TECHNICAL SPECIFICATIONS

KEY PERFORMANCE INDICATORS (KPIs)

CLINICAL SERVICES

MEDICAL PROGRAMME VERSION 4.0

2016
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### MEDICAL-BASED DISCIPLINES

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### CLINICAL SUPPORT

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### MEDICAL-BASED DISCIPLINE

#### CARDIOLOGY

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<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
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<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of new non-urgent cases that were given appointment for elective cardiac catheterisation within (≤) 12 weeks</td>
<td>Timely</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>ST elevation myocardial infarction (STEMI) without shock case fatality rate</td>
<td>Customer</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>ST elevation myocardial infarction (STEMI) with shock case fatality rate</td>
<td>Customer</td>
<td>≤ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>NSTEMI case fatality rate</td>
<td>Customer</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>Percentage of high risk acute coronary syndrome (ACS) cases undergo cardiac catheterization within the same admission</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Elective Percutaneous Coronary Intervention (PCI) complication rate</td>
<td>Safety</td>
<td>≤ 1%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Permanent pacemaker implantation infection rate</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Trans-oesophageal echocardiogram complication rate</td>
<td>Safety</td>
<td>&lt; 1%</td>
<td>Monthly</td>
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#### DERMATOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
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<th>SUB-SPECIALTY</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
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<tr>
<td>D</td>
<td>1</td>
<td>-</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 14 working days at Skin Specialist Clinic</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
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</tbody>
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### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
#### MEDICAL PROGRAMME 2016

#### CLINICAL PERFORMANCE SURVEILLANCE UNIT
- **D** (Departmental)
- **I** (Individual)

### CLINICAL SERVICES

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<th>Reporting Frequency</th>
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<tbody>
<tr>
<td><strong>D</strong></td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Skin Specialist Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>3</td>
<td>Percentage of psoriasis patients assessed for quality of life</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>4</td>
<td>Severe cutaneous adverse drug reaction (SCADR) notification rate</td>
<td>Safety</td>
<td>≥ 80%</td>
<td>Monthly</td>
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<tr>
<td><strong>I</strong></td>
<td>5</td>
<td>Infection rate of skin biopsy wound</td>
<td>Safety</td>
<td>≤ 2%</td>
<td>6 Monthly</td>
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<tr>
<td><strong>I</strong></td>
<td>6</td>
<td>Patch test positivity rate</td>
<td>Effectiveness</td>
<td>≤ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>7</td>
<td>Default rate for phototherapy patients</td>
<td>Customer</td>
<td>≤ 30%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>8</td>
<td>Notification of patients with skin cancer in dermatology clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
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<td><strong>I</strong></td>
<td>9</td>
<td>Post-laser treatment complication rate</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>6 Monthly</td>
</tr>
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<td><strong>I</strong></td>
<td>10</td>
<td>Percentage of cutaneous lupus erythematosus patients with Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI) assessment</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>6 Monthly</td>
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### ENDOCRINOLOGY

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<tbody>
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<td><strong>D</strong></td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Endocrine and Diabetes clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Endocrine and Diabetes clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>3</td>
<td>Percentage of new diabetic cases referred for diabetes education within (≤) 8 weeks from first consultation</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>4</td>
<td>Diabetic Ketoacidosis (DKA) Mortality Rate</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
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<tr>
<td><strong>I</strong></td>
<td>5</td>
<td>Percentage of endocrine emergency cases seen by an endocrinologist before discharge</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
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### Gastroenterology

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<th>HOSPITAL REPORTING FREQUENCY</th>
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<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Gastroenterology Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Gastroenterology clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
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<tr>
<td>D</td>
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<td>Percentage of non-urgent cases that were given first endoscopic appointment within (≤) 8 weeks after clinic consultation</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
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<tr>
<td>I</td>
<td>4</td>
<td>Percentage of oesophagastroduodenoscopy (OGDS) performed within (≤) 24 hours of admission in patients presented with upper gastrointestinal haemorrhage (UGIH)</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>Monthly</td>
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<tr>
<td>I</td>
<td>5</td>
<td>Caecal intubation rate (CIR)</td>
<td>Safety</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of colonic perforation in patients underwent colonoscopy procedure</td>
<td>Safety</td>
<td>≤ 0.2%</td>
<td>Monthly</td>
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### General Medicine

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<tr>
<td>D</td>
<td>1</td>
<td>Non ST elevation myocardial infarction (NSTEMI)/Unstable angina case fatality rate</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>Monthly</td>
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<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at General Medicine Outpatient Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of new non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at General Medicine Outpatient Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
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<tr>
<td>D</td>
<td>4</td>
<td>Percentage of patients with diabetes who have been screened for target organ damage</td>
<td>Customer</td>
<td>&gt; 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients with history of myocardial infarction on current management treated with ALL named medications</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of hypertensive patients with blood pressure ≤ 140/90 mmHg as measured in the General Medicine Outpatient Clinic</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Percentage of patients with non vulvular atrial fibrillation assessed for risk of stroke within (≤) 6</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
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## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
### MEDICAL PROGRAMME 2016

### CLINICAL PERFORMANCE SURVEILLANCE UNIT

#### D(Departmental); I(Individual)

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<th>Standard</th>
<th>Hospital Reporting Frequency</th>
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<tr>
<td>I</td>
<td>8</td>
<td>Percentage of new cases admitted during on call hours who are seen by the individual specialist (as the first specialist) within 12 hours of admission</td>
<td>Customer</td>
<td>≥ 50%</td>
<td>6 Monthly</td>
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### GERIATRIC

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<th>Standard</th>
<th>Hospital Reporting Frequency</th>
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<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of new non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Geriatric Clinic</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the health care worker at Geriatric clinic</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients undergoing comprehensive geriatric assessment (CGA) within (≤) one week of admission to Geriatric ward</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients discharged with Geriatric Discharge Plan</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients referred for impaired cognition to the Geriatric Clinic who are assessed for reversible aetiology</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
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### HAEMATOLOGY

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<tr>
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<th>NO</th>
<th>Indicator</th>
<th>Dimension</th>
<th>Standard</th>
<th>Hospital Reporting Frequency</th>
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</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Chemotherapy Extravasation Rate</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patient with waiting time of ≤ 90 minutes to see the doctor at Haematology Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of new acute leukaemia/ Diffuse large B-cell lymphoma (DLBL) cases that were given appointment within (≤) 7 days</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of induction death from chemotherapy in newly diagnosed acute leukaemia/ Diffuse large B-cell lymphoma (DLBL)</td>
<td>effectiveness</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Chemotherapy Error Rate</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of transfusion dependent thalassaemia (TDT) patients on iron chelation therapy</td>
<td>Customer</td>
<td>&gt; 90%</td>
<td>3 Monthly</td>
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### HEPATOLOGY

<table>
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<tr>
<th>TYPE</th>
<th>NO</th>
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<th>HOSPITAL REPORTING FREQUENCY</th>
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<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Hepatology Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of (≤) 90 minutes to see the doctor at Hepatology clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of cirrhotic patients with clinically apparent ascites had diagnostic abdominal paracentesis performed within (≤) 48 hours of admission</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of cirrhotic patients admitted with clinically apparent ascites given advice on low salt diet</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients with Acute Liver Failure or Acute on Chronic Liver Failure completed assessment within (≤) 48 hours of listing for liver transplant by the Transplant Team</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of chronic hepatitis C patients who are fully assessed and initiated on anti-HCV therapy within (≤) 8 months of first consultation at Hepatology Department</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

### INFECTIOUS DISEASE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of HIV patients achieving undetectable HIV viral load within (≤) 6 months of commencement of anti-retroviral therapy</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of new HIV cases that were given appointment for first consultation within (≤) 4 weeks in the Infectious Disease Clinic</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of HIV patients commenced with appropriate first line anti-retroviral (ARV) regimen in accordance to local HIV guidelines</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of HIV patients receiving treatment counselling before commencing first line anti-retroviral (ARV) therapy</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients started on carbapenam in the infectious diseases discipline who have a documented review within (≤) 72 hours of initiation</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of new HIV patients screened for pulmonary tuberculosis within (≤) 3 months of first visit to clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

#### Nephrology

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
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<th>HOSPITAL REPORTING FREQUENCY</th>
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</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of chronic haemodialysis patients with delivered KT/V of ≥ 1.2</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Occurrence of peritonitis in adult patients on chronic peritoneal dialysis (&lt; 1 case per 24 patient-months)</td>
<td>Safety</td>
<td>≤ 0.04</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of diabetic nephropathy patients with acceptable blood pressure control (≤130/80mmHg) as measured in Nephrology Clinic</td>
<td>Effectiveness</td>
<td>≥ 25%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of documented exploration of living donor transplant option with relatives of patients with End Stage Renal Failure (ESRF)</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of non-diabetic chronic kidney disease (CKD) patients with acceptable blood pressure control (≤140/90 mmHg) as measured in Nephrology Clinic</td>
<td>Effectiveness</td>
<td>≥ 60%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of diabetic chronic kidney disease (CKD) patients treated with ACE inhibitors (ACEi) or Angiotensin Receptor Blockers (ARBs)</td>
<td>Effectiveness</td>
<td>≥ 60%</td>
<td>3 Monthly</td>
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#### Neurology

<table>
<thead>
<tr>
<th>TYPE</th>
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<th>INDICATOR</th>
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<th>HOSPITAL REPORTING FREQUENCY</th>
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</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 12 weeks at Neurology Clinic</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of non-urgent Electroencephalography (EEG) carried out within (≤) 8 weeks of request</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of Acute Ischaemic Stroke (AIS) patients obtained a neurology consultation within (≤) 24 hours of referral</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients with Blepharospasm and Hemifacial Spasm who did not develop ptosis after 4 weeks of Botulinum Toxin Therapy</td>
<td>Effectiveness</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of Parkinson’s Disease patients initiated on appropriate treatment within (≤) 12 weeks of referral to Neurology Services</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of non-urgent out-patient electroencephalograph (EEG) reported by a Neurologists within (≤) 4 weeks of recording</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>6 Monthly</td>
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## PAEDIATRICS

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</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td></td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at Paediatric Specialist Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
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<tr>
<td>D</td>
<td>2</td>
<td></td>
<td>Percentage of patients with waiting time of (≤) 90 minutes to see the doctor at Paediatric Specialist Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
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<tr>
<td>D</td>
<td>3</td>
<td></td>
<td>Percentage of House Officers trained in Neonatal Resuscitation Programme (NRP)</td>
<td>Safety</td>
<td>100%</td>
<td>Monthly</td>
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<tr>
<td>D</td>
<td>4</td>
<td></td>
<td>Percentage of survival of inborn very low birth weight infants between 1000 – 1499 g birthweight</td>
<td>Effectiveness</td>
<td>≥ 85%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td></td>
<td>Percentage of babies with congenital hypothyroidism receiving treatment within 2 weeks of diagnosis</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>General</td>
<td>Community-acquired pneumonia death rate (in previously healthy children aged between 1 month and 5 years)</td>
<td>Effectiveness</td>
<td>≤ 1%</td>
<td>Monthly</td>
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<tr>
<td>I</td>
<td>7</td>
<td>General</td>
<td>Percentage of paediatric patients with unplanned readmission to paediatric ward within (≤) 48 hours of discharge</td>
<td>Effectiveness</td>
<td>≤ 2%</td>
<td>Monthly</td>
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<tr>
<td>I</td>
<td>8</td>
<td>Nephrology</td>
<td>Peritonitis rate in patients on chronic peritoneal dialysis (PD)</td>
<td>Effectiveness</td>
<td>&lt; 2%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>9</td>
<td>Nephrology</td>
<td>Complication rates of renal biopsy</td>
<td>Safety/Effectiveness</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>10</td>
<td>Neonatology</td>
<td>Therapeutic hypothermia for inborn infants ≥ 36 weeks gestational age with hypoxic ischaemic encephalopathy (HIE) started within 6 hours of life</td>
<td>Effectiveness</td>
<td>&gt; 80%</td>
<td>3 Monthly</td>
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<tr>
<td>I</td>
<td>11</td>
<td>Neonatology</td>
<td>Percentage or inborn VLBW infants with moderate to severe RDS requiring surfactant being given surfactant within 2 hours of life</td>
<td>Effectiveness</td>
<td>&gt; 80%</td>
<td>3 Monthly</td>
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<tr>
<td>I</td>
<td>12</td>
<td>Infectious Disease</td>
<td>Percentage of infants born to HIV-infected mothers started on PMTCT neonatal prophylaxis within 12 hours of birth.</td>
<td>Efficiency</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>13</td>
<td>Infectious Disease</td>
<td>Percentage of non-urgent new</td>
<td>Customer</td>
<td>≥ 95%</td>
<td>Monthly</td>
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<td>I</td>
<td>Disease</td>
<td>Performance Criteria</td>
<td>Measurement Period</td>
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<td>14</td>
<td>Infectious Disease</td>
<td>Percentage of all paediatric vancomycin prescriptions reviewed within 3 days of initiation</td>
<td>Effectiveness ≥ 80%</td>
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<td>Monthly</td>
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<td>15</td>
<td>Adolescent Medicine</td>
<td>Percentage of adolescent patients successfully transitioned to adult care services upon reaching 16 to 18 years of age</td>
<td>Customer &gt; 80%</td>
<td></td>
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<td>6 Monthly</td>
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<tr>
<td>16</td>
<td>Developmental Paediatrics</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within 20 weeks</td>
<td>Customer ≥ 90%</td>
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<td>3 Monthly</td>
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<tr>
<td>17</td>
<td>Developmental Paediatrics</td>
<td>Percentage of new patients with developmental assessment done</td>
<td>Effectiveness ≥ 90%</td>
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<td></td>
<td>3 Monthly</td>
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<tr>
<td>18</td>
<td>Neurology</td>
<td>Percentage of EEG reporting turn-around time ≤ 1 month</td>
<td>Customer ≥ 80%</td>
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<td>Monthly</td>
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<td>19</td>
<td>Rheumatology</td>
<td>Percentage of patients reviewed by specialist during a paediatric Rheumatology Clinic</td>
<td>Safety ≥ 80%</td>
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<td>Monthly</td>
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<td>20</td>
<td>Rheumatology</td>
<td>Ophthalmology referral for uveitis screening within 3 months of diagnosis of Juvenile Idiopathic Arthritis</td>
<td>Safety ≥ 80%</td>
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<td></td>
<td>3 Monthly</td>
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<tr>
<td>21</td>
<td>Endocrinology</td>
<td>Percentage of obese children above the age of 10 years seen in Paediatric Endocrine Clinic screened for metabolic syndrome</td>
<td>Customer ≥ 80%</td>
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<td></td>
<td>Monthly</td>
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<td>22</td>
<td>Endocrinology</td>
<td>Percentage of type 2 diabetes mellitus patients seen in Paediatric Endocrine Clinic screened for urine microalbuminuria annually</td>
<td>Customer ≥ 80%</td>
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<td>Monthly</td>
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<tr>
<td>23</td>
<td>Haematology-Oncology</td>
<td>Percentage of transfusion-dependent Thalassaemia patients of &lt; 10 years old with serum ferritin level of &lt; 2500 mcg/l</td>
<td>Effectiveness ≥ 60%</td>
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<td>6 Monthly</td>
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<tr>
<td>24</td>
<td>Haematology-Oncology</td>
<td>Death during induction in patients with Acute Lymphoblastic Leukaemia</td>
<td>Safety &lt; 8%</td>
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<td></td>
<td>Yearly</td>
<td></td>
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<tr>
<td>25</td>
<td>Dermatology</td>
<td>Percentage of children newly diagnosed with atopic dermatitis undergoing parent/ patient eczema educational programme (PEEP) within 3 months after first appointment date at Eczema Clinic</td>
<td>Effectiveness ≥ 80%</td>
<td></td>
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<td></td>
<td>6 Monthly</td>
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<tr>
<td>26</td>
<td>Dermatology</td>
<td>Percentage of children moderate to severe atopic dermatitis undergoing skin prick test and serum for specific Ig E levels</td>
<td>Effectiveness ≥ 80%</td>
<td></td>
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<td>6 Monthly</td>
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<td>Indicator</td>
<td>Dimension</td>
<td>Standard</td>
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<tr>
<td>I 27</td>
<td>Dermatology</td>
<td>Percentage of children with facial port wine stain receiving 3 sessions of laser therapy in a year till 80% resolution</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Yearly</td>
<td></td>
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<tr>
<td>I 28</td>
<td>Respiratory</td>
<td>Percentage of spirometry report turnaround time &lt; 2 weeks</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
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<tr>
<td>I 29</td>
<td>Respiratory</td>
<td>Turnaround time for teaching parents of patients on CPAP/ BIPAP/ oxygen concentrator within 72 hours prior to discharge</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
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<tr>
<td>I 30</td>
<td>Critical Care</td>
<td>Readmission to the ICU within 48 hours of transfer during a single hospital stay</td>
<td>Safety</td>
<td>≤ 5</td>
<td>Monthly</td>
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<td><strong>PALLIATIVE MEDICINE</strong></td>
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<tr>
<td>D 1</td>
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<td>Percentage of inpatient with severe cancer pain whose pain had been significantly reduced within (≤) 24 hours of therapy on initial encounter</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
<td></td>
</tr>
<tr>
<td>D 2</td>
<td></td>
<td>Timely response within (≤) 24 hours by Palliative Care Team to inpatient referrals</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
<td></td>
</tr>
<tr>
<td>D 3</td>
<td></td>
<td>Timely response within (≤) 10 working days by Palliative Care Team to new outpatient referrals</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
<td></td>
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<tr>
<td>I 4</td>
<td></td>
<td>Percentage of patients who are dying from advanced terminal illness undergo futile resuscitative intervention</td>
<td>Effectiveness</td>
<td>&lt; 1%</td>
<td>6 Monthly</td>
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<tr>
<td>I 5</td>
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<td>Percentage of patients with documented discussion on patients’ terminal prognosis and resuscitation status with family or relevant persons prior to death</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>6 Monthly</td>
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<tr>
<td>I 6</td>
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<td>Percentage of severe opioid toxicity requiring reversal with naloxone due to inappropriate opioid administration or prescription</td>
<td>Safety</td>
<td>&lt; 1%</td>
<td>6 Monthly</td>
<td></td>
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<td><strong>PSYCHIATRY</strong></td>
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</tr>
<tr>
<td>D 1</td>
<td></td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at Psychiatry Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>D 2</td>
<td></td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Psychiatry Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>6 Monthly</td>
<td></td>
</tr>
<tr>
<td>D 3</td>
<td></td>
<td>Default rate among Psychiatric outpatients</td>
<td>Customer</td>
<td>&lt; 15%</td>
<td>Monthly</td>
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</tr>
<tr>
<td>I 4</td>
<td></td>
<td>Percentage of new outpatients received psycho-</td>
<td>Customer</td>
<td>&gt; 80%</td>
<td>Monthly</td>
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### RESPIRATORY

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<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at Respiratory Clinic</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of smear positive PTB patients who are started TB treatment within 3 working days of diagnosis</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of asthma patients discharged with an asthma discharge plan</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of full lung function test interpreted within 2 weeks</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of positive histopathological examination (HPE) results of endobronchial biopsy from the lesion</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of suspected lung cancer patients who undergo a diagnostic procedure (bronchoscopy/image-guided biopsy/pleuroscopy) within 2 weeks</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Percentage of complications during elective diagnostic bronchoscopies</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>Monthly</td>
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### RHEUMATOLOGY

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<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Rheumatology Clinic</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of new cases seen by Rheumatologist at Rheumatology Clinic</td>
<td>Customer</td>
<td>&gt; 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of Rheumatoid arthritis patient screen for hepatitis prior to starting methotrexate</td>
<td>Safety</td>
<td>&gt; 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients on biologic disease modifying anti-rheumatic drugs (DMARDs) screened for tuberculosis (TB)</td>
<td>Safety</td>
<td>&gt; 95%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of newly diagnosed rheumatoid</td>
<td>Customer</td>
<td>&gt; 80%</td>
<td>3 Monthly</td>
</tr>
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</table>
### SURGICAL-BASED DISCIPLINE

#### BREAST AND ENDOCRINE SURGERY

<table>
<thead>
<tr>
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<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with waiting time of less than 3 months for elective thyroidectomy</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of breast cancer patients going for definitive surgery within (≤) 4 weeks of the diagnosis</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with suspicious breast lump/lesion that were given appointment within (≤) 14 working days of referral at Breast Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of recurrent laryngeal nerve (RLN) injury in primary benign thyroid operation</td>
<td>Safety</td>
<td>≤ 3%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients with clear surgical margins in breast conserving surgery (BCS)</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients with missing parathyroid gland in surgery for renal hyperparathyroidism</td>
<td>Effectiveness</td>
<td>&lt; 20%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

#### BURN AND TRAUMA

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>SUB-SPECIALTY</th>
<th>INDICATOR</th>
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<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>-</td>
<td>Timeliness for crash operation within (≤) 60 minutes</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>-</td>
<td>Minor trauma mortality rate</td>
<td>Effectiveness</td>
<td>&lt; 8%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Burn</td>
<td>Severe burn mortality rate</td>
<td>Effectiveness</td>
<td>&lt; 30%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>Trauma</td>
<td>Percentage of non-therapeutic laparotomy (NTL) for trauma cases</td>
<td>Effectiveness</td>
<td>&lt; 20%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>-</td>
<td>Percentage of trauma alert responded by surgeon within (≤) 30 minutes</td>
<td>Customer</td>
<td>&gt; 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>-</td>
<td>Percentage of patients with duration of surgery within (≤) 90 minutes in crash trauma laparotomy</td>
<td>Customer</td>
<td>&gt; 75%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>
### CARDIOVASCULAR AND THORACIC SURGERY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of unplanned hospital readmission within (≤) 28 days following discharge after elective adult open heart surgery</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with operable lung cancer or suspected lung cancer operated within (≤) 3 weeks</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3.1</td>
<td>Elective coronary artery bypass surgery (CABG) mortality rate [High Volume Centre]</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3.2</td>
<td>Elective coronary artery bypass surgery (CABG) mortality rate [Low Volume Centre]</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4.1</td>
<td>Percentage of patients with chest reopening for severe bleeding post elective primary isolated adult open heart surgery [High Volume Centre]</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4.2</td>
<td>Percentage of patients with chest reopening for severe bleeding post elective primary isolated adult open heart surgery [Low Volume Centre]</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of watershed stroke patients following elective primary isolated adult open heart surgery</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of post cardiac surgery patients with complete sternal wound dehiscence</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>3 Monthly</td>
</tr>
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</table>

### COLORECTAL SURGERY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Rate of immediate stoma revision after its creation</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 3 weeks for colorectal cancer (CRC) surgery</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with waiting time of ≤ 4 weeks for elective colonoscopy</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Rate of unclear surgical margins in rectal cancer surgery</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

#### MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicators</th>
<th>Dimension</th>
<th>Standard</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>I 5</td>
<td>Percentage of colonic perforation during colonoscopy</td>
<td>Safety</td>
<td>&lt; 2%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I 6</td>
<td>Occurrence of anal stenosis following haemorrhoidectomy</td>
<td>Effectiveness</td>
<td>0</td>
<td>3 Monthly</td>
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</table>

**GENERAL SURGERY**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of new non-urgent cases that were given appointment for first consultation within (≤) 4 weeks at General Surgery Clinic</td>
<td>Timely</td>
<td>≥ 75%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patient with waiting time of (≤) 90 minutes to see the doctor at General Surgery Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Post appendicectomy complications rate during hospital stay</td>
<td>Safety</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of cases with unplanned return to the operating theatre following an elective surgical procedure</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of colonic perforation during colonoscopy</td>
<td>Safety</td>
<td>≤ 2%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of cancellation of elective surgery</td>
<td>Effectiveness</td>
<td>≤10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Percentage of complications following thyroidectomy (hemi &amp; total) for benign thyroid diseases</td>
<td>Safety</td>
<td>≤ 10%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**HEPATOBILIARY SURGERY**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that are given appointment for first consultation within 1 month</td>
<td>Timely</td>
<td>≥75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of (≤) 1 month for elective surgery for hepatobiliary malignancy</td>
<td>Timely</td>
<td>≥90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of cancellation of listed elective hepatobiliary surgical cases</td>
<td>Customer</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Mortality ≤ 30 days following elective Hepatic Resection</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Mortality ≤ 30 days following elective Whipple’s operation</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of attendance for department CME</td>
<td>Effectiveness</td>
<td>≥80%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>
### NEUROSURGERY

<table>
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<tr>
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<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of newly diagnosed brain or spine tumour patients with waiting time of less than 3 months for elective surgery</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Mild head injury case fatality rate</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of safe CSF shunt surgery for paediatric patients conducted by Neurosurgeon</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients with wound infection following clean elective neurosurgical surgery</td>
<td>Safety</td>
<td>≤ 8%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of safe cranioplasty surgery for paediatric patients conducted by Neurosurgeon</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
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</table>

### OBSTETRICS AND GYNAECOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with eclampsia administered Magnesium Sulphate (MgSO₄)</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of massive postpartum haemorrhage (PPH) incidence in cases delivered in the hospital</td>
<td>Safety</td>
<td>≤ 1%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients hospitalised &gt; 24 hours seen by specialist at least once before discharge</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of cases with Erythromycin Ethinyl Succinate (EES) administration for preterm pre-labour rupture of membrane (PPROM) cases</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of unrecognised ureteric injury intraoperatively during benign gynaecological condition</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients diagnosed antenatally with morbidly adherent placenta have their caesarean section performed or supervised by consultant/specialist</td>
<td>Safety</td>
<td>≥ 90%</td>
<td>Monthly</td>
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</table>

### OPHTHALMOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>SUBSPECIALTY</th>
<th>INDICATOR</th>
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<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>-</td>
<td>Percentage of diabetic mellitus patients that were given appointment for first consultation within (≤) 6 weeks at Ophthalmology Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>-</td>
<td>Percentage of patients developed infectious endophthalmitis</td>
<td>Effectiveness</td>
<td>&lt; 0.2%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>TYPE</td>
<td>NO</td>
<td>INDICATOR</td>
<td>DIMENSION</td>
<td>STANDARD</td>
<td>REPORTING FREQUENCY</td>
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<td></td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 4 weeks at Orthopaedic Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of unplanned return to the operating room/ theatre within (≤) 24 hours of surgery</td>
<td>Effectiveness</td>
<td>&lt; 1%</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with waiting time of ≤ 7 working days for fixation of long bone closed fracture(s) as decided by attending doctor</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of surgical site infection in clean elective orthopaedic surgery</td>
<td>Safety</td>
<td>&lt; 3%</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of unacceptable internal fixation of fracture requiring revision</td>
<td>Effectiveness</td>
<td>&lt; 3%</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of post primary total knee replacement patients with length of stay in hospital of ≤ 5 working days</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
<td></td>
</tr>
</tbody>
</table>

### ORTHOPAEDIC

| D | 1 | Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Otorhinolaryngology Clinic | Customer | ≥ 90% | Monthly |
| D | 2 | Percentage of patients with waiting time of less than 3 months for elective surgery | Customer | ≥ 90% | Monthly |
| D | 3 | Incidence of post-tonsillectomy haemorrhage | Safety | < 5% | Monthly |

#### SUBSPECIALTIES

| I | 4.1 | Percentage of complication following; Mastoidectomy: Facial nerve injury | Safety | < 10% | 6 Monthly |
| I | 4.2 | Percentage of complication following; Functional endoscopic sinus surgery (FESS): Eye injury/ Cerebro-spinal fluid (CSF) leak | Safety | < 10% | 6 Monthly |
| I | 4.3 | Percentage of complication following; Superficial parotidectomy: Facial nerve injury | Safety | < 10% | 6 Monthly |

| I | 5.1 | Success rate following surgery; Myringoplasty: Closure of perforation. | Effectiveness | ≥ 70% | 6 Monthly |
| I | 5.2 | Success rate following surgery; Septum Related Surgery: No septal perforation | Safety | ≥ 95% | 6 Monthly |
| I | 5.3 | Success rate following surgery; Head and neck surgery: Wound healing with primary intention | Effectiveness | ≥ 95% | 6 Monthly |

| I | 6.1 | Percentage of oesophageal perforation following elective diagnostic rigid oesophagoscopy | Safety | ≤ 2% | 6 Monthly |
| I | 6.2 | Percentage of pneumothorax in elective paediatric tracheostomy procedure | Safety | ≤ 2% | 6 Monthly |
| I | 6.3 | Percentage of perforation and pneumothorax in elective paediatric bronchoscopy procedure | Safety | ≤ 2% | 6 Monthly |
### PAEDIATRIC SURGERY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of white/ normal appendix during appendicectomy</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of anastomotic leak post-tracheoesophageal fistula (TOF) repair</td>
<td>Safety</td>
<td>≤ 20%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at specialist clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Anastomotic leak rate</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of targeted paediatric surgical services provided by paediatric surgeon to the designated hospital (Outreach Program)</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of successful hypospadias repair</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
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</table>

### PLASTIC AND RECONSTRUCTIVE SURGERY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of cleft lip/ palate patients that were given appointment for first consultation within (≤) 6 weeks at Plastic Surgical Outpatient Department (Plastic SOPD)</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of basal cell carcinoma (BCC) patients with waiting time of (≤) 4 weeks for definitive surgery</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Plastic Surgical Outpatient Department (Plastic SOPD)</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of full thickness skin graft (FTSG) with ≥ 80% graft take following elective surgery</td>
<td>Effectiveness</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of post-palatoplasty haemorrhage patients reintubated and/ or returned to operating theatre within (≤) 24 hours of primary palate repair</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Rate of complete excision of basal cell carcinoma (BCC)</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

### UPPER GASTROINTESTINAL SURGERY

<table>
<thead>
<tr>
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<th>HOSPITAL REPORTING FREQUENCY</th>
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<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with gastric tumour who undergo potential curative surgical resection in which surgical margin is clear</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with oesophageal tumour who undergo potential curative surgical resection in</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>
### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

#### Medical Programme 2016

**CLINICAL PERFORMANCE SURVEILLANCE UNIT**

**D** (Departmental); **I** (Individual)

---

<table>
<thead>
<tr>
<th>Type</th>
<th>No.</th>
<th>Indicator</th>
<th>Dimension</th>
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<th>Hospital Reporting Frequency</th>
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<tbody>
<tr>
<td><strong>D</strong></td>
<td>3</td>
<td>Percentage of patients with oesophageal or gastric tumours should be operated within (≤) 2 weeks after pre-operative optimization</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>4</td>
<td>Percentage of patients with oesophageal anastomotic leak after oesophago-gastric surgery</td>
<td>Effectiveness</td>
<td>&lt; 30%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>5</td>
<td>Percentage of patients with gastric adenocarcinoma who undergo curative surgical resection (RO) where ≥15 lymph nodes are resected and pathologically examined</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>6</td>
<td>Percentage of patients with benign stomach disorder who undergo elective surgery and receive blood transfusion intra-operatively more than 4 units</td>
<td>Customer</td>
<td>&lt; 15%</td>
<td>6 Monthly</td>
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### Urology

<table>
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<tr>
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<th>No.</th>
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<th>Standard</th>
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<tbody>
<tr>
<td><strong>D</strong></td>
<td>1</td>
<td>Percentage of suspected renal cancer cases that were given appointment for first consultation within (≤) 14 working days at Urology Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>2</td>
<td>Percentage of patients with suspected bladder tumour undergo elective transurethral resection of bladder tumour (TURBT) within (≤) 1 month</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>3</td>
<td>Percentage of ureteric stents inserted post urological procedures removed either before or on the date of appointment given</td>
<td>Safety</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>4</td>
<td>Percentage of safe percutaneous nephrolithotripsy (PCNL)</td>
<td>Safety</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>5</td>
<td>Percentage of safe transurethral resection of the prostate (TURP)</td>
<td>Safety</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td>6</td>
<td>Percentage of safe ureterorenoscopy (URS) with lithotripsy</td>
<td>Safety</td>
<td>≥ 95%</td>
<td>Monthly</td>
</tr>
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</table>

### Vascular Surgery

<table>
<thead>
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<th>No.</th>
<th>Indicator</th>
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<th>Standard</th>
<th>Hospital Reporting Frequency</th>
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</thead>
<tbody>
<tr>
<td><strong>D</strong></td>
<td>1</td>
<td>Post-operative mortality rate for elective open repair of abdominal aortic aneurysm (AAA)</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>2</td>
<td>Percentage of patients undergoing secondary amputation following intervention for critical limb ischaemia (CLI)</td>
<td>Effectiveness</td>
<td>&lt; 40%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>3</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at General Surgery Clinic (General Surgery)</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
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## Clinical Support Discipline

### Anaesthesiology

<table>
<thead>
<tr>
<th>Type</th>
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<th>Sub-Specialty</th>
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<th>Dimension</th>
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<tr>
<td>D</td>
<td>1</td>
<td>-</td>
<td>Percentage of major elective surgery patients received Acute Pain Service (APS)</td>
<td>Customer</td>
<td>≥ 60%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>-</td>
<td>Ventilator care bundle (VCB) compliance rate</td>
<td>Safety</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>-</td>
<td>Percentage of elective surgical cancellations after pre-operative assessment in the Anaesthetic Clinic</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>General</td>
<td>Percentage of re-intubation in the operating room (OR) or recovery room (RR)</td>
<td>Effectiveness</td>
<td>≤ 0.3%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>General</td>
<td>Percentage of patients on Acute Pain Service (APS) with pain score of less than 4 within the first 24 hours after surgery at rest</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>General</td>
<td>Percentage of cases with accidental dural puncture</td>
<td>Safety</td>
<td>&lt; 3%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Pain</td>
<td>Percentage of inpatients referred for chronic pain management seen within (≤) 24 hours</td>
<td>Customer</td>
<td>&gt; 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Pain</td>
<td>Percentage of unplanned admissions after day-case pain procedures</td>
<td>Effectiveness</td>
<td>&lt; 1%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>9</td>
<td>ICU</td>
<td>Percentage of readmission within 48 hours of ICU discharge</td>
<td>Effectiveness</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>10</td>
<td>ICU</td>
<td>Percentage of unplanned extubation</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>Monthly</td>
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</table>
## CARDIAC ANAESTHESIA

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
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</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of major elective surgery patients received Acute Pain Service (APS) (Anaesthesiology)</td>
<td>Customer/ Effectiveness</td>
<td>≥ 60%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Ventilator care bundle (VCB) compliance rate (Anaesthesiology)</td>
<td>Safety</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of elective surgical cancellations after pre-operative assessment in the Anaesthetic Clinic (Anaesthesiology)</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of post-elective cardiopulmonary bypass adult patients with blood glucose level ≥ 10mmol/L on arrival to Cardiac Intensive Care Unit (CICU)</td>
<td>Effectiveness</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of accidental carotid arterial puncture during central venous cannulation via internal jugular vein (IJV) approach</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients require re-intubation in Cardiac Intensive Care Unit (CICU) after open heart surgeries</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>Monthly</td>
</tr>
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</table>

## CLINICAL GENETIC

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
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<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
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</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation ≤ 8 weeks</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Genetic Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of ward referrals to be seen by specialist ≤ 2 working days</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of new cases with written feedback to the referring clinician ≤ 2 weeks of clinic attendance</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of unplanned readmission for patients treated for intoxication type IEM ≤ 48 hours of discharge</td>
<td>Effectiveness</td>
<td>&lt; 1%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients with intoxication type IEM with &gt; 3 admission in a year for metabolic decompensation</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Percentage of care pathway usage in patients with Marfan Syndrome</td>
<td>Safety</td>
<td>&gt; 90%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

### EMERGENCY MEDICAL AND TRAUMA SERVICES

<table>
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<tr>
<th>TYPE</th>
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<th>REPORTING FREQUENCY</th>
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<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of MTC Yellow patients where treatment is instituted by ED staff within (≤) 30 minutes</td>
<td>Effectiveness</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of inappropriate triaging (under triaging): Category Green patients who should have been triaged as Category Red</td>
<td>Safety</td>
<td>≤ 0.5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of ambulance preparedness and dispatch for primary response within (≤) 5 minutes</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of ST Elevation Myocardial Infarction (STEMI) patients receiving thrombolytic therapy within (≤) 30 minutes of presentation at the Emergency Department</td>
<td>Effectiveness</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of severe sepsis patient managed according to Modified Surviving Sepsis Bundle within (≤) 60 minutes of diagnosis</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Procedural sedation and analgesia (PSA) complication rate in Emergency and Trauma Department</td>
<td>Safety</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
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</table>

### FORENSIC MEDICINE

<table>
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<tr>
<th>TYPE</th>
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<th>REPORTING FREQUENCY</th>
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<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of completeness in registration of deaths from the wards for non-police cases by the Forensic Medicine Department/ Forensic Unit</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
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<tr>
<td>D</td>
<td>2</td>
<td>Turnaround time of ≤ 3 hours for releasing bodies (non-police cases) to the appropriate claimant from the registration of bodies by the Forensic Medicine Department/ Forensic Unit</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of bodies released to the right claimant by the Forensic Medicine Department/ Forensic Unit</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Turnaround time of ≤ 48 hours for performing forensic autopsies of police/ medico-legal cases from the issuance of ‘Polis 61’ order by the Forensic Specialist</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Turnaround time of ≤ 12 weeks for preparing forensic autopsy reports of police cases from the</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

#### MEDICAL PROGRAMME 2016

**D (Departmental); I (Individual)**

**CLINICAL PERFORMANCE SURVEILLANCE UNIT**

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<th>FREQUENCY</th>
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<tbody>
<tr>
<td>6</td>
<td>Performance of autopsy by the Forensic Specialist</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
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### NUCLEAR MEDICINE

<table>
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<tr>
<th>TYPE</th>
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<th>REPORTING FREQUENCY</th>
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<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of repeat studies in diagnostic nuclear medicine</td>
<td>Safety</td>
<td>&lt; 3%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Nuclear Medicine Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with benign thyroid disease received radioiodine therapy within (≤) 1 month</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Turnaround time of ≤ 7 working days for diagnostic nuclear medicine reports after completion of studies</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Turnaround time of ≤ 2 working days for urgent diagnostic nuclear medicine reports after completion of studies</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients counselled against pregnancy within (≤) 4 months post radioiodine therapy</td>
<td>Safety</td>
<td>100%</td>
<td>Monthly</td>
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### PATHOLOGY

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<th>DIMENSION</th>
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<th>REPORTING FREQUENCY</th>
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<tbody>
<tr>
<td>D</td>
<td>1</td>
<td></td>
<td>Percentage of laboratory turnaround time (LTAT) for urgent Full Blood Count (FBC) within (≤) 45 minutes</td>
<td>Timeliness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td></td>
<td>Notification of neonatal total bilirubin results &gt; 300 µmol/L within 30 minutes after result verification</td>
<td>Safety</td>
<td>≥ 95%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td></td>
<td>Percentage of correct species identification of malaria parasites</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Chemical Pathology</td>
<td>Percentage of Laboratory Turn Around Time (LTAT) for Thyroid Function Tests is 3 working days</td>
<td>Timely</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Chemical Pathology</td>
<td>Glucose analytical imprecision is not more than 3.4%</td>
<td>Efficiency</td>
<td>≤ 3.4%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Chemical Pathology</td>
<td>Validation of abnormal Haemoglobin A1c (HbA1c)</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Anatomical</td>
<td>Percentage of amended</td>
<td>Safety</td>
<td>≤ 1%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>Pathology</td>
<td>Indicator</td>
<td>Dimension</td>
<td>Standard</td>
<td>Reporting Frequency</td>
<td></td>
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<tr>
<td>----</td>
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<td>---------------------------------------------------------------------------</td>
<td>---------------</td>
<td>--------------</td>
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<tr>
<td>8</td>
<td>Anatomical Pathology</td>
<td>Percentage of outstanding histopathology report</td>
<td>Timely</td>
<td>≤ 5%</td>
<td>Yearly</td>
<td></td>
</tr>
<tr>
<td>9.1</td>
<td>Anatomical Pathology</td>
<td>Percentage of Histopathology correlation for FNAC of breast lesion</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Yearly</td>
<td></td>
</tr>
<tr>
<td>9.2</td>
<td>Anatomical Pathology</td>
<td>Accuracy of reporting the General Module of Histopathology External Quality Assurance (EQA) Program</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Yearly</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Haematology</td>
<td>Percentage of outstanding bone marrow aspiration (BMA) reports</td>
<td>Timely</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Haematology</td>
<td>Percentage of amended reports by individual pathologists</td>
<td>Safety</td>
<td>≤ 1%</td>
<td>Yearly</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Haematology</td>
<td>Accuracy of the External Quality Assurance (EQA) report for morphology</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Yearly</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Medical Microbiology</td>
<td>Percentage of Amended Report for tests scheduled and reported by the respective Clinical Microbiologist</td>
<td>Safety</td>
<td>≤ 1%</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Medical Microbiology</td>
<td>Percentage of complete positive culture results released within 3 days</td>
<td>Timely</td>
<td>≥ 70%</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Medical Microbiology</td>
<td>Percentage of outstanding result of reactive HIV antibody by EIA with supplementary particle agglutination (PA) testing</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>Monthly</td>
<td></td>
</tr>
</tbody>
</table>

**RADIOLOGY**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with significant pneumothorax/haemorrhage requiring intervention following percutaneous interventional procedures in the thorax, abdomen and pelvis</td>
<td>Safety</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 60 minutes for commencement of ultrasound examination</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of rejected radiographs/ radiographic images</td>
<td>Efficiency</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Turnaround time of ≤ 2 working days for final report of special radiological examinations done on inpatients</td>
<td>Timely</td>
<td>≥ 97%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Turnaround time of ≤ 14 days for final report of special radiological examinations done on outpatients</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients developed significant contrast media extravasation following CT</td>
<td>Safety</td>
<td>&lt; 1%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>TYPE</td>
<td>NO</td>
<td>INDICATOR</td>
<td>DIMENSION</td>
<td>STANDARD</td>
<td>HOSPITAL REPORTING FREQUENCY</td>
</tr>
<tr>
<td>------</td>
<td>----</td>
<td>---------------------------------------------------------------------------</td>
<td>-----------</td>
<td>----------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of new cases that were given appointment for first consultation within (≤) 2 weeks at Radiotherapy and Oncology Clinic</td>
<td>Customer</td>
<td>≥ 70 %</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients who were started on chemotherapy within (≤) 2 weeks from the date of decision for chemotherapy</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients who were started on radical radiotherapy for head and neck cancer within (≤) 6 weeks from the date of decision</td>
<td>Timely</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients developed extravasation during chemotherapy treatment</td>
<td>Safety</td>
<td>&lt; 0.5%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients with colorectal cancer fail to complete radical treatment in the neo-adjuvant setting before surgery</td>
<td>Effectiveness</td>
<td>&lt; 25%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Rehabilitation Medicine Specialist clinic</td>
<td>Timely</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of inpatients with length of stay of ≥ 120 days for Spinal Rehabilitation Program</td>
<td>Timely</td>
<td>&lt; 20%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of new cases that were given appointment for first consultation within (≤) 1 month at Rehabilitation Medicine Specialist Clinic</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Timeliness of establishment of an interdisciplinary rehabilitation plan for inpatient care within (≤) 5 working days of admission</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of inpatients received timely functional measure assessment within (≤) 5 working days of admission/ referral</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of inpatients with functional measure assessment prior to cessation of inpatient rehabilitation care</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>TYPE</td>
<td>NO</td>
<td>INDICATOR</td>
<td>DIMENSION</td>
<td>STANDARD</td>
<td>HOSPITAL REPORTING FREQUENCY</td>
</tr>
<tr>
<td>------</td>
<td>----</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------</td>
<td>----------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of new cases that were given appointment for first consultation within (≤) 4 weeks at Sports Medicine Clinic</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of (≤) 90 minutes to see the doctor at Sports Medicine Clinic</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of post-operative sports surgery patients seen within (≤) 3 days for initiation of sports rehabilitation</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>Percentage of inpatient rehabilitation patients referred for weight management program seen within 7 working days from date of referral</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Incidence of septic arthritis within (≤) 2 weeks of intra- or peri-articular injection</td>
<td>Safety</td>
<td>&lt; 1%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients who passed the Single Leg Hop Tests (SLHT) at 1 year post-anterior cruciate ligament (ACL) reconstruction surgery</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Percentage of new cases with knee problems who have been assessed using the Lysholm Knee Scoring Scale</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Percentage of patients ≥ 18 years old screened for diabetes on first consultation in Sports Medicine Clinic</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>9</td>
<td>Percentage of patients with acute musculoskeletal injury seen within (≤) 2 weeks after the first assessment in clinic</td>
<td>Effectiveness</td>
<td>&gt; 70%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**Transfusion Medicine**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of blood components preparation</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Incidence of incorrect blood component transfused (IBCT) due to blood bank error</td>
<td>Safety</td>
<td>0</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Timeliness of blood supply for urgent cases within (≤) 30 minutes</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of newly diagnosed thalassaemia patients with new development of red cell antibody/ies (starting from July, 2014)</td>
<td>Effectiveness</td>
<td>≤ 30%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of donation from regular blood donors</td>
<td>Safety</td>
<td>≥ 60%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of elective surgeries in General Surgery and/ or Orthopaedic Department cancelled or postponed after admission due to lack of blood</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>
TECHNICAL SPECIFICATION

MEDICAL BASED DISCIPLINES
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
### MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of new non-urgent cases that were given appointment for elective cardiac catheterisation within (≤) 12 weeks</td>
<td>Timely</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>ST elevation myocardial infarction (STEMI) without shock case fatality rate</td>
<td>Customer</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>ST elevation myocardial infarction (STEMI) with shock case fatality rate</td>
<td>Customer</td>
<td>≤ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>NSTEMI case fatality rate</td>
<td>Customer</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>Percentage of high risk acute coronary syndrome (ACS) cases undergo cardiac catheterization within the same admission</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Elective Percutaneous Coronary Intervention (PCI) complication rate</td>
<td>Safety</td>
<td>≤ 1%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Permanent pacemaker implantation infection rate</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Trans-oesophageal echocardiogram complication rate</td>
<td>Safety</td>
<td>&lt; 1%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**
- **Departmental Discipline:** Cardiology
- **Indicator:** Percentage of new non-urgent cases that were given appointment for elective cardiac catheterisation within (≤) 12 weeks
- **Dimension of Quality:** Timely
- **Rationale:** Patient with unresolved cardiac conditions should be seen as early as possible.
- **Definition of Terms:**
  - **Inclusion:**
    1. Non-urgent cases for elective cardiac catheterization.
  - **Exclusion:**
    1. Patients who default and given new appointment dates.
### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

#### MEDICAL PROGRAMME 2016

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of new non-urgent cases that were given appointment for elective cardiac catheterization within (≤) 12 weeks

**Denominator:** Total number of new non-urgent cases for elective cardiac catheterization

**Formula:**
\[
\text{Numerator} \times 100 \%
\]

**Denominator**

**Standard:** ≥ 90%

**Data Collection:**
1. **Where:** Data will be collected in Cardiology Clinic and invasive cardiovascular laboratory (ICL).
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from appointment/invasive cardiovascular laboratory (ICL) procedure book / record book (refer to KPI MOH Guidelines).

**Remarks**

---

**Indicator 2**

- **Departmental**
- **Discipline:** Cardiology
- **Indicator:** ST Elevation Myocardial Infarction (STEMI) without shock Case Fatality Rate
- **Dimension of Quality:** Customer Centeredness
- **Rationale:** Acute Coronary Syndrome is a frequent cause of hospital death. It is important to measure quality of care and adherence to practice guidelines.

**Definition of Terms**

- **ST Elevation Myocardial Infarction (STEMI):** A clinical syndrome of acute myocardial death defined by a rise in cardiac biomarkers in the presence of ST elevation on the Electrocardiograph (ECG). The biomarkers used may include any of the following; Troponin T/I, Creatinine Kinase or its MB fraction (CK, CKMB).

**Criteria**

- **Inclusion:**
  1. Patients admitted under Cardiology.
  2. All deaths prior to hospital discharge, including in CCU or CRW.

- **Exclusion:**
  1. Patients not admitted under Cardiology.
  2. Patients “brought in dead” to Emergency but resuscitation still attempted.
  3. STEMI complicated with shock.

**Type of indicator:** Rate-based outcome indicator

**Numerator:** Number of patients diagnosed and/or admitted with STEMI and who died from STEMI

**Denominator:** Total number of patients diagnosed and/or admitted with STEMI
### Indicator 3

**Discipline:** Cardiology  
**Indicator:** ST Elevation Myocardial Infarction (STEMI) with shock Case Fatality Rate  
**Dimension of Quality:** Customer Centeredness  
**Rationale:** STEMI with shock is a common cause of hospital death. It is important to measure quality of care and adherence to practice guidelines.

**Definition of Terms:** STEMI with shock is a clinical syndrome of acute myocardial death defined by a rise in cardiac biomarkers in the presence of ST elevation on the Electrocardiograph (ECG). The biomarkers used may include any of the following; Troponin T/I, Creatinine Kinase or its MB fraction (CK, CKMB).

**Criteria:**  
**Inclusion:**  
1. Patients admitted under Cardiology.  
2. All deaths prior to hospital discharge, whether in CCU or CRW.  

**Exclusion:**  
1. Patients not admitted under Cardiology.  
2. Patients “brought in dead” to Emergency but resuscitation still attempted.

**Type of indicator:** Rate-based outcome indicator  
**Numerator:** Number of patients diagnosed and/ or admitted with STEMI and who died from STEMI with Cardiogenic Shock  
**Denominator:** Total number of patients diagnosed and/ or admitted with STEMI with Cardiogenic Shock  
**Formula:** Numerator x 100 %  
**Standard:** ≤ 90%  

**Data Collection:** 1. **Where:** Data will be collected in Cardiac wards/ CCU/ CRW or wards that cater for the above condition.  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from log book or from National Cardiovascular Disease for Acute Coronary Syndrome (NCVD-ACS) Registry/ record book (refer to KPI MOH Guidelines).
### Indicator 4

**Departmental Discipline:** Cardiology  
**Indicator:** Non-ST Elevation Myocardial Infarction (STEMI) Case Fatality Rate  
**Dimension of Quality:** Customer Centeredness

**Rationale**

1. Acute Coronary Syndrome is a frequent cause of hospital death. It is important to measure quality of care and adherence to practice guidelines. Cardiovascular diseases accounted for the 25.6% of deaths in Ministry of Health (MOH) Hospitals in 2011. The majority of cardiovascular deaths are attributed to acute coronary syndrome (ACS). This is a spectrum of disease with 3 accepted classes:
   a) ST elevation Myocardial Infarction (STEMI)  
   b) Non-ST elevation Myocardial Infarction (NSTEMI)  
   c) Unstable Angina (UA)

2. Mortality rates quoted in the Malaysian Acute Coronary Syndrome (ACS) Registry maintained by the National Heart Association of Malaysia are 9% for NSTEMI and 3% for UA between 2006 and 2010.

3. Survival is dependent on good monitoring with prompt and continued use of specific medication (anti-platelets, anti-thrombotics, hypolipidemic therapy, B-blockers and ACE-Inhibitors)

**Definition of Terms**

**Non-ST Elevation Myocardial Infarction (NSTEMI):** A clinical syndrome of acute myocardial death defined by a rise in cardiac biomarkers in the absence of ST elevation on the Electrocardiograph (ECG). The biomarkers used may include any of the following; Troponin T/I, Creatinine Kinase or its MB fraction (CK, CKMB).

**Unstable Angina (UA):** A clinical syndrome comprising chest pain or its equivalent with or without ST depression and T wave inversion on the ECG and in the absence of raised cardiac biomarkers.

**Criteria**

**Inclusion:**
1. Patient with NSTEMI/ UA as a primary diagnosis.
2. Patient who died from cardiovascular causes (ACS, pulmonary oedema, dysrhythmia, cardiac tamponade, valvular dysfunction, cardiac failure and cardiogenic shock).
3. All deaths prior to hospital discharge, including CCU or CRW.

**Exclusion:**
1. Patients not admitted under Cardiology.
2. Death on arrival.
3. Patients “brought in dead” to Emergency but resuscitation still attempted.
4. Patients with NSTEMI/ UA who died of a non-cardiovascular diagnosis. (e.g. sepsis, pneumonia, stroke).
5. Presumed NSTEMI (diagnosis was not confirmed).
6. ACS complicated with shock.

**Type of indicator** : Rate-based outcome indicator

**Numerator** : Number of patients diagnosed and/or admitted with Non-STEMI and who died from Non-STEMI

**Denominator** : Total number of patients diagnosed and/or admitted with Non-STEMI

**Formula** : Numerator \( \times \) 100 %

\[ \text{Denominator} \]

**Standard** : \( \leq 10\% \)

**Data Collection** :
1. **Where** : Data will be collected in Cardiac wards/ CCU/ CRW or wards that cater for the above condition.
2. **Who** : Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
4. **Who should verify** : All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect** : Data is suggested to be collected from log book or from National Cardiovascular Disease for Acute Coronary Syndrome (NCVD-ACS) Registry/ record book (refer to KPI MOH Guidelines).

**Remarks** :

**Indicator 5** :

**Discipline** : Cardiology

**Indicator** : Percentage of high risk acute coronary syndrome (ACS) cases undergo cardiac catheterization within the same admission

**Dimension of Quality** : Customer centeredness

**Rationale** : Patient with high risk ACS features should undergo cardiac catheterization as early as possible.

**Definition of Terms** :

- **Acute coronary syndrome (ACS)**: Includes patients with unstable angina, non-ST elevation myocardial infarction (NSTEMI), ST elevation myocardial infarction (STEMI).

**Risk scoring** : Calculation is based on TIMI Risk score that comprises of 7-8 clinical parameters of ACS which predict higher rate of major adverse cardiac events.

<table>
<thead>
<tr>
<th>STEMI Parameters</th>
<th>Score</th>
<th>NSTEMI Parameters</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (&lt;65, 65-74, &gt;75)</td>
<td>0, 2, 3</td>
<td>Age &gt;65</td>
<td>1</td>
</tr>
<tr>
<td>Body weight &lt;67 kg</td>
<td>1</td>
<td>Known CAD</td>
<td>1</td>
</tr>
<tr>
<td>Systolic BP &lt;100mmHg</td>
<td>3</td>
<td>Aspirin usage in the past 7 days</td>
<td>1</td>
</tr>
<tr>
<td>Heart rate &gt;100 bpm</td>
<td>2</td>
<td>Angina episode &gt;2</td>
<td>1</td>
</tr>
<tr>
<td>Killip class II-IV</td>
<td>2</td>
<td>Elevated biomarkers</td>
<td>1</td>
</tr>
<tr>
<td>Anterior ST segment/ LBBB</td>
<td>1</td>
<td>ST deviation &gt;0.5mm</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes mellitus, hypertension and angina</td>
<td>1</td>
<td>3 CVD Risk factors (Family history),</td>
<td>1</td>
</tr>
</tbody>
</table>
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
### MEDICAL PROGRAMME 2016

### Hypertension, Dyslipidaemia, Diabetes Mellitus, Active Smoker

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. High risk STEMI (score ≥6).</td>
</tr>
<tr>
<td></td>
<td>2. High risk NSTEMI (score ≥5).</td>
</tr>
</tbody>
</table>

### Exclusion:
1. Patients not admitted/ not referred to Cardiology.
2. Low risk ACS.
3. Patient refused for the procedure
4. Patient with renal impairment
5. Patient with history of angiogram within 1 year

### Type of indicator
**Rate-based outcome indicator**

### Numerator
**Number of high risk acute coronary syndrome (ACS) cases undergo cardiac catheterization within the same admission**

### Denominator
**Total number of high risk acute coronary syndrome (ACS) cases admitted**

### Formula
\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

### Standard
≥ 90%

### Data Collection
1. **Where**: Data will be collected in Invasive Cardiovascular Laboratory (ICL)/CCU/CRW/Cardiac wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from coronary angiogram procedure book/record book (refer to KPI MOH Guidelines).

### Remarks

### Indicator 6
**Individual Discipline**: Cardiology

**Indicator**: Elective Percutaneous Coronary Intervention (PCI) complication rate

**Dimension of Quality**: Safety

**Rationale**: Important to monitor patient safety.

**Definition of Terms**: Complication: Only for major complications:
1. Death.
2. Conversion to emergency surgery.
4. Cardiac arrest resulting in intubation and ventilation.
5. Perforation leading tamponade.

**Criteria**: Inclusion: NA

**Exclusion:**
<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of major complications in elective Percutaneous Coronary Intervention (PCI)</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of elective Percutaneous Coronary Intervention (PCI) performed</td>
</tr>
<tr>
<td>Formula</td>
<td>( \frac{\text{Numerator}}{\text{Denominator}} \times 100% )</td>
</tr>
<tr>
<td>Standard</td>
<td>( \leq 1% )</td>
</tr>
</tbody>
</table>
| Data Collection                      | 1. Where: Data will be collected Invasive Cardiovascular Laboratory (ICL)/Cardiac wards/ CCU/ CRW or wards that cater for the above illness.  
2. Who: Data will be collected by Officer/ paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
4. Who should verify: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from Invasive Cardiovascular Laboratory (ICL) log book or from NCVD-PCI / record book (refer to KPI MOH Guidelines). |

### Indicator 7

**Discipline:** Cardiology  
**Indicator:** Permanent pacemaker implantation infection rate  
**Dimension of Quality:** Safety  

**Rationale:**  
1. Permanent pacemaker implantation is core procedure for interventional cardiologist in some KKM cardiology department,  
2. In those centres with electrophysiology services, most of the procedures are performed by electrophysiologist.  
3. Maintenance of sterility and skills are importance to minimise rate of implantation site infection, avoiding unnecessary untimely explanation of pacemaker and re-implantation of new unit, hence improving short and long term outcome.  
4. Reference: National Health Service (NHS), United Kingdom.

**Definition of Terms:**  
**Permanent pacemaker implantation:** A procedure involving implantation of permanent pacemaker in order to restore regular cardiac rhythm in patients with heart block.  
**Pacemaker infection:** Infection at implantation site with or without involvement of pacemaker/ its system within one month of pacemaker implantation.

**Criteria:**  
**Inclusion:**  
1. All pacemaker implant.  

**Exclusion:**  
1. Other devices e.g. cardiac resynchronization therapy (CRT), automatic implantable cardioverter-defibrillator (AICD).
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

#### MEDICAL PROGRAMME 2016

**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of patients with infected permanent pacemaker

**Denominator**: Total number of patients with permanent pacemaker implanted

**Formula**:
\[
\text{Numerator} \times 100\% \quad \text{Denominator}
\]

**Standard**: < 5%

**Data Collection**:
1. **Where**: Data will be collected in Cardiac wards or wards that cater for the above patients.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from admission book/patient's case note/record book (refer to KPI MOH Guidelines).

**Remarks**:

---

**Indicator 8**

**Discipline**: Cardiology

**Indicator**: Trans-oesophageal Echocardiogram (TOE) complication rate

**Dimension of Quality**: Safety

**Rationale**:
1. Trans-oesophageal Echocardiogram (TOE) is indicated in certain patients to better visualize certain cardiac structures, monitor and guide Cardiologist in non-invasive and invasive cardiology lab or Cardiothoracic Surgeon intraoperatively during cardiac surgery.
2. Rarely, it may be complicated by trauma and its sequelae to oesophagus or stomach.
3. Usually it is performed by trained Cardiologist or Cardiac Anaesthetist.
4. **Reference**: National Health Service (NHS), United Kingdom.

**Definition of Terms**:

*Trans-oesophageal Echocardiogram (TOE)*: A form of advanced echocardiography viewing the heart through trans-oesophageal echo cardiac probe which requires skills in introducing fibre optic to oesophagus and stomach simultaneously manoeuvring the probe and performing Echocardiography procedures for certain patients.

**Complications**: Such as bleeding, injuries to gastrointestinal tract, etc.

**Criteria**:

**Inclusion**:
1. All patients underwent trans-oesophageal echocardiogram (TOE) procedures.
2. All TOE procedure related complications.

**Exclusion**: NA

**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of patients underwent trans-oesophageal echocardiogram (TOE) developed complications
## Denominator
Total number of patients underwent trans-oesophageal echocardiogram (TOE)

### Formula
\[
\text{Numerator} \times 100\% \div \text{Denominator}
\]

### Standard
< 1%

## Data Collection

1. **Where**: Data will be collected in non-invasive cardiac laboratory (NICL)/invasive cardiac laboratory (ICL) or Cardiothoracic OT.
2. **Who**: Data will be collected by Cardiovascular Technologist/ Sister in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from non-invasive cardiac laboratory (NICL)/ invasive cardiac laboratory (ICL)/ Cardiothoracic OT/ patient’s case note (refer to KPI MOH Guidelines).

---

**Remarks**
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

### MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>NO</th>
<th>SUB-SPECIALTY</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D</strong> 1</td>
<td>-</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 14 working days at Skin Specialist Clinic</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td><strong>D</strong> 2</td>
<td>-</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Skin Specialist Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td><strong>D</strong> 3</td>
<td>-</td>
<td>Percentage of psoriasis patients assessed for quality of life</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td><strong>I</strong> 4</td>
<td>General</td>
<td>Severe cutaneous adverse drug reaction (SCADR) notification rate</td>
<td>Safety</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>I</strong> 5</td>
<td>General</td>
<td>Infection rate of skin biopsy wound</td>
<td>Safety</td>
<td>≤ 2%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td><strong>I</strong> 6</td>
<td>General/Contact Dermatitis</td>
<td>Patch test positivity rate</td>
<td>Effectiveness</td>
<td>≤ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td><strong>I</strong> 7</td>
<td>Phototherapy</td>
<td>Defaulter rate for phototherapy patients</td>
<td>Customer</td>
<td>≤ 30%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td><strong>I</strong> 8</td>
<td>Dermato-oncology</td>
<td>Notification of patients with skin cancer in dermatology clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td><strong>I</strong> 9</td>
<td>Laser</td>
<td>Post-laser treatment complication rate</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td><strong>I</strong> 10</td>
<td>Collagen Vascular Disease</td>
<td>Percentage of cutaneous lupus erythematosus patients with Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI) assessment</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**
- **Discipline**: Departmental
- **Indicator**: Percentage of non-urgent cases that were given appointment for first consultation within (≤) 14 working days at Skin Specialist Clinic
- **Dimension of Quality**: Customer centeredness
- **Rationale**: To ensure that patients have access to skin services as soon as possible to reduce morbidity.
- **Definition of Terms**
  - **Appointment**: Time taken from the date of referral received to the date of first consultation with the doctor (only working days is calculated).
- **Criteria**
  - **Inclusion**: NA
  - **Exclusion**: 1. All urgent cases.
### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

#### Medical Programme 2016

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of non-urgent cases that were given appointment for first consultation within (≤) 14 working days at Skin Specialist Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of non-urgent cases referred to Skin Specialist Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 70%</td>
</tr>
</tbody>
</table>

#### Data Collection
1. Where: Data will be collected in Skin Specialist Clinic.
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
4. Who should verify: All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.
5. How to collect: Data is suggested to be collected from appointment book/record book (refer to KPI MOH Guidelines).

#### Remarks

<table>
<thead>
<tr>
<th>Indicator 2</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Dermatology</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of patients with waiting time of (≤) 90 minutes to see the doctor at Skin Specialist Clinic</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
<tr>
<td>Rationale</td>
<td>To give prompt attention to patient needs by reducing waiting time for consultation.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Waiting time: Time of registration/appointment (whichever is later) to the time patient is first seen by the doctor.</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: NA</td>
</tr>
</tbody>
</table>

**Exclusion:**
1. Patients who request to see a specific doctor.
3. Patients with multiple appointments on the same day.
4. Patients need to do special procedures on the same day before seeing the doctor e.g. blood taking or radiological examination.
5. Patients slotted in for special consultation.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients whose waiting time of (≤) 90 minutes to see the doctor at Skin Specialist Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients seen at the Skin Specialist Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 80%</td>
</tr>
</tbody>
</table>
### Data Collection

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where</td>
<td>Data will be collected in Skin Specialist Clinic.</td>
</tr>
<tr>
<td>Who</td>
<td>Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td>How frequent</td>
<td>6 monthly data collection.</td>
</tr>
<tr>
<td>Who should verify</td>
<td>All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td>How to collect</td>
<td>Data is suggested to be collected from waiting time slips/ record book/ outpatient card (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

**Remarks:** It is suggested that 25% sampling (randomized) is applied to the total number of patients seen at Skin Specialist Clinic.

---

### Indicator 3

**Departmental Discipline:** Dermatology

**Indicator:** Percentage of psoriasis patients assessed for quality of life

**Dimension of Quality:** Customer centeredness

**Rationale:**
1. Psoriasis is an immune mediated multisystem disease which runs a chronic debilitating course.
2. It causes profound physical and psychosocial impact, hence reducing the quality of life of patients.
3. Management of psoriasis patients can be improved by assessing their quality of life and providing holistic care.

**Definition of Terms:**
Quality of Life measures are an important adjunct to skin lesion assessments to properly assess the full effect of an illness such as psoriasis that is not life-threatening.

Dermatology Life Quality Index (DLQI) is very useful to assess the quality of life impact of psoriasis. Aim of this 10-question validated questionnaire is to measure how much the skin problem has affected patients’ life over the last week.

**Criteria:**

**Inclusion:**
Psoriasis patients seen in outpatient clinic.

**Exclusion:**
Psoriatic patients who had quality of life assessed by other centres.

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of psoriasis patients assessed for quality of life

**Denominator:** Total number of psoriasis patients seen during the specified period of time

**Formula:**
\[ \text{Numerator} \times 100\% \]
\[ \text{Denominator} \]

**Standard:** ≥ 70%

**Data Collection:**
1. Where: Data will be collected in Skin Specialist Clinic.
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
4. Who should verify: All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.
5. How to collect: Data is suggested to be collected from patient’s case note.
**TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES**

**MEDICAL PROGRAMME 2016**

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**Indicator 4**  | Individual  
**Discipline**  | Dermatology (Generalist)  
**Indicator**  | Severe cutaneous adverse drug reaction (SCADR) notification rate  
**Dimension of Quality**  | Safety  
**Rationale**  | 1. To avoid recurrent SCADR with the same drug that has higher morbidity and mortality risk as compared to first exposure.  
**Definition of Terms**  | Severe Cutaneous Adverse Drug Reaction (SCADR): Includes Toxic epidermal necrolysis (TEN), Stevens Johnson Syndrome (SJS), Drug rash with eosinophilia and systemic symptoms (DRESS), Acute generalised exanthematous pustulosis (AGEP) and acute erythroderma.  
**Notification**: Patients who had severe cutaneous adverse drug reaction (SCADR) notified to Malaysian adverse drug reaction committee (MADRAC).  
**Criteria**  | **Inclusion**: NA  
| **Exclusion**: 1. Patients who had history of SCADR but medication is not known.  
**Type of indicator**  | Rate-based process indicator  
**Numerator**  | Number of patients with severe cutaneous adverse drug reaction (SCADR) notified  
**Denominator**  | Total number of patients diagnosed with severe cutaneous adverse drug reaction (SCADR)  
**Formula**  | Numerator x 100%  
**Denominator**  
**Standard**  | ≥ 80%  
**Data Collection**  | 1. **Where**: Data will be collected in Skin Specialist Clinic/ wards that cater for the above condition.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from patient’s case note/ MADRAC form record book (refer to KPI MOH Guidelines).  
**Remarks**  :  

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**Indicator 5**  | Individual  
**Discipline**  | Dermatology (Generalist)  
**Indicator**  | Infection rate of skin biopsy wound  
**Dimension of Quality**  | Safety  

---
| Rationale | 1. Skin biopsies are performed for diagnostic or therapeutic reasons.  
2. The site where a skin biopsy has been performed may be infected and this may produce a poor cosmetic result and increase morbidity. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of Terms</td>
<td><strong>Infection</strong>: Diagnosed clinically when there is evident of pain, erythema, swelling and purulent exudates and/or feedback from patients on follow up.</td>
</tr>
</tbody>
</table>
| Criteria | **Inclusion**: NA  
**Exclusion**: 1. Patient with infected wound prior to biopsy. |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of patients who had infected skin biopsy wound |
| Denominator | Total number of patients who had undergone skin biopsy |
| Formula | Numerator x 100%  
Denominator |
| Standard | ≤ 2% |
| Data Collection | 1. **Where**: Data will be collected in Skin Specialist Clinic/wards that cater for the above condition.  
2. **Who**: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.  
3. **How frequent**: 6 monthly data collection.  
4. **Who should verify**: All performance data must be verified by the Head of Department/Head of Unit/Hospital Director.  
5. **How to collect**: Data is suggested to be collected from biopsy registration book/biopsy slip/patient’s case notes/record book (refer to KPI MOH Guidelines). |
| Remarks | |

### Indicator 6

<table>
<thead>
<tr>
<th>Indicator 6</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Dermatology (Generalist/Contact Dermatitis)</td>
</tr>
<tr>
<td>Indicator</td>
<td>Patch test positivity rate</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>
| Rationale | 1. High patch test positivity rate indicates under-diagnosing of contact dermatitis.  
2. Under-diagnosing will affect patient’s quality of life. |
| Definition of Terms | **Patch test**: A tool to confirm allergic contact dermatitis (delayed hypersensitivity reaction). |
| Criteria | **Inclusion**: NA  
**Exclusion**: 1. Defaulters. |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of patients with positive patch test to European Standards |
| Denominator | Total number of patients who had patch test done to European Standards |
| Formula | Numerator x 100%  
Denominator |
| Standard | ≤ 80% |
### Data Collection

1. **Where**: Data will be collected in Skin Specialist Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 6 Monthly data collection.
4. **Who should verify**: All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from procedure or record book/ patient’s case note/ Hospital IT System (refer to KPI MOH Guidelines).

### Remarks

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<table>
<thead>
<tr>
<th>Indicator 7</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Dermatology (Phototherapy)</td>
</tr>
<tr>
<td>Indicator</td>
<td>Defaulter rate of phototherapy patients</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
</tbody>
</table>
| Rationale   | 1. For skin conditions to improve with phototherapy treatment, patients must comply with the treatment schedule.  
2. If patients keep on defaulting treatment, this may also predispose patients to unnecessary exposure to ultraviolet radiation.  
3. Thus, the service should be efficiently managed to provide optimum and effective treatment to the patients and to reduce morbidity. |
| Definition of Terms | Phototherapy: Mode of therapy using ultraviolet radiation to treat a variety of skin conditions e.g. Psoriasis, vitiligo and T-cell lymphoma. The ultraviolet radiation used is mainly ultraviolet A (UVA) and ultraviolet B (UVB).  
Defaulter: Patients who had failed to come for treatment ≥ 3 times consecutively. |
| Criteria     | Inclusion: NA  
Exclusion:  
1. Patients who default the appointment for less than 3 times  
2. Patients who unable to attend the clinic due to valid reason (e.g. admitted to ward due to other illness). |
| Type of indicator | Rate-based outcome indicator |
| Numerator    | Number of patients who defaulted phototherapy session ≥ 3 times consecutively |
| Denominator  | Total number of patients underwent phototherapy during specified period of time |
| Formula      | Numerator x 100% / Denominator |
| Standard     | ≤ 30% |
| Data Collection | 1. **Where**: Data will be collected in Skin Specialist Clinic (phototherapy counter).  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: 3 monthly data collection.  
4. **Who should verify**: All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from phototherapy appointment book/ record book (refer to KPI MOH Guidelines). |
| Remarks      | : |
**Indicator 8**

**Discipline:** Dermatology (Dermato-Oncology)

**Indicator:** Notification of patients with skin cancer in dermatology clinic

**Dimension of Quality:** Customer centeredness

**Rationale:** To ensure that patients with skin cancers seen in the Dermatology Clinic are notified to Jabatan Kesihatan Negeri.

**Definition of Terms**
- **Skin cancers:** Histologically confirmed skin cancer where skin biopsy was performed in a dermatology clinic.
- **Notification:** Patients with histologically confirmed skin cancers notified to Jabatan Kesihatan Negeri.

**Criteria**
- **Inclusion:**
  1. All types of skin cancer with histology report from skin biopsy
  2. Skin biopsy performed in the Dermatology Clinic
- **Exclusion:** Patient with skin cancer where biopsy was performed in other department/hospital.

**Type of indicator:** Rate-based process indicator

**Numerator:** No. of patients who had skin biopsy performed in the Dermatology Clinic, diagnosed with skin cancer and notified to Jabatan Kesihatan Negeri

**Denominator:** No. of patients who had skin biopsy performed in the Dermatology Clinic, diagnosed with skin cancer

**Formula:** \[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard:** ≥ 80%

**Data Collection**

1. **Where:** Data will be collected in Dermatology Clinic.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** 6 monthly data collection.
4. **Who should verify:** All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from HPE specimen despatch book/ HPE results/ patients’ case notes/ Cancer Notification Form/ Skin Cancer Notification file and book/ record book (refer to KPI MOH Guidelines).

**Remarks:**

---

**Indicator 9**

**Discipline:** Dermatology (Laser)

**Indicator:** Post-laser treatment complication rate

**Dimension of Quality:** Safety

**Rationale:**
1. Laser and light-based procedures are used to treat a wide range of cutaneous disorders with the main aim to improve the cosmetic appearances of patients.
2. Therefore, such procedures should not have any complications.

**Definition of Terms**

**Complication:** Patient has at least one of the following:
1. Hypopigmentation.
2. Infection.
3. Scarring.
4. Blisters.
5. Ulcerations.
6. Skin textural changes.
7. Contact dermatitis secondary to post/ pre laser topical therapy

**Criteria**

**Inclusion:** NA

**Exclusion:**
1. Post-inflammatory hyperpigmentation (considered a side-effect as this will resolve after a few months).

**Type of indicator:** Rate-based outcome indicator

**Numerator:** Number of patients with post-laser treatment complication

**Denominator:** Total number of patients who had laser treatment

**Formula:**
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard:** ≤ 5%

**Data Collection**

1. **Where:** Data will be collected in laser procedure room.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 6 monthly data collection.
4. **Who should verify:** All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient's case note/ census report / record book (refer to KPI MOH Guidelines).

**Remarks**

**Indicator 10**

**Individual**

**Discipline:** Dermatology (Collagen Vascular Disease)

**Indicator:** Percentage of cutaneous lupus erythematosus patients with Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI) assessment

**Dimension of Quality:** Customer centeredness

**Rationale:**
1. To improve management of cutaneous lupus patients by assessing their CLASI.

**Definition of Terms**

**Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI) assessment:** This is a validated measurement instrument to quantify cutaneous activity and damage in cutaneous lupus patients.

**Criteria**

**Inclusion:**
1. All patients confirmed cutaneous lupus erythematosus histologically seen at outpatient clinic.

**Exclusion:**
1. Patients who default the follow up.
<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of cutaneous lupus erythematosus patients with CLASI assessment done</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of new cutaneous lupus erythematosus patients</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100 % Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 70%</td>
</tr>
</tbody>
</table>

### Data Collection

1. **Where**: Data will be collected in Skin Specialist Clinic.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator coordinator) of the department/unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/ CLASI file/ record book (refer to KPI MOH Guidelines).

### Remarks

---

**Type of indicator**: Rate-based outcome indicator  
**Numerator**: Number of cutaneous lupus erythematosus patients with CLASI assessment done  
**Denominator**: Total number of new cutaneous lupus erythematosus patients  
**Formula**: Numerator x 100 % Denominator  
**Standard**: ≥ 70%
<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Endocrine and Diabetes clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Endocrine and Diabetes clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of new diabetic cases referred for diabetes education within (≤) 8 weeks from first consultation</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Diabetic Ketoacidosis (DKA) Mortality Rate</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of endocrine emergency cases seen by an endocrinologist before discharge</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of hypothyroid patients achieved euthyroid status after 6 months of first consultation by Endocrinologist</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

Indicator 1: Departmental  
Discipline: Endocrinology  
Indicator: Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Endocrine and Diabetes clinic  
Dimension of Quality: Customer centeredness  
Rationale:  
1. Patient usually had seen at primary care and some form of treatment has been initiated.  
2. Endocrinology services are currently available in all state hospital either in as resident or visiting services.  
3. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.  
4. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.  
Definition of Terms: Appointment: Time taken from the date of referral received to the date of first consultation with the doctor.
**Criteria**

**Inclusion:**
1. All new patients referred to Endocrine and Diabetes clinic for Diabetes/Endocrine disease.

**Exclusion:**
1. All urgent cases.
2. Patients who request to delay the appointment date.
3. Patients who request to see a specific doctor.
4. Patients who default the first appointment given.
5. Non endocrine cases seen as personal patients.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Endocrine and Diabetes clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of non-urgent cases referred to Endocrine and Diabetes clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>( \frac{\text{Numerator}}{\text{Denominator}} \times 100% )</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 80%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Where: Data will be collected in Endocrinology and Diabetes Clinic.</td>
</tr>
<tr>
<td>Who: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.</td>
</tr>
<tr>
<td>How frequent: Monthly data collection.</td>
</tr>
<tr>
<td>Who should verify: Data will be verified by Head of Department/Head of Unit/Hospital Director.</td>
</tr>
<tr>
<td>How to collect: Data is suggested to be collected from appointment book (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

| Remarks |

---

**Indicator 2**

**Discipline:** Endocrinology

**Indicator:** Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Endocrine and Diabetes clinic

**Dimension of Quality:** Customer centeredness

**Rationale**

1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.
3. Endocrinology and diabetes services are currently available in all state hospital either in as resident or visiting services.

**Definition of Terms**

**Waiting time:** Time of registration/appointment (whichever is later) to the time patient is first seen by the doctor.

**Criteria**

**Inclusion:** NA

**Exclusion:**
1. Urgent referrals.
2. Patients who request to see a specific doctor.
### CLINICAL PERFORMANCE SURVEILLANCE UNIT

#### Type of indicator:
- Rate-based process indicator

#### Numerator:
- Number of patients with waiting time of \( \leq 90 \) minutes to see the doctor at Endocrine and Diabetes clinic

#### Denominator:
- Total number of patients seen at Endocrine and Diabetes clinic

#### Formula:
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

#### Standard:
- \( \geq 80\% \)

#### Data Collection:
1. **Where:** Data will be collected in Endocrinology and Diabetes Clinic.
2. **Who:** Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** Data will be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book/waiting time slip/outpatient card (refer to KPI MOH Guidelines).

#### Remarks:

### Indicator 3

#### Discipline:
- Endocrinology

#### Indicator:
- Percentage of new diabetic cases referred for diabetes education within (\( \leq \)) 8 weeks from first consultation

#### Dimension of Quality:
- Customer centeredness

#### Rationale:
- Diabetes education is the cornerstone of diabetes management because diabetes requires day-to-day knowledge of nutrition, exercise, monitoring, and medication.

#### Definition of Terms:
- **Referred within (\( \leq \)) 8 weeks:** Time taken from the date of first consultation with Endocrinologist to the date patient seen by diabetes educator.
- **Diabetes educator:** Certified Healthcare Personnel who are trained in providing diabetes education.

#### Criteria:
- **Inclusion:**
  - Newly referred diabetic cases to Endocrine Clinic.
- **Exclusion:**
  - Patients who defaulted the first appointment given.

#### Type of indicator:
- Rate-based process indicator

#### Numerator:
- Number of new diabetic cases referred for diabetes education within (\( \leq \)) 8 weeks from first consultation

#### Denominator:
- Total number of newly referred diabetic cases

#### Formula:
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]
| **Standard** | : | ≥ 80% |
| **Data Collection** | : | 1. **Where:** Data will be collected in Endocrine Clinic.  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from appointment book/ record book (refer to KPI MOH Guidelines). |
| **Remarks** | : | |

| **Indicator 4** | : | Individual |
| **Discipline** | : | Endocrinology |
| **Name of indicator** | : | Diabetic Ketoacidoses (DKA) Mortality Rate |
| **Dimension of Quality** | : | Effectiveness |
| **Rationale** | : | 1. DKA is a medical emergency with a significant morbidity and mortality. It should be diagnosed promptly and managed intensively by experienced staff.  
2. Most DKA are managed by general medicine team or by intensivist in ICU. Only some cases of DKA are referred by General Medicine team to Endocrinologist.  
3. Mortality from DKA is usually related to other medical illness such as sepsis or organ failure, or due to late presentation with severe acidosis. |
| **Definition of Terms** | : | DKA death: Death secondary to complications of DKA which can be avoided, ie hypovolemic shock, fluid overload, hypokalemic arrhythmia, hypoglycaemia, acidosis and cerebral edema which developed after treatment started |
| **Criteria** | : | **Inclusion:**  
All the cases referred and managed primarily by endocrine team  
**Exclusion:**  
1. DKA managed by non-endocrine doctors  
2. There is no endocrine team doctors available |
| **Type of indicator** | : | Rate-based outcome indicator |
| **Numerator** | : | Number of patients admitted with DKA and died from DKA |
| **Denominator** | : | Total number of patients admitted with DKA |
| **Formula** | : | Numerator x 100%  
Denominator  
| **Standard** | : | ≤ 5% |
| **Data Collection** | : | 1. **Where:** Data will be collected in Endocrine wards/ ICU/ CCU/ CRW/ NICU/ HDW or other related area.  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** 3 monthly data collection. |
### Indicator 5

<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Who should verify</strong></td>
<td>Data will be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td><strong>How to collect</strong></td>
<td>Data is suggested to be collected from registration/ admission book/ record book (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

**Remarks:**

- **Indicator 5:** Individual
- **Discipline:** Endocrinology
- **Name of indicator:** Percentage of endocrine emergency cases seen by an endocrinologist before discharge
- **Dimension of Quality:** Effectiveness

**Rationale:**
1. Endocrine emergencies represent a group of potentially life-threatening conditions that are frequently overlooked, resulting in delays in diagnosis, treatment as well as referral to endocrinologist.
2. Most endocrine emergencies are initially managed by general medicine team.
3. Referral before discharge will ensure proper discharge plan and follow-up.

**Definition of Terms:**
- **Endocrine emergency:** This includes diabetic ketoacidosis (DKA), hyperglycaemic hyperosmolar state (HHS), hypoglycaemic coma or severe hypoglycaemia, acute adrenocortical insufficiency, phaeochromocytoma crisis, hypercalcaemia, myxoedema coma, thyroid storm and pituitary apoplexy.
- **Seen by an endocrinologist before discharge:** The patient is referred to the endocrinologist after been recognised by the emergency department doctors or general medicine doctors. This is not inclusive of reviewing or consultations while the patient still in Emergency Department.

**Criteria**

- **Inclusion:** All cases referred to endocrinologist
- **Exclusion:** At own risk (AOR) discharged patients/ patients request for discharge against medical advice.

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of endocrine emergency cases reviewed by/ consulted with Endocrinologist before discharge

**Denominator:** Total number of endocrine emergency cases admitted and referred to Endocrinologist

**Formula:**

\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

**Standard:** ≥ 90%

**Data Collection:**
1. **Where:** Data will be collected in Endocrine wards/ ICU/ CCU/ CRW/ NICU/ HDW or other related areas.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from admission book/ patient’s case note (refer to KPI MOH Guidelines).

**Remarks**

<table>
<thead>
<tr>
<th>Indicator 6</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Endocrinology</td>
</tr>
<tr>
<td><strong>Name of indicator</strong></td>
<td>Percentage of hypothyroid patients achieved euthyroid status after 6 months of first consultation by Endocrinologist</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Effectiveness</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>Restoring euthyroid state in hypothyroid patients following new diagnosis, radiiodine therapy or thyroidectomy should be achievable within 6 months.</td>
</tr>
</tbody>
</table>
| **Definition of Terms** | Hypothyroid patients: Newly diagnosed/ newly referred cases of hypothyroid that are not treated/ not controlled on thyroxine replacement. This includes post-radiiodine patients and post-thyroidectomy patients.  
Euthyroid status: Absence of hypo or hyperthyroid symptoms accompanied by normal serum free thyroxine (FT4) and TSH level. |
| **Criteria** | Inclusion: 1. Patients who received treatment for $\geq 6$ months.  
Exclusion: 1. Patients already on thyroxine therapy and controlled. 2. Patients on thyroxine suppression therapy post-radioactive iodine (RAI) for differentiated thyroid cancer. 3. Patients who default the appointment or treatment. 4. Patients who had thyroidectomy, started on thyroxine replacement and been primarily managed and follow up by the endocrine surgical team. |
| **Type of indicator** | Rate-based outcome indicator |
| **Numerator** | Number of hypothyroid patients achieved euthyroid status after 6 months of first consultation by Endocrinologist |
| **Denominator** | Total number of hypothyroid patients |
| **Formula** | $\frac{\text{Numerator}}{\text{Denominator}} \times 100\%$ |
| **Standard** | $\geq 80\%$ |
| **Data Collection** | 1. **Where**: Data will be collected in Endocrine Clinics.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit. |
3. **How frequent**: 6 Monthly data collection.
4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>:</td>
</tr>
</tbody>
</table>
## GASTROENTEROLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Gastroenterology Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Gastroenterology clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of non-urgent cases that were given first endoscopic appointment within (≤) 8 weeks after clinic consultation</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of oesophagogastroduodenoscopy (OGDS) performed within (≤) 24 hours of admission in patients presented with upper gastrointestinal haemorrhage (UGIH)</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Caecal intubation rate (CIR)</td>
<td>Safety</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of colonic perforation in patients underwent colonoscopy procedure</td>
<td>Safety</td>
<td>≤ 0.2%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

### Indicator 1

**Type:** Departmental  
**Discipline:** Gastroenterology  
**Name of indicator:** Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Gastroenterology Clinic  
**Dimension of Quality:** Customer centeredness  
**Rationale:**  
1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.  
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.  
**Definition of Terms:**  
**Appointment:** Time taken from the date of referral received to the date of first consultation with the doctor.  
**Inclusion:** NA  
**Exclusion:**  
1. All urgent cases.  
2. Patients who request to delay the appointment date.  
3. Patients who request to see a specific doctor.  
4. Patients who default the first appointment given.  
**Type of indicator:** Rate-based process indicator  
**Numerator:** Number of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Gastroenterology Clinic
**Indicator 2**

- **Departmental**
- **Discipline**: Gastroenterology
- **Name of indicator**: Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Gastroenterology clinic
- **Dimension of Quality**: Customer centeredness
- **Rationale**:
  1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
  2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.
- **Definition of Terms**: Waiting time: Time of registration/ appointment (whichever is later) to the time patient is first seen by the doctor.
- **Criteria**
  - **Inclusion criteria**: NA
  - **Exclusion criteria**:
    1. Patients who request to see a specific doctor.
    2. Patients who come without an appointment (“walk-in” patients).
    3. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.
    4. Patients with multiple appointments on the same day.
    5. Patients slotted in for special consultation.
- **Type of indicator**: Rate-based process indicator
- **Numerator**: Number of patients with waiting time of ≤ 90 minutes to see the doctor at Gastroenterology clinic
- **Denominator**: Total number of patients seen at the Gastroenterology clinic
- **Formula**: \[ \text{Numerator} \times \frac{100}{\text{Denominator}} \]
- **Standard**: ≥ 90%

### Data Collection

1. **Where**: Data will be collected in Gastroenterology Clinic.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator coordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from appointment/ record book (refer to KPI MOH Guidelines).

### Remarks
### Indicator 3

**Discipline**: Gastroenterology  
**Name of indicator**: Percentage of non-urgent cases that were given first endoscopic appointment within (≤) 8 weeks after clinic consultation  
**Dimension of Quality**: Customer centeredness  
**Rationale**:  
1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.  
2. It is the aim of the MOH to reduce the waiting time to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.  
**Definition of Terms**: Appointment: Time taken from the date of endoscopic request to the date of first endoscopic performed.  
**Criteria**:  
**Inclusion**: NA  
**Exclusion**:  
1. All urgent cases.  
2. Patients who request to delay the appointment date.  
3. Patients who request to see a specific doctor.  
4. Patients who default the first appointment given.  
**Type of indicator**: Rate-based process indicator  
**Numerator**: Number of non-urgent cases that were given first endoscopic appointment within (≤) 8 weeks after clinic consultation  
**Denominator**: Total number of non-urgent cases for first endoscopic procedure  
**Formula**:  
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]  
**Standard**: ≥ 80%  
**Data Collection**:  
1. **Where**: Data will be collected in Endoscopic Unit.  
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator coordinator) of the department/unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from appointment book/record book (refer to KPI MOH Guidelines).  
**Remarks**: 

### Indicator 4

**Discipline**: Individual
Discipline: Gastroenterology

Name of indicator: Percentage of oesophagogastroduodenoscopy (OGDS) performed within (≤) 24 hours of admission in patients presented with upper gastrointestinal haemorrhage (UGIH)

Dimension of Quality: Customer centeredness

Rationale:
1. The Glasgow Blatchford Score (GBS) is a pre-endoscopic risk assessment tool for patients presenting with UGIH. It can predict need for intervention or death and identifies low risk patients suitable for out-patient management.
2. Glasgow Blatchford Score (GBS) for assessing the severity of UGIH:

<table>
<thead>
<tr>
<th>ADMISSION RISK MARKER</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Urea (mmol/L)</td>
<td></td>
</tr>
<tr>
<td>≥6·5 &lt;8·0</td>
<td>2</td>
</tr>
<tr>
<td>≥8·0 &lt;10·0</td>
<td>3</td>
</tr>
<tr>
<td>≥10·0 &lt;25·0</td>
<td>4</td>
</tr>
<tr>
<td>≥25</td>
<td>6</td>
</tr>
<tr>
<td>Haemoglobin (men) (g/dL)</td>
<td></td>
</tr>
<tr>
<td>≥12·0 &lt;13·0</td>
<td>1</td>
</tr>
<tr>
<td>≥10·0 &lt;12·0</td>
<td>3</td>
</tr>
<tr>
<td>&lt;10·0</td>
<td>6</td>
</tr>
<tr>
<td>Haemoglobin (women) (g/dL)</td>
<td></td>
</tr>
<tr>
<td>≥10·0 &lt;12·0</td>
<td>1</td>
</tr>
<tr>
<td>&lt;10</td>
<td>6</td>
</tr>
<tr>
<td>Systolic blood pressure (mmHg)</td>
<td></td>
</tr>
<tr>
<td>100-109</td>
<td>1</td>
</tr>
<tr>
<td>90-99</td>
<td>2</td>
</tr>
<tr>
<td>&lt;90</td>
<td>3</td>
</tr>
<tr>
<td>Other markers</td>
<td></td>
</tr>
<tr>
<td>Pulse ≥100 (per min)</td>
<td>1</td>
</tr>
<tr>
<td>Presentation with maelena</td>
<td>1</td>
</tr>
<tr>
<td>Presentation with syncope</td>
<td>2</td>
</tr>
<tr>
<td>Hepatic disease</td>
<td>2</td>
</tr>
<tr>
<td>Cardiac failure</td>
<td>2</td>
</tr>
</tbody>
</table>

3. The score has been validated to show that patients with a score of 0 are low risk. All other values are considered high risk.

4. Low-risk criteria of GBS:
   i. Urea <6·5 mmol/L.
   ii. Haemoglobin level >12.9 g/dL (men) or >11.9 g/dL (women).
   iii. Systolic blood pressure >109 mmHg.
   iv. Pulse <100 beats/min.
   v. Absence of maelena, syncope, cardiac failure, or liver disease.

5. In the validation group, scores of 6 or more were associated with a greater than 50% risk of needing an intervention.

6. Reference:

Definition of Terms: Oesophagogastroduodenoscopy (OGDS): A diagnostic endoscopic procedure to visualize the upper part of the gastrointestinal tract up to the duodenum.

Within (≤) 24 hours of admission: Time taken from the time patient had been admitted to the ward to the time OGDS conducted.
### Upper gastrointestinal haemorrhage (UGIH):
The presence of haematemesis, coffee ground vomiting, maelena or haematochezia (verified by Gastroenterologist).

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion criteria:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. All cases of upper gastrointestinal bleeding.</td>
</tr>
</tbody>
</table>

**Exclusion criteria:**
1. Unfit for endoscopy/ unstable patients e.g. hypotensive or in shock.
2. Encephalopathy.
3. In severe coagulopathy.
4. Cases that need other therapeutic optimization i.e. haemodialysis.
5. Refuse for endoscopy.
6. No consent.

**Type of indicator:** Rate-based outcome indicator

**Numerator:** Number of oesophagogastroduodenoscopy (OGDS) performed within (≤) 24 hours of admission in patients presented with upper gastrointestinal haemorrhage (UGIH)

**Denominator:** Total number of patients presented with upper gastrointestinal haemorrhage (UGIH) admitted

**Formula:** \( \text{Numerator} \times 100\% \/M/ \text{Denominator} \)

**Standard:** ≥ 75%

**Data Collection:**
1. **Where:** Data will be collected in wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator coordinator) of the department/unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from admission book/procedure book/record book (refer to KPI MOH Guidelines).

**Remarks:**

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**Indicator 5**

- **Type:** Individual
- **Discipline:** Gastroenterology
- **Name of indicator:** Caecal intubation rate (CIR)
- **Dimension of Quality:** Safety

**Rationale:**
1. Caecal intubation is critical to a complete examination. The need for caecal intubation is based on the persistent finding that a substantial fraction of colorectal neoplasms are located in the proximal colon, including the caecum. Visualization of this area is paramount to the prevention of colon cancer.
2. The unadjusted completion rate (CIR) for colonoscopy is 90%.
3. References:
   a) The Guidelines for the Implementation of a National Quality Assurance Programme in GI Endoscopy (Version 2.0) developed by The Working Group of National QA Programme in GI Endoscopy by the Conjoint Board of the Royal College of Physicians and Royal College of Surgeons
### Definition of Terms

**Caecal intubation**: Passage of the colonoscope tip to a point proximal to the ileocaecal valve so that the entire caecal caput, including the medial wall of the caecum between the ileocaecal valve and appendiceal orifice, is visible.

### Criteria

**Inclusion criteria:**
1. All colonoscopy studies including those, in which a previously unknown benign or malignant stricture is encountered, should be counted.

**Exclusion criteria:**
1. Poor bowel preparation.
2. Severe colitis.
3. Colonoscopic treatment of a benign or malignant stricture or a large polyp.
5. Planned colonoscopy which does not require to reach caecum/ terminal ileum e.g. radiation proctitis.

### Type of indicator

Rate-based outcome indicator

### Numerator

Number of caecal intubation performed during colonoscopy

### Denominator

Total number of colonoscopies performed

### Formula

\[
\text{Numerator} \times 100\% \div \text{Denominator}
\]

### Standard

\[ \geq 80\% \]

### Data Collection

1. **Where**: Data will be collected in Endoscopic Unit.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

### Remarks

Photographic evidence of the terminal ileum/ caecum/ anastomosis should be obtained.

### Indicator 6

**Discipline**: Gastroenterology

**Name of indicator**: Percentage of colonic perforation in patients underwent colonoscopy procedure

**Dimension of Quality**: Safety

**Rationale**: 1. Perforation is the most serious complication in the short term during or after colonoscopy. About 5% of colonoscopic perforations are fatal.
2. Overall perforation rates is <1:500.

3. References:
   c) BSG Quality and Safety Indicators for Endoscopy by Joint Advisory Group on GI Endoscopy (2007).

**Definition of Terms**

**Colonic perforation**: Evidence of air, luminal contents or instrumentation outside the GI tract.

**Criteria**

**Inclusion**:  
1. All colonoscopy studies including for screening.

**Exclusion**:  
Patients with high risk of perforation such as:  
1. Pseudo-obstruction.  
2. Ischemic colitis.  
3. Severe colitis.  
4. Radiation-induced colitis.  
5. Stricture formation.  
7. Chronic corticosteroid therapy.  
8. Post-polypectomy.  
10. Diverticular disease.

**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of colonic perforation in colonoscopy procedure

**Denominator**: Total number of colonoscopies performed

**Formula**: \[rac{\text{Numerator}}{\text{Denominator}} \times 100\%\]

**Standard**: \(\leq 0.2\%\)

**Data Collection**

1. **Where**: Data will be collected in Endoscopic Unit.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record/procedure book (refer to KPI MOH Guidelines).
### General Medicine

<table>
<thead>
<tr>
<th>Type</th>
<th>No</th>
<th>Indicator</th>
<th>Dimension</th>
<th>Standard</th>
<th>Hospital Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Non ST elevation myocardial infarction (NSTEMI)/ Unstable angina case fatality rate</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at General Medicine Outpatient Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of new non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at General Medicine Outpatient Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>Percentage of patients with diabetes who have been screened for target organ damage</td>
<td>Customer</td>
<td>&gt; 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients with history of myocardial infarction on current management treated with ALL named medications</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of hypertensive patients with blood pressure ≤ 140/90 mmHg as measured in the General Medicine Outpatient Clinic</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Percentage of patients with non-vulvar atrial fibrillation assessed for risk of stroke within (≤) 6 months of diagnosis</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Percentage of new cases admitted during on call hours who are seen by the individual specialist (as the first specialist) within 12 hours of admission</td>
<td>Customer</td>
<td>≥ 50%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

- **Departmental**
- **Discipline**: General Medicine
- **Name of indicator**: Non ST elevation myocardial infarction (NSTEMI)/ Unstable angina (UA) case fatality rate
- **Dimension of Quality**: Effectiveness

**Rationale**

1. Cardiovascular diseases accounted for the 25.6% of deaths in Ministry of Health (MOH) Hospitals in 2011. The majority of cardiovascular deaths are attributed to acute coronary syndrome (ACS). This is a spectrum of disease with 3 accepted classes:
   a) ST elevation Myocardial Infarction (STEMI)
   b) Non-ST elevation Myocardial Infarction (NSTEMI)
   c) Unstable angina (UA).
2. Mortality rates quoted in the Malaysian Acute Coronary Syndrome (ACS) Registry maintained by the National Heart Association of Malaysia are 9% for
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

NSTEMI and 3% for UA between 2006 and 2010.

3. Survival is dependent on good monitoring with prompt and continued use of specific medication (anti-platelets, anti-thrombotics, hypolipidemic therapy, B-blockers and ACE-inhibitors).

**Definition of Terms**

**Non ST Elevation Myocardial Infarction (NSTEMI):** A clinical syndrome of acute myocardial death defined by a rise in cardiac biomarkers in the absence of ST elevation on the Electrocardiograph (ECG). The biomarkers used may include any of the following: Troponin T/I, Creatinine Kinase or its MB fraction (CK, CKMB).

**Unstable Angina (UA):** A clinical syndrome comprising chest pain or its equivalent with or without ST depression and T wave inversion on the ECG and in the absence of raised cardiac biomarkers.

**Criteria**

**Inclusion:**
1. Patients with ACS/ NSTEMI/ UA as a primary diagnosis
2. Deaths due to cardiovascular causes
3. Deaths due to infection as a secondary course

**Exclusion:**
1. Death on arrival.
2. Patients “brought in dead” to Emergency but resuscitation still attempted.

**Type of indicator:**
Rate-based outcome indicator

**Numerator:**
Number of patients diagnosed with ACS/ NSTEMI/ UA who died

**Denominator:**
Total number of patients diagnosed with ACS/ NSTEMI/ UA

**Formula:**
\[
\text{Numerator} \times \frac{100\%}{\text{Denominator}}
\]

**Standard:**
\( \leq 10\% \)

**Data Collection**

1. **Where:** Data will be collected in Medical wards/ ICU/ CCU/ CRW/ NICU/ wards that cater for the above condition/ record office.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection
4. **Who should verify:** All performance data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from registration book/ record book (refer to KPI MOH Guidelines).

**Remarks**:

---

**Indicator 2**

**Discipline:** General Medicine

**Name of indicator:** Percentage of patients with waiting time of \( \leq 90 \) minutes to see the doctor at General Medicine Outpatient Clinic

**Dimension of Quality:** Customer centeredness

**Rationale:**
1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Director-General of Health Malaysia Circular No. 6/2004 – Steps to...
<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Reduce the Waiting Time in MOH Facilities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria</td>
<td><strong>Waiting time</strong>: Time of registration/appointment (whichever is later) to the time the patient is first seen by the doctor.</td>
</tr>
<tr>
<td>Exclusion</td>
<td><strong>Inclusion</strong>: NA</td>
</tr>
<tr>
<td></td>
<td>1. Patients who request to see a specific doctor.</td>
</tr>
<tr>
<td></td>
<td>2. Patients who come without an appointment (“walk-in” patients).</td>
</tr>
<tr>
<td></td>
<td>3. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.</td>
</tr>
<tr>
<td></td>
<td>4. Patients with multiple appointments on the same day.</td>
</tr>
<tr>
<td></td>
<td>5. Patients slotted in for special consultation.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based outcome indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of patients with waiting time of ≤ 90 minutes to see doctor at General Medicine Outpatient Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients seen at General Medicine Outpatient Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>$\frac{\text{Numerator}}{\text{Denominator}} \times 100%$</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. <strong>Where</strong>: Data will be collected in General Medicine Outpatient Clinic.</td>
</tr>
<tr>
<td></td>
<td>2. <strong>Who</strong>: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.</td>
</tr>
<tr>
<td></td>
<td>3. <strong>How frequent</strong>: Monthly data collection.</td>
</tr>
<tr>
<td></td>
<td>4. <strong>Who should verify</strong>: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. <strong>How to collect</strong>: Data is suggested to be collected from record book/waiting time slip/outpatient card (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>

**Indicator 3**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>General Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of new non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at General Medicine Outpatient Clinic</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
<tr>
<td>Rationale</td>
<td>1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.</td>
</tr>
<tr>
<td></td>
<td>2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.</td>
</tr>
</tbody>
</table>

**Definition of Terms**

| Definition of Terms | New cases: Cases referred to the clinic for the first time. These patients will not have prior records in the department. |
|---------------------| First consultation: The first contact the patient has with a specialist, registrar or medical officer undergoing training in a medical specialist clinic. |
### Appointment
Time taken from the date of referral received to the date of first consultation with the doctor.

### Referrals
A referral may be received via a phone call, e-mail, fax or attendance to the clinic with a referral letter.

#### Criteria
- **Inclusion:** NA
- **Exclusion:**
  1. All urgent cases.
  2. Inpatients discharged from the care of the Medical Department and attending the clinic for the first time.
  3. Patients who request to delay the appointment date.
  4. Patients who request to see a specific doctor.
  5. Patients who default the first appointment given.

#### Type of indicator
- Rate-based process indicator

#### Numerator
Number of new non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at General Medicine Outpatient Clinic

#### Denominator
Total number of new non-urgent cases referred to General Medicine Outpatient Clinic

#### Formula
\[
\text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

#### Standard
≥ 90%

#### Data Collection
1. **Where:** Data will be collected in General Medicine Outpatient Clinic.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from appointment/record book (refer to KPI MOH Guidelines).

#### Remarks

### Indicator 4
- **Discipline:** General Medicine
- **Name of indicator:** Percentage of patients with diabetes who have been screened for target organ damage
- **Dimension of Quality:** Customer centeredness
- **Rationale:** Diabetes remains a very important disease both in the burden and the potential side effects that it causes.
- **Definition of Terms:** Screening for target organ damage:
  1. Urine dipstick or UFEME or Urine Microalbuminuria shall be performed to diagnose proteinuria
  2. Funduscopy shall be performed to assess diabetic retinopathy.
  3. Neurological examination shall be performed to exclude diabetic neuropathy.
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

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| Criteria | Inclusion: All patients who have been diagnosed to be having diabetes mellitus.  
**Exclusion:** Gestational diabetes mellitus. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of diabetic patients who have been screened for target organ damage</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients who have been diagnosed with diabetes mellitus</td>
</tr>
</tbody>
</table>
| Formula | \[
\text{Numerator} \times 100\% \\
\text{Denominator}
\] |
| Standard | > 70% |
| Data Collection | 1. **Where:** Data will be collected in General Medicine Outpatient Clinic.  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** 3 Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines). |
| Remarks | Sampling may reflect 30% of patients who have been diagnosed diabetes mellitus. |

---

### Indicator 5

- **Discipline:** General Medicine
- **Name of indicator:** Percentage of patients with history of myocardial infarction treated with ALL named medications
- **Dimension of Quality:** Effectiveness

#### Rationale

1. Cardiovascular diseases accounted for the 25.6% of deaths in Ministry of Health (MOH) Hospitals in 2011.
2. Post Myocardial infarction many patients may be managed with medical therapy instead of being referred for revascularisation, especially when revascularisation may not be offered under the same roof or nearby.
3. These patients form a sizeable portion of every medical clinic patient load and it is critical that they be prevented from developing repeat myocardial infarctions through the modification of their risk factors.
4. Thus the physicians in the clinic will be responsible for the management of the patients and shall ensure that these measures will be instituted for their patients.

#### Definition of Terms

**Myocardial infarction:** Evidence of myocardial necrosis in a clinical setting consistent with acute myocardial ischaemia. The following criteria must meets in order to diagnose myocardial infarction:

- Detection of a rise and/or fall of cardiac biomarker values (preferably cardiac troponin (cTn)) with at least one value above the 99th percentile upper reference limit and with at least one of the following:
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion:</td>
<td>Patients with contraindication of the medications.</td>
</tr>
<tr>
<td></td>
<td>Patients developed side effects / adverse reaction to the medications.</td>
</tr>
<tr>
<td></td>
<td>Patients referred to Cardiology team / under Cardiology team care.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of patients with history of myocardial infarction treated with ALL named medications</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients with history of myocardial infarction</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 70%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. <strong>Where:</strong> Data will be collected in General Medicine Outpatient Clinic.</td>
</tr>
<tr>
<td></td>
<td>2. <strong>Who:</strong> Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>3. <strong>How frequent:</strong> 3 monthly data collection.</td>
</tr>
<tr>
<td></td>
<td>4. <strong>Who should verify:</strong> Data will be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. <strong>How to collect:</strong> Data is suggested to be collected from record book/ file (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

**Remarks:**

**Indicator 6**
- **Individual**
- **Discipline:** General Medicine
- **Name of indicator:** Percentage of hypertensive patients with blood pressure ≤ 140/90 mmHg as measured in the General Medicine Outpatient Clinic
- **Dimension of Quality:** Effectiveness
- **Rationale:**
  1. Hypertension is a simple parameter that can be measured easily in every set up and yet is critically responsible for a myriad of complication.
  2. Hypertension control will lead to a reduction in future burden for chronic renal failure, strokes, and ischemic heart disease.
### Definition of Terms

**Criteria**

**Inclusion:**
1. All patients diagnosed or referred with hypertension in the clinic.
2. All hypertensive patients seen at least 4 clinic sessions per month.

**Exclusion:**
1. Patients aged more than 65 years old.
3. Patients who default follow up for more than 1 visit.

### Type of indicator

Rate-based outcome indicator

### Numerator

Number of hypertensive patients with blood pressure ≤ 140/90 mmHg as measured in the General Medicine Outpatient Clinic after minimum of 6 months of treatment for hypertension.

### Denominator

Total number of hypertensive patients under follow up in General Medicine Outpatient Clinic after minimum of 6 months of treatment for hypertension.

### Formula

\[
\text{Numerator} \times \frac{100\%}{\text{Denominator}}
\]

### Standard

≥ 70%

### Data Collection

1. **Where**: Data will be collected in General Medicine Outpatient Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).

### Remarks


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### Indicator 7

**Discipline**: General Medicine

**Name of indicator**: Percentage of patients with non valvular atrial fibrillation assessed for risk of stroke within (≤) 6 months of diagnosis

**Dimension of Quality**: Effectiveness

**Rationale**

1. Atrial fibrillation is a disease that has many sequelae and the primary form of assessment relies on an application of the CHA\(_2\)DS\(_2\)-VAS\(_2\) scoring system to patients to assess the risk of developing strokes.
2. This simple scoring system when applied will ensure that the treatment options will be optimised for each patient.
Definition of Terms:

**Non valvular atrial fibrillation**: Atrial fibrillation in the absence of rheumatic mitral stenosis, a mechanical or bioprosthetic heart valve, or mitral valve repair.

**Assessment**: The assessment performed by using CHA$_2$DS$_2$-VASc risk stratification scoring system for estimating the risk of stroke in patients with atrial fibrillation.

### CONDITION | POINTS
---|---
C | Congestive Heart Failure (or Left Ventricular systolic dysfunction) | 1
H | Hypertension: BP consistently above 140/90 mmHg (or treated hypertension on medication) | 1
A$_2$ | Age ≥ 75 years | 2
D | Diabetes mellitus | 1
S$_2$ | Prior stroke or TIA or thromboembolism | 2
V | Vascular disease (e.g. peripheral artery disease, myocardial infarction, aortic plaque) | 1
A | Age 65-74 years | 1
S$_c$ | Sex category (i.e. female sex) | 1

### SCORE | RISK | ANTI-COAGULATION THERAPY | CONSIDERATION
---|---|---|---
0 | Low | No anti-thrombotic therapy (or aspirin) | No anti-thrombotic therapy (or Aspirin 75-325mg daily)
1 | Moderate | Aspirin, warfarin or other oral anti-coagulant | Oral anti-coagulant either new oral anti-coagulant drug e.g. dabigatran or well controlled warfarin at INR 2.0-3.0 (or aspirin 75-325 mg daily, depending of factors such as patients preference).
≥ 2 | Moderate to high | Warfarin or other oral anti-coagulant | Oral anti-coagulant using either new oral anti-coagulant drug (apixaban, rivaroxaban or dabigatran) or well-controlled warfarin at INR 2.0-3.0.

**Criteria**

**Inclusion**: 1. All patients under General Medicine Outpatient Clinic follow up.

**Exclusion**: 1. Atrial fibrillation due to reversible causes e.g. sepsis, myocardial ischaemia, electrolyte imbalance.
2. Rheumatic mitral stenosis.
3. Mechanical or bioprosthetic valve.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients with non valvular atrial fibrillation assessed for risk of stroke.
### Indicator 8: Individual Discipline: General Medicine

**Name of indicator**: Percentage of new cases admitted during on call hours who are seen by the individual specialist (as the first specialist) within 12 hours of admission

**Dimension of Quality**: Customer centeredness

**Rationale**: When on call, patient care is heavily dependent upon the level of care that is delivered. In some hospitals level of care drops once on call hours and care delivered is dependent on medical officers. The intention is to prevent the substandard care.

**Definition of Terms**

- **On call hours**: After normal working hours which is 5 pm to 8 am on weekdays and 8 am to 8 am on weekends or public holidays.

**Criteria**

- **Inclusion**: All admissions during the on call hours
- **Exclusion**: Admission who have already been reviewed/ seen by another Medical Specialists prior to admission.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of non elective patients who are admitted non electively during on call hours and who are reviewed by the Medical Specialist as the first doctor within 12 hours of admission.

**Denominator**: Total number of patients who admitted to the medical wards during on call hours

**Formula**: \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \)

**Standard**: \( \geq 80\% \)

**Data Collection**

1. **Where**: Data will be collected in General Medicine Outpatient Clinic/ Medical Wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 6 Monthly data collection.
4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from admission book/ reference books.

**Remarks**
| Remarks       | patient's case note/record book (refer to KPI MOH Guidelines). |
### GERIATRIC

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of new non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Geriatric Clinic</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the health care worker at Geriatric clinic</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients undergoing comprehensive geriatric assessment (CGA) within (≤) one week of admission to Geriatric ward</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients discharged with Geriatric Discharge Plan</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients referred for impaired cognition to the Geriatric Clinic who are assessed for reversible aetiology</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

- **Type**: Departmental
- **Discipline**: Geriatric
- **Indicator**: Percentage of new non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Geriatric Clinic
- **Dimension of Quality**: Customer centeredness
- **Rationale**:
  1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
  2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.
- **Definition of Terms**:
  - **Appointment**: Time taken from the date of referral received to the date of first consultation with the doctor.
  - **New non-urgent cases**: Newly referred non-urgent cases. This does not cover patients already seen by geriatric team as inpatient.
  - **Geriatric clinic**: Clinic with dedicated in-house Geriatrician.
- **Criteria**:
  - **Inclusion**:
    1. Patients with referral letter.
    2. New patients that were referred from ward/ other MOH hospital.
  - **Exclusion**:
    1. Patients already seen by Geriatric team as inpatient or outpatient prior to
<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of new non-urgent cases that were given appointment for first consultation within (≤) 8 weeks in Geriatric Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of new non-urgent cases referred to Geriatric Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100 % / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 75%</td>
</tr>
</tbody>
</table>
| Data Collection           | 1. **Where:** Data will be collected in Geriatric Clinic.  
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator coordinator) of the department/unit.  
3. **How frequent:** 3 Monthly data collection.  
4. **Who should verify:** Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from appointment book (refer to KPI MOH Guidelines). |
| Remarks                   | |

**Indicator 2**

**Discipline:** Geriatric

**Indicator:** Percentage of patients with waiting time of ≤ 90 minutes to see the healthcare worker at Geriatric clinic

**Dimension of Quality:** Customer centeredness

**Rationale:**
1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

**Definition of Terms:**

**Waiting time:** Time of registration/appointment (whichever is later) to the time patient is first seen by healthcare worker.

**Healthcare worker:** Any member of the Geriatric Team that has the privileged to perform the assessment.

**Criteria:**

**Inclusion:** NA

**Exclusion:**
1. Patients who request for a specific personnel.
2. Patients who come without an appointment ("walk-in" patients).
3. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.
4. Patients with multiple appointments on the same day.
5. Patients slotted in for special consultation.
TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with waiting time of ( \leq 90 ) minutes to see the healthcare worker at Geriatric clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients seen at Geriatric clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>( \frac{\text{Numerator}}{\text{Denominator}} \times 100% )</td>
</tr>
<tr>
<td>Standard</td>
<td>( \geq 70% )</td>
</tr>
</tbody>
</table>
| Data Collection   | 1. **Where**: Data will be collected in Geriatric Clinic.  
                          2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
                          3. **How frequent**: 3 monthly data collection.  
                          4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
                          5. **How to collect**: Data is suggested to be collected from appointment book (refer to KPI MOH Guidelines). |
| Remarks           | |

<table>
<thead>
<tr>
<th>Indicator 3</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Geriatric</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of patients undergoing comprehensive geriatric assessment (CGA) within (≤) one week of admission to Geriatric ward</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
</tbody>
</table>
| Rationale         | 1. Comprehensive geriatric assessment (CGA) has been proven to provide better diagnostic accuracy, functional outcome, affect or cognition and reduced medication use in the older patient. An early interdisciplinary team review is important for planning management and intervention for elderly inpatients.  
                          2. References:  
                              b. JKH Luk Using the comprehensive Geriatric Assessment Technique to assess elderly patients. HKMJ Vol 6 Mac 2000 : 95 |
| Definition of Terms | Comprehensive Geriatric Assessment (CGA): Multidimensional and multidisciplinary diagnostic instrument designed to evaluate as well as to manage elderly patients by collecting data on the identified medical, psychosocial and functional capabilities and limitations of elderly patients with the aim to maximize overall health with aging by:  
                          1. Developing treatment and long-term follow-up plans.  
                          2. Arranging for primary care and rehabilitative services.  
                          3. Organizing and facilitating the intricate process of case management.  
                          4. Determining long-term care requirements and optimal placement.  
                          5. Making use of health care resources. |
| Criteria          | Inclusion:  
                          1. All patients admitted to the Geriatric ward. |
### Exclusion:
1. Patients who are discharged/transferred out within 7 days e.g. patients admitted for procedure/short intervention period (e.g. MRI, further investigation).

### Type of indicator:
Rate-based process indicator

### Numerator:
Number of patients undergoing comprehensive geriatric assessment (CGA) within (≤) one week of admission to Geriatric ward

### Denominator:
Total number of patients admitted to Geriatric ward

### Formula:
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard:
≥ 80%

### Data Collection:
1. **Where**: Data will be collected in Geriatric wards or wards with designated cubicles/beds for Geriatric patients.
2. **Who**: Data will be collected by Officer/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: Data will be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from registration book (refer to KPI MOH Guidelines).

### Remarks:

### Indicator 4
- **Individual**: Geriatric
- **Indicator**: Percentage of patients discharged with Geriatric Discharge Plan
- **Dimension of Quality**: Customer centeredness

### Rationale:
1. Continuity of care is important in the elderly with multiple co-morbidities or those with cognitive impairment.
2. Poor communication in the transition of care leads to risk of injury and other adverse events such as medication errors, duplication of services, inappropriate or conflicting care recommendations in the elderly.
3. Part of a high-quality transitional care is to provide a written document as a communication tool.
4. References:
   b. Hazzard's Geriatric Medicine And Gerontology Chap 16:198

### Definition of Terms:
- **Geriatric Discharge Plan**: An appropriate discharge plan must consist of:
  1. Advice related to the disease/general advice (i.e. fall).
  2. Counselling on compliancy of medications.
  3. Complete discharge summary (to be given to patient/family)

- **Complete discharge summary**: Must include ALL of below:
  1. Diagnoses.
  2. Functional status.
### Mobility and aid.

1. All patients discharged from the Geriatric wards or wards with designated cubicles/ beds for geriatric patients.

### Investigation.

2. Patients at own risk (AOR) discharged where a less comprehensive notes given.

3. Patients expire during stay.

### Drug treatment.

4. Patients referred for impaired cognition to the Geriatric Clinic who are assessed for reversible aetiology.

### Follow-up plan.

5. All patients referred for cognitive impairment.

6. Patients who are deemed too ill to benefit from intervention.
<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients referred for impaired cognition to the Geriatric Clinic who are assessed for reversible aetiology</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients referred for impaired cognition to the Geriatric Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100 % / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 80%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected in Geriatric Clinic.</td>
</tr>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.</td>
</tr>
<tr>
<td></td>
<td>3. How frequent: 3 monthly data collection.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from patient’s case note (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td>Remarks</td>
<td>:</td>
</tr>
</tbody>
</table>
### HAEMATOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Chemotherapy Extravasation Rate</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patient with waiting time of ≤ 90 minutes to see the doctor at Haematology Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of new acute leukaemia/ Diffuse large B-cell lymphoma (DLBL) cases that were given appointment within (≤) 7 days</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of induction death from chemotherapy in newly diagnosed acute leukaemia/ Diffuse large B-cell lymphoma (DLBL) effectiveness</td>
<td>safety</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Chemotherapy Error Rate</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of transfusion dependent thalassaemia (TDT) patients on iron chelation therapy</td>
<td>Customer</td>
<td>&gt; 90%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

- **Departmental Disciplines:** Haematology
- **Indicator:** Chemotherapy Extravasation Rate
- **Dimension of Quality:** Safety

**Rationale**

1. Extravasation is a potentially preventable complication of chemotherapy.
2. This indicator reflects quality of service delivery and also safety of chemotherapy administration.

**Definition of Terms**

- **Chemotherapy extravasation:** Inadvertent leakage of intravenous drugs out of the vein into surrounding tissues.

**Criteria**

- **Inclusion:**
  1. Infusion or IV bolus of chemotherapy.
  2. Administration of chemotherapy in Haematology day care or ward.

- **Exclusion:**
  1. Non-chemotherapy extravasations e.g. antibiotics.
  2. Local reaction/ chemical phlebitis caused by certain chemotherapy.

**Type of indicator:** Rate-based outcome indicator

**Numerator:** Number of chemotherapy extravasation reported

**Denominator:** Total number of administration of chemotherapy

**Formula:** \( \text{Numerator} \times 100 \% \) \( \text{Denominator} \)

**Standard:** < 5%

**Data Collection**

1. **Where:** Data will be collected in Haematology day care/ wards.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
### Indicator 2

**Discipline**: Haematology

**Indicator**: Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Haematology Clinic

**Dimension of Quality**: Customer centeredness

**Rationale**:
1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

**Definition of Terms**:
- **Waiting time**: Time of registration/ appointment (whichever is later) to the time patient is first seen by the doctor.

**Criteria**:
- **Inclusion**: NA

**Exclusion**:
1. Urgent cases.
2. Patients who request to see a specific doctor.
4. Patient with multiple appointments on the same day.
5. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.
6. Patients slotted in for special consultations.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients with waiting time of ≤90 minutes to see the doctor at Haematology Clinic

**Denominator**: Total number of patients seen at the Haematology Clinic

**Formula**: Numerator \( \times \) 100 %
Denominator

**Standard**: ≥ 80%

**Data Collection**:
1. **Where**: Data will be collected in Haematology Clinic.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book/ waiting time slip/ outpatient card (refer to KPI MOH Guidelines).

**Remarks**: 

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**Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.

**How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).
### Indicator 3
**Discipline:** Haematology

**Indicator:** Percentage of new acute leukaemia/ Diffuse large B-cell lymphoma (DLBL) cases that were given appointment within (≤) 7 days

**Dimension of Quality:** Customer centeredness

**Rationale:**
1. Ensuring timely delivery of services and to avoid harmful delay in diseases that require early treatment.
2. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
3. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

**Definition of Terms**
**Appointment:** Date from first contact with Haematology team either by phone calls or by appearance in clinic/ day care to the date of appointment to see Haematologist.

**Criteria**
**Inclusion:**
1. All newly diagnosed untreated acute leukaemia/ DLBL.

**Exclusion:**
1. Relapsed cases.
2. Non-acute leukaemia.
3. Previously treated acute leukaemia/ DLBL.
4. Patients who request to delay the appointment date.
5. Patients who request to see a specific doctor.
6. Patients who default the first appointment given.

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of new acute leukaemia/ Diffuse large B-cell lymphoma (DLBL) cases that were given appointment within (≤) 7 days

**Denominator:** Total number of new acute leukaemia/ Diffuse large B-cell lymphoma (DLBL) cases referred

**Formula:**
\[
\frac{\text{Numerator} \times 100}{\text{Denominator}}
\]

**Standard:** ≥ 90%

**Data Collection**
1. **Where:** Data will be collected in Haematology clinic.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from appointment book (refer to KPI MOH Guidelines).

**Remarks**

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### Indicator 4
**Discipline:** Individual
### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

#### Medical Programme 2016

**Discipline**: Haematology  
**Indicator**: Percentage of induction death from chemotherapy in newly diagnosed acute leukaemia/ Diffuse large B-cell lymphoma (DLBL) cases  
**Dimension of Quality**: Effectiveness  
**Rationale**:  
1. This is to ensure effectiveness of treatment.  
2. Acute leukaemia and diffuse large B-cell lymphoma (DLBL) are the two most common conditions treated in the Haematology Department/ Unit.  
**Definition of Terms**: Acute leukaemia: Consist of Acute Myeloid Leukaemia (AML)/ Acute Lymphoblastic Leukaemia (ALL).  
**Criteria**  
**Inclusion**:  
1. Newly diagnosed acute AML/ ALL or DLBL patients.  
2. Patients who had started on one cycle of induction chemotherapy.  
**Exclusion**:  
1. Newly diagnosed cases planned for supportive/ palliative chemotherapy.  
2. Patients with secondary acute leukaemia.  
3. Elderly acute leukaemia patients aged >60 years old  
4. Patients who did not complete scheduled induction.  
5. Patients who are unable to start induction chemotherapy due to poor physical condition.  
6. Previous defaulter.  
**Type of indicator**: Rate-based outcome indicator  
**Numerator**: Number of induction death from chemotherapy in newly diagnosed acute leukaemia/ Diffuse large B-cell lymphoma (DLBL) cases  
**Denominator**: Total number of newly diagnosed acute leukaemia/ Diffuse large B-cell lymphoma (DLBL) cases on induction chemotherapy  
**Formula**:  
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]  
**Standard**: <10%  
**Data Collection**:  
1. **Where**: Data will be collected in Haematology Wards/ Clinic or other related area.  
2. **Who**: Data will be collected by Officer/ / Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: 3 monthly data collection.  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from registration book/ record book/ Hospital IT system (refer to KPI MOH Guidelines).  
**Remarks**:  

---

**Indicator 5**  
**Discipline**: Haematology  
**Indicator**: Chemotherapy Error Rate  
**Dimension of Quality**: Safety  
**Rationale**:  
1. Chemotherapy has a narrow therapeutic index and can cause potential harm including death if given incorrectly.
2. To ensure the safety and effectiveness of treatment and avoid injury to patients.

**Definition of Terms**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemotherapy error</td>
<td>All errors reported in the dosing, chemotherapy regimen or administration of chemotherapy in the day care or Haematology wards.</td>
</tr>
</tbody>
</table>

**Criteria**

<table>
<thead>
<tr>
<th>Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclusion</td>
<td>NA</td>
</tr>
<tr>
<td>Exclusion</td>
<td>1. Oral chemotherapy that are dispensed in the Outpatient Pharmacy.</td>
</tr>
</tbody>
</table>

**Type of indicator**

- Rate-based outcome indicator

**Numerator**

- Number of chemotherapy error reported

**Denominator**

- Total number of chemotherapy administered

**Formula**

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard**

- < 5%

**Data Collection**

1. Where: Data will be collected in Haematology wards/ day care.
2. Who: Data will be collected by Officer/ Pharmacist/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. How frequent: 3 monthly data collection.
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. How to collect: Data is suggested to be collected from report book/ record book (refer to KPI MOH Guidelines).

**Remarks**

- 

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**Indicator 6**

- Individual

**Discipline**

- Haematology

**Indicator**

- Percentage of transfusion dependent thalassaemia (TDT) patients on iron chelation therapy

**Dimension of Quality**

- Customer centeredness

**Rationale**

1. The National Thalassaemia Prevention and Control programme was launched in 2005 and as part of the initiative to improve outcome in patients with thalassaemia.
2. A CPG on management of transfusion dependent thalassaemia was developed and published in 2009.
3. This indicator measures adherence to CPG guideline and reflects equity of care.

**Definition of Terms**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfusion dependent thalassaemia (TDT)</td>
<td>Those who require lifelong transfusions i.e. at least 8 weekly.</td>
</tr>
<tr>
<td>Iron chelation therapy</td>
<td>Monotherapy or combination therapy of Desferrioxamine, Deferiprone or Deferasirox.</td>
</tr>
</tbody>
</table>

**Criteria**

<table>
<thead>
<tr>
<th>Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclusion</td>
<td>1. Transfusion dependent thalassaemia (TDT) patients who are under Haematology follow up for at least a year.</td>
</tr>
<tr>
<td></td>
<td>2. Transfusion dependent thalassaemia (TDT) patients with serum ferritin &gt;2500ug/L for at least 6 months.</td>
</tr>
</tbody>
</table>
## Exclusion:
1. Non-transfusion dependent thalassaemia patients e.g. thalassaemia intermedia, mild to moderate E-beta, HbH and those with milder phenotype.
2. Foreigners.
3. Patients who have contraindication to iron chelation therapy.

### Type of indicator
- Rate-based process indicator

### Numerator
- Number of Transfusion dependent thalassaemia (TDT) patients on iron chelation therapy

### Denominator
- Total number Transfusion dependent thalassaemia (TDT) patients

### Formula
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard
- > 90%

### Data Collection
1. **Where**: Data will be collected in Haematology Wards/ Clinic/ Day care.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).
### HEPATOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Hepatology Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Hepatology clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of cirrhotic patients with clinically apparent ascites had diagnostic abdominal paracentesis performed within (≤) 48 hours of admission</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of cirrhotic patients admitted with clinically apparent ascites given advice on low salt diet</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients with Acute Liver Failure or Acute on Chronic Liver Failure completed assessment within (≤) 48 hours of listing for liver transplant by the Transplant Team</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of chronic hepatitis C patients who are fully assessed and initiated on anti-HCV therapy within (≤) 8 months of first consultation at Hepatology Department</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

**Discipline**: Hepatology

**Indicator**: Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Hepatology Clinic

**Dimension of Quality**: Customer centeredness

**Rationale**:
1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting time for consultation.
2. Waiting time to see doctor at the specialist clinic reflects on proper clinic management and therefore efficiency and punctuality. Patients should receive services at the time promised.
3. It is the aim of the MOH to reduce the waiting times to a minimum in line with the circular of the Director-General of Health Malaysia No. 6/2004 – Steps to reduce the waiting time in MOH facilities.

**Definition of Terms**:
- **Appointment**: Time taken from the date of referral received to the date of first consultation with the doctor.

**Criteria**:
- **Inclusion**: NA
**Exclusion:**
1. All urgent cases.
2. Patients who request to delay the appointment date.
3. Patients who request to see a specific doctor.
4. Patients who default the first appointment given.

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Hepatology Clinic

**Denominator:** Total number of non-urgent cases referred to Hepatology Clinic

**Formula:**
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard:** ≥ 80%

**Data Collection:**
1. **Where:** Data will be collected in Hepatology Clinic.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from appointment/ record book (refer to KPI MOH Guidelines).

**Remarks**

---

**Indicator 2**

**Discipline:** Hepatology

**Indicator**

**Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Hepatology clinic**

**Dimension of Quality:** Customer centeredness

**Rationale**

1. Patient-centred services must give priority and prompt attention to patient needs by reducing waiting times to see the doctor in the clinics.
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

**Definition of Terms**

**Waiting time:** Time of registration/appointment (whichever is later) to the time patient is first seen by the doctor.

**Criteria**

**Inclusion:** NA

**Exclusion:**
1. Patients who request to see a specific doctor.
2. Patients who come without an appointment (walk-in patients).
3. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.
4. Patients with multiple appointments on the same day.
5. Patients slotted in for special consultation.

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of patients with waiting time of ≤ 90 minutes to see the doctor at
TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
MEDICAL PROGRAMME 2016

Hepatology clinic

<table>
<thead>
<tr>
<th>Denominator</th>
<th>Total number of patients seen at Hepatology clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula</td>
<td>Numerator x 100%</td>
</tr>
<tr>
<td></td>
<td>Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>

Data Collection: 1. Where: Data will be collected in Hepatology Clinic.  
2. Who: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. How frequent: 3 monthly data collection.  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from record book/ waiting time slip/ outpatient card (refer to KPI MOH Guidelines).

Remarks:

Indicator 3

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Hepatology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Percentage of cirrhotic patients with clinically apparent ascites had diagnostic abdominal paracentesis performed within (≤) 48 hours of admission</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
<tr>
<td>Rationale</td>
<td>1. All cirrhotic with clinically apparent ascites require paracentesis to diagnose unexpected infection when they are admitted.</td>
</tr>
</tbody>
</table>

Definition of Terms: Clinically apparent ascites: Flank dullness which is greater/ higher than usual and "shifting".  
Performed within (≤) 48 hours of admission: Time taken from the time patient arrived to the ward to the time diagnostic abdominal paracentesis performed.

Exclusion: 1. Patients with suspicion of intra-abdominal haemorrhage, dilated bowels or any other contraindications to abdominal paracentesis.  
2. Patient refusal or no consent.  
3. Recent abdominal paracentesis in referring hospital that were adequately performed and no indication for a repeat.

Type of indicator: Rate-based process indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of cirrhotic patients with clinically apparent ascites had diagnostic abdominal paracentesis performed within (≤) 48 hours of admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of cirrhotic patients with clinically apparent ascites admitted</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100%</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 80%</td>
</tr>
</tbody>
</table>

Data Collection: 1. Where: Data will be collected in Liver/ Hepatology Ward or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from registration book/ patient’s case note/ procedure book (refer to KPI MOH Guidelines).

| Indicator 4 | : | Individual |
| Discipline | : | Hepatology |
| Name of indicator | : | Percentage of cirrhotic patients admitted with clinically apparent ascites given advice on low salt diet |
| Dimension of Quality | : | Customer centeredness |
| Rationale | : | 1. All cirrhotic in-patients with clinically apparent ascites require salt restriction as well as other management of ascites.  
| Definition of Terms | : | Clinically apparent ascites: Flank dullness which is greater/ higher than usual and “shifting”. |
| Criteria | : | Inclusion: 
1. Newly admitted cirrhotic patients with clinically apparent ascites. 
| Exclusion: 
1. Patients who are encephalopathic.  
2. Patients with advanced hepatocellular carcinoma. |
| Type of indicator | : | Rate-based process indicator |
| Numerator | : | Number of cirrhotic patients admitted with clinically apparent ascites given advice on low salt diet |
| Denominator | : | Total number of cirrhotic patients admitted with clinically apparent ascites |
| Formula | : | Numerator x 100% 
Denominator |
| Standard | : | ≥ 80% |
| Data Collection | : | 1. **Where**: Data will be collected in Liver/ Hepatology ward or wards that cater for the above condition.  
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit. 
3. **How frequent**: 3 monthly data collection. 
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from patient’s case note/ checklist (refer to KPI MOH Guidelines). |
| Remarks | : | |
**Indicator 5** : Individual  
**Discipline** : Hepatology

**Name of indicator** : Percentage of patients with Acute Liver Failure or Acute on Chronic Liver Failure completed assessment within (≤) 48 hours of listing for liver transplant by the Transplant Team

**Dimension of Quality** : Customer centeredness

**Rationale** : 1. Patients with Acute Liver Failure or Acute on Chronic Liver Failure that satisfies transplant criteria or have poor prognostic markers have high mortality rates without liver transplant.  
2. Urgent liver transplantation is a lifesaving procedure.

**Definition of Terms** : 
- **Acute Liver Failure patient**: Patient with evidence of coagulation abnormality (usually INR ≥1.5) and any degree of mental alteration (encephalopathy) in a patient without pre-existing cirrhosis and with an illness of <26 weeks duration.
- **Acute on Chronic Liver Failure patient**: Patient with diagnosed or undiagnosed chronic liver disease who had an acute hepatic insult which result in jaundice (bilirubin ≥5 mg/dL), coagulopathy (INR ≥ 1.5) and developed ascites and/ or encephalopathy within 4 weeks.
- **Complete assessment**: Complete clinical assessment and investigations including blood grouping, HBsAg, antiHCV, HIV, LFT, FBC, RP, INR, ECG, CXR, USG of the liver.
- **Liver Transplant Team**: The members are medical professionals with different expertise which may include doctors, nurses and other related health care personnel that involved in pre, during and post procedure care.

**Criteria** : 
**Inclusion**:  
1. Adult Acute Liver Failure or Acute on Chronic Liver Failure patients who were admitted and satisfied transplant criteria (based on the King’s College criteria or other criteria/ prognostic markers if applicable).  
2. Adult acute liver failure or acute on chronic liver failure patients who were accepted for transplant by the Transplant Team.

**Exclusion**:  
1. Patients refused for liver transplant.  
2. Presence of contraindications for liver transplant.  
3. Delay due to problem in availability of tests/ investigations.

**Type of indicator** : Rate-based process indicator

**Numerator** : Number of patients with Acute Liver Failure or Acute on Chronic Liver Failure completed assessment within (≤) 48 hours of listing for liver transplant by the Transplant Team

**Denominator** : Total number of patients with Acute Liver Failure or Acute on Chronic Liver Failure listed for liver transplant by Transplant Team

**Formula** : Numerator x 100%  
Denominator

**Standard** : ≥ 80%

**Data Collection** : 1. **Where**: Data will be collected in Liver/ Hepatology wards/ HDW/ ICU or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from database of patients with acute liver failure and acute on chronic liver failure (refer to KPI MOH Guidelines).

### Indicator 6

**Discipline**: Hepatology

**Name of indicator**: Percentage of chronic hepatitis C patients who are fully assessed and initiated on anti-HCV therapy within (≤) 8 months of first consultation at Hepatology Department

**Dimension of Quality**: Customer centeredness

**Rationale**:
1. Timely treatment in patients with significant liver disease prevents long term liver complications and use of more health resources.
2. Chronic hepatitis C patients who had completed assessments required for anti-HCV therapy and initiated on treatment.

**Definition of Terms**: 
- **Assessment**: Depend on the patient and treatment characteristics.

**Criteria**

**Inclusion**:
1. Patients who are willing for treatment.
2. Patients have significant liver disease and other indications for treatment.

**Exclusion**:
1. Patients who refused anti-HCV therapy.
2. Patients who are enrolled into clinical trials.
3. Patients who have contraindications to anti-HCV therapy.
4. Patients who defaulted appointments for investigations and clinic follow-up.
5. Delays due to problems with availability of tests, results or anti-HCV therapy.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of chronic hepatitis C patients who are fully assessed and initiated on anti-HCV therapy within (≤) 8 months of first consultation at Hepatology Department

**Denominator**: Total number of chronic hepatitis C patients who received anti-HCV therapy

**Formula**: $\frac{\text{Numerator}}{\text{Denominator}} \times 100\%$

**Standard**: ≥ 70%

**Data Collection**:
1. **Where**: Data will be collected in Hepatology Department.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3. <strong>How frequent:</strong></td>
<td>6 monthly data collection.</td>
</tr>
<tr>
<td>4. <strong>Who should verify:</strong></td>
<td>All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td>5. <strong>How to collect:</strong></td>
<td>Data is suggested to be collected from database of patients with Hepatitis C (refer KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

**Remarks:** :
## Infectious Disease

<table>
<thead>
<tr>
<th>Type</th>
<th>No</th>
<th>Indicator</th>
<th>Dimension</th>
<th>Standard</th>
<th>Hospital Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of HIV patients achieving undetectable HIV viral load within ≤ 6 months of commencement of anti-retroviral therapy</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of new HIV cases that were given appointment for first consultation within ≤ 4 weeks in the Infectious Disease Clinic</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of HIV patients commenced with appropriate first line anti-retroviral (ARV) regimen in accordance to local HIV guidelines</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of HIV patients receiving treatment counselling before commencing first line anti-retroviral (ARV) therapy</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients started on carbapenam in the infectious diseases discipline who have a documented review within ≤ 72 hours of initiation</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of new HIV patients screened for pulmonary tuberculosis within ≤ 3 months of first visit to clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**: Departmental  
**Discipline**: Infectious Disease  
**Indicator**: Percentage of HIV patients achieving undetectable HIV viral load within ≤ 6 months of commencement of anti-retroviral therapy  
**Dimension of Quality**: Effectiveness  
**Rationale**: Important to achieve treatment target i.e. undetectable viral loads to ensure optimal treatment outcome.  
**Definition of Terms**: Undetectable HIV viral loads: Viral loads < 200 copies /ml  
**Criteria**  
**Inclusion**:  
1. HIV patients who have been started on HIV treatment for the first time (treatment naïve).  
**Exclusion**:  
1. HIV patients who have defaulted/ died or have been transferred out.  
2. Patients received anti-retroviral therapy for more than 6 months.  
**Type of indicator**: Rate-based outcome indicator  
**Numerator**: Number of HIV patients who have achieved undetectable HIV viral load within ≤
### Indicator 2

**Discipline:** Infectious Disease  
**Indicator:** Percentage of new HIV cases that were given appointment for first consultation within (≤) 4 weeks at Infectious Disease Clinic  
**Dimension of Quality:** Timely  

**Rationale:**  
1. Important for timely access to HIV medical care.  
2. Urgent access to correct and current HIV information.  
3. Early access to effective HIV counselling.  
4. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.  
5. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

**Definition of Terms:**  
- **New HIV patients:** HIV patients that have come to the Infectious Diseases clinic with a fresh medical referral.  
- **Appointment:** Time taken from the date of referral received to the date of first consultation with the doctor.

**Criteria:**  
- **Inclusion:** NA  
- **Exclusion:**  
  1. All urgent cases.  
  2. Patients who request to delay the appointment date.  
  3. Patients who request to see a specific doctor.  
  4. Patients who default the first appointment given.

**Type of indicator:** Rate-based outcome indicator

**Numerator:** Number of new HIV cases that were given appointment for first consultation within (≤) 4 weeks at Infectious Disease Clinic  
**Denominator:** Total number of new HIV cases referred to Infectious Disease Clinic  

**Formula:**  
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

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**Indicators**

<table>
<thead>
<tr>
<th>Indicator 3</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Infectious Disease</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of HIV patients commenced with appropriate first line anti-retroviral (ARV) regimen in accordance to local HIV guidelines</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>
| Rationale   | 1. To ensure safe, cost-effective and potent first line ARV regimens are used for HIV treatment.  
2. This will ensure optimal clinical outcome with acceptable cost and side effect risks. |
| Definition of Terms | Local HIV Guidelines: Refers to the most current anti-retroviral (ARV) guidelines endorsed by the Ministry of Health. |
| Criteria    | Inclusion:  
HIV patients who have been started on HIV treatment for the first time (treatment naïve).  
Exclusion:  
HIV patients who have not started on HIV treatment due to allergy or side effects |
| Type of Indicator | Rate-based process indicator |
| Numerator   | Number of HIV patients commenced with appropriate first line anti-retroviral (ARV) regimen in accordance to local HIV guidelines |
| Denominator | Total number of HIV patients commenced with first line anti-retroviral (ARV) regimen |
| Formula     | Numerator \times 100 \%
Denominator |
| Standard    | ≥ 80% |
| Data Collection | 1. Where: Data will be collected in Infectious Disease clinic.  
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from patient’s case notes/ pharmacy records/ check list/ record book (refer to KPI MOH Guidelines). |
| Remarks     | : |
### Indicator 4
**Discipline**: Infectious Disease  
**Indicator**: Percentage of HIV patients receiving treatment counselling before commencing first line anti-retroviral (ARV) therapy  
**Dimension of Quality**: Effectiveness  
**Rationale**:  
1. Important to obtain clear and accurate information and good counselling from the specialist before commencing ARV therapy.  
2. This will contribute to achieve optimal treatment outcomes in view of limited ARV options available.  
**Definition of Terms**:  
- **Treatment counselling**: Patient score ≥80% from a standardised survey form that filled up by the patient/ care taker (for patients who are not able to organise their medication schedule).  
**Criteria**  
- **Inclusion**: HIV patients who have been started on HIV treatment for the first time (treatment naïve).  
- **Exclusion**: NA  
**Type of indicator**: Rate-based process indicator  
**Numerator**: Number of HIV patients received treatment counselling (score ≥80%) before commencing first line anti-retroviral (ARV) therapy  
**Denominator**: Total number of HIV patients commenced on first line antiretroviral (ARV) therapy and had been counselled  
**Formula**:  
\[
\text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\% 
\]  
**Standard**: ≥ 80%  
**Data Collection**  
1. **Where**: Data will be collected in Infectious Disease clinic.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: 3 monthly data collection.  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from patient’s case note/ pharmacy records/ HIV treatment survey form/ record book (refer to KPI MOH Guidelines).  
**Remarks**

### Indicator 5
**Discipline**: Infectious Disease  
**Indicator**: Percentage of patients started on carbapenam* in the Infectious Disease discipline who have a documented review within (≤) 72 hours of initiation  
**Dimension of Quality**: Effectiveness  
**Rationale**:  
1. There is increasing number of Multiresistant Organisms (MROs)/ Carbapenam Resistant Enterobacteriaceae (MRE) in the country.
2. The 72 hours review is a part of important component of Antimicrobial Stewardship Program (ASP).

**Definition of Terms**

**Documented review**: Documented evidence that patients started on carbapenam in the Infectious Disease discipline are reviewed for continuation, cessation or de-escalation within (≤) 72 hours of initiation.

**Patients**: Inpatients.

**Criteria**

**Inclusion**: NA

**Exclusion**:
1. Patients died or transferred out of the hospital before 72 hours of initiation of carbapenam
2. Patients for whom carbapenam has been stopped before 72 hours of initiation.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients started on carbapenam in the Infectious Disease discipline who have a documented review within (≤) 72 hours of initiation

**Denominator**: Total number of patients started on carbapenam in the Infectious Disease discipline

**Formula**: \[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard**: ≥80%

**Data Collection**

1. **Where**: Data will be collected in wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 3 Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/pharmacy records/record book (refer to KPI MOH Guidelines).

**Remarks**: *The choice of antibiotic may vary depending on the antibiotic use and resistance data of the hospital.*

---

**Indicator 6**

- **Individual**
- **Discipline**: Infectious Disease

**Indicator**: Percentage of new HIV patients screened for pulmonary tuberculosis within (≤) 3 months of first visit to clinic

**Dimension of Quality**: Customer centeredness

**Rationale**: 1. Tuberculosis is the leading cause of death among people living with HIV, accounting for one in four HIV-related deaths based on WHO TB/HIV fact 2012-2013.

**Definition of Terms**

**Screening for tuberculosis**: This includes symptom screening and if necessary chest x-ray.

**Criteria**

**Inclusion**: NA

**Exclusion**: 
### Type of indicator
- Rate-based process indicator

### Numerator
- Number of new HIV patients screened for pulmonary tuberculosis within (≤) 3 months of first visit to clinic

### Denominator
- Total number of new HIV patients seen at the clinic by the relevant doctor

### Formula
- \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \)

### Standard
- ≥ 80%

### Data Collection
1. **Where**: Data will be collected in Infectious Disease Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 3 Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).

### Remarks
-
## Nephrology

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of chronic haemodialysis patients with delivered KT/V of \geq 1.2</td>
<td>Effectiveness</td>
<td>\geq 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Occurrence of peritonitis in adult patients on chronic peritoneal dialysis (&lt; 1 case per 24 patient-months)</td>
<td>Safety</td>
<td>\leq 0.04</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of diabetic nephropathy patients with acceptable blood pressure control (\leq 130/80 mmHg) as measured in Nephrology Clinic</td>
<td>Effectiveness</td>
<td>\geq 25%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of documented exploration of living donor transplant option with relatives of patients with End Stage Renal Failure (ESRF)</td>
<td>Customer</td>
<td>\geq 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of non-diabetic chronic kidney disease (CKD) patients with acceptable blood pressure control (\leq 140/90 mmHg) as measured in Nephrology Clinic</td>
<td>Effectiveness</td>
<td>\geq 60%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of diabetic chronic kidney disease (CKD) patients treated with ACE inhibitors (ACEi) or Angiotensin Receptor Blockers (ARBs)</td>
<td>Effectiveness</td>
<td>\geq 60%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

### Indicator 1

**Departmental Discipline:** Nephrology

**Name of indicator:** Percentage of chronic haemodialysis patients with delivered KT/V of \geq 1.2

**Dimension of Quality:** Effectiveness

**Rationale:**

1. Haemodialysis is the core business of Nephrology. The cost of treating a patient on haemodialysis is RM 33,642 per life year saved in 2001.
2. KT/V is a measure of adequacy of haemodialysis. The survival of haemodialysis (HD) patients is dependent on dialysis adequacy and it, in turn, is under the control of HD unit staff.
3. KT/V is dependent of blood flow rate, dialysate flow rate, the type of dialyser used, the number of hours on dialysis, dialysis frequency and body weight of the patient.
4. KT/V is estimated every 3 monthly. This indicator is a measure of the ongoing processes in the daily running of haemodialysis units, involving processes during the haemodialysis procedure which is carried out by paramedics and clinical management of patients by nephrologists

**Definition of Terms:**

KT/V: A measure of dialysis adequacy based on clearance of urea.
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

---

#### Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Patients on chronic haemodialysis for more than 3 months in the centre.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patients with acute renal failure on haemodialysis.</td>
</tr>
</tbody>
</table>

#### Type of indicator

- Rate-based outcome indicator

#### Numerator

- Number of chronic haemodialysis patients with delivered KT/V of ≥ 1.2

#### Denominator

- Total number of chronic haemodialysis patients tested for KT/V

#### Formula

\[
\text{Numerator} \times 100\% = \frac{\text{Numerator}}{\text{Denominator}}
\]

#### Standard

- ≥ 80%

#### Data Collection

1. **Where**: Data will be collected in Haemodialysis Unit.
2. **Who**: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

#### Remarks

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### Indicator 2

- **Departmental**

#### Discipline

- Nephrology

#### Name of indicator

- Occurrence of peritonitis in adult patients on chronic peritoneal dialysis

#### Dimension of Quality

- Safety

#### Rationale

1. Peritoneal dialysis (PD) is one of the main modes of renal replacement therapy which is found in Nephrology Units in the Ministry of Health (about 24% of all dialysis patients in MOH in 2006). It cost the Ministry of Health RM 31,635 per life year saved in 2001.
2. One of the indicators of safety and efficacy is the peritonitis rate. It is affected by the training of patients, the peritoneal dialysis system used and the long term care of the PD patient especially in preventing and treating exit site infection.
3. Peritonitis is the main cause of technique failure. It causes pain, suffering and impacts on the workload of the haemodialysis unit as the patient may have to go on acute or permanent haemodialysis.
4. The indicator is a measure of the work done by PD nurses and the clinical care and counselling given to patients in clinic.

#### Definition of Terms

**Peritonitis**: Present of at least 2 of the following criteria:

1. Symptoms (abdominal pain or turbid fluid).
2. White cells in the peritoneal fluid of more than 100 cells/ml with at least 50% polymorphs.
3. Positive peritoneal fluid culture.

#### Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. All hospitals with peritoneal dialysis (PD) program.</td>
</tr>
<tr>
<td></td>
<td>2. Patients on chronic PD.</td>
</tr>
</tbody>
</table>
### Key Performance Indicator 3:

**Departmental Discipline:** Nephrology  
**Name of indicator:** Percentage of diabetic nephropathy patients with acceptable blood pressure control (≤ 130/80 mmHg) as measured in Nephrology Clinic  
**Dimension of Quality:** Effectiveness  

**Rationale:**
1. The commonest cause of end-stage renal failure (ESRF) in Malaysia is diabetic nephropathy (58% in 2009).  
2. Control of blood pressure in patients with diabetic nephropathy impacts on the progression to ESRF.  

**Definition of Terms:** NA  

**Criteria**

- **Inclusion:**  
  1. All patients with diabetic nephropathy on follow-up in Nephrology clinic in hospitals with resident Nephrologists.  

- **Exclusion:**  
  1. Patients seen for the first time.  
  2. Patients on dialysis.  
  3. Patient who default the treatment or follow up.  

**Type of indicator:** Rate-based outcome indicator  

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Denominator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of diabetic nephropathy patients with acceptable blood pressure control (≤ 130/80 mmHg) as measured in Nephrology Clinic</td>
<td>Total number of diabetic nephropathy patients seen at Nephrology Clinic</td>
</tr>
</tbody>
</table>

**Formula:**
\[
\text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

**Standard:** ≤0.04  

**Data Collection**

1. **Where:** Data will be collected in Nephrology wards or wards that cater for the above condition.  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).  

**Remarks:** <1 case per 24 patient-months
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

<table>
<thead>
<tr>
<th>Indicator 4</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Nephrology</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of documented exploration of living donor transplant option with relatives of patients with end stage renal failure (ESRF)</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
</tbody>
</table>
| Rationale   | 1. The living donor kidney transplantation rate in Malaysia is less than two per million populations.  
2. The aim of this indicator is to ensure that the living donor transplantation is actively explored in appropriate patients. |
| Definition of Terms | Documented: Documentation using a special form documenting a formal discussion performed. Aim documentation is 12 per year. |
| Criteria     | Inclusion:  
1. All ESRF patients who are suitable for kidney transplantation.  
Exclusion:  
1. All ESRF patients who are unsuitable for living donor kidney transplantation. |
| Type of indicator | Rate-based process indicator |
| Numerator    | Number of documented exploration of living donor transplant option with relatives of patients with end stage renal failure (ESRF) |
| Denominator  | Total number of targeted exploration of living donor transplant option with relatives of patients with end stage renal failure (ESRF) |
| Formula      | \[
\text{Numerator} \times 100\% \\
\text{Denominator}
\]
| Standard     | ≥ 75% |
| Data Collection | 1. Where: Data will be collected in Nephrology Clinic/ Nephrology wards or wards that cater for the above condition.  
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
4. Who should verify: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from patient’s case note/ related form/ record book (refer to KPI MOH Guidelines). |
<p>| Remarks      | It is suggested that 25% sampling (random) is applied to the total number of patients seen at the Nephrology Clinic. |</p>
<table>
<thead>
<tr>
<th>Indicator 5</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Nephrology</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of non-diabetic chronic kidney disease (CKD) patients with acceptable blood pressure control (≤140/90 mmHg) as measured in Nephrology Clinic</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>
| Rationale | 1. Control of hypertension in CKD reduces disease progression and CVD risks.  
2. Control of hypertension depends on multiple factors including drug and non-drug components.  
| Definition of Terms | Non-diabetic chronic kidney disease (CKD): A clinical state characterised by irreversible loss or reduced renal function, structural or urinary abnormalities persisting longer than 3 months in patients without diabetes mellitus. |
| Criteria | Inclusion:  
1. Patients with albuminuria/ proteinuria due to non-diabetic nephropathy or structural abnormalities e.g. polycystic kidney disease, renal calculi, etc.  
2. Patients with estimated glomerular filtration rate (eGFR) of 60ml/min or less.  
Exclusion:  
1. Patients with acute kidney injury.  
2. Patients who are renal allograft recipients.  
3. Patients on maintenance dialysis therapy.  
4. Patient who default the treatment or follow up. |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of non-diabetic chronic kidney disease (CKD) patients with acceptable blood pressure control (≤140/90 mmHg) as measured in Nephrology Clinic |
| Denominator | Total number of non-diabetic chronic kidney disease (CKD) patients seen at Nephrology Clinic |
| Formula | Numerator x 100 %  
Denominator |
| Standard | ≥ 60 % |
| Data Collection | 1. Where: Data will be collected in Nephrology Clinic.  
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. How frequent: 3 monthly data collection.  
4. Who should verify: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from registration book/ patients’ medical records/ record book (refer to KPI MOH Guidelines). |
| Remarks | |

<table>
<thead>
<tr>
<th>Indicator 6</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Nephrology</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>Percentage of diabetic chronic kidney disease (CKD) patients treated with Angiotensin Converting Enzyme Inhibitor (ACEi) or Angiotensin Receptor Blocker (ARB)</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>
| Rationale | 1. Angiotensin Converting Enzyme Inhibitor (ACEi) and Angiotensin Receptor Blocker (ARB) are both renoprotective and confer cardiovascular protection in patients with diabetes mellitus and chronic kidney disease.  
2. In the absence of contraindications or adverse effects of the drugs, patients with diabetic CKD should receive treatment with either an ACEi or ARB.  
| Definition of Terms | Diabetic chronic kidney disease (CKD): A clinical condition in patients with diabetes mellitus and evidence of CKD. |
| Criteria | Inclusion:  
1. Patients with diabetes mellitus who satisfy the criteria for diagnosis of CKD attending Nephrology Clinics.  

Exclusion:  
1. Patients with acute kidney injury.  
2. Patients who are renal allograft recipients  
3. Patients on maintenance dialysis therapy  
4. Patients who have clinical contraindications or developed adverse clinical affects to either agents.  
5. Patient who default the treatment or follow up. |
| Type of indicator | Rate-based process indicator |
| Numerator | Number of diabetic chronic kidney disease (CKD) patients treated with Angiotensin Converting Enzyme Inhibitor (ACEi) or Angiotensin Receptor Blocker (ARB) |
| Denominator | Total number of diabetic chronic kidney disease (CKD) patients attending Nephrology Clinics |
| Formula | Numerator x 100 %  
Denominator |
| Standard | ≥ 60 % |
| Data Collection | 1. Where: Data will be collected in Nephrology Clinic.  
2. Who: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. How frequent: 3 monthly data collection.  
4. Who should verify: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from registration book/ patients’ medical records/ record book (refer to KPI MOH Guidelines). |
| Remarks | : |
### NEUROLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
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</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 12 weeks at Neurology Clinic</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of non-urgent Electroencephalography (EEG) carried out within (≤) 8 weeks of request</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of Acute Ischaemic Stroke (AIS) patients obtained a neurology consultation within (≤) 24 hours of referral</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients with Blepharospasm and Hemifacial Spasm who did not develop ptosis after 4 weeks of Botulinum Toxin Therapy</td>
<td>Effectiveness</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of Parkinson’s Disease patients initiated on appropriate treatment within (≤) 12 weeks of referral to Neurology Services</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of non-urgent out-patient electroencephalograph (EEG) reported by a Neurologists within (≤) 4 weeks of recording</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

- **Departmental**
- **Discipline**: Neurology
- **Name of indicator**: Percentage of non-urgent cases that were given appointment for first consultation within (≤) 12 weeks at Neurology Clinic
- **Dimension of Quality**: Customer centeredness

**Rationale**

1. There are wide varieties of indications for a neurology referral such as headache, epilepsy, movement disorders, entrapment neuropathy, and others. Some neurological conditions may present with subtle or atypical presentation. Therefore, early assessment will be able to make a neurology diagnosis, initiate proper investigations and hence starting appropriate treatment. This will ensure early recovery and prevent further neurological complications.

2. It has been a department/unit policy to review a newly referred case as early as possible. However, the appointment given is depends on the number of doctors and the work load of the neurology clinic in the respective hospitals.

3. Reference:
   Patterson V, Humphreys J, and Chua R. Email triage of new neurological outpatient referrals from general practice. J Neurol Neurosurg Psychiatry
### Definition of Terms

**Appointment:** Time taken from the date of referral received to the date of first consultation with the doctor.

### Criteria

**Inclusion:** NA

**Exclusion:**
1. All urgent cases.
2. Neurology referral made over the phone or with a special arrangement.
3. Patients who request to delay the appointment date.
4. Patients who request to see a specific doctor.
5. Patients who default the first appointment given.

### Type of Indicator

Rate-based process indicator

### Numerator

Number of non-urgent cases that were given appointment for first consultation within (≤) 12 weeks at Neurology Clinic

### Denominator

Total number of non-urgent cases referred to Neurology Clinic

### Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard

≥ 85%

### Data Collection

1. **Where:** Data will be collected in Neurology Clinic.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from appointment/ record book (refer to KPI MOH Guidelines).

### Remarks


### Indicator 2

**Departmental**

**Neurology**

**Percentage of non-urgent Electroencephalography (EEG) carried out within (≤) 8 weeks of request**

**Customer centeredness**

1. A scalp Electroencephalograph (EEG) recording is important and helps to subtype the epileptic disorders and hence initiate appropriate antiepileptic drug.
2. This will also ensure a good epilepsy control as early as possible.

**Definition of Terms**

**Electroencephalogram (EEG):** Test that measures and records the electrical activity of brain. Special sensors (electrodes) are attached to scalp and connected to a computer. The computer records the brain's electrical activity on the screen and then printed in a paper as wavy lines. Certain conditions, such as seizures, can be seen by the changes in the normal pattern of the brain’s electrical activity. EEG is also used in other cases like encephalopathy and sleep disorders.
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

#### CLINICAL PERFORMANCE SURVEILLANCE UNIT

**D(Deportmental); I(Individual)**

#### Indicator 3

<table>
<thead>
<tr>
<th>Criteria</th>
<th>:</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1. All non-urgent Scalp EEGs done in neurology outpatient clinic.</td>
</tr>
</tbody>
</table>

**Exclusion:**

1. Patient with already diagnosed epilepsy in other clinic and seeking for EEG testing. 
2. Patients who default the appointment date. 
3. EEG machine breakdown.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>:</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>:</td>
<td>Number of non-urgent Electroencephalography (EEG) carried out within (≤) 8 weeks of request</td>
</tr>
<tr>
<td>Denominator</td>
<td>:</td>
<td>Total number of non-urgent Electroencephalography (EEG) performed</td>
</tr>
</tbody>
</table>

**Formula:**

\[
\text{Numerator} \times 100\% \quad \text{Denominator}
\]

**Standard:**

\[ \geq 90\% \]

**Data Collection:**

1. **Where:** Data will be collected in Neurophysiology Unit. 
2. **Who:** Data will be collected by Officer/ Nurse/ Assistant Medical Officer in-charge. 
3. **How frequent:** 3 monthly data collection. 
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director. 
5. **How to collect:** Data is suggested to be collected from appointment/procedure book/ record book (refer to KPI MOH Guidelines).

<table>
<thead>
<tr>
<th>Remarks</th>
<th>:</th>
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</thead>
</table>

**Indicator 3:**

| Departmental |
| Neurology |

**Name of indicator:** Percentage of acute ischaemic stroke (AIS) patients obtained Neurology consultation within (≤) 24 hours of referral

**Dimension of Quality:** Customer centeredness

**Rationale:**

1. Stroke is the most common causes of physical disability in adults. 
2. Strokes can be either ischaemic or haemorrhagic. The Ischaemic (75%) is more common than haemorrhagic (25%). 
3. Many cases of stroke are admitted to the general medical ward. Early referral to neurology team will ensure initiation of appropriate management and prevention of stroke complications. The management involves multidisciplinary departments/units. The long-term management includes secondary stroke prevention and rehabilitation process. The length of hospital stay (LOS) could reflect the effectiveness of stroke management. 
4. Early neurological attention in acute stroke is related to better functional outcome and shorter hospitalization.
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

### MEDICAL PROGRAMME 2016

1. **Definition of Terms**
   - **Acute ischaemic stroke (AIS):** It occurred when the blood supply to certain part of the brain is blocked usually because of atherosclerosis which usually located at the arterial branches. Other cause is a thromboembolic phenomenon usually from cardiac (cardioembolic stroke). The CT-scan brain shoes hypodense (black) area in the brain.

2. **Patients:** In-patients.

3. **Neurology Consultation within (≤) 24 hours of referral:** Time taken from the time patient was referred to Neurology team to the time patient was seen by the team (at least seen by the medical officer from Neurology team and discussed verbally or via phone consultation.)

4. **Criteria**
   - **Inclusion:**
     1. Acute onset ischaemic stroke patient admitted for further management and referred for neurology consultation.

   - **Exclusion:**
     1. Transient ischaemic attack (TIA).
     2. Haemorrhagic stroke which includes intracerebral haemorrhage (ICH) and subarachnoid haemorrhage (SAH).
     3. Traumatic head injury.
     4. Stroke syndrome other than vascular causes such as cerebral tumour.
     5. Patients who died within (≤) 24 hours after referral.

5. **Type of indicator:** Rate-based process indicator

   - **Numerator:** Number of acute ischaemic stroke (AIS) patients obtained Neurology consultation within (≤) 24 hours of referral

   - **Denominator:** Total number of acute ischaemic stroke (AIS) patients referred to Neurology team

   - **Formula:**
     
     \[
     \text{Numerator} \times \frac{100}{\text{Denominator}}
     \]

   - **Standard:** ≥ 85%

6. **Data Collection:**
   1. **Where:** Data will be collected in Neurology wards or wards that cater for the above condition.
   2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
   3. **How frequent:** Monthly data collection.
   4. **Who should verify:** All performance data must be verified by Head of...
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

Department/ Head of Unit/ Hospital Director.

5. **How to collect:** Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines).

### Remarks

| Indicator 4 | : | Individual |
| Discipline | : | Neurology |
| Name of indicator | : | Percentage of patients with Blepharospasm and Hemifacial Spasm who did not develop ptosis after 4 weeks of Botulinum Toxin Therapy |
| Dimension of Quality | : | Effectiveness |
| Rationale | : | 1. Blepharospasm is a neurological condition characterized by forcible closure of the eyelids. It could cause severe functional disability to a patient. There is no cure for blepharospasm. Oral medications such as muscle relaxation did not show significant clinical response and also cause untoward side effects.  
2. It is generally accepted that botulinum neurotoxin injections are the most effective treatment available for the reduction of symptoms. The possible side effects of the botulinum injection in ptosis and diplopia.  
3. The presence of complications of botulinum toxin injection will reflect the incompetency of the injection technique, the inadequacy of training and skills as well as the ineffectiveness of the treatment. |
| Definition of Terms | : | Blepharospasm: Abnormal involuntary and sustained contractions of the muscles around the eyes (orbicularis oculi).  
Hemifacial Spasm: Abnormal involuntary and sustained contractions of the muscles on one side of the face.  
Botulinum toxin therapy: Therapy using Botox or Dysport. |
| Criteria | : | Inclusion: NA  
Exclusion:  
1. Cases of lid apraxia.  
2. Cases of Meige’s Syndrome.  
3. Patients who underwent treatment for more than 4 weeks. |
| Type of indicator | : | Rate-based outcome indicator |
| Numerator | : | Number of blepharospasm and hemifacial spasm patients who did not develop ptosis after 4 weeks of Botulinum Toxin Therapy |
| Denominator | : | Total number of blepharospasm and hemifacial spasm patients received Botulinum Toxin Therapy |
| Formula | : | Numerator x 100%  
Denominator |
| Standard | : | ≥ 85% |
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

**CLINICAL PERFORMANCE SURVEILLANCE UNIT**

**D(Departmental); I(Individual)**

**Data Collection**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1. <strong>Where:</strong></td>
<td>Data will be collected in Neurology clinic.</td>
</tr>
<tr>
<td>2. <strong>Who:</strong></td>
<td>Data will be collected by Officer/ Paramedic/ Nurse-in-charge (indicator co-ordinator) of the department/unit.</td>
</tr>
<tr>
<td>3. <strong>How frequent:</strong></td>
<td>3 monthly data collection.</td>
</tr>
<tr>
<td>4. <strong>Who should verify:</strong></td>
<td>All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td>5. <strong>How to collect:</strong></td>
<td>Data is suggested to be collected from patient’s case note/ procedure book/ record book (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

**Remarks**

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>Patients need to be reviewed at 4 weeks after injection.</td>
</tr>
</tbody>
</table>

**Indicator 5**

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Indicate:</strong></td>
<td>Individual</td>
</tr>
<tr>
<td><strong>Discipline:</strong></td>
<td>Neurology</td>
</tr>
<tr>
<td><strong>Name of indicator:</strong></td>
<td>Percentage of Parkinson’s disease patients initiated on appropriate treatment within (≤) 12 weeks of referral to Neurology services</td>
</tr>
<tr>
<td><strong>Dimension of Quality:</strong></td>
<td>Customer centeredness</td>
</tr>
</tbody>
</table>

**Rationale**

1. People with Parkinson’s Disease (PD) may lose up to 80% of dopamine level in their bodies before symptoms appear. In addition, neuro-imaging studies of brain show that dopamine may decline as much as 10% per year in people with Parkinson’s disease. Therefore, as PD is a progressive disease, early diagnosis and treatment are important to help minimize dopamine loss in the brain and maintain muscle function. At the moment, there is no cure for PD. Medications will improve symptoms and patient’s activity of daily living (ADL). There are few groups of drugs for PD: a. **Dopamine agonists (DAgs)** are medications that mimic the effects of dopamine by direct stimulation of dopamine receptors in the brain, namely D2 and D3. Dopamine agonists (DAg) are options for initial treatment and have been shown to delay the onset of motor complications. It is believed that some DAgs have neuroprotective effect. However, dopamine agonists are inferior to levodopa in controlling motor symptoms. DAgs may be used alone or in combination with levodopa, and they may reduce the required dosage of levodopa.

   b. **Levodopa (LD)** is a precursor of dopamine and is converted to dopamine in the brain. Levodopa is the primary treatment for Parkinson’s disease. It is one of the most effective treatments for the symptoms of Parkinson’s disease. The clinical improvement is faster. However, there are long-term levodopa-related motor complications develop after 3-5 years of its usage.

   c. **Monoamine oxidase-B inhibitors (MAOB-I)** block the actions of the MAO enzyme, type B, which is responsible for the majority of the breakdown of dopamine in the brain. When used as initial therapy to treat early symptoms of Parkinson’s disease, MAO-B inhibitors help control motor symptoms and may delay the need for levodopa therapy. When prescribed along with levodopa, MAO-B inhibitors have also been shown to reduce “off” time. MAO-B such as Selegiline is used as a neuroprotective agent.

**Definition of Terms**

<p>| | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Parkinson’s disease (PD):</strong></td>
<td>A common neurodegenerative disorder due to dopamine deficiency at basal ganglia. It can cause significant disability and decreased the patient’s quality of life. The cardinal physical signs of the disease are distal resting tremor, rigidity, bradykinesia and postural instability.</td>
</tr>
</tbody>
</table>
### Appropriate treatment:
Regardless of types of drug initiated either single or combination therapy of Dopamine agonist, Levodopa or Monoamine oxidase-B inhibitors.

### Criteria

**Inclusion:**
1. All Parkinson’s disease patients newly referred to the neurology services as outpatient.

**Exclusion:**
1. All urgent neurology referral.
2. Neurology referral made over the phone or with a special arrangement.
3. Neurology referral as an inpatient.

### Type of indicator
Rate-based process indicator

### Numerator
Number of Parkinson’s disease patients initiated on appropriate treatment within (≤) 12 weeks of referral to Neurology services

### Denominator
Total number of Parkinson's disease patients referred to Neurology services

### Formula
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard
≥ 80%

### Data Collection
1. **Where:** Data will be collected in Neurology clinic.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).

### Remarks

### Indicator 6

**Discipline:** Neurology

**Name of indicator:** Percentage of non-urgent outpatient electroencephalograph (EEG) reported by a Neurologists within (≤) 4 weeks of recording

**Dimension of Quality:** Customer centeredness

**Rationale:**
1. The scalp EEG which is entirely harmless and relatively inexpensive, is the important investigation in the diagnosis and management of neurological illness mainly epilepsies providing that it is properly performed by experienced technicians and carefully studied and interpreted in the context of a well-described clinical setting by experienced physicians.
2. Early EEG report will allow a proper diagnosis and line of investigations that needed for a particular patient. It therefore will also help in deciding appropriate treatment.

**Definition of Terms:**
Electroencephalogram (EEG): A test that measures and records the electrical activity of brain. Special sensors (electrodes) are attached to head and connected
to a computer. The computer records the brain's electrical activity on the screen or on paper as wavy lines. Certain conditions, such as seizures, can be seen by the changes in the normal pattern of the brain's electrical activity. EEG is also used in case like encephalopathy and sleep disorders.

<table>
<thead>
<tr>
<th>Criteria :</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All non-urgent outpatients EEG recording.</td>
<td></td>
</tr>
</tbody>
</table>

| Exclusion: |
| 1. Portable EEG. |
| 2. Video telemetry (VTR) or prolong EEG monitoring. |
| 4. EEG request as inpatient. |
| 5. Patients who are no longer under follow up due to valid reason/ default follow up/ died. |

| Type of indicator : | Rate-based process indicator |
| Numerator : | Number of non-urgent outpatient EEG reported by Neurologist within (≤) 4 weeks of recording |
| Denominator : | Total number of non-urgent outpatient EEG performed |

<table>
<thead>
<tr>
<th>Formula :</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator x 100%</td>
</tr>
<tr>
<td>Denominator</td>
</tr>
</tbody>
</table>

| Standard : | ≥ 85% |

| Data Collection : |
| 1. Where: Data will be collected in Neurophysiology Unit/ Neurology Clinic. |
| 2. Who: Data will be collected by Officer/ Nurse/ Assistant Medical Officer in-charge (indicator co-ordinator) of the department/ unit. |
| 4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director. |
| 5. How to collect: Data is suggested to be collected from record book (refer to KPI MOH Guidelines). |

<p>| Remarks : |</p>
<table>
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<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td></td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at Paediatric Specialist Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td></td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Paediatric Specialist Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td></td>
<td>Percentage of House Officers trained in Neonatal Resuscitation Programme (NRP)</td>
<td>Safety</td>
<td>100%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td></td>
<td>Percentage of survival of inborn very low birth weight infants between 1000 – 1499 g birthweight</td>
<td>Effectiveness</td>
<td>≥ 85%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td></td>
<td>Percentage of babies with congenital hypothyroidism receiving treatment within 2 weeks of diagnosis</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>General</td>
<td>Community-acquired pneumonia death rate (in previously healthy children aged between 1 month and 5 years)</td>
<td>Effectiveness</td>
<td>≤ 1%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>General</td>
<td>Percentage of paediatric patients with unplanned readmission to paediatric ward within (≤) 48 hours of discharge</td>
<td>Effectiveness</td>
<td>≤ 2%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Nephrology</td>
<td>Peritonitis rate in patients on chronic peritoneal dialysis (PD)</td>
<td>Effectiveness</td>
<td>&lt; 2%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>9</td>
<td>Nephrology</td>
<td>Complication rates of renal biopsy</td>
<td>Effectiveness</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>10</td>
<td>Neonatology</td>
<td>Therapeutic hypothermia for inborn infants ≥ 36 weeks gestational age with hypoxic ischaemic encephalopathy (HIE) started within 6 hours of life</td>
<td>Effectiveness</td>
<td>&gt; 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>11</td>
<td>Neonatology</td>
<td>Percentage or inborn VLBW infants with moderate to severe RDS requiring surfactant being given surfactant within 2 hours of life</td>
<td>Effectiveness</td>
<td>&gt; 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>12</td>
<td>Infectious Disease</td>
<td>Percentage of infants born to HIV-infected mothers started on PMTCT neonatal prophylaxis within 12 hours of birth.</td>
<td>Efficiency</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>13</td>
<td>Infectious Disease</td>
<td>Percentage of non-urgent new referrals given appointment to infectious diseases clinic within 6 weeks of referral</td>
<td>Customer</td>
<td>≥ 95%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>14</td>
<td>Infectious Disease</td>
<td>Percentage of all paediatric vancomycin prescriptions reviewed within 3 days of initiation</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>15</td>
<td>Adolescent Medicine</td>
<td>Percentage of adolescent patients successfully transitioned to adult care services upon reaching 16 to 18 years of age</td>
<td>Customer</td>
<td>&gt; 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>16</td>
<td>Developmental Paediatrics</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within 20 weeks</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>17</td>
<td>Developmental Paediatrics</td>
<td>Percentage of new patients with developmental assessment done</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>18</td>
<td>Neurology</td>
<td>Percentage of EEG reporting turn-around time ≤ 1 month</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>19</td>
<td>Rheumatology</td>
<td>Percentage of patients reviewed by specialist during a paediatric Rheumatology Clinic</td>
<td>Safety</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>20</td>
<td>Rheumatology</td>
<td>Ophthalmology referral for uveitis screening within 3 months of diagnosis of Juvenile Idiopathic Arthritis</td>
<td>Safety</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>21</td>
<td>Endocrinology</td>
<td>Percentage of obese children above the age of 10 years seen in Paediatric Endocrine Clinic screened for metabolic syndrome</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>22</td>
<td>Endocrinology</td>
<td>Percentage of type 2 diabetes mellitus patients seen in Paediatric Endocrine Clinic screened for urine microalbuminuria annually</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>23</td>
<td>Haematology-Oncology</td>
<td>Percentage of transfusion-dependent Thalassaemia patients of &lt; 10 years old with serum ferritin level of &lt; 2500 mcg/l</td>
<td>Effectiveness</td>
<td>≥ 60%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>24</td>
<td>Haematology-Oncology</td>
<td>Death during induction in patients with Acute Lymphoblastic Leukaemia</td>
<td>Safety</td>
<td>&lt; 8%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>25</td>
<td>Dermatology</td>
<td>Percentage of children newly diagnosed with atopic dermatitis undergoing parent/patient eczema educational programme (PEEP) within 3 months after first appointment date at Eczema Clinic</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>26</td>
<td>Dermatology</td>
<td>Percentage of children moderate to severe atopic dermatitis undergoing skin prick test and serum for specific</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>Indicator</td>
<td>Discipline</td>
<td>Dimension of Quality</td>
<td>Rationale</td>
<td>Definition of Terms</td>
<td>Criteria</td>
<td>Type of indicator</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>----------------------</td>
<td>-----------</td>
<td>--------------------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>27</td>
<td>Dermatology</td>
<td>Customer centeredness</td>
<td>1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation. 2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.</td>
<td>Appointment: Time taken from the date of referral received to the date of first consultation with the doctor.</td>
<td>Inclusion: NA</td>
<td>Exclusion: 1. All urgent cases. 2. Patients who request to delay the appointment date. 3. Patients who request to see a specific doctor. 4. Patients who default the first appointment given.</td>
</tr>
</tbody>
</table>
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from appointment/ record book (refer to KPI MOH Guidelines).

**Remarks**:
* If annual clinic attendance < 10,000 all data are collected.
If annual clinic attendance ≥ 10,000 suggested for 50% random sampling data.

**Indicator 2**
- **Departmental**
- **Discipline**: Paediatrics
- **Indicator**: Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Paediatric Specialist Clinic
- **Dimension of Quality**: Customer centeredness
- **Rationale**
  1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
  2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.
- **Definition of Terms**
  - **Waiting time**: Time of registration/ appointment (whichever is later) to the time patient is first seen by the doctor.
- **Criteria**
  - **Inclusion**: NA
  - **Exclusion**
    1. Patients who request to see a specific doctor.
    2. Patients who come without an appointment (“walk-in” patients).
    3. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.
    4. Patients with multiple appointments on the same day.
    5. Patients slotted in for special consultation.
- **Type of indicator**: Rate-based process indicator
- **Numerator**: Number of patients with waiting time of ≤90 minutes to see the doctor at Paediatric Specialist Clinic
- **Denominator**: Total number of patients seen at Paediatric Specialist Clinic
- **Formula**: \[
\text{Numerator} \times 100 \% \over \text{Denominator}
\]
- **Standard**: ≥ 90%
- **Data Collection**
  1. **Where**: Data will be collected in Paediatric Specialist Clinic.
  2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
  3. **How frequent**: Monthly data collection.
  4. **Who should verify**: All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.
  5. **How to collect**: Data is suggested to be collected from record book/ waiting time slip/ outpatient card (refer to KPI MOH Guidelines).
- **Remarks**
  * If annual clinic attendance < 10,000 all data are collected.
  If annual clinic attendance ≥ 10,000 suggested for 50% random sampling data.
### Indicator 3

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Paediatrics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator</strong></td>
<td>Percentage of House Officers trained in Neonatal Resuscitation Programme (NRP)</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Safety</td>
</tr>
</tbody>
</table>
| **Rationale**      | 1. Neonatal Resuscitation Program (NRP) training is essential for all medical officers providing services for children. 
2. It should be compulsory rather than an option during their house officer training. |
| **Definition of Terms** | Neonatal Resuscitation Programme (NRP): A training program for House Officer in resuscitating neonates. |
| **Criteria**       | **Inclusion:**
1. All house officers who completes at least 4 months of paediatric posting. |
**Exclusion:**
1. House officers who are on long leave e.g. medical, maternity. 
2. House officers who quit service during paediatric postings. 
3. House officers who are transferred out. |
| **Type of indicator** | Rate-based process indicator |
| **Numerator**      | Number of paediatric house officers trained in NRP |
| **Denominator**    | Total number of house officers who completes at least 4 months of paediatric posting |
| **Formula**        | Numerator x 100 %
Denominator |
| **Standard**       | 100% |
| **Data Collection**| **Where**: Data will be collected in Paediatric/ NICU ward. 
**Who**: Data will be collected by ward manager in-charge of NRP (indicator coordinator) of the department/unit. 
**How frequent**: Monthly data collection. 
**Who should verify**: All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director. 
**How to collect**: Data is suggested to be collected from House officer schedule/ record book for NRP (refer to KPI MOH Guidelines). |
| **Remarks**        | It is recommended that all House Officers complete the NRP during the paediatric posting. However, under certain circumstances, completion of the NRP after the paediatric posting is acceptable and the indicator is considered as achieved. |

### Indicator 4

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Paediatric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator</strong></td>
<td>Percentage of survival of inborn very low birth weight infants between 1000 – 1499 g birthweight</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Clinical effectiveness</td>
</tr>
</tbody>
</table>
### Rationale
This group of infants comprises a significant proportion of patients who utilize NICU and special care nursery resources. Their survival impacts significantly on the under 5 survival target.

### Definition of Terms

**Very Low Birth Weight** (VLBW): Birth weight below 1500 g

**Live Birth**: Born alive

**Inborn**: Born in the same hospital

### Criteria

**Inclusion:**
1. Inborn infants of birth weight between 1000 – 1499 g
2. Livebirths

**Exclusion:**
1. Babies born with major/lethal congenital anomalies (LCM)

### Type of indicator
Rate based process indicator

### Numerator
No. of inborn livebirths of birthweight between 1000 - 1499 g birth weight, without lethal congenital malformations, who survive to discharge

### Denominator
Total no. of inborn livebirths of birthweight between 1000 – 1499 g birthweight, without lethal congenital malformations

### Formula
\[
\text{Numerator} \times 100\% \\
\text{Denominator}
\]

### Standard
≥ 85%

### Data Collection
1. **Where**: Data will be collected in Paediatric Neonatology Unit/ICU/ CCU/ CRW/ NICU/ other related area
2. **Who**: Data will be collected by Officer/paramedic/Nurse In-Charge
3. **How frequent**: 6 monthly data collection
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines)

### Remarks

**Indicator 5**
Departmental

**Discipline**: Paediatric

**Indicator**: Percentage of babies with congenital hypothyroidism receiving treatment within 2 weeks of diagnosis

**Dimension of Quality**: Effectiveness

**Rationale**: The incidence of congenital hypothyroidism is estimated as 1 in 4,000 live births worldwide. It is one of the preventable causes of mental retardation. Early treatment will ensure a good outcome.

**Definition of Terms**: The age of patient at which L-thyroxine was initiated.

**Criteria**

**Inclusion**:
1. All patients with congenital hypothyroidism detected by newborn screening

**Exclusion**:
1. Patients whose parents gave wrong addresses and could not be traced
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

### MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>No. of patients with congenital hypothyroidism who received L-thyroxine within 2 weeks of life</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total no. of patients with congenital hypothyroidism</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 70%</td>
</tr>
</tbody>
</table>
| Data Collection   | 1. **Where**: Data will be collected in Paediatric wards/ NICU/ clinic/ other related area  
                  2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse In-Charge  
                  3. **How frequent**: Monthly data collection  
                  4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director  
                  5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines) |

### Indicator 6

**Discipline**: Paediatrics - General  
**Indicator**: Community-acquired pneumonia death rate (in previously healthy children aged between 1 month and 5 years)  
**Dimension of Quality**: Effectiveness  
**Rationale**: Pneumonia is a common childhood infection where mortality can be reduced by careful management.  
**Definition of Terms**: Community acquired pneumonia (CAP): Pneumonia acquired from normal social contact as opposed to being acquired during hospitalization and confirmed by radiological or laboratory investigations.  
**Previously healthy**: Paediatric patients who are not known to have any serious medical illnesses before (e.g. Chronic childhood asthma, severe malnutrition, etc.).  
**Criteria**  
**Inclusion**:  
1. Previously healthy children aged between 1 month and 5 years.  
**Exclusion**:  
1. Patients younger than 1 month and older than 5 years.  
2. Hospital-acquired pneumonia.  
3. Children with co-morbid conditions e.g. cardiac, chronic lung disease, severe neurological conditions causing restrictive lung disease, etc.  
4. Epidemics of CAP.  
**Type of indicator**: Rate-based outcome indicator  
**Numerator**: Number of deaths due to community-acquired pneumonia in previously healthy children aged between 1 month and 5 years
### Denominator
- Total number of cases admitted for community-acquired pneumonia among previously healthy children aged between 1 month and 5 years

### Formula
- Numerator \times 100 \%
- Denominator

### Standard
- $\leq 1\%$

### Data Collection
1. **Where:** Data will be collected in Paediatric wards / ICU/ CCU/ CRW/ NICU or other related area.
2. **Who:** Data will be collected by officer/ paramedic/ nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from registration book (refer to KPI MOH Guidelines).

### Remarks

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**Indicator 7**
- **Discipline:** Paediatrics - General
- **Indicator:** Percentage of paediatric patients with unplanned readmission to paediatric ward within (≤) 48 hours of discharge
- **Dimension of Quality:** Effectiveness
- **Rationale:** Unplanned readmission is often considered to be the result of suboptimal care in the previous admission leading to readmission.
- **Definition of Terms**
  - **Unplanned readmission:** Patient being readmitted for the management of the same clinical condition he or she was discharged with and the admission was not scheduled.
  - **Same clinical condition:** Same diagnosis as refer to the ICD 10.
- **Criteria**
  - **Inclusion:**
    1. Readmission with similar conditions (primary diagnosis).
  - **Exclusion:**
    1. Neonates.
    2. Patients of > 12 years of age.
    3. AOR (at own risk) discharged patients during the first admission.
    4. Patients re-admitted at different hospital (difficult in data collection and reporting).
    5. Patients with chronic illness.
    6. Readmission requested by next-of-kin or other team.
- **Type of indicator:** Rate-based process indicator
- **Numerator:** Number of patients with unplanned readmissions to paediatric ward within (≤) 48 hours of discharge
- **Denominator:** Total number of paediatric patients discharged during the same period of time the numerator data was collected
- **Formula**
  - Numerator \times 100 \%
  - Denominator
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
### MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>Standard</th>
<th>≤ 2%</th>
</tr>
</thead>
</table>
| Data Collection | 1. **Where**: Data will be collected in Paediatric ward.  
2. **Who**: Data will be collected by officer/ paramedic/ nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance data must be verified by the Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from registration book (refer to KPI MOH Guidelines). |

### Remarks

<table>
<thead>
<tr>
<th>Indicator 8</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Paediatric Nephrology</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>Peritonitis rate in patients on chronic peritoneal dialysis (PD)</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Clinical effectiveness and efficiency</td>
</tr>
<tr>
<td>Rationale</td>
<td>The Achilles heel in PD is peritonitis and good management results in reduction of peritonitis rate</td>
</tr>
</tbody>
</table>
| Definition of Terms | **Peritoneal Dialysis**: Patients’ abdominal peritoneum as a filter to clear wastes and extra fluid from body and return electrolytes levels to normal.  
**Peritonitis**: Infection around the catheter site/ infection of the lining of the abdominal wall. |
| Criteria | **Inclusion**: All patients on chronic peritoneal dialysis  
**Exclusion**: Patients on acute peritoneal dialysis, irrespective of indication. |
| Type of indicator | Rate based process indicator |
| Numerator | No. of peritonitis episode |
| Denominator | Total patients on chronic peritoneal dialysis |
| Formula | Numerator / Denominator x 100% |
| Standard | < 2% |
| Data Collection | 1. **Where**: Data will be collected in Paediatric Nephrology Unit  
2. **Who**: Data will be collected by PD Nurse  
3. **How frequent**: 6 Monthly data collection  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director  
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines) |

### Remarks
### Indicator 9

**Discipline**: Paediatric Nephrology  
**Name of indicator**: Complication rates of renal biopsy  
**Dimension of Quality**: Effectiveness  
**Rationale**: Renal biopsy is a common procedure in nephrology. Monitoring of effectiveness and complications is important.  

#### Definition of Terms

*Renal biopsy*: Procedure used to extract kidney tissue for laboratory analysis

#### Criteria

- **Inclusion**: All percutaneous renal biopsies – native and renal allograft biopsies.  
- **Exclusion**: Open renal biopsies done by surgeons/ urologists

#### Type of indicator

Rate based process indicator

#### Numerator

No. of renal biopsies with post biopsy complications requiring further radiological imaging and intervention either radiologically or surgically.

#### Denominator

All percutaneous renal biopsies

#### Formula

\[
\text{Numerator} \times 100\% / \text{Denominator}
\]

#### Standard

< 5%

#### Data Collection

1. **Where**: Data will be collected in Paediatric Nephrology Unit  
2. **Who**: Data will be collected by Officer/ Nurse In-Charge  
3. **How frequent**: 3 monthly data collection  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director  
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines)

#### Remarks


### Indicator 10

**Discipline**: Paediatric Neonatology  
**Name of indicator**: Therapeutic hypothermia for inborn infants ≥ 36 weeks gestational age with hypoxic ischaemic encephalopathy (HIE) started within 6 hours of life  
**Dimension of Quality**: Clinical effectiveness  
**Rationale**: Hypothermia therapy to prevent secondary cytotoxic brain injury secondary to moderate to severe HIE should be given within 6 hours of life
### Definition of Terms

<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Hypothermia therapy: To cool infant to 33-34ºC over 3 days and then slow rewarming for infants who meet criteria for such therapy.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIE: Encephalopathy associated with hypoxic and ischaemic events.</td>
<td></td>
</tr>
</tbody>
</table>

### Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. ≥ 36 weeks gestational age</td>
</tr>
<tr>
<td></td>
<td>2. Inborn infants</td>
</tr>
<tr>
<td></td>
<td>3. Moderate to severe HIE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Oxygen requirement &gt; 80% and not in stable condition</td>
</tr>
<tr>
<td>2. Major congenital abnormalities that are for palliative care</td>
</tr>
<tr>
<td>3. Severe clinical coagulopathy not responding to treatment</td>
</tr>
<tr>
<td>4. Baby in extremis and not expected to survive</td>
</tr>
</tbody>
</table>

### Type of indicator

Rate based process indicator

### Numerator

Total number of inborn HIE newborn babies ≥ 36 weeks gestational age admitted to NICU who were cooled before 6 hours of life

### Denominator

Total number of inborn HIE newborn babies ≥ 36 weeks gestational age admitted to NICU

### Formula

\[
\text{Numerator} \times 100\% \\
\text{Denominator}
\]

### Standard

> 80%

### Data Collection

1. **Where:** Data will be collected in Paediatric Neonatology Unit
2. **Who:** Data will be collected by Officer/ Nurse In-Charge
3. **How frequent:** 3 monthly data collection
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines)

### Remarks

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### Indicator 11

<table>
<thead>
<tr>
<th>Indicator 11</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Paediatric Neonatology</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>Percentage or inborn VLBW infants with moderate to severe RDS requiring surfactant being given surfactant within 2 hours of life</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Clinical effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>Surfactant in the treatment of RDS is more efficiently and evenly distributed within the lungs if given soon after birth. As some VLBW babies may not require surfactant if they respond well to continuous positive airway pressure support or have minimal RDS, two hours is the time period given for evaluation as to the requirement for surfactant treatment.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Respiratory Distress Syndrome (RDS): Breathing disorder of premature babies</td>
</tr>
</tbody>
</table>
caused by inadequate production of surfactant in the lungs.

**Very Low Birth Weight (VLBW):** Birth weight below 1500 g

### Criteria

**Inclusion:**
1. Inborn infants
2. Infants who are < 1500 g birthweight
3. Infants who are given surfactant

**Exclusion:**
1. Infants with congenital abnormalities where surfactant usage is to be reviewed based on patient’s progress
2. Infants given surfactant for conditions other than RDS

### Type of indicator

Rate based process indicator

### Numerator

No. of inborn VLBW infants given surfactant for RDS within 2 hours of life

### Denominator

No. of inborn VLBW infants given surfactant for RDS

### Formula

\[
\text{Numerator} \times 100\% \div \text{Denominator}
\]

### Standard

> 80%

### Data Collection

1. **Where:** Data will be collected in Paediatric Neonatology Unit
2. **Who:** Data will be collected by Officer/ Nurse In-Charge
3. **How frequent:** 3 monthly data collection
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines)

### Remarks

---

**Indicator 12**

**Individual**

**Discipline:** Paediatrics Infectious Disease

**Name of indicator:** Percentage of infants born to HIV-infected mothers started on PMTCT neonatal prophylaxis within 12 hours of birth.

**Dimension of Quality:** Efficiency

**Rationale:**

PMTCT neonatal prophylaxis is an integral part of preventive measures to reduce the transmission risk of HIV from an HIV-infected mother to her baby. Early and timely administration of the prophylaxis is associated with reduced transmission risk of HIV to the baby.

**Definition of Terms**

**PMTCT:** Prevention of mother to child transmission

**Neonatal prophylaxis:** Single or combined antiretroviral treatment administered to the baby to prevent transmission of HIV to the baby.

**Criteria**

**Inclusion:**
### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

**Medical Programme 2016**

#### Inborn infants of mother with HIV

**Exclusion:**
1. Outborn infants of mothers with HIV
2. Infant of mothers not diagnosed with HIV during antenatal or intrapartum period

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>No. of infants born to HIV positive mothers started on PMTCT within 12 hours of birth</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of infants born to HIV positive mothers</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator ( \times ) 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>

**Data Collection:**
1. **Where:** Data will be collected in Neonatal wards/Labour Room
2. **Who:** Data will be collected by Officer/Nurse In-Charge
3. **How frequent:** Monthly data collection
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines)

**Remarks**

---

#### Indicator 13

**Type of indicator:** Individual

**Discipline:** Paediatrics Infectious Disease

**Name of indicator:** Percentage of non-urgent new referrals given appointment to infectious diseases clinic within 6 weeks of referral

**Dimension of Quality:** Customer Centeredness

**Rationale:** Patient centered services must give priority to prompt attention to patients need by reducing waiting time for first consultation

**Definition of Terms**

**Criteria**

**Inclusion:** NA

**Exclusion:** Patients who come with incomplete referral letter

**Type of indicator:** Rate based process indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>No. of new patients with ID referrals given appointment within 6 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total no. of new ID cases referrals</td>
</tr>
</tbody>
</table>

**Formula**

\[ \text{Numerator} \times 100\% \text{ Denominator} \]

**Standard**

≥ 95%
### Data Collection

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>1. Where</strong></td>
<td>Data will be collected in Paediatric Infectious Disease Unit</td>
</tr>
<tr>
<td><strong>2. Who</strong></td>
<td>Data will be collected by Officer/ Nurse In-Charge</td>
</tr>
<tr>
<td><strong>3. How frequent</strong></td>
<td>Monthly data collection</td>
</tr>
<tr>
<td><strong>4. Who should verify</strong></td>
<td>All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director</td>
</tr>
<tr>
<td><strong>5. How to collect</strong></td>
<td>Data is suggested to be collected from record book (refer to KPI MOH Guidelines)</td>
</tr>
</tbody>
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### Remarks

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### Indicator 14

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<tbody>
<tr>
<td><strong>Indication</strong></td>
<td>Individual</td>
</tr>
<tr>
<td><strong>Discipline</strong></td>
<td>Paediatrics Infectious Disease</td>
</tr>
<tr>
<td><strong>Name of indicator</strong></td>
<td>Percentage of all paediatric vancomycin prescriptions reviewed within 3 days of initiation</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Clinical effectiveness and patient safety</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>Antimicrobial resistance is an increasing problem in healthcare. Rational use of vancomycin will help to prevent development of vancomycin-resistant organisms.</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
<td>NA</td>
</tr>
</tbody>
</table>
| **Criteria** | **Inclusion**: All children (≤12 years) who are admitted to the hospital and started on vancomycin  
**Exclusion**: NA |
| **Type of indicator** | Rate based process indicator |
| **Numerator** | No. of paediatric in-patients started on vancomycin who have a documented review within 3 days |
| **Denominator** | Total no. of paediatric in-patients started on vancomycin |
| **Formula** | Numerator x 100%  
Denominator |
| **Standard** | ≥ 80% |

### Data Collection

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<tbody>
<tr>
<td><strong>1. Where</strong></td>
<td>Data will be collected in Paediatric Infectious Disease Unit</td>
</tr>
<tr>
<td><strong>2. Who</strong></td>
<td>Data will be collected by Officer/ Nurse In-Charge</td>
</tr>
<tr>
<td><strong>3. How frequent</strong></td>
<td>Monthly data collection</td>
</tr>
<tr>
<td><strong>4. Who should verify</strong></td>
<td>All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director</td>
</tr>
<tr>
<td><strong>5. How to collect</strong></td>
<td>Data is suggested to be collected from record book (refer to KPI MOH Guidelines)</td>
</tr>
</tbody>
</table>

### Remarks

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### Indicator 15

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<tr>
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</thead>
<tbody>
<tr>
<td><strong>Indication</strong></td>
<td>Individual</td>
</tr>
<tr>
<td><strong>Discipline</strong></td>
<td>Paediatric Adolescent Medicine</td>
</tr>
</tbody>
</table>
### Indicator 15

**Name of indicator**: Percentage of adolescent patients successfully transitioned to adult care services upon reaching 16 to 18 years of age

**Dimension of Quality**: Customer Centeredness

**Rationale**: Successful transition to adult health care is important for adolescents with chronic illness for optimal outcomes in adult life

**Definition of Terms**: Transition can start early as 16 years and go on till 18 years old. The aim is to refer to respective specialist clinics in internal medicine for continuation of care.

**Criteria**

**Inclusion**: All adolescents with chronic illness that will need care in adult health care facilities

**Exclusion**:
1. Adolescents who are intellectually challenged
2. Adolescents with complex paediatric syndromes
3. Adolescents with congenital heart disease who may require long term follow up with paediatric cardiologist
4. Adolescents > 18 years who are in a major exam year (e.g. STPM/ A level) will be transitioned after the exams

**Type of indicator**: Rate based process indicator

**Numerator**: No. of adolescent patients with chronic illness transitioned to internal medicine by 18 years of age

**Denominator**: Total no. of adolescent patients with chronic illness at 18 years on follow up in adolescent medicine clinic

**Formula**:  \[
\text{Numerator} \times 100\% \\
\text{Denominator}
\]

**Standard**: > 80%

**Data Collection**
1. **Where**: Data will be collected in Paediatric Adolescent Medicine Unit
2. **Who**: Data will be collected by Officer/ Nurse In-Charge
3. **How frequent**: 6 Monthly data collection
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines)

**Remarks**

---

### Indicator 16

**Name of indicator**: Percentage of non-urgent cases that were given appointment for first consultation within 20 weeks

**Dimension of Quality**: Customer Centeredness

**Rationale**: Patient centered services must give priority to prompt attention to patients need by reducing waiting time for first consultation

**Discipline**: Paediatric Developmental

**Remarks**

---
### Definition of Terms

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>NA</td>
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</tr>
</tbody>
</table>

### Criteria

#### Exclusion

- Patients who come with incomplete referral letter

### Type of indicator

- Rate based process indicator

### Numerator

- No. of new patients given appointment within 12 weeks for first consultation

### Denominator

- Total no. of new cases referred

### Formula

\[
\text{Numerator} \times 100\% \quad \text{Denominator}
\]

### Standard

\[\geq 90\%\]

### Data Collection

1. **Where**: Data will be collected in Paediatric Developmental Unit
2. **Who**: Data will be collected by Officer/ Nurse In-Charge
3. **How frequent**: 3 Monthly data collection
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines)

### Remarks

- Indicators

#### Indicator 17

- **Individual Discipline**: Paediatric Developmental
- **Name of indicator**: Percentage of new patients with developmental assessment done
- **Dimension of Quality**: Effectiveness
- **Rationale**: Developmental assessment and/or other clinically relevant assessment tool is essential to objectively assess each patient with developmental disorder
- **Definition of Terms**: Developmental assessment done using SGS II/ GMDS-ER/ Bayley-III/ LD screening/ Movement ABC Standardised screening/ assessment tool refers to ADOS-2, CPRS/ CTRS, CBCL, M-CHAT, DSM-5
- **Criteria**
  - **Inclusion**: All patients referred with developmental disorder
  - **Exclusion**: Patient's age is not within the range stipulated for the respective assessment tool
- **Type of indicator**: Rate base process indicator
- **Numerator**: Patients referred to the Child Development Clinic for developmental or behavioural disorder/ learning difficulties who have received at least one of the above assessment
- **Denominator**: Total no. of patients referred to the Child Development Clinic
- **Formula**
  \[
  \text{Numerator} \times 100\% \quad \text{Denominator}
  \]
- **Standard**: \[\geq 90\%\]
### Data Collection

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<table>
<thead>
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</thead>
<tbody>
<tr>
<td>1. <strong>Where</strong>: Data will be collected in Paediatric Developmental Unit</td>
<td></td>
</tr>
<tr>
<td>2. <strong>Who</strong>: Data will be collected by Officer/ Nurse In-Charge</td>
<td></td>
</tr>
<tr>
<td>3. <strong>How frequent</strong>: 3 Monthly data collection</td>
<td></td>
</tr>
<tr>
<td>4. <strong>Who should verify</strong>: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director</td>
<td></td>
</tr>
<tr>
<td>5. <strong>How to collect</strong>: Data is suggested to be collected from record book (refer to KPI MOH Guidelines)</td>
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</tbody>
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### Remarks

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### Indicator 18

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Discipline</strong>: Paediatric Neurology</td>
<td></td>
</tr>
<tr>
<td><strong>Name of indicator</strong>: Percentage of EEG reporting turn-around time ≤ 1 month</td>
<td></td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong>: Customer Centeredness</td>
<td></td>
</tr>
<tr>
<td><strong>Rationale</strong>: Patient centered services must give priority to prompt attention to Paediatric EEG service</td>
<td></td>
</tr>
</tbody>
</table>
| **Definition of Terms**: EEG reporting turn-around time:  
  - For in-house EEGs: days from date EEG done  
  - For external EEGs: days from EEG CD received |   |
| **Criteria**:  
  - **Inclusion**: NA  
  - **Exclusion**: Long term videotelemetry or urgent EEG request |   |
| **Type of indicator**: Rate based process indicator |   |
| **Numerator**: No. of routine EEGs reported with turn-around time ≤ 1 month |   |
| **Denominator**: Total no. of routine EEGs reported |   |
| **Formula**:  
  \[
  \text{Numerator} \times 100\% 
  \text{Denominator}
  \] |   |
| **Standard**: ≥ 80% |   |

### Data Collection

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1. <strong>Where</strong>: Data will be collected in Paediatric Neurology Unit</td>
<td></td>
</tr>
<tr>
<td>2. <strong>Who</strong>: Data will be collected by Officer/ Nurse In-Charge</td>
<td></td>
</tr>
<tr>
<td>3. <strong>How frequent</strong>: Monthly data collection</td>
<td></td>
</tr>
<tr>
<td>4. <strong>Who should verify</strong>: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director</td>
<td></td>
</tr>
<tr>
<td>5. <strong>How to collect</strong>: Data is suggested to be collected from record book (refer to KPI MOH Guidelines)</td>
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</table>

### Remarks

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### Indicator 19

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong>: Paediatric Rheumatology</td>
<td></td>
</tr>
<tr>
<td>Name of indicator</td>
<td>Percentage of patients reviewed by specialist during a Paediatric Rheumatology Clinic</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
<tr>
<td>Rationale</td>
<td>Paediatric Rheumatology is a small and niche subspecialty which requires expert input from specialist to ensure optimal patient management and output. Furthermore most patients are referred and come from afar and thus should be reviewed by the specialist</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Specialist is a consultant paediatric rheumatologist or a paediatric specialist who is undergoing fellowship training</td>
</tr>
</tbody>
</table>
| Criteria | **Inclusion:** All patients attending the Paediatric Rheumatology Clinic  
**Exclusion:**  
1. Walk in patients  
2. Patients who defaulted follow-up and were given a new follow-up appointment |
| Type of indicator | Rate based process indicator |
| Numerator | No. of patients seen by a specialist in the Paediatric Rheumatology Clinic |
| Denominator | Total no. of patients attending the Paediatric Rheumatology Clinic |
| Formula | Numerator x 100%  
Denominator |
| Standard | ≥ 80% |
| Data Collection | 1. **Where:** Data will be collected in Paediatric Rheumatology Unit  
2. **Who:** Data will be collected by Officer/ Nurse In-Charge  
3. **How frequent:** Monthly data collection  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director  
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines) |
| Remarks | |

**Indicator 20**  
**Discipline:** Paediatric Rheumatology  
**Name of indicator:** Ophthalmology referral for uveitis screening within 3 months of diagnosis of Juvenile Idiopathic Arthritis (JIA)  
**Dimension of Quality:** Safety  
**Rationale:** Chronic uveitis is a major cause of blindness in JIA patients and routine screening is mandatory as it is often silent and has an insidious onset. Early detection and treatment will preserve vision.  
**Definition of Terms:** Ophthalmology referral is when a referral letter has been done and patients made aware of the importance of uveitis screening and the need to obtain an appointment with the Ophthalmology Clinic.
### Criteria

**Inclusion:** All newly diagnosed JIA patients

**Exclusion:**
1. Patients who are diagnosed at other centres
2. Patients who have had initial ee screening at other hospitals

### Type of indicator

Rate based outcome indicator

### Numerator

No. of new JIA patients with an Ophthalmology referral within 3 months of diagnosis

### Denominator

Total no. of JIA patients

### Formula

\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

### Standard

\(\geq 80\%\)

### Data Collection

1. **Where:** Data will be collected in Paediatric Rheumatology Unit
2. **Who:** Data will be collected by Officer/ Nurse In-Charge
3. **How frequent:** 3 Monthly data collection
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines)

### Remarks


### Indicator 21

**Individual**

**Discipline:** Paediatric Endocrinology

**Name of indicator:** Percentage of obese children above the age of 10 years seen in Paediatric Endocrine Clinic screened for metabolic syndrome

**Dimension of Quality:** Customer Centeredness

**Rationale:**

The incidence of obesity in Malaysia is increasing and parallel to it we see an increasing number of obesity-related complications such as metabolic syndrome. The NHMS III survey (2006) revealed a national prevalence of overweight children below 18 years old as 5.4%.

It is recommended to screen for metabolic syndrome for paediatric obese patients more than 10 years old based on International Diabetes Federation (IDF) criteria as follows:

- Central obesity plus any 2 of the following 4 factors:
  1. Triglyceride > 1.7 mmol/L
  2. HDL-C < 1.03 mmol/L
  3. Blood pressure > 130/80 mmHg
  4. Glucose > 5.6 mmol/L (OGTT recommended) or known type 2 diabetes mellitus.

**Definition of Terms**

IDF metabolic syndrome criteria for children above 10 years old.
Central obesity: waist circumference with ethnicity specific values

**Criteria**

- Inclusion: Obese patients seen at Paediatric Endocrine Clinic
- Exclusion: Obese patients not seen at Paediatric Endocrine Clinic

**Type of indicator**
Rate based process indicator

**Numerator**
No. of obese patients more than 10 years old screened for metabolic syndrome

**Denominator**
Total no. of obese patients more than 10 years old

**Formula**
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard**
≥ 80%

**Data Collection**
1. **Where:** Data will be collected in Paediatric Endocrinology Unit
2. **Who:** Data will be collected by Officer/Nurse In-Charge
3. **How frequent:** Monthly data collection
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines)

**Remarks**

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**Indicator 22**

- **Discipline:** Paediatric Endocrinology
- **Name of indicator:** Percentage of type 2 diabetes mellitus patients seen in Paediatric Endocrine Clinic screened for urine microalbuminuria annually
- **Dimension of Quality:** Customer Centeredness
- **Rationale:**
From the Diabetes in Children and Adolescent Registry (DiCARE) 2006 – 2009, 8.0% of the patients were reported as having type 2 diabetes mellitus.
From other studies, it was stated that these patients may already have some form of diabetes-related complications such as microalbuminuria, hyperlipidaemia and hypertension at diagnosis.

**Definition of Terms**
Urine microalbumin in patients with type 2 diabetes mellitus annually

**Criteria**

- Inclusion: All type 2 diabetes mellitus patients seen at Paediatric Endocrine Clinic
- Exclusion: Type 2 diabetes mellitus patients not seen at Paediatric Endocrine Clinic

**Type of indicator**
Rate based process indicator

**Numerator**
No. of patients with type 2 diabetes mellitus screened for urine microalbuminuria

**Denominator**
Total no. of patients with type 2 diabetes mellitus
### Indicator 23

<table>
<thead>
<tr>
<th><strong>Indicator</strong></th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Paediatric Haemato-Oncology</td>
</tr>
<tr>
<td><strong>Name of indicator</strong></td>
<td>Percentage of transfusion-dependent Thalassemic patients of less than 10 years old with serum ferritin level of &lt; 2500 mcg/l</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Effectiveness</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>Iron toxicity causes cardiomyopathy and other end organ failure in Thalassaemia patients. Serum ferritin &lt; 2500mcg/l carries lower cardiac risk and end organ complications</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
<td>NA</td>
</tr>
</tbody>
</table>
| **Criteria** | **Inclusion**: NA  
**Exclusion**: NA |
| **Type of indicator** | Rate based process indicator |
| **Numerator** | Number of transfusion-dependent Thalassaemia patients of < 10 years old with serum ferritin < 2500 mcg/l |
| **Denominator** | Total number of transfusion-dependent Thalassaemia patients of < 10 years old |
| **Formula** | Numerator x 100%  
Denominator |
| **Standard** | ≥ 60% |

**Data Collection**

1. **Where**: Data will be collected in Paediatric Day care Units/wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/Paramedic/Nurse In-Charge
3. **How frequent**: 6 Monthly data collection
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director
5. **How to collect**: Data is suggested to be collected from record book/registration book (refer to KPI MOH Guidelines)

**Remarks**

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### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

**Medical Programme 2016**

| **Formula** | Numerator x 100%  
Denominator |
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<tbody>
<tr>
<td><strong>Standard</strong></td>
<td>≥ 80%</td>
</tr>
</tbody>
</table>

**Data Collection**

1. **Where**: Data will be collected in Paediatric Endocrinology Unit
2. **Who**: Data will be collected by Officer/Nurse In-Charge
3. **How frequent**: Monthly data collection
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines)

**Remarks**
### Indicator 24

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Paediatric Haemato-Oncology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Death during induction in patients with Acute Lymphoblastic Leukaemia</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
<tr>
<td>Rationale</td>
<td>Patients newly diagnosed with Acute Lymphoblastic Leukaemia undergo a 6-week period of induction chemotherapy to induce remission. These patients are often unwell and are neutropenic and thrombocytopenic due to bone marrow failure as a result of the disease process. Therefore they are at risk of death due to infection and bleeding. In addition they are immunosuppressed by the disease as well as the chemotherapy and hence are susceptible to infections especially by gram negative organisms. Death is a reflection of the efficacy and adequacy of the supportive care provided to these patients.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td><strong>Death during induction</strong>: Deaths in patients with newly diagnosed Acute Lymphoblastic Leukaemia undergoing induction chemotherapy.</td>
</tr>
<tr>
<td>Criteria</td>
<td><strong>Inclusion</strong>: All patients newly diagnosed with Acute Lymphoblastic Leukaemia admitted and treated in the Oncology Unit, Institut Paediatrik, HKL.</td>
</tr>
<tr>
<td></td>
<td><strong>Exclusion</strong>: NA</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of deaths during induction per year</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients diagnosed and treated for Acute Lymphoblastic Leukaemia per year</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>&lt; 8%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. <strong>Where</strong>: Data will be collected in Oncology ward/wards that cater for the above condition. 2. <strong>Who</strong>: Data will be collected by Officer/Paramedic/Nurse In-Charge 3. <strong>How frequent</strong>: Yearly data collection 4. <strong>Who should verify</strong>: All performance data must be verified by Head of Department/Head of Unit/Hospital Director 5. <strong>How to collect</strong>: Data is suggested to be collected from record book/registration and mortality books (refer to KPI MOH Guidelines)</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>

### Indicator 25

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Paediatric Dermatology</th>
</tr>
</thead>
</table>
**Name of indicator**: Percentage of children newly diagnosed with atopic dermatitis undergoing parent/patient eczema educational programme (PEEP) within 3 months after first appointment date at Eczema Clinic

**Dimension of Quality**: Effectiveness

**Rationale**: Management of children with atopic dermatitis in a holistic manner focusing on better clinical outcome and improve quality of life.

**Definition of Terms**: PEEP: Parent/patient eczema educational programme is a 2 hour educational programme which include counseling on disease and prognosis, identifying and avoiding triggers and demonstration of treatment for children with atopic dermatitis.

**Criteria**
- **Inclusion**: All children ≤ 12 years old with newly diagnosed atopic dermatitis.
- **Exclusion**: NA

**Type of indicator**: Rate based outcome indicator

**Numerator**: Number of children newly diagnosed with atopic dermatitis who have undergone the PEEP within 3 months after first appointment date at Eczema Clinic

**Denominator**: Total number of children newly diagnosed with atopic dermatitis who have undergone the PEEP

**Formula**: Numerator x 100%

**Standard**: ≥ 80%

**Data Collection**
1. **Where**: Data will be collected in Paediatric Dermatology Clinic
2. **Who**: Data will be collected by Officer/Paramedic/Nurse In-Charge
3. **How frequent**: 6 Monthly data collection
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director
5. **How to collect**: Data is suggested to be collected from record book/registration book (refer to KPI MOH Guidelines)

**Remarks**

---

**Indicator 26**

**Discipline**: Paediatric Dermatology

**Name of indicator**: Percentage of children moderate to severe atopic dermatitis undergoing skin prick test and serum for specific IgE levels

**Dimension of Quality**: Effectiveness

**Rationale**: Identifying the common triggers and ruling out false belief or food faddism among children with atopic dermatitis. Will help to improve the management of children with atopic dermatitis in a holistic manner.

**Definition of Terms**: Skin Prick Test (SPT): A standard set of reagents of common food allergen and other allergens.
### IG E: Immunoglobulin E

| Criteria | **Inclusion:** All children ≤ 12 years with moderate to severe atopic dermatitis  
**Exclusion:** All children with mild atopic dermatitis. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of indicator</td>
<td>Rate based outcome indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of children with moderate to severe atopic dermatitis subjected to skin prick test and serum specific Ig E levels</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of children with moderate to severe atopic dermatitis seen at Eczema Clinic</td>
</tr>
</tbody>
</table>
| Formula | \[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\% 
\] |
| Standard | ≥ 80% |
| Data Collection | 1. **Where:** Data will be collected in Paediatric Dermatology Clinic  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse In-Charge  
3. **How frequent:** 6 Monthly data collection  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director  
5. **How to collect:** Data is suggested to be collected from record book/ registration book (refer to KPI MOH Guidelines) |
| Remarks | |

### Indicator 27: Individual

**Discipline:** Paediatric Dermatology

**Name of indicator:** Percentage of children with facial port wine stain receiving 3 sessions of laser therapy in a year till 80% resolution

**Dimension of Quality:** Effectiveness

**Rationale:** A child with port wine stain should receive optimum number of laser treatment for satisfactory resolution and outcome (scored by the parent and physician)

**Definition of Terms:** Vascular Laser is the treatment of choice for port wine stain and it is done on a repeated sessions till satisfactory resolution

**Criteria**

<table>
<thead>
<tr>
<th>Inclusion</th>
<th>All children ≤ 12 years with facial port wine stain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Type of indicator:** Rate based outcome indicator

**Numerator**

Number of children with facial port wine stain subjected to laser treatment at 4 monthly intervals at laser clinic (3 sessions per year)

**Denominator**

Total number of children with facial port wine stain receiving treatment at laser clinic

**Formula**

\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\% 
\]
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
### MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>Standard</th>
<th>( \geq 80% )</th>
</tr>
</thead>
</table>
| **Data Collection** | 1. **Where:** Data will be collected in Paediatric Dermatology Clinic  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse In-Charge  
3. **How frequent:** Yearly data collection  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director  
5. **How to collect:** Data is suggested to be collected from record book/ registration book (refer to KPI MOH Guidelines) |
| **Remarks** | **Remarks** |

<table>
<thead>
<tr>
<th>Indicator 28</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Paediatric Respiratory</td>
</tr>
<tr>
<td><strong>Name of indicator</strong></td>
<td>Percentage of spirometry report turnaround time (&lt; 2) weeks</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Effectiveness</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>Spirometry is a respiratory diagnostics performed to older patients with respiratory diseases. The aim of performing is for diagnosis as well as monitoring children with lung disease as an objective measure. It has to be reported early to assist the doctors in patient management such as changing medications.</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
<td>Turnaround time of reporting is from the time of spirometry being performed to time of reporting.</td>
</tr>
</tbody>
</table>
| **Criteria** | **Inclusion:** All spirometry performed in the Respiratory Unit  
**Exclusion:** NA |
| **Type of indicator** | Rate based process indicator |
| **Numerator** | Number of spirometers performed and reported \(< 2\) weeks by the paediatric respiratory physicians |
| **Denominator** | Total number of spirometry performed in the Respiratory Unit |
| **Formula** | \[ \text{Numerator} \times 100\% \] Denominator |
| **Standard** | \( \geq 80\% \) |
| **Data Collection** | 1. **Where:** Data will be collected in Respiratory Unit  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse In-Charge  
3. **How frequent:** Monthly data collection  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director  
5. **How to collect:** Data is suggested to be collected from record book/ registration book/ printed spirometry result (refer to KPI MOH Guidelines) |
<p>| <strong>Remarks</strong> | <strong>Remarks</strong> |</p>
<table>
<thead>
<tr>
<th>Indicator 29</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Paediatric Respiratory</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>Turnaround time for teaching parents of patients on CPAP/ BIPAP/ oxygen concentrator within 72 hours prior to discharge</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>Home oxygen therapy and non invasive ventilation is an integral part of management in children with chronic respiratory disease. Oxygen therapy is prescribed in patient with chronic lung diseases who are hypoxic such as BPD, bronchiolitis obliterans, interstitial lung disease and bronchiectasis. CPAP is commonly prescribed in children with obstructive sleep apnoea secondary to obesity, severe laryngomalacia, bronchomalacia and tracheomalacia. BIPAP are also prescribed in children with hypoventilation syndromes such as in Duchenne muscular dystrophy. As patient will be using this technology at home it is important to teach parents regarding the use of these machines and patient care before sending home.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Turnaround time for teaching is from the planned date of discharge to the time of teaching the parents</td>
</tr>
</tbody>
</table>
| Criteria | **Inclusion:**
1. The teaching/ training is conducted in a formal session pertaining to Home care of patients on oxygen concentrator/ BIPAP/ CPAP
2. The teaching/ training conducted by Assistant Medical Officers/ Nurses who are responsible for teaching/ training of parents on home care.

**Exclusion:** Parents received informal teaching from other staffs. |
| Type of indicator | Rate based process indicator |
| Numerator | Number of teaching sessions performed within 72 hours prior to discharge |
| Denominator | Total number of patients discharge on oxygen concentrator/ CPAP/ BIPAP |
| Formula | Numerator x 100% Denominator |
| Standard | ≥ 80% |
| Data Collection | 1. Where: Data will be collected in Respiratory Unit
2. Who: Data will be collected by Officer/ Paramedic/ Nurse In-Charge
3. How frequent: Monthly data collection
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director
5. How to collect: Data is suggested to be collected from record book/ patient's case note (refer to KPI MOH Guidelines) |
<p>| Remarks | |</p>
<table>
<thead>
<tr>
<th>Indicator 30</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Paediatric Critical Care</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>Readmission to the ICU within 48 hours of transfer during a single hospital stay</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
<tr>
<td>Rationale</td>
<td>A zero admission rate reflects a more ‘defensive’ approach by the ICU team, which increases length of stay in ICU causing risk of nosocomial, iatrogenic complications and non availability of beds for deserving patients a high mortality rate of 1.5 to 10 times of controls and higher length of stay at least twice of the control patients has been documented. A higher readmission rate indicates premature decision to shift out patients.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Patient readmitted to PICU within 48 hours of transfer out from PICU to the other ward in the same hospital within the same admission.</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: All patients discharged/ transfer out from PICU</td>
</tr>
<tr>
<td>Exclusion</td>
<td>NA</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate based outcome indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of patients readmitted within 48 hours of discharge</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patient managed in PICU</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≤ 5%</td>
</tr>
</tbody>
</table>
| Data Collection | 1. Where: Data will be collected in PICU  
2. Who: Data will be collected by Officer/ Paramedic/ Nurse In-Charge  
3. How frequent: Monthly data collection  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director  
5. How to collect: Data is suggested to be collected from record book/ registration book (refer to KPI MOH Guidelines) |
| Remarks | : |
### PALLIATIVE MEDICINE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of inpatient with severe cancer pain whose pain had been significantly reduced within (≤) 24 hours of therapy on initial encounter</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Timely response within (≤) 24 hours by Palliative Care Team to inpatient referrals</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Timely response within (≤) 10 working days by Palliative Care Team to new outpatient referrals</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients who are dying from advanced terminal illness undergo futile resuscitative intervention</td>
<td>Effectiveness</td>
<td>&lt; 1%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients with documented discussion on patients' terminal prognosis and resuscitation status with family or relevant persons prior to death</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of severe opioid toxicity requiring reversal with naloxone due to inappropriate opioid administration or prescription</td>
<td>Safety</td>
<td>&lt; 1%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**
- **Discipline**: Palliative Medicine
- **Indicator**: Percentage of inpatient with severe cancer pain whose pain had been significantly reduced within (≤) 24 hours of therapy on initial encounter
- **Dimension of Quality**: Effectiveness
- **Rationale**
  1. Cancer pain is one of the main symptoms managed in palliative care and it has been documented that about 90% of cancer pain can be relieved with routine pain medications such as opioid analgesia.
  2. All palliative care services should be able to achieve good pain relief in over 90% of cancer pain patients.
- **Definition of Terms**
  - **Cancer pain**: Pain directly or indirectly due to cancer.
  - **Severe cancer pain**: Pain score of 7/10 or more.
  - **Significant reduced pain**: Reduction of pain severity of at least 2 points from baseline pain score.
  - **Therapy**: Pain medications such as opioid analgesia.
- **Criteria**: Inclusion:
  1. All inpatient with severe cancer pain reviewed by the palliative care service
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Palliative Medicine</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of inpatients seen within (≤) 24 hours of referral to the Palliative Care Team</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Timely</td>
</tr>
</tbody>
</table>
| Rationale | 1. Palliative care is about improving quality of life and reducing suffering.  
2. Any in-patient that requires referral should be seen within 24 hours in order to relieve suffering as soon as possible in order to provide effective and quality palliative care while preventing further suffering. |
| Definition of Terms | Timely response: Time taken from the time referral is first acknowledged by the Palliative Care Team to the time patient is seen by the team. |
| Criteria | Inclusion:  
1. All inpatients referred to the palliative care service.  
Exclusion:  
1. Patients referred on day of discharge intended for outpatient care.  
2. Patients discharge within 24 hours of admission.  
3. Patients referred on weekends or public holidays. |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of inpatients seen within (≤) 24 hours of referral to the Palliative Care Team |
### Clinical Performance Surveillance Unit

**Denominator**: Total number of inpatients referred to the Palliative Care Team

<table>
<thead>
<tr>
<th>Team</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of inpatients referred to the Palliative Care Team</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 80%</td>
</tr>
</tbody>
</table>

**Data Collection**

1. **Where**: Data will be collected in Palliative wards or wards that cater for the above conditions.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/ record book/ Hospital Information System (refer to KPI MOH Guidelines).

**Remarks**

---

**Indicator 3**

**Discipline**: Palliative Medicine

**Indicator**: Percentage of new outpatients seen within ten (10) working days of referral to the Palliative Care Team

**Dimension of Quality**: Timely

**Rationale**

1. Patients referred as outpatients or upon discharge are deemed to be fairly stable at time of referral.
2. However as the condition of a patient in the palliative care setting may change over short weeks, it is important that patients are seen within 1-2 weeks of referral.
3. This is to allow initial palliative care review to be conducted before a patient’s condition deteriorates and is suffering at home with before adequate palliative care support can be established.

**Definition of Terms**

**Timely response**: Time taken from the date of the referral is first acknowledged by the Palliative Care Team to the date of patient seen by the Palliative Care Team.

**Criteria**

**Inclusion**:

1. New patients referred in outpatient setting.
2. Patients admitted under the care of other disciplines request for outpatient referral to Palliative Care Team.
3. Patients referred by community hospice NGOs, other government clinics/ hospitals/ institutions and private medical centres/ clinics for the first time in the outpatient clinic.

**Exclusion**:  
1. Patients seen as inpatient referral requesting outpatient clinic follow up appointment.
2. Patients who default the first appointment given.
3. Patients who request to see a specific doctor.
4. Patients who request to delay the appointment date.
**Type of indicator**: Rate-based outcome indicator  
**Numerator**: Number of new outpatients seen within ten (10) working days of referral to the Palliative Care Team  
**Denominator**: Total number of new outpatients referred to the Palliative Care Team  

**Formula**: \[
\frac{\text{Numerator}}{\text{Denominator}} \times 100 \%
\]

**Standard**: \( \geq 80\% \)

**Data Collection**  
1. **Where**: Data will be collected in Palliative Medicine clinic.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
3. **How frequent**: 6 monthly data collection.  
4. **Who should verify**: All performance will be verified by Head of Department/Head of Unit/Hospital Director.  
5. **How to collect**: Data is suggested to be collected from appointment/record book/Hospital Information System (refer to KPI MOH Guidelines).

**Remarks**:

---

**Indicator 4**  
**Discipline**: Palliative Medicine  
**Indicator**: Percentage of patients who are dying from advanced terminal illness undergo futile resuscitative intervention  
**Dimension of Quality**: Effectiveness  

**Rationale**  
1. Patients who are known to be dying of terminal cancer should have proper discussions with clinicians regarding advanced directives and the need to prevent suffering from degrading undignified futile therapies at the end of life including intubation, CPR and artificial ventilation.  
2. Advanced planning is a vital component of good end-of-life care.  
3. Acute therapies used at the end of life are a reflection of poor clinical management and lack of good end-of-life care practices.  
4. The issue of safety as a quality dimension comes in as the suffering for the patient and family should be regarded as an adverse incident.  
5. The dimension of efficiency is also applicable as using interventions such as ventilators and intensive care management for a dying patient is in sense wastage of limited resources that should be applied only for critically ill patients with reversible and treatable conditions.

**Definition of Terms**:  
**Futile resuscitative intervention**: Including intubation, cardiopulmonary resuscitation (CPR) or ventilation that does not result in benefit for patient in terms of survival. (Survival of less than 24 hours or steady deterioration till death with no evidence of improvement or stabilisation).  
**Patients**: Patients primarily under the care of Palliative care team.

**Criteria**  
1. All patients primarily under care of the palliative care team admitted to a dedicated palliative care bed undergoing futile intubation.  
2. Family members request for resuscitation.
### Exclusion:
1. Patients resuscitated who are under the Palliative Care Team but have concurrent condition leading to deterioration from a reversible cause where resuscitation is deemed appropriate.
2. Patients resuscitated in other healthcare facilities where patient is not known to primary care teams.

### Type of indicator
Rate-based outcome indicator

### Numerator
Number of patients who are dying from advanced terminal illness undergo futile resuscitative intervention

### Denominator
Total number of patients dying from advanced terminal illness

### Formula
\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\% 
\]

### Standard
< 1%

### Data Collection
1. **Where**: Data will be collected in Palliative wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient's case note/ procedure book/ record book/ Hospital Information System (refer to KPI MOH Guidelines).

### Indicator 5
- **Individual**
- **Discipline**: Palliative Medicine

### Indicator
Percentage of patients with documented discussion on patients’ terminal prognosis and resuscitation status with family or relevant persons prior to death

### Dimension of Quality
Customer centeredness

### Rationale
1. Good communication with family members of dying patients is a critical part of end of life care.
2. Family of patients who are dying should be informed clearly regarding the patient’s condition and the need to avoid futile resuscitative interventions towards the last days of life and also to ensure continuous relief from distress at the end of life.
3. Failure to communicate effectively is a major shortfall in quality management and at the end of life, if issues of “not for active resuscitation” are not discussed sensitively and effectively, this will result in formal complaints and inappropriate interventions at the end of life.
4. Proper documentation of issues communicated is an essential part of clinical practice and effective communication.

### Definition of Terms
**Documented discussion**: Documentation in written or printed form described in patient's clinical notes on discussion between doctor and family members/ relevant persons.
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
<th>Exclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. All patients who have died in the hospital/ palliative care facility who are directly or indirectly under the palliative medicine specialist’s care.</td>
<td>1. Patients died outside hospital.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Patients died in Emergency Departments or less than 24 hours after admission.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Patients with no relative or significant other to communicate to.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Patients who are co-managed but not directly under Palliative care team.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with documented discussion on patients’ terminal prognosis and resuscitation status with family/ relevant persons prior to death</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients under palliative care unit who have died in the hospital</td>
</tr>
</tbody>
</table>

**Formula**

\[
\text{Numerator} \times 100\% \over \text{Denominator}
\]

<table>
<thead>
<tr>
<th>Standard</th>
<th>≥ 90%</th>
</tr>
</thead>
</table>

**Data Collection**

1. **Where**: Data will be collected in Palliative wards/wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance will be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines).

**Remarks**

---

**Indicator 6**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Individual Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Percentage of severe opioid toxicity requiring reversal with naloxone due to inappropriate opioid administration or prescription</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
</tbody>
</table>

**Rationale**

1. Cancer pain management is one of the key areas of management in palliative medicine.
2. Opioid analgesia is an essential medication that is commonly used in the management of cancer pain. Although opioids are considered dangerous drugs, WHO and international pain and palliative care organisations worldwide advocate its use and promote safe and appropriate techniques to manage cancer pain effectively.
3. MOH has developed a CPG Management of Cancer Pain (July 2010) and in this document detail of safe and effective use of opioid analgesia has been specified.
4. Clinicians should adhere to these safe practices to avoid incidences of opioid toxicity which can result in pre-mature death of a patient receiving palliative care.
| Definition of Terms | **Opioid**: Includes any strong opioid drug used for the management of pain (morphine, oxycodone, fentanyl, methadone).

**Severe opioid toxicity**: Toxicity due to excessive administration of opioid analgesia resulting in respiratory depression requiring the use of naloxone.

**Inappropriate administration**: Incorrect delivery of opioid analgesia to a patient in terms of dose or route of administration.

**Inappropriate prescription**: Prescription of opioid analgesics not justified according to the guidance of the MOH CPG on cancer pain management. |
| --- | --- |
| Criteria | **Inclusion**:  
1. All patients under the Palliative care specialist’s care developing severe opioid toxicity admitted to hospital requiring reversal with naloxone.

**Exclusion**:  
1. Patients developing severe opioid toxicity due to prescriptions of opioids by doctors other than those under the supervision of the palliative medicine specialist.
2. Patients developing severe opioid toxicity due to metabolic changes as a consequence of primary illness or comorbidities. |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of patients developed severe opioid toxicity requiring reversal with naloxone due to inappropriate opioid administration or prescription |
| Denominator | Total number of new patients referred to Palliative care team |
| Formula | \[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\] |
| Standard | < 1% |
| Data Collection | 1. **Where**: Data will be collected in Palliative wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from incidence reporting and pharmacy Daily Define Dose (DDA) record books (refer to KPI MOH Guidelines). |
<p>| Remarks | . |</p>
<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at Psychiatry Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Psychiatry Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Defaulter rate among Psychiatric outpatients</td>
<td>Customer</td>
<td>&lt; 15%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of new outpatients received psycho-education on first visit at Psychiatry Clinic</td>
<td>Customer</td>
<td>&gt; 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>New patients started on psychotropic medication developing weight gain &gt; 7% from baseline after 6 months of treatment</td>
<td>Safety</td>
<td>&lt; 20%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients prescribed with more than 2 benzodiazepines/hypnotics at a particular time</td>
<td>Safety</td>
<td>&lt;10%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

**Discipline**: Psychiatry

**Name of indicator**: Percentage of non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at Psychiatry Clinic

**Dimension of Quality**: Customer centeredness

**Rationale**: 1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

**Definition of Terms**

**Appointment**: Time taken from the date of the referral received to the date of first consultation with the doctor.

**Criteria**

**Inclusion**: 1. New general psychiatric cases.

**Exclusion**: 1. All urgent cases.
2. Patients who request to see a specific doctor.
3. Patients who request to delay the appointment date.
4. Patients who default the first appointment given.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at Psychiatry Clinic

**Denominator**: Total number of non-urgent cases referred to Psychiatric Clinic
### Indicator 2

**Departmental Discipline**: Psychiatry

**Name of indicator**: Percentage of patients with waiting time of \( \leq 90 \) minutes to see the doctor at Psychiatry clinic

**Dimension of Quality**: Customer centeredness

**Rationale**:
1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

**Definition of Terms**:
- **Waiting time**: Time of registration/appointment (whichever is later) to the time patient is first seen by the doctor.

**Criteria**:
- **Inclusion**: NA

**Exclusion**:
1. Patients who request to see a specific doctor.
2. Patients who come without appointment (walk-in patients).
3. Patients with multiple appointments on the same day.
4. Patients slotted in for special consultation.
5. Patients need to do special procedure on the same day before seeing the doctor.
6. Patients not on psychotropics.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients with waiting time of \( \leq 90 \) minutes to see the doctor at Psychiatry clinic

**Denominator**: Total number of patients seen at Psychiatry clinic

**Formula**: Numerator \( \times \) 100% / Denominator

**Standard**: \( \geq 90\% \)

**Data Collection**:
1. **Where**: Data will be collected in Psychiatry Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
<table>
<thead>
<tr>
<th><strong>Indicator 3</strong></th>
<th><strong>: Departmental</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Psychiatry</td>
</tr>
<tr>
<td><strong>Name of indicator</strong></td>
<td>Default rate among Psychiatric outpatients</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Customer centeredness</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>1. Studies have shown that high defaulter rate in psychiatric patients resulted in high morbidity and high mortality.</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
<td>Default: Patient who failed to attend outpatient clinic within (≤) one month of the appointment date.</td>
</tr>
<tr>
<td><strong>Criteria</strong></td>
<td><strong>Inclusion:</strong> NA</td>
</tr>
<tr>
<td></td>
<td><strong>Exclusion:</strong></td>
</tr>
<tr>
<td></td>
<td>1. Appointment to counsellor.</td>
</tr>
<tr>
<td></td>
<td>2. New cases/ referrals.</td>
</tr>
<tr>
<td></td>
<td>3. Patients not on medication.</td>
</tr>
<tr>
<td><strong>Type of indicator</strong></td>
<td>Rate-based outcome indicator</td>
</tr>
<tr>
<td><strong>Numerator</strong></td>
<td>Number of psychiatric outpatients defaulting Psychiatric Clinic follow-up</td>
</tr>
<tr>
<td><strong>Denominator</strong></td>
<td>Total number of psychiatric outpatients attending Psychiatric Clinic</td>
</tr>
<tr>
<td><strong>Formula</strong></td>
<td>[ \text{Numerator} \times 100% \div \text{Denominator} ]</td>
</tr>
<tr>
<td><strong>Standard</strong></td>
<td>&lt; 15%</td>
</tr>
<tr>
<td><strong>Data Collection</strong></td>
<td>1. Where: Data will be collected in Psychiatry Clinic.</td>
</tr>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from appointment book/ record book (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>:</td>
</tr>
</tbody>
</table>
## Indicator 4

<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>New outpatients: Newly seen patients or family members in Psychiatric Clinic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria</td>
<td>Inclusion: NA&lt;br&gt;Exclusion: NA</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of new outpatients received psycho-education on first visit at Psychiatry Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of new outpatients seen</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100%&lt;br&gt;Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>&gt; 80%</td>
</tr>
</tbody>
</table>

### Data Collection

1. **Where**: Data will be collected in Psychiatry Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines).

### Remarks

### Indicator 5

<table>
<thead>
<tr>
<th>Indicator 5</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Psychiatry</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>New patients started on psychotropic medication developing weight gain &gt; 7% from baseline after 6 months of treatment</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
</tbody>
</table>

### Rationale

1. Patients on treatment with psychotropic medication should be monitored and managed so as not to have weight gain of more than 7% from baseline after 6 months of treatment.
2. Excessive weight gain can pose a threat to their physical health including the development of metabolic syndrome, diabetes or hypertension.

### Definition of Terms

- **Gained weight**: Increased weight of more than 7% from baseline.
- **Psychotropic medication**: All psychotropic medication are included (conventional and second generation psychotropic medication)

### Criteria

<table>
<thead>
<tr>
<th>Inclusion:</th>
<th>All new psychiatric patients.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion:</td>
<td>NA</td>
</tr>
</tbody>
</table>

### Type of indicator

- Rate-based outcome indicator

### Numerator

- No. of new cases started on psychotropic medication who gained weight > 7% from baseline within 6 months

### Denominator

- Total no. of new cases started on psychotropic medication

### Formula

- Numerator x 100%
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

#### Denominator

| Standard | < 20% |

#### Data Collection

| 1. Where: | Data will be collected in Psychiatry Clinic. |
| 2. Who: | Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit. |
| 4. Who should verify: | All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director. |
| 5. How to collect: | Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines). |

#### Remarks:

### Indicator 6

| Discipline | Psychiatry |
| Name of indicator | Percentage of patients prescribed with more than 2 benzodiazepines/ hypnotics at a particular time |
| Dimension of Quality | Safety |
| Rationale | With proper management, patients should not be prescribed more than 2 benzodiazepines or hypnotics at any one time. |
| Definition of Terms | Hypnotics: Drugs used to help induce sleep. |
| Criteria | **Inclusion:**  
1. All patients prescribed benzodiazepines/ hypnotics.  
2. All patients prescribed with more than 2 benzodiazepines/ hypnotics by the respective psychiatrist in the particular hospital.  

**Exclusion:** NA |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of patients prescribed with more than 2 benzodiazepines/ hypnotics at a particular time |
| Denominator | Total number of patients on benzodiazepines/ hypnotics |
| Formula | Numerator \* 100%  
Denominator |
| Standard | < 10% |
| Data Collection | 1. Where: Data will be collected in Psychiatry Clinic/ Pharmacy.  
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines). |
| Remarks |  

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149 CLINICAL PERFORMANCE SURVEILLANCE UNIT  
D(Departmental); I(Individual)  
PERFORMANCE SURVEILLANCE 4.0
## RESPIRATORY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at Respiratory Clinic</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of smear positive PTB patients who are started TB treatment within 3 working days of diagnosis</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of asthma patients discharged with an asthma discharge plan</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of full lung function test interpreted within 2 weeks</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of positive histopathological examination (HPE) results of endobronchial biopsy from the lesion</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of suspected lung cancer patients who undergo a diagnostic procedure (bronchoscopy/image-guided biopsy/pleuroscopy) within 2 weeks</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Percentage of complications during elective diagnostic bronchoscopies</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1** : Departmental  
**Discipline** : Respiratory  
**Indicator** : Percentage of non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at Respiratory Clinic  
**Dimension of Quality** : Timely  
**Rationale** :  
1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.  
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.  
3. The usual first contact point of a patient is at a primary care and some form of treatment has been initiated.  
4. Services/ Respiratory Physicians are available in all hospitals centres in Malaysia except Malacca, Negeri Sembilan and Perlis.  

**Definition of Terms** :  
- **Non-urgent cases**: Depends of the judgment of the respiratory physician.  
- **Appointment**: Time taken from the date of referral letter received to the date of first consultation with the doctor.
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
<th>Exclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. All new patients referred to the Respiratory Clinic for illness related to the respiratory system.</td>
<td>1. All urgent cases.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Patients who request to delay the appointment date.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Patients who request to see a specific doctor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Patients who default the first appointment given.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Patients with non-respiratory condition seen as personal patients.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of non-urgent cases that were given appointment for first consultation within (≤) 6 weeks at Respiratory Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of non-urgent cases referred to Respiratory Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator (\times) 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 80%</td>
</tr>
</tbody>
</table>

| Data Collection | 1. **Where:** Data will be collected in Respiratory Clinic. |
|                | 2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit. |
|                | 3. **How frequent:** Monthly data collection. |
|                | 4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director. |
|                | 5. **How to collect:** Data is suggested to be collected from appointment/ record book (refer to KPI MOH Guidelines). |

<table>
<thead>
<tr>
<th>Remarks</th>
<th>:</th>
</tr>
</thead>
</table>

### Indicator 2

**Departmental**

**Respiratory**

**Percentage of smear positive PTB patients who are started TB treatment within 3 working days of diagnosis**

**Dimension of Quality:** Effectiveness

**Rationale:**
1. To assess standard of care given to patients treated within the Respiratory Fraternity.
2. Steps can be taken to improve quality of care.

**Definition of Terms**
- **Smear positive PTB:** sputum AFB direct smear is positive
- **Start treatment:** initiation of standard antiTB therapy

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. All new cases with sputum AFB positive at diagnosis.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All sputum AFB negative cases at diagnosis.</td>
</tr>
<tr>
<td>2. Extra-pulmonary samples.</td>
</tr>
<tr>
<td>3. MDRTB</td>
</tr>
</tbody>
</table>
**Type of indicator**: Rate-based process indicator

**Numerator**: Number of smear positive patients started on standard treatment within 3 working days

**Denominator**: Total number of patients with positive sputum acid fast bacilli (AFB) at diagnosis

**Formula**: \[\frac{\text{Numerator}}{\text{Denominator}} \times 100\%\]

**Standard**: ≥ 80%

**Data Collection**
1. **Where**: Data will be collected in Respiratory Clinic/wards that cater for the above conditions.
2. **Who**: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from TB Information System (TBIS)/record book (refer to KPI MOH Guidelines).

**Remarks**

**Indicator 3**

**Discipline**: Respiratory

**Indicator**: Percentage of asthma patients discharged with an asthma discharge plan

**Dimension of Quality**: Effectiveness

**Rationale**
1. Asthma is a common condition.
2. Severity and frequency of exacerbation may decrease by holistic approach.
3. All hospitalized patients should be discharged with Asthma Discharge Plan.

**Definition of Terms**

**Asthma Discharge Plan**: An appropriate discharge plan must consist of:
1. Peak expiratory flow (PEF)/Forced Expiratory Volume in 1 sec (FEV1)
2. Asthma education
   a. Identification and avoidance of triggering factor/s.
   b. Inhaler technique education.
   c. Advice on rescue medication.
   d. To seek treatment from healthcare facility (during exacerbation and for regular follow up).
3. List of medications upon discharge.

**Criteria**

**Inclusion**:
1. All asthmatic patients discharge from ward.
2. Patients referred to Respiratory team.

**Exclusion**:
1. Patients who refused on asthma discharge plan.
2. At on risk (AOR) discharged patients/patients discharged against medical advice.

**Type of indicator**: Rate-based process indicator
### Indicator 4

**Discipline**: Respiratory  
**Indicator**: Percentage of full lung function test interpreted within 2 weeks  
**Dimension of Quality**: Effectiveness  

**Rationale**
1. Referral for full lung function test has been increasing from other disciplines.  
2. Interpretation should be early so that proper treatment can be instituted.  
3. All respiratory physicians are able to interpret full lung function test.

**Definition of Terms**
- **Full lung function test**: General Respiratory Function Test (GRFT): Includes spirometry, plethysmography, single and multiple breath N2 washout, gas transfer (DLCO), respiratory muscle strength and impulse oscillometry.
- **Within (≤) 2 weeks**: Within 14 working days.

**Criteria**
- **Inclusion**: NA  
- **Exclusion**:
  1. When the service is not available for more than 2 weeks.

**Type of indicator**: Rate-based process indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of General Respiratory Function Test (GRFT) interpreted within (≤) 2 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of General Respiratory Function Test (GRFT) performed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formula</th>
<th>Numerator x 100% / Denominator</th>
</tr>
</thead>
</table>

**Standard**: ≥ 80%

**Data Collection**
1. **Where**: Data will be collected in Pulmonary Physiology Lab  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from patient’s case note/ checklist / record book (refer to KPI MOH Guidelines).
### Indicator 5

**Discipline**: Respiratory

**Indicator**: Percentage of positive histopathological examination (HPE) results of endobronchial biopsy from the lesion

**Dimension of Quality**: Effectiveness

**Rationale**:
1. Bronchoscopy services are available in all hospital with Respiratory Physician.
2. All respiratory physicians are able to perform bronchoscopy.
3. Pathologists and laboratory facilities are available in all hospitals.
4. Standard data for positive HPE from 70-90%.

**Definition of Terms**:
- **Positive histopathological examination (HPE)**: Confirmed tissue diagnosis.
- **Endobronchial biopsy**: Biopsy taken from the intraluminal lesion via bronchoscopy.

**Criteria**:
- **Inclusion**:
  1. All biopsied specimens from lesion.
  2. All biopsies done by a respiratory physician.

- **Exclusion**:
  1. Uncooperative patients.
  2. Patients with difficult anatomy access.

**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of positive histopathological examination (HPE) results of endobronchial biopsy from the lesion

**Denominator**: Total number of endobronchial biopsy performed

**Formula**:
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard**: \( \geq 70\% \)

**Data Collection**:
1. **Where**: Data will be collected in Respiratory Endoscopy Suite.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from procedure or record book/ patient’s case note/ HPE report (refer to KPI MOH Guidelines).

**Remarks**:

---

### Indicator 6

**Discipline**: Individual

---

**Remarks**:
### Discipline
- Respiratory

### Indicator
- Percentage of suspected lung cancer patients who undergo a diagnostic procedure (bronchoscopy/image-guided biopsy/pleuroscopy) within 2 weeks

### Dimension of Quality
- Effectiveness

### Rationale
1. The number of patients diagnosed with lung cancer is increasing.
2. Delay in diagnosis and initiation of therapy means progression of disease, thus shortening survival.
3. Patient and doctor delay has been documented in multiple studies

### Definition of Terms
**Diagnostic procedure for the diagnosis of lung cancer:**
The procedure can be either:
1. Bronchoscopy
2. Image-guided (fluoroscopy/ultrasound/CT) biopsy
3. Pleuroscopy

**Within (≤) 2 weeks:** Within 14 working days.

### Criteria
**Inclusion:**
1. All patients who undergo diagnostic procedure for the diagnosis of lung cancer

**Exclusion:**
1. Ill patients (PS = 3, 4) who are not candidates for chemotherapy or radiotherapy despite the diagnosis of cancer.
2. Patients who refuse investigations
3. Patients who have contraindications for procedure

### Type of indicator
- Rate-based process indicator

### Numerator
- Number of diagnostic procedure done within 2 weeks

### Denominator
- Total number of diagnostic procedures performed

### Formula
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard
- ≥ 80 %

### Data Collection
1. **Where:** Data will be collected in Outpatient clinic
2. **Who:** Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect:** Data is suggested to be collected from procedure/record book (refer to KPI MOH Guidelines).

### Remarks

---

<table>
<thead>
<tr>
<th>Indicator 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline:</strong> Respiratory</td>
</tr>
<tr>
<td><strong>Indicator:</strong> Percentage of complications during elective diagnostic bronchoscopies</td>
</tr>
<tr>
<td><strong>Dimension of Quality:</strong> Safety</td>
</tr>
<tr>
<td><strong>Rationale:</strong> 1. Any invasive procedures are at risk of developing complications.</td>
</tr>
<tr>
<td>Question</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2. Complications such as desaturation &lt;90%, bronchospasm, bleeding,</td>
</tr>
<tr>
<td>3. To ensure that services rendered are safe and does not make the</td>
</tr>
<tr>
<td>patient’s condition worse.</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>Criteria</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Type of indicator</strong></td>
</tr>
<tr>
<td><strong>Numerator</strong></td>
</tr>
<tr>
<td><strong>Denominator</strong></td>
</tr>
<tr>
<td><strong>Formula</strong></td>
</tr>
<tr>
<td><strong>Standard</strong></td>
</tr>
<tr>
<td><strong>Data Collection</strong></td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
</tr>
</tbody>
</table>
# RHEUMATOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Rheumatology Clinic</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of new cases seen by Rheumatologist at Rheumatology Clinic</td>
<td>Customer</td>
<td>&gt; 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of Rheumatoid arthritis patient screen for hepatitis prior to starting methotrexate</td>
<td>Safety</td>
<td>&gt; 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients on biologic disease modifying anti-rheumatic drugs (DMARDs) screened for tuberculosis (TB)</td>
<td>Safety</td>
<td>&gt; 95%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of newly diagnosed rheumatoid arthritis patients started on disease modifying anti-rheumatic drugs (DMARDs) within (≤) 6 months of diagnosis</td>
<td>Customer</td>
<td>&gt; 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of SLE patients on Hydroxychloroquine in Rheumatology Clinic</td>
<td>Effectiveness</td>
<td>&gt; 90%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

Indicator 1: Departmental

Discipline: Rheumatology

Name of indicator: Percentage of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Rheumatology Clinic

Dimension of Quality: Timely

Rationale:
1. Services available in all state hospitals in Malaysia except Perlis.
2. Patient usually had been seen at primary care and some form of treatment has been initiated.
3. Chronic illness will result in reduction of quality of life.
4. The aim of treatment is to prevent disease progression and deformities.
5. This is in accordance with MOH’s aim to reduce waiting time.

Definition of Terms:
Appointment: Time taken from the date of referral received to the date of first consultation with the doctor.

Criteria:
Inclusion:
1. All new patients referred to Rheumatology Clinic for rheumatological illness.

Exclusion:
1. Urgent referrals.
2. Patients with non-rheumatological condition seen as personal patients.
3. Patients who request to see a specific doctor.
<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of non-urgent cases that were given appointment for first consultation within (≤) 8 weeks at Rheumatology Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of non-urgent cases referred to Rheumatology Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 80%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected at Rheumatology Clinic. 2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit. 3. How frequent: 3 monthly data collection. 4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director. 5. How to collect: Data is suggested to be collected from appointment book / record book (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>

**Indicator 2**

**Discipline** | Rheumatology |
**Name of indicator** | Percentage of new cases seen by the Rheumatologist at Rheumatology Clinic |
**Dimension of Quality** | Customer centeredness |
**Rationale** | 1. Rheumatology is a specified condition and some patient has complex disease that needs a proper and specified treatment by the rheumatologist. |
**Definition of Terms** | Rheumatologist: The specialist that has been credentialed to practice rheumatology. |
**Criteria** | **Inclusion:** 1. All new cases referred to Rheumatology Clinic. **Exclusion:** 1. Urgent referrals. 2. Patients who come without an appointment (Walk-in patients). 3. Patients with non-rheumatological condition seen as personal patients. |
**Type of indicator** | Rate-based process indicator |
**Numerator** | Number of new cases seen by the Rheumatologist at Rheumatology Clinic |
**Denominator** | Total number of new cases attended Rheumatology Clinic |
**Formula** | Numerator x 100% / Denominator |
**Standard** | > 80% |
**Data Collection** | 1. Where: Data will be collected at Rheumatology Clinic. |
### Indicator 3

<table>
<thead>
<tr>
<th>Name of indicator</th>
<th>Percentage of Rheumatoid arthritis patient screen for hepatitis prior to starting methotrexate</th>
</tr>
</thead>
</table>

#### Dimension of Quality

- **Safety**

#### Rationale

1. Rheumatoid arthritis is the most common disease seen at Rheumatology Clinic
2. Methotrexate is the commonest drug use for treatment
3. Methotrexate side effect is hepatitis and screening of other causes is important to rule out other cause of hepatitis

#### Definition of Terms

- **Hepatitis screening** are for Hepatitis B and C.

#### Criteria

**Inclusion:**
- All rheumatoid arthritis patients started with Methotrexate

**Exclusion:**
- Patient with other form of hepatitis
- Patient refuse treatment
- Patient already started with methotrexate when referred without hepatitis B/C screening

#### Type of indicator

- Rate base process indicator

#### Numerator

- No. of patients screen for hepatitis B and C prior to methotrexate

#### Denominator

- Total no. of patient on methotrexate

#### Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

#### Standard

- > 90%

#### Data Collection

1. **Where:** Data will be collected in Rheumatology Clinic.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note (refer to KPI MOH Guidelines).
<table>
<thead>
<tr>
<th>Indicator 4</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Rheumatology</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>Percentage of patients on biologic disease modifying anti-rheumatic drugs (BDMARDs) screened for tuberculosis (TB)</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
</tbody>
</table>
| Rationale | 1. Biologic DMARDs therapy has been established as a standard therapy for inflammatory arthritis including Rheumatoid arthritis (RA)/ Psoriatic arthritis (PsA)/ Ankylosing spondylitis (AS) with moderate to severe disease who has failed oral DMARDs. 
2. It is associated with increased risk of TB infection and reactivation of latent TB which is potentially preventable and treatable. |
| Definition of Terms | Tuberculosis screening: Consists of clinical symptoms, chest x-ray and Mantoux test. Quantiferon can be used as alternative to Mantoux test. |
| Criteria | Inclusion: 
1. All patients selected to start on biologics. |
| Exclusion: NA |
| Type of indicator | Rate-based process indicator |
| Numerator | Number of patients on biologic DMARDs being screened for TB |
| Denominator | Total number of patients on biologic DMARDs |
| Formula | Numerator x 100% Denominator |
| Standard | > 95% |
| Data Collection | 1. Where: Data will be collected at Rheumatology Clinic/ Rheumatology Wards or wards that cater for the above condition. 
2. Who: Data will be collected by Officer/ Nurse in-charge (indicator coordinator) of the department/ unit. 
3. How frequent: 3 monthly data collection. 
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director. 
5. How to collect: Data is suggested to be collected from record book/ patient’s case note (refer to KPI MOH Guidelines). |
| Remarks | |

<table>
<thead>
<tr>
<th>Indicator 5</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Rheumatology</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>Percentage of newly diagnosed rheumatoid arthritis (RA) patients started on disease modifying anti-rheumatic drugs (DMARDs) within (≤) 6 months of diagnosis</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
</tbody>
</table>
| Rationale | 1. All patients with rheumatoid arthritis should be treated with DMARDs as soon as possible upon diagnosis. 
2. The aim is to achieve remission or low disease activity. |
| Definition of Terms | Disease modifying anti-rheumatic drugs (DMARDs): Includes methotrexate, leflunomide, sulphasalazine, azathioprine and hydroxychloroquine. |
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: All newly diagnosed rheumatoid arthritis patients.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exclusion:</strong></td>
<td></td>
</tr>
<tr>
<td>1. Patients not tolerating DMARDs.</td>
<td></td>
</tr>
<tr>
<td>2. Patients contraindicated to DMARDs.</td>
<td></td>
</tr>
<tr>
<td>3. Patients who defaulted follow-up.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of newly diagnosed rheumatoid arthritis patients started on DMARDs within (≤) 6 months of diagnosis</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of newly diagnosed rheumatoid arthritis patients</td>
</tr>
</tbody>
</table>

**Formula:**

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard:**

> 80%

**Data Collection:**

1. **Where:** Data will be collected at Rheumatology Clinic.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book/ patient’s case note (refer to KPI MOH Guidelines).

**Remarks:**

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**Indicator 6**

**Discipline:** Rheumatology

**Name of indicator:** Percentage of SLE patients on Hydroxychloroquine in Rheumatology Clinic

**Dimension of Quality:** Effectiveness

**Rationale:**

1. SLE is one of the common rheumatology Disease with exacerbation and remission
2. The main aim of treatment is remission where hydroxychloroquine will sustain it
3. Hydroxychloroquine offer a lot of other advantages for SLE patient
4. Hydroxychloroquine has been shown to reduce frequency and severity of lupus flare.

**Definition of Terms:**

**Hydroxychloroquine:** Drug use in management SLE patient

**Criteria:**

**Inclusion:**

1. All SLE patients attending Rheumatology Clinic

**Exclusion:**

1. Patient intolerance/ allergy/ contraindicated to hydroxychloroquine
2. Patient already started with hydroxychloroquine when referred

**Type of indicator:** Rate based process indicator

**Numerator:**

No. of patients on hydroxychloroquine

**Denominator:**

Total no. of SLE patients

**Formula:**

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]
<table>
<thead>
<tr>
<th>Standard</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Collection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. <strong>Where</strong>: Data will be collected in Rheumatology Clinic.</td>
</tr>
<tr>
<td></td>
<td>2. <strong>Who</strong>: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>3. <strong>How frequent</strong>: 3 Monthly data collection.</td>
</tr>
<tr>
<td></td>
<td>4. <strong>Who should verify</strong>: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. <strong>How to collect</strong>: Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>
TECHNICAL SPECIFICATION

SURGICAL BASED DISCIPLINES
### Indicator 1

**Type**: Departmental  
**Discipline**: Breast and Endocrine Surgery  
**Name of indicator**: Percentage of patients with waiting time of less than 3 months for elective thyroidectomy  
**Dimension of Quality**: Customer centeredness  
**Rationale**: 1. When surgery is the treatment option for the relief of their ailments, patients should be able to undergo the surgery within a reasonable waiting time.  
2. This is especially true if the delay can result in complications of the condition or prolonged suffering.  
**Definition of Terms**: Waiting time: Time taken from the date of decision for operation made to the time operation performed.  
**Criteria**:  
- **Inclusion**: NA  
- **Exclusion**: 1. Patients who request to delay the appointment date.  
2. Patients who request for specific doctor.  
3. Patients who are medically unfit for the operation.  
**Type of indicator**: Rate-based process indicator  
**Numerator**: Number of patients with waiting time of less than 3 months for elective thyroidectomy  
**Denominator**: Total number of elective thyroidectomy performed  
**Formula**: \[ \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \]

<table>
<thead>
<tr>
<th>Type</th>
<th>No</th>
<th>Indicator</th>
<th>Dimension</th>
<th>Standard</th>
<th>Hospital Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with waiting time of less than 3 months for elective thyroidectomy</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of breast cancer patients going for definitive surgery within (≤) 4 weeks of the diagnosis</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with suspicious breast lump/ lesion that were given appointment within (≤) 14 working days of referral at Breast Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of recurrent laryngeal nerve (RLN) injury in primary benign thyroid operation</td>
<td>Safety</td>
<td>≤ 3%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients with clear surgical margins in breast conserving surgery (BCS)</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients with missing parathyroid gland in surgery for renal hyperparathyroidism</td>
<td>Effectiveness</td>
<td>&lt; 20%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>
### Indicator 2

**Discipline**: Breast and Endocrine Surgery  
**Name of indicator**: Percentage of breast cancer patients going for definitive surgery within (≤) 4 weeks of diagnosis  
**Dimension of Quality**: Customer centeredness

#### Rationale
1. Breast cancer is the commonest cancer affecting female patients.  
2. Timely surgical treatment is essential to prevent complications and worse outcome of the disease.  
3. Delay in surgical treatment will delay the commencement of adjuvant treatment such as chemotherapy and radiotherapy. This delay may worsen the disease outcomes.

#### Definition of Terms
- **Breast cancer patients**: Patients confirmed with diagnosis of breast cancer at the facility involved. If the diagnosis was obtained elsewhere the timing is taken from time of consultation and confirmation for surgical procedure.  
- **Definitive surgery**: Surgical procedure or treatment that result in removal of tumour. This may include diagnostic surgical procedure that results in therapeutic outcomes that does not require further surgery for removal of tumour (e.g. wide local excision for suspicious malignancy).  
- **Date of diagnosis**: Date HPE report reviewed and informed to the patient. If diagnosis is done outside the facility, the time of diagnosis is replaced with time of consultations and confirmation of definitive surgery.

#### Criteria
- **Inclusion**: NA
- **Exclusion**:  
  1. Patients who refuse surgery after decision is made and later agreeable to do the operations.  
  2. Patients that need to go for neo-adjuvant chemo/ radio/ hormonal therapy prior to definitive surgery.  
  3. Patients that are not decided for operation after diagnosis been made e.g. elderly patients undergoing hormonal treatment and have failed and later are decided for surgery.  
  4. Patients that are partially treated elsewhere and need completion of treatment.

---

<table>
<thead>
<tr>
<th>Standard</th>
<th>≥ 90%</th>
</tr>
</thead>
</table>
| Data Collection | 1. **Where**: Data will be collected in surgical wards or clinic that have Breast & Endocrine Surgery Service by Breast & Endocrine Surgeon(s)/ OT.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from OT schedule/ record book (refer to KPI MOH Guidelines). |
| Remarks |  
---

**Indicator 2**

**Departmental**  
**Discipline**: Breast and Endocrine Surgery  
**Name of indicator**: Percentage of breast cancer patients going for definitive surgery within (≤) 4 weeks of diagnosis  
**Dimension of Quality**: Customer centeredness

#### Rationale
1. Breast cancer is the commonest cancer affecting female patients.  
2. Timely surgical treatment is essential to prevent complications and worse outcome of the disease.  
3. Delay in surgical treatment will delay the commencement of adjuvant treatment such as chemotherapy and radiotherapy. This delay may worsen the disease outcomes.

#### Definition of Terms
- **Breast cancer patients**: Patients confirmed with diagnosis of breast cancer at the facility involved. If the diagnosis was obtained elsewhere the timing is taken from time of consultation and confirmation for surgical procedure.  
- **Definitive surgery**: Surgical procedure or treatment that result in removal of tumour. This may include diagnostic surgical procedure that results in therapeutic outcomes that does not require further surgery for removal of tumour (e.g. wide local excision for suspicious malignancy).  
- **Date of diagnosis**: Date HPE report reviewed and informed to the patient. If diagnosis is done outside the facility, the time of diagnosis is replaced with time of consultations and confirmation of definitive surgery.

#### Criteria
- **Inclusion**: NA
- **Exclusion**:  
  1. Patients who refuse surgery after decision is made and later agreeable to do the operations.  
  2. Patients that need to go for neo-adjuvant chemo/ radio/ hormonal therapy prior to definitive surgery.  
  3. Patients that are not decided for operation after diagnosis been made e.g. elderly patients undergoing hormonal treatment and have failed and later are decided for surgery.  
  4. Patients that are partially treated elsewhere and need completion of treatment.
### Type of indicator: Rate-based process indicator

#### Numerator:
Number of breast cancer patients went for definitive surgery within (≤) 4 weeks of the diagnosis

#### Denominator:
Total number of breast cancer patients went for definitive surgery

#### Formula:
\[ \frac{\text{Numerator} \times 100}{\text{Denominator}} \]

#### Standard:
\[ \geq 75\% \]

### Data Collection
1. **Where**: Data will be collected in surgical wards or clinic that have Breast & Endocrine Surgery Service by Breast & Endocrine Surgeon(s)/ OT.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from OT schedule/appointment book/ record book (refer to KPI MOH Guidelines).

### Remarks:

#### Indicator 3

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Breast and Endocrine Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of patients with suspicious breast lump/ lesion that were given appointment within (≤) 14 working days of referral at Breast Clinic</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
</tbody>
</table>
| Rationale             | 1. Breast cancer is the commonest cancer affecting female patients.  
2. Timely consultation is essential for early diagnosis and to prevent complications and worse outcome of the disease.  
3. Delay in surgical consultation will delay the diagnosis and delay in giving appropriate treatment and this may worsen the disease outcomes. |
| Definition of Terms   | Suspicious breast lump/ lesion: This include all breast lesions or lumps that are clinically and/ or radiologically suspicious (i.e. Mammogram or Ultrasound findings).  
Appointment: Time taken from the date of referral received to the actual date of appointment seen by the doctor.  
Date of referral:  
1. Actual Date when patient or relative first come to Breast Clinic for an appointment.  
2. Actual Date when a referral is made by any doctor/ medical staff to Breast Clinic. |
**Note:** The date in the referral letter may not be the same as the above date.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: Refer to CPG [Management of Breasts Cancer] criteria for early referral:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Age ≥ 40 years old women presenting with a breast lump</td>
</tr>
<tr>
<td></td>
<td>2. Lump ≥ 3 cm at any age</td>
</tr>
<tr>
<td></td>
<td>3. Clinical signs of malignancy</td>
</tr>
</tbody>
</table>

| Exclusion:     | 1. Patients who default the first appointment given.                               |

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with suspicious breast lump/ lesion that were given appointment within (≤) 14 working days of referral at Breast Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of suspicious breast lumps/ lesions patients referred to Breast Clinic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formula</th>
<th>Numerator x 100% / Denominator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>≥ 80 %</td>
</tr>
</tbody>
</table>

**Data Collection:**
1. **Where:** Data will be collected in Breast and Endocrine Clinic or Surgical Clinic that has Breast & Endocrine Surgery Service by Breast & Endocrine Surgeon(s).
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from appointment book/ record book/ referral letter/ patients case note (refer to KPI MOH Guidelines).

**Remarks**

---

**Indicator 4** : Individual

**Discipline** : Breast and Endocrine Surgery

**Name of indicator** : Percentage of recurrent laryngeal nerve (RLN) injury in primary benign thyroid operation

**Dimension of Quality** : Safety

**Rationale**
1. Benign thyroid surgery is a common procedure.
2. Injury to RLN can cause significant morbidity to patients and in some cases it may results in life-threatening complications e.g. airway obstruction.
3. In good hands and trained surgeon the RLN injury is very low.

**Definition of Terms**
**Primary:** First time thyroid operation.

**Injury to recurrent laryngeal nerve (RLN):**
1. Physical severance of RLN intra-operatively.
2. Presence of clinical symptoms and signs of RLN injury (i.e. stridor, choking, change in voice), which is confirmed via ENT assessment postoperatively. Patients with bilateral RLN palsies are counted as one event.

**Thyroid operation:** Includes hemithyroidectomy, total thyroidectomy and subtotal
### Technicial Specifications for Key Performance Indicators (KPI) Clinical Services

#### Medical Programme 2016

**Clinical Performance Surveillance Unit**

**Departmental**; **Individual**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. All patients undergoing primary thyroid operations.</td>
</tr>
<tr>
<td></td>
<td>2. All patients with benign thyroid diseases.</td>
</tr>
</tbody>
</table>

**Exclusion:**

1. Re-do, secondary and completion procedures.
2. All malignant cases. Histologically confirmed malignancy that is diagnosed after the procedures should also be excluded from final calculations.
3. Isthmectomy.

**Type of indicator:** Rate-based outcome indicator

**Numerator:** Number of nerve injury in primary benign thyroid operation

**Denominator:** Number of nerve at risk in primary benign thyroid operation

**Formula:** \[
\frac{\text{Numerator}}{\text{Denominator}} \times 100% \]

**Standard:** ≤ 3%

**Data Collection:**

1. **Where:** Data will be collected in surgical wards or clinic that have Breast & Endocrine Surgery Service by Breast & Endocrine Surgeon(s)/ OT.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from operative notes/ patient’s case note/ record book (refer to KPI MOH Guidelines).

**Remarks:**

---

**Indicator 5**

**Discipline:** Breast and Endocrine Surgery

**Name of indicator:** Percentage of patients with clear surgical margins in breast conserving surgery (BCS)

**Dimension of Quality:** Effectiveness

**Rationale:**

1. Breast cancer is the commonest cancer affecting female patients.
2. A number of breast cancer patients with early breast cancer will only require Breast Conserving Surgery (BCS) as the definitive procedure.
3. BCS is cosmetically more acceptable and less traumatic to breast cancer patients however some technical expertise with good pathology service back-up is required for this type of treatment to be successful.
4. Clear surgical margins are paramount in BCS treatment of breast cancers.

**Definition of Terms:**

**Clear surgical margins:** Complete excision of the tumour with clear margins (greater than or equal to 2 mm) or no tumour at the margins.

**Margins:** Referred to Superior, Inferior, Medial and Lateral margins. Anterior (Superficial) margin is excluded if the skin overlying tumour is removed together with tumour. Deep margin clearance is when there is no tumour at margin.

* based on Clinical Practice Guidelines for Management of Breast Cancer Nov
**Breast conserving surgery (BCS):** Any procedure that preserve a part of the breast tissue. This can be performed with other Oncoplastic/ Reconstructive procedures.

<table>
<thead>
<tr>
<th>Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inclusion:</strong></td>
<td></td>
</tr>
<tr>
<td>1. All patients undergoing Breast Conserving Surgery as the definitive surgical procedure for breast cancer.</td>
<td></td>
</tr>
<tr>
<td><strong>Exclusion:</strong></td>
<td></td>
</tr>
<tr>
<td>1. Procedures performed as part of diagnostic work-up.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with clear surgical margins in breast conserving surgery (BCS)</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients underwent breast conserving surgery (BCS)</td>
</tr>
<tr>
<td>Formula</td>
<td>(\frac{\text{Numerator}}{\text{Denominator}} \times 100%)</td>
</tr>
<tr>
<td>Standard</td>
<td>(\geq 75%)</td>
</tr>
</tbody>
</table>

**Data Collection**

1. **Where:** Data will be collected in surgical clinic/wards that have Breast & Endocrine Surgery Service by Breast & Endocrine Surgeon(s).
2. **Who:** Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note/histopathological examination reports/record book (refer to KPI MOH Guidelines).

**Remarks:** Histopathological examination reports need to be reviewed by respective surgeons to verify the margins clearance.

---

**Indicator 6**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Breast and Endocrine Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of patients with missing parathyroid gland in surgery for renal hyperparathyroidism</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>

**Rationale**

2. In some patients not ALL FOUR Glands can be found due to technical competency of the surgeon, patient’s own anatomical variance (i.e. ectopic gland or supernumerary gland) and previous operation in the neck area making the dissection area more difficult. However presence of ‘ectopic gland’ or supernumerary gland is very rare.

**Definition of Terms**

- **Missing parathyroid gland:** When total number of parathyroid glands removed are less than four from final Histopathological Examination Report (HPE).

- **Renal hyperparathyroidism:** Diagnosis of hyperparathyroidism as results of End Stage Renal Failure (ESRF) where all four parathyroid glands undergoing
### Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. All patients undergoing surgery for renal hyperparathyroidism including patients undergoing other neck-related surgery at the same setting e.g. thyroid operations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patients with history of previous neck surgery or operations.</td>
</tr>
</tbody>
</table>

### Type of indicator

- Rate-based process indicator

### Numerator

- Number of patients with missing parathyroid gland in surgery for renal hyperparathyroidism

### Denominator

- Total number of patients underwent surgery for renal hyperparathyroidism

### Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard

- < 20%

### Data Collection

1. **Where:** Data will be collected in surgical wards/clinics that have Breast & Endocrine Surgery Service by Breast & Endocrine Surgeon(s)/OT.
2. **Who:** Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note/histopathological/record book examination reports (refer to KPI MOH Guidelines).

### Remarks

- Histopathological examination reports need to be reviewed by respective surgeons to verify the margins clearance.
## Indicator 1

**Type**: Departmental

**Discipline**: Burn and Trauma

**Name of indicator**: Timeliness for crash operation within (≤) 60 minutes

**Dimension of Quality**: Customer centeredness

### Rationale

1. Mortality risk of exsanguinating patient is related to delay in definitive surgery.
2. Refers to KKM policy of waiting time for very urgent surgery.

### Definition of Terms

**Crash operation**: Any operation that is required based on rapid deterioration of hemodynamic status as a direct result of trauma in which if delayed may result in death and/or permanent disability.

**Within (≤) 60 minutes**: Time taken from the referral made to Trauma Unit and decision made for operation to the time operation commenced.

### Criteria

**Inclusion**: 1. Any exsanguinating patient managed/ referred to the Trauma Unit from Emergency Department.

**Exclusion**: 1. Exsanguination from non-trauma causes e.g. bleeding peptic ulcer.
2. Exsanguinating cases not managed by the trauma unit e.g. base of skull

### Table: BURN AND TRAUMA

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>SUB-SPECIALTY</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>-</td>
<td>Timeliness for crash operation within (≤) 60 minutes</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>-</td>
<td>Minor trauma mortality rate</td>
<td>Effectiveness</td>
<td>&lt; 8%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Burn</td>
<td>Severe burn mortality rate</td>
<td>Effectiveness</td>
<td>&lt; 30%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>Trauma</td>
<td>Percentage of non-therapeutic laparotomy (NTL) for trauma cases</td>
<td>Effectiveness</td>
<td>&lt; 20%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>-</td>
<td>Percentage of trauma alert responded by surgeon within (≤) 30 minutes</td>
<td>Customer</td>
<td>&gt; 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>-</td>
<td>Percentage of patients with duration of surgery within (≤) 90 minutes in crash trauma laparotomy</td>
<td>Customer</td>
<td>&gt; 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>-</td>
<td>Percentage of cases with unplanned return to the operating theatre within the same admission following an elective surgical procedure (General Surgery)</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>
### Type of indicator
- Rate-based process indicator

### Numerator
- Number of crash operations performed within (≤) 60 minutes

### Denominator
- Total number of crash operations performed

### Formula
- Numerator \times \frac{100}{\text{Denominator}}

### Standard
- \geq 75%

### Data Collection
1. **Where**: Data will be collected in wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: Data will be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from OT notes/patient’s case note (refer to KPI MOH Guidelines).

### Remarks

---

### Indicator 2

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Burn and Trauma</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>Minor trauma mortality rate</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>

#### Rationale
- Trauma mortality is related to severity. The group with minor trauma is expected to have a high probability of survival and any mortality is a potentially preventable death.
- US National Trauma Database results as a basis for comparison.

#### Definition of Terms
- **Minor trauma**: Any injury with Injury Severity Score (ISS) <16.

#### Criteria
- **Inclusion**: Minor trauma cases admitted under Trauma Unit.
- **Exclusion**: Minor trauma cases not admitted under Trauma Unit.

#### Type of indicator
- Rate-based outcome indicator

#### Numerator
- Number deaths following minor trauma

#### Denominator
- Total number minor trauma cases admitted

#### Formula
- Numerator \times \frac{100}{\text{Denominator}}

#### Standard
- < 8%

#### Data Collection
1. **Where**: Data collected in wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: Data will be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from registration book (refer to KPI MOH Guidelines).
**Remarks**

| Indicator 3 | : Departmental |
| Discipline | : Burn and Trauma (Burn) |
| Name of indicator | : Severe burn mortality rate |
| Dimension of Quality | : Effectiveness |
| Rationale | : 1. Mortality is correlated with severity of burns and expertise/facilities available.  
   2. Mortality index = % burns + age.  
   3. By having the performance of this indicator, comparison with other Burns Unit can be made. |
| Definition of Terms | : Severe burns: >20% body surface area.  
   Mortality: Deaths occur within the same admission. |
| Criteria | : Inclusion:  
   1. Burns between 20 – 40% as the primary diagnosis.  
   Exclusion:  
   1. Burn associated with inhalational injuries.  
   2. Age less than 12 years old.  
   3. Patients who died due to other secondary diagnosis. |
| Type of indicator | : Rate-based outcome indicator |
| Numerator | : Number of deaths due to severe burn |
| Denominator | : Total number of patients with severe burn |
| Formula | : Numerator x 100%  
   Denominator |
| Standard | : < 30% |
| Data Collection | : 1. **Where**: Data collected in wards that cater for the above condition.  
   2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
   3. **How frequent**: 3 monthly data collection.  
   4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
   5. **How to collect**: Data is suggested to be collected from Burns admissions records/registry (refer to KPI MOH Guidelines). |
| Remarks | : |

| Indicator 4 | : Departmental |
| Discipline | : Burn and Trauma (Trauma) |
| Name of indicator | : Percentage of non-therapeutic laparotomy (NTL) for trauma cases |
| Dimension of Quality | : Effectiveness |
| Rationale | : 1. Unnecessary exploratory laparotomy for intra-abdominal injuries where the bleeding has already stopped by itself is associated with post-operative morbidity.  
   2. These patients can be safely managed with conservative management thus avoiding the complications of surgery. |
**Definition of Terms**

| Definition of Terms     | Non-therapeutic laparotomy (NTL): Laparotomy performed for suspected intra-abdominal injuries where no surgical therapeutic procedure was needed upon exploration. NTL includes cases where peritoneal washout of haemoperitoneum was performed and the injured organ has no active bleeding/ does not need surgical haemostasis or repair. |

**Criteria**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: 1. All trauma cases.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exclusion: 1. Cases where only a diagnostic laparoscopy was performed.</td>
</tr>
</tbody>
</table>

**Type of indicator**

| Type of indicator | Rate-based process indicator |

**Numerator**

| Numerator | Number of non-therapeutic laparotomy (NTL) for trauma cases performed |

**Denominator**

| Denominator | Total number of laparotomy for trauma cases performed |

**Formula**

| Formula | \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \) |

**Standard**

| Standard | < 20\% |

**Data Collection**

| Data Collection | Where: Data collected in wards that cater for the above condition.  |
|                | Who: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.  |
|                | How frequent: 3 monthly data collection.  |
|                | Who should verify: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  |
|                | How to collect: Data is suggested to be collected from OT notes/ record (refer to KPI MOH Guidelines).  |

**Remarks**

| Remarks | |

**Indicator 5**

| Indicator 5 | Individual |
| Discipline | Burn and Trauma |

**Name of indicator**

| Name of indicator | Percentage of trauma alert responded by surgeon within (≤) 30 minutes |

**Dimension of Quality**

| Dimension of Quality | Customer centeredness |

**Rationale**

| Rationale | 1. Timeliness in response to a trauma alert determines how fast a patient with major trauma gets attended to.  |
|           | 2. Trauma alerts in an institution is made for major trauma and within a specified predetermined clinical situation. |

**Definition of Terms**

| Definition of Terms | Response time: Time taken from the time cases referred to Trauma Unit to the time cases reviewed by the Trauma Surgeon. |

**Criteria**

| Criteria | Inclusion: 1. All trauma alerts as defined by the institution made to the trauma surgeon.  |
|          | Exclusion: NA |

**Type of indicator**

| Type of indicator | Rate-based process indicator |

**Numerator**

| Numerator | Number of trauma alerts responded by surgeon within (≤) 30 minutes |

**Denominator**

| Denominator | Total number of trauma alerts |

**Formula**

| Formula | \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \) |

**Standard**

| Standard | > 75\% |

**Data Collection**

| Data Collection | Where: Data will be collected in Emergency Department.  |
|                | Who: Data will be collected by Officer/ Nurse in-charge (indicator co- |
### Indicator 6

**Discipline**: Burn and Trauma  
**Name of indicator**: Percentage of patients with duration of surgery within (≤) 90 minutes in crash trauma laparotomy  
**Dimension of Quality**: Customer centeredness  
**Rationale**:  
1. Excessive time taken during conduct of a trauma laparotomy leads to poor outcome as the haemodynamically unstable patients has little or no physiological reserves.  
2. Decision for damage control procedures need to be made early in the conduct of the laparotomy.  
**Definition of Terms**:  
- **Duration of surgery**: Time taken from the start of abdominal incision until closure of wound (by whatever technique e.g. stapler, suture, vacuum assisted closure, etc).  
- **Crash trauma laparotomy**: The conduct of an emergency laparotomy for intra-abdominal bleeding due to trauma where the patient is haemodynamically unstable.  
- **Haemodynamically unstable**: Any systolic BP <100 mmHg (or requires use of inotropes to maintain SBP >100 mmHg) where initial resuscitation has resulted in transient response or requires large amounts of fluids and blood/ blood products to maintain a SBP >100 mmHg before or during surgery.  
**Criteria**:  
**Inclusion**:  
1. Any trauma laparotomy for haemodynamically unstable patient.  
**Exclusion**:  
1. Cases where more than one compartment involved e.g. laparotomy with thoracotomy.  
2. Patients or relatives refused or delay in giving consent for surgery.  
**Type of indicator**: Rate-based process indicator  
**Numerator**: Number of patients with duration of surgery within (≤) 90 minutes in crash trauma laparotomy  
**Denominator**: Total number of patients underwent crash trauma laparotomy  
**Formula**:  
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]  
**Standard**: > 75%  
**Data Collection**:  
1. **Where**: Data will be collected in wards that cater for the above condition.  
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
### Indicator 7

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Burn and Trauma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Percentage of cases with unplanned return to the operating theatre within the same admission following an elective surgical procedure</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>1. Any unplanned return to the operation theatre may indicate a quality problem due to the occurrence of intra-operative problems that are serious enough to warrant intervention post-operatively.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Unplanned return: Unexpected return to the operating theatre to address a previous complication of the original operation.</td>
</tr>
<tr>
<td>Criteria Inclusion</td>
<td>Elective surgical procedure performed under general anaesthesia.</td>
</tr>
<tr>
<td>Criteria Exclusion</td>
<td>1. Endoscopy cases. 2. Day care cases.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of cases with unplanned return to the operating theatre within the same admission following an elective surgical procedure</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of cases underwent elective surgical procedure</td>
</tr>
</tbody>
</table>
| Formula             | \[
|                     | \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \]
| Standard            | ≤ 10 % |
| Data Collection     | 1. Where: Data will be collected at surgical wards or wards that cater the above condition. 2. Who: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit. 3. How frequent: Monthly data collection. 4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director. 5. How to collect: Data is suggested to be collected from OT book/ registration book/ patient’s case note (refer to KPI MOH Guidelines). |
| Remarks             | National Institutes of Health (NIH) USA data reports an unplanned return rate of between 5% and 15%, depending on the type of surgery performed. |
CARDIOVASCULAR AND THORACIC SURGERY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of unplanned hospital readmission within (≤) 28 days following discharge after elective adult open heart surgery</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with operable lung cancer or suspected lung cancer operated within (≤) 3 weeks</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3.1</td>
<td>Elective coronary artery bypass surgery (CABG) mortality rate [High Volume Centre]</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3.2</td>
<td>Elective coronary artery bypass surgery (CABG) mortality rate [Low Volume Centre]</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4.1</td>
<td>Percentage of patients with chest reopening for severe bleeding post elective primary isolated adult open heart surgery [High Volume Centre]</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4.2</td>
<td>Percentage of patients with chest reopening for severe bleeding post elective primary isolated adult open heart surgery [Low Volume Centre]</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of watershed stroke patients following elective primary isolated adult open heart surgery</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of post cardiac surgery patients with complete sternal wound dehiscence</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

**Discipline**

Cardiovascular and Thoracic Surgery

**Indicator**

Percentage of unplanned hospital readmission within (≤) 28 days following discharge after elective adult open heart surgery

**Dimension of Quality**

Effectiveness

**Rationale**

1. Reducing hospital readmission after adult cardiac surgery is necessary as part of the solution to achieving improved efficiency in health care.
2. References:
   Prospective Evaluation Of Patients Readmitted After Cardiac Surgery: Analysis Of Outcomes and Identification Of Risk Factors.
## Definition of Terms

**Elective heart surgery**: Surgery for patients whose clinical condition requires procedures that can be managed by placement on a waiting (ref: RACS – National definition for elective surgery urgency categories August 2013).

## Criteria

**Inclusion**: NA

**Exclusion**:
1. Urgent and emergency adult open heart surgery.
2. Patients who readmitted for other medical illness (not related to the heart surgery).

## Type of indicator

Rate-based outcome indicator

## Numerator

Number of patients readmitted within (≤) 28 days following discharge after elective adult open heart surgery

## Denominator

Total number of patients discharged following elective adult open heart surgery

## Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

## Standard

≤ 10%

## Data Collection

1. **Where**: Data will be collected in Cardiothoracic wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from registration/admission book / record book (refer to KPI MOH Guidelines).

## Remarks


## Indicator 2

**Departmental**

**Discipline**: Cardiovascular and Thoracic Surgery

**Indicator**: Percentage of patients with operable lung cancer or suspected lung cancer operated within (≤) 3 weeks

**Dimension of Quality**: Customer centeredness

**Rationale**:

1. Lung cancer remains the number one cause of cancer deaths amongst the adult male population. The American College of Chest Physician (ACCP) in its recent guidelines for management of patients with Lung cancer that patients with known or suspected lung cancer receive timely and efficient care. Grade of recommendation 1B.

**Definition of Terms**: Operable lung cancer: Stage I-IIa (as agreed by the managing team which includes cardiothoracic surgeons, respiratory physicians, pathologists, radiologist...
and oncologists).

Within (≤) 3 weeks: Time taken from acceptance for surgery, completion of staging investigation and any neo-adjuvant treatment to the time surgery done.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>:</th>
<th>Inclusion: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion:</td>
<td>:</td>
<td>1. Inoperable lung cancer (Stage IIIb and IV).</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>:</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>:</td>
<td>Number of patients with operable lung cancer or suspected lung cancer operated within (≤) 3 weeks</td>
</tr>
<tr>
<td>Denominator</td>
<td>:</td>
<td>Total number of patients with operable lung cancer or suspected lung cancer</td>
</tr>
<tr>
<td>Formula</td>
<td>:</td>
<td>Numerator x 100 %</td>
</tr>
<tr>
<td>Standard</td>
<td>:</td>
<td>≥ 85%</td>
</tr>
</tbody>
</table>

Data Collection:
1. Where: Data will be collected in Cardiothoracic wards/ Operation Theatre or wards that cater for the above condition.
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. How to collect: Data is suggested to be collected from Cardiothoracic OT census/ admission book/ record book/ Hospital IT System (refer to KPI MOH Guidelines).

Remarks:

Indicator 3.1: Departmental
Discipline: Cardiovascular and Thoracic Surgery
Indicator: Elective coronary artery bypass surgery (CABG) mortality rate [High Volume Centre]
Dimension of Quality: Effectiveness

Rationale:
1. Coronary artery bypass surgery is the most common open heart surgical procedure currently being performed. However there are various co-morbid factors which influence the outcome of cardiac surgery – age, co-morbid illness e.g. diabetes, renal impairment, poor EF and the patients need to be risk stratified. Risk stratification is done through various predictive risk scoring methods e.g. Euroscore, Parsonnet, STS score which allows for comparison with international standards.
2. It has also been shown that high volume centres consistently perform better than low volume centres thus it provides important data for planning and resource management. Mortality rates are considered outcome of care measure because they measure the results of the treatment.
3. References:
## Technical Specifications for Key Performance Indicators (KPI) Clinical Services

### Clinical Services Medical Programme 2016

| Definition of Terms | Elective surgery: Surgery for patients whose clinical condition requires procedures that can be managed by placement on a waiting (ref: RACS – National definition for elective surgery urgency categories Aug 2013).

**Coronary artery bypass surgery (CABG):** Primary isolated low or medium risk CABG.

**Risk stratification:** Based on Euro Score II (A method of calculating predictive operative mortality for patients undergoing cardiac surgery).

**Mortality:** All cause of deaths related to the performance of elective isolated coronary artery bypass surgery.

*High Volume Centre: > 100 cases

### Criteria

**Inclusion:**
1. Patients undergoing first time isolated CABG.
2. Patients undergoing primary isolated low or medium risk CABG.

**Exclusion:**
1. Re-do cases or multiple procedures open heart surgery.
2. Urgent or emergency cardiac surgeries.
3. Patients who died due to other illness.

### Type of Indicator

Rate-based outcome indicator

### Numerator

Number of deaths from elective coronary artery bypass surgery (CABG)

### Denominator

Total number of elective coronary artery bypass surgery (CABG) done

### Formula

\[ \text{Numerator} \times \frac{100}{\text{Denominator}} \]

### Standard

≤ 5%

### Data Collection

1. **Where:** Data will be collected from Cardiothoracic wards/ Cardiothoracic clinic/ Operation Theatre/ ICU/ CCU/ CRW/ NICU/ wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from OT list/ patient's case note/ registration book/ record book/ Hospital IT System (refer to KPI MOH Guidelines).
<table>
<thead>
<tr>
<th>Indicator 3.2</th>
<th>: Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>: Cardiovascular and Thoracic Surgery</td>
</tr>
<tr>
<td>Indicator</td>
<td>: Elective coronary artery bypass surgery (CABG) mortality rate [Low Volume Centre]</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>: Effectiveness</td>
</tr>
</tbody>
</table>
| Rationale    | : 1. Coronary artery bypass surgery is the most common open heart surgical procedure currently being performed. However, there are various co-morbid factors which influence the outcome of cardiac surgery—age, co-morbid illness e.g. diabetes, renal impairment, poor EF and the patients need to be risk stratified. Risk stratification is done through various predictive risk scoring methods e.g. Euroscore, Parsonnet, STS score which allows for comparison with international standards.
2. It has also been shown that high volume centres consistently perform better than low volume centres thus it provides important data for planning and resource management. Mortality rates are considered outcome of care measure because they measure the results of the treatment.
3. References:
| Definition of Terms | : Elective surgery: Surgery for patients whose clinical condition requires procedures that can be managed by placement on a waiting (ref: RACS—National definition for elective surgery urgency categories Aug 2013).
Coronary artery bypass surgery (CABG): Primary isolated low or medium risk CABG.
**Risk stratification:** Based on Euro Score II (A method of calculating predictive operative mortality for patients undergoing cardiac surgery).
Mortality: All cause of deaths related to the performance of elective isolated coronary artery bypass surgery.
*Low Volume Centre: ≤ 100 cases |
| Criteria      | : Inclusion:
   1. Patients undergoing first time isolated CABG.
   2. Patients undergoing primary isolated low or medium risk CABG.
Exclusion:
   1. Re-do cases or multiple procedures open heart surgery.
   2. Urgent or emergency cardiac surgeries.
   3. Patients who died due to other illness. |
| Type of indicator | : Rate-based outcome indicator |
| Numerator     | : Number of deaths from elective coronary artery bypass surgery (CABG) |
| Denominator   | : Total number of elective coronary artery bypass surgery (CABG) done |
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

#### 182

**CLINICAL PERFORMANCE SURVEILLANCE UNIT**

**D(Departmental); I(Individual)**

#### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

| Formula | : | Numerator \( \times \) 100 % \[
| Standard | : | \( \leq 10\% \) |
| Data Collection | : | 1. **Where**: Data will be collected from Cardiothoracic wards/ Cardiothoracic clinic/ Operation Theatre/ ICU/ CCU/ CRW/ NICU/ wards that cater for the above condition.
| | : | 2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
| | : | 3. **How frequent**: 3 monthly data collection.
| | : | 4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
| | : | 5. **How to collect**: Data is suggested to be collected from OT list/ patient’s case note/ registration book/ record book/ Hospital IT System (refer to KPI MOH Guidelines). |

**Remarks**

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### Indicator 4.1

**Individual**

**Discipline**: Cardiovascular and Thoracic Surgery

**Indicator**: Percentage of patients with chest reopening for severe bleeding post elective primary isolated adult open heart surgery [High Volume Centre]

**Dimension of Quality**: Effectiveness

**Rationale**: 1. Post-operative bleeding in cardiac surgery is a serious complication with an increase both morbidity and mortality thus extra care should be taken intra-operatively to limit surgical causes of bleeding.
2. References:
   a. [http://icvts.oxfordjournals.org/content/14/6/704.full](http://icvts.oxfordjournals.org/content/14/6/704.full). Re-exploration for bleeding or tamponade after cardiac operation.
   b. [http://circoutcomes.ahajournals.org/content/2/6/583.full](http://circoutcomes.ahajournals.org/content/2/6/583.full). Reoperation for Bleeding in Patients Undergoing Coronary Artery Bypass Surgery: Incidence, Risk Factors, Time Trends, and Outcomes.

**Definition of Terms**: **Severe post operative bleeding**: Considered when any one or more of these criteria are met or as determined by the operating consultant:
1. \( >500\)mls in any hour postoperatively.
2. \( >400\)mls during any 2 successive hours postoperatively.
3. \( >300\)mls in each 3 successive hours postoperatively.
4. If at the end of the 4th or 5th hour the patient has bled 1000mls or 1200mls respectively.

**Primary open heart surgery**: First time single procedure open heart surgery.

**Criteria**: Inclusion:
1. Patients who underwent elective primary single procedure adult open heart surgery.

*High Volume Centre*: > 100 cases
surgery.

**Exclusion:**
1. Multiple open heart cardiac surgical procedures.
2. Re-do operations.
3. Patients who have had their chest left opened for elective closure at a later date.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numerator</strong></td>
<td>Number of patients with chest reopening for severe bleeding post elective primary isolated adult open heart surgery</td>
</tr>
<tr>
<td><strong>Denominator</strong></td>
<td>Total number of elective primary isolated adult open heart surgery</td>
</tr>
<tr>
<td><strong>Formula</strong></td>
<td>Numerator ( \times ) 100 % / Denominator</td>
</tr>
<tr>
<td><strong>Standard</strong></td>
<td>( \leq 5% )</td>
</tr>
</tbody>
</table>

**Data Collection**
1. **Where:** Data will be collected from Cardiothoracic ward/ Operation Theatre/ CCU/ CRW/ ICU/ NICU or wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from OT list/ patient's case note/ record book/ Hospital IT system (refer to KPI MOH Guidelines).

**Remarks**

**Indicator 4.2**

**Discipline:** Cardiovascular and Thoracic Surgery

**Indicator:** Percentage of patients with chest reopening for severe bleeding post elective primary isolated adult open heart surgery [Low Volume Centre]

**Dimension of Quality:** Effectiveness

**Rationale**
1. Post-operative bleeding in cardiac surgery is a serious complication with an increase both morbidity and mortality thus extra care should be taken intraoperatively to limit surgical causes of bleeding.
2. **References:**
   a. [Re-exploration for bleeding or tamponade after cardiac operation](http://icvts.oxfordjournals.org/content/14/6/704.full).
   b. [Reoperation for Bleeding in Patients Undergoing Coronary Artery Bypass Surgery. Incidence, Risk Factors, Time Trends, and Outcomes](http://circoutcomes.ahajournals.org/content/2/6/583.full).

**Definition of Terms**

**Severe post operative bleeding:** Considered when any one or more of these criteria are met or as determined by the operating consultant:
1. >500mls in any hour postoperatively.
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patients who underwent elective primary single procedure adult open heart surgery.</td>
</tr>
<tr>
<td></td>
<td>Exclusion:</td>
</tr>
<tr>
<td></td>
<td>Multiple open heart cardiac surgical procedures.</td>
</tr>
<tr>
<td></td>
<td>Re-do operations.</td>
</tr>
<tr>
<td></td>
<td>Patients who have had their chest left opened for elective closure at a later date.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of patients with chest reopening for severe bleeding post elective primary isolated adult open heart surgery</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of elective primary isolated adult open heart surgery</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≤ 10%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected from Cardiothoracic ward/ Operation Theatre/ CCU/ CRW/ ICU/ NICU or wards that cater for the above condition.</td>
</tr>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>3. How frequent: 3 monthly data collection.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from OT list/ patient’s case note/ record book/ Hospital IT system (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

**Remarks**

**Indicator 5**

- **Discipline**: Cardiovascular and Thoracic Surgery
- **Indicator**: Percentage of watershed stroke patients following elective primary isolated adult open heart surgery
- **Dimension of Quality**: Effectiveness
- **Rationale**: Strokes occur up to 10% of patients following cardiac surgery. And there is a 10% increase in mortality in patients who developed postoperative stroke following cardiac surgery. This underlies the importance of brain protective strategies perioperatively.
- **References**:
  1. [http://stroke.ahajournals.org/content/37/9/2306.full](http://stroke.ahajournals.org/content/37/9/2306.full)

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2. >400mls during any 2 successive hours postoperatively.
3. >300mls in each 3 successive hours postoperatively.
4. If at the end of the 4th or 5th hour the patient has bled 1000mls or 1200mls respectively.

**Primary open heart surgery**: First time single procedure open heart surgery.

*Low Volume Centre: ≤ 100 cases*
<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Watershed stroke: An ischemia or impediment of blood flow that is localised to the border zones between the territories of two major cerebral arteries.</th>
</tr>
</thead>
</table>
| Criteria            | **Inclusion:**  
1. All patients who developed stroke (confirmed radiologically and reviewed by a physician/neurologist).  
2. Elective primary isolated open heart surgery.  

**Exclusion:**  
1. Urgent and emergency open heart surgery.  
2. Complex aortic arch surgery.  
3. Patients with previous stroke, transient ischaemic attack (TIA), carotid stenosis >70% or atheromatous ascending aorta on CT scan. |
| Type of indicator   | Rate-based process indicator |
| Numerator           | Number of watershed stroke patients following elective primary isolated adult open heart surgery |
| Denominator         | Total number of patients underwent elective primary isolated adult open heart surgery |
| Formula             | \[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\] |
| Standard            | ≤ 10% |
| Data Collection     | 1. **Where:** Data will be collected from Cardiothoracic ward/ Cardiothoracic clinic/ ICU/ CCU/ CRW/ NICU or ward that cater the above condition  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** 6 monthly data collection.  
4. **Who should verify:** Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from OT list/ patient's case note/ admission book/ record book/ Hospital IT system (refer to KPI MOH Guidelines). |
| Remarks             | |

**Indicator 6**  
**Discipline:** Cardiovascular and Thoracic Surgery  
**Indicator:** Percentage of post cardiac surgery patients with complete sternal wound dehiscence  
**Dimension of Quality:** Effectiveness  
**Rationale:**  
1. The incidence of sternal wound complications such as sternal dehiscence or...
superficial sternal wound infections (SSWI), or deep sternal wound infections (DSWI) range from 0.3% to 8%.

2. Sternal wound complications result in increased morbidity and mortality, reaching 10% to 40%.

3. Mediastinitis, complete dehiscence and osteomyelitis has an unacceptably high mortality rate. Such complications can escalate the costs of surgery up to 4-fold.

4. References:
   b. http://www.cardiothoracicsurgery.org/content/4/1/19

<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Complete sternal wound dehiscence: Complete separation of the bony sternum and manubrium following median sternotomy approach.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>Adult patients.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: 1. All adult patients who had an open heart surgical procedures via a median sternotomy, and who had a complete sternal wound dehiscence with or without evidence of bacterial infections.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of post cardiac surgery adult patients with complete sternal wound dehiscence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of post cardiac surgery adult patients who had open heart surgery via a median sternotomy approach</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formula</th>
<th>Numerator x 100 % / Denominator</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Standard</th>
<th>≤ 10%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>1. Where: Data will be collected from Cardiothoracic wards/ Cardiothoracic clinic/ ICU/ CCU/ CRW/ NICU/ wards that cater for the above condition.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>3. How frequent: 3 monthly data collection.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from OT census/ admission book/ record book/ Hospital IT system (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

| Remarks             |                                                   |
## COLORECTAL SURGERY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Rate of immediate stoma revision after its creation</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 3 weeks for colorectal cancer (CRC) surgery</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with waiting time of ≤ 4 weeks for elective colonoscopy</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Rate of unclear surgical margins in rectal cancer surgery</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of colonic perforation during colonoscopy</td>
<td>Safety</td>
<td>&lt; 2%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Occurrence of anal stenosis following haemorrhoidectomy</td>
<td>Effectiveness</td>
<td>0</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

### Indicator 1

**Discipline**: Colorectal Surgery  
**Name of indicator**: Rate of immediate stoma revision after its creation  
**Dimension of Quality**: Effectiveness  
**Rationale**: To ensure stoma is being created properly.  
**Definition of Terms**:  
- **Stoma**: Colostomy and ileostomy.  
- **Immediate stoma revision**: Unplanned refashioning of stoma during the same admission.  

**Criteria**  
**Inclusion**: All colostomy and ileostomy refashioning during the same admission.  
**Exclusion**:  
1. Ileal conduits and feeding stomas.  
2. Refashioning was done during another admission.  

**Type of indicator**: Rate-based process indicator  
**Numerator**: Number of immediate stoma revision after its creation  
**Denominator**: Total number of stoma created  
**Formula**:  
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]  
**Standard**: < 10%  
**Data Collection**:  
1. **Where**: Data will be collected from wards that cater for the above condition/OT.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator)
### Indicator 2

**Discipline**: Colorectal Surgery

**Name of indicator**: Percentage of patients with waiting time of ≤ 3 weeks for colorectal cancer (CRC) surgery

**Dimension of Quality**: Customer centeredness

**Rationale**:
1. To ensure no delay in colorectal cancer operation.

**Definition of Terms**:

- **Waiting time**: From the time patient seen at clinic after HPE confirmation till the date of surgery.

**Criteria**:

- **Inclusion**: All colorectal malignancy.
- **Exclusion**:
  1. Malignancy of non-colorectal origin.
  2. Colorectal malignancy where treatment is preceded by radiation or chemotherapy (neo-adjuvant therapy).
  3. Patient who refused the proposed date.
  4. Patients’ condition is not permissible for surgery.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients with waiting time of ≤ 3 weeks for colorectal cancer (CRC) surgery

**Denominator**: Total number of patients for colorectal cancer (CRC) surgery

**Formula**: Numerator \times 100\% / Denominator

**Standard**: ≥ 90\%

**Data Collection**:
1. **Where**: Data will be collected from Surgical Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from OT list/ record book/ Hospital IT System (refer to KPI MOH Guidelines).

**Remarks**: 

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| Indicator 3 | Departmental |
| Discipline | Colorectal Surgery |
### Indicator 1
**Name of indicator**: Percentage of patients with waiting time \( \leq 4 \) weeks for elective colonoscopy

**Dimension of Quality**: Customer centeredness

**Rationale**: To ensure the waiting time for colonoscopy is not too long.

**Definition of Terms**:
- **Waiting time**: The time between decision to scope and the actual colonoscopy done.

**Criteria**:
- **Inclusion**: All new elective colonoscopies by the surgical department
- **Exclusion**: Any emergency colonoscopies, colonoscopy by other departments, sigmoidoscopy and proctoscopy, patient refused the proposed date, patient for surveillance for colorectal cancer.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients with waiting time elective colonoscopy of \( \leq 4 \) weeks

**Denominator**: Total number of patients for colonoscopy

**Formula**: 
\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

**Standard**: \( \geq 90\% \)

**Data Collection**:
- **Where**: Data will be collected from Endoscopic Suite.
- **Who**: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
- **How frequent**: 3 monthly data collection.
- **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
- **How to collect**: Data is suggested to be collected from appointment book/record book/Hospital IT System (refer to KPI MOH Guidelines).

**Remarks**: 

### Indicator 2
**Name of indicator**: Rate of unclear surgical margins in rectal cancer surgery

**Dimension of Quality**: Effectiveness

**Rationale**: To ensure complete resection of rectal cancer.

**Definition of Terms**:
- **Margins**: Include proximal, distal and circumferential margins.

**Criteria**:
- **Inclusion**: All resectable primary rectal adenocarcinoma, rectosigmoid malignancies.
- **Exclusion**: T4 rectal lesion irrespective of therapy, malignancy other than rectal adenocarcinoma.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of unclear surgical margins in rectal cancer surgery

**Denominator**: Total number of rectal cancer surgery performed

**Formula**: 
\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

**Remarks**: 

**Indicator 4**: Individual

**Discipline**: Colorectal Surgery

**Name of indicator**: Rate of unclear surgical margins in rectal cancer surgery

**Definition of Terms**:
- **Margins**: Include proximal, distal and circumferential margins.

**Criteria**:
- **Inclusion**: All resectable primary rectal adenocarcinoma, rectosigmoid malignancies.
- **Exclusion**: T4 rectal lesion irrespective of therapy, malignancy other than rectal adenocarcinoma.
**TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES**

**MEDICAL PROGRAMME 2016**

**Standard** : <10%

**Data Collection**:
1. **Where**: Data will be collected from Surgical Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note and histopathological examination report/ record book/ Hospital IT System (refer to KPI MOH Guidelines).

**Remarks** :

---

**Indicator 5**

**Discipline** : Colorectal Surgery

**Name of indicator** : Percentage of colonic perforation during colonoscopy

**Dimension of Quality** : Safety

**Rationale** : To minimize accidental perforations during colonoscopy.

**Definition of Terms** : NA

**Criteria** :

**Inclusion**:
1. All diagnostic colonoscopy done by any personnel in the Department.

**Exclusion**:
1. All therapeutic colonoscopies.

**Type of indicator** : Rate-based outcome indicator

**Numerator** : Number of colonic perforations during colonoscopy

**Denominator** : Total number of colonoscopies performed

**Formula** :
\[
\text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

**Standard** : < 2%

**Data Collection**:
1. **Where**: Data will be collected from Endoscopy Unit.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from colonoscopy book/ emergency OT list / record book/ Hospital IT System(refer to KPI MOH Guidelines).

**Remarks** :

---

**Indicator 6**

**Discipline** : Colorectal Surgery

**Name of indicator** : Occurrence of anal stenosis following haemorrhoidectomy

---
### Dimension of Quality: Effectiveness

#### Rationale:
1. To ensure no anal stenosis after haemorrhoidectomy.

#### Definition of Terms:
**Haemorrhoidectomy:** Open, closed and stapled haemorrhoidopexy.

#### Criteria:
- **Inclusion:**
  1. All new haemorrhoidectomy cases.

- **Exclusion:** NA

#### Type of indicator: Sentinel event

#### Numerator:
Number of anal stenosis following haemorrhoidectomy

#### Denominator:
NA

#### Formula:
NA

#### Standard:
0

#### Data Collection:
1. **Where:** Data will be collected from Surgical Clinic/ OT.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from OT schedule/ patient’s case note/ record book/ Hospital IT System (refer to KPI MOH Guidelines).

#### Remarks:
### GENERAL SURGERY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of new non-urgent cases that were given appointment for first consultation within (\leq 4) weeks at General Surgery Clinic</td>
<td>Timely</td>
<td>(\geq 75%)</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patient with waiting time of (\leq 90) minutes to see the doctor at General Surgery Clinic</td>
<td>Customer</td>
<td>(\geq 90%)</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Post appendicectomy complications rate during hospital stay</td>
<td>Safety</td>
<td>(\leq 10%)</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of cases with unplanned return to the operating theatre within the same admission following an elective surgical procedure</td>
<td>Safety</td>
<td>(\leq 5%)</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of colonic perforation during colonoscopy</td>
<td>Safety</td>
<td>(\leq 2%)</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of cancellation of elective surgery</td>
<td>Effectiveness</td>
<td>(\leq 10%)</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Percentage of complications following thyroidectomy (hemi &amp; total) for benign thyroid diseases</td>
<td>Safety</td>
<td>(\leq 10%)</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**: Departmental  
**Discipline**: General Surgery  
**Indicator**: Percentage of new non-urgent cases that were given appointment for first consultation within \(\leq 4\) weeks at General Surgery Clinic  
**Dimension of Quality**: Timely  
**Rationale**:  
1. A patient with a surgical illness should be able to gain access to our public health system without delay.  
2. The time interval between the dates a patient (“new case”) requested for an appointment to the date of the first appointment given reflects on one aspect of accessibility.  
3. Delay is a failure to provide service according to needs and may lead to deterioration of the patient's illness or forcing him / her to seek medical services elsewhere.  
**Definition of Terms**:  
**Appointment**: Time taken from date of referral received to the date of first consultation with the doctor.  
**Inclusion**: NA  
**Exclusion**:  
1. Patients who default the first appointment given.
TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of cases that were given appointment for first consultation within (≤) 4 weeks at General Surgery Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of cases referred to General Surgery Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 75%</td>
</tr>
</tbody>
</table>

**Data Collection**

1. **Where**: Data will be collected at General Surgery Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from appointment book/ record book (refer to KPI MOH Guidelines).

**Remarks**

**Indicator 2**

Departmental

**Discipline**: General Surgery

**Indicator**: Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at General Surgery Clinic

**Dimension of Quality**: Customer centeredness

**Rationale**

1. Waiting time to see doctor at the Specialist Clinic reflects on proper clinic management and therefore efficiency and punctuality. Ideally, patients should receive services at the stipulated time.
2. It is the aim of the MOH to reduce waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities

**Definition of Terms**

**Waiting time**: Time of registration/ appointment (whichever is later) to the time patient is first seen by the doctor.

**Criteria**

Inclusion: NA

**Exclusion**

1. Patients who request to see a specific doctor.
2. Patients who come without an appointment (“walk-in” patients).
3. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.
4. Patients with multiple appointments on the same day.
5. Patients slotted in for special consultation.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients with waiting time of ≤ 90 minutes to see the doctor at General Surgery Clinic

**Denominator**: Total number of patients seen at General Surgery Clinic

**Formula**: Numerator x 100%
**TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES**

**MEDICAL PROGRAMME 2016**

---

## Denominator

<table>
<thead>
<tr>
<th>Standard</th>
<th>Denominator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>

## Data Collection

<table>
<thead>
<tr>
<th></th>
<th>1. <strong>Where</strong>: Data will be collected at General Surgery Clinic.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. <strong>Who</strong>: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>3. <strong>How frequent</strong>: 3 monthly data collection.</td>
</tr>
<tr>
<td></td>
<td>4. <strong>Who should verify</strong>: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. <strong>How to collect</strong>: Data is suggested to be collected from record book/ waiting time slip/ outpatient card (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

## Remarks

- For Hospitals with > 100 beds or have constraints in systematically data collection, it is suggested that 25% sampling is applied to the total number of patients seen at General Surgery Clinic.
- The sampling is suggested to be randomised and the numbers of samples are based on previous month total number of patients seen at General Surgery Clinic.

---

## Indicator 3

<table>
<thead>
<tr>
<th>Indicator 3</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>General Surgery</td>
</tr>
<tr>
<td><strong>Indicator</strong></td>
<td>Post appendicectomy complications rate during hospital stay</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Safety</td>
</tr>
</tbody>
</table>

### Rationale

Appendicectomy is a common surgery and it will present the skill of the trained surgeon. Complication following the common surgery may reflect the competency of the surgeon.

### Definition of Terms

**Complications include**

1. Wound infection / Superficial Skin Infection / Surgical Site Infection (SSI)
2. Appendicular stump blowout
3. Intra abdominal abscess
4. Intestinal obstruction
5. Any complication that require stay > 5 days post operatively *(may or may not be related to appendix)*
6. Bleeding

* Multiple complications in a surgery considered as a single complication in the same surgery.

### Criteria

#### Inclusion:

1. All appendicectomies performed via Lanz’s incision or laparoscopically

#### Exclusion:

1. Appendicectomy done via laparotomy
2. Incidental appendicectomy

### Type of indicator

Rate-based outcome indicator

### Numerator

Number **cases** of appendicectomy with complication during the hospital stay

### Denominator

Total number of appendicectomy done in the corresponding month

### Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard

≤ 10%
### Data Collection

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| **Data Collection** | **1. Where:** Data will be collected at surgical wards/wards that cater for the above condition.  
**2. Who:** Data will be collected by Officer/Nurse in-charge (indicator co-ordinator) of the department/unit.  
**3. How frequent:** Monthly data collection.  
**4. Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.  
**5. How to collect:** Data is suggested to be collected from OT book/registration book/patient’s case note (refer to KPI MOH Guidelines). |
| **Remarks** |   |

### Indicator 4

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator</strong></td>
<td>Percentage of cases with unplanned return to the operating theatre within the same admission following an elective surgical procedure</td>
</tr>
<tr>
<td><strong>Discipline</strong></td>
<td>General Surgery</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Safety</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>1. Any unplanned return to the operation theatre may indicate a quality problem due to the occurrence of intra-operative problems that are serious enough to warrant intervention post-operatively.</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
<td><strong>Unplanned return:</strong> Unexpected return to the operating theatre to address a previous complication of the original operation.</td>
</tr>
</tbody>
</table>
| **Criteria** | **Inclusion:**  
1. Elective surgical procedure performed under general anaesthesia.  
**Exclusion:**  
1. Endoscopy cases.  
2. Day care cases. |
| **Type of indicator** | Rate-based outcome indicator |
| **Numerator** | Number of cases with unplanned return to the operating theatre within the same admission following an elective surgical procedure |
| **Denominator** | Total number of cases undergo elective surgical procedure |
| **Formula** | \[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\] |
| **Standard** | \(\leq 5\%\) |
| **Data Collection** | 1. **Where:** Data will be collected at surgical wards/wards that cater for the above condition.  
2. **Who:** Data will be collected by Officer/Nurse in-charge (indicator co-ordinator) of the department/unit.  
3. **How frequent:** 3 Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.  
5. **How to collect:** Data is suggested to be collected from OT book/registration book/patient’s case note (refer to KPI MOH Guidelines). |
| **Remarks** | National Institutes of Health (NIH) USA data reports an unplanned return rate of between 5% and 15%, depending on the type of surgery performed. |
| Indicator 5 | : | Individual |
| Discipline | : | General Surgery |
| Indicator | : | Percentage of colonic perforation during colonoscopy |
| Dimension of Quality | : | Safety |
| Rationale | : | Colonoscopy is a common procedure and needed for diagnostic or therapeutic purposes. Complication following the common procedure may reflect the competency of the surgeon. |
| Definition of Terms | : | NA |
| Criteria | : | **Inclusion:** All cases of colonoscopy performed  
**Exclusion:**  
1. Patient with connective tissue disease |
| Type of indicator | : | Rate-based outcome indicator |
| Numerator | : | Number of colonic perforation following colonoscopy |
| Denominator | : | Total number of colonoscopy done |
| Formula | : | \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \) |
| Standard | : | \( \leq 2\% \) |
| Data Collection | : | 1. **Where:** Data will be collected at surgical wards/wards that cater for the above condition.  
2. **Who:** Data will be collected by Officer/Nurse in-charge (indicator co-ordinator) of the department/unit.  
3. **How frequent:** 3 Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.  
5. **How to collect:** Data is suggested to be collected from OT book/registration book/patient’s case note (refer to KPI MOH Guidelines). |
| Remarks | : | |
| Indicator 6 | : | Individual |
| Discipline | : | General Surgery |
| Indicator | : | Percentage of cancellation of elective surgery |
| Dimension of Quality | : | Effectiveness |
| Rationale | : | Surgical procedure executed as planned reflects on customer satisfaction. Cancellation may leads to patient’s disappointments and may jeopardise surgeon-patient’s rapport. |
| Definition of Terms | : | **Elective surgery:** Surgery is planned for the patient by a surgeon.  
**Cancellation:** The surgery is cancelled in spite of already in the list for the operating day. |
| Criteria | : | **Inclusion:** All elective surgery scheduled.  
**Exclusion:**  
1. Cancellation due to acute medical problems rendering him unfit for surgery or anaesthesia. |
### Type of indicator
- Rate-based outcome indicator

### Numerator
- Number of elective surgery cancelled on the correspond period

### Denominator
- Total number of elective surgery scheduled on the correspond period

### Formula
\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

### Standard
- ≤ 10%

### Data Collection
1. **Where**: Data will be collected at surgical wards/ OT/ wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from OT book/ registration book/ patient’s case note / record book (refer to KPI MOH Guidelines).

### Remarks:

---

### Indicator 7
- **Type**: Individual
- **Discipline**: General Surgery
- **Indicator**: Percentage of complications following thyroidectomy (hemi & total) for benign thyroid diseases
- **Dimension of Quality**: Safety
- **Rationale**: Thyroid surgery contributes to about 20% of major elective surgery. Surgeons are trained to do thyroidectomy, therefore, complication following the thyroidectomy for benign conditions should be minimal.

#### Definition of Terms
- **Complications** include:
  1. Bleeding/ haematoma
  2. Recurrent laryngeal nerve injury (RLN)

#### Criteria
- **Inclusion**: all patients
- **Exclusion**:
  1. Operation done by other department (eg. ORL)
  2. Thyroidectomy done as emergencies

#### Type of indicator
- Rate-based outcome indicator

#### Numerator
- Number of post thyroidectomy complication on the correspond period

#### Denominator
- Total number of thyroidectomy done on the correspond period

#### Formula
\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

#### Standard
- ≤ 10%

#### Data Collection
1. **Where**: Data will be collected at surgical wards/ OT/ wards that cater for the
<table>
<thead>
<tr>
<th>Remarks</th>
<th></th>
</tr>
</thead>
</table>

above condition.

2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.

3. **How frequent**: 3 Monthly data collection.

4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.

5. **How to collect**: Data is suggested to be collected from OT book/ registration book/ patient’s case note (refer to KPI MOH Guidelines).
## Hepatobiliary Surgery

<table>
<thead>
<tr>
<th>Type</th>
<th>No</th>
<th>Indicator</th>
<th>Dimension</th>
<th>Standard</th>
<th>Hospital Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that are given appointment for first consultation within 1 month</td>
<td>Timely</td>
<td>≥75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 1 month for elective surgery for hepatobiliary malignancy</td>
<td>Timely</td>
<td>≥90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of cancellation of listed elective hepatobiliary surgical cases</td>
<td>Customer</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Mortality ≤ 30 days following elective Hepatic Resection</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Mortality ≤ 30 days following elective Whipple’s operation</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of attendance for department CME</td>
<td>Effectiveness</td>
<td>≥80%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

### Indicator 1

**Department:** Departmental  
**Discipline:** Hepatobiliary Surgery  
**Indicator:** Percentage of non-urgent cases that are given appointment for first consultation within 1 month  
**Dimension of Quality:** Timely  
**Rationale:** A patient with a hepatobiliary illness should be able to gain access to our public health system without delay. The time interval between a new patient requested for an appointment to the date of the first appointment given reflects on one aspect of accessibility. Delay is a failure to provide service according to needs and may lead to deterioration of the patient’s illness.  
**Definition of Terms:**  
**Waiting time:** From the date requested appointment to the given appointment  
**Criteria:**  
**Inclusion:** NA  
**Exclusion:**  
1. Patient who default the first appointment given  
2. Patients who request to see a specific doctor  
3. Patients who request to delay the appointment date  
**Type of indicator:** Rate-based process indicator  
**Numerator:** No. of patient given appointment for first consultation ≤ 1 month  
**Denominator:** Total no. of patient given appointment for first consultation  
**Formula:**  
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]  
**Standard:** ≥75%
### Data Collection

| Data Collection | 1. **Where:** Data will be collected at Hepatobiliary Surgery Unit/ Department.  
|                | 2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
|                | 3. **How frequent:** 3 Monthly data collection.  
|                | 4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
|                | 5. **How to collect:** Data is suggested to be collected from appointment book/ record book (refer to KPI MOH Guidelines).  
| Remarks |  |

### Indicator 2

| Indicator 2 | **Discipline:** Hepatobiliary Surgery  
|            | **Dimension of Quality:** Timely  
|            | **Rationale:** When surgery is the treatment option for hepatopancreatobiliary malignancy, patients should be able to undergo the surgery within a reasonable waiting time  
|            | **Definition of Terms:**  
|            | **Inclusion:** All patients with hepatopancreatobiliary malignancies  
|            | **Exclusion:**  
|            | 1. Patient not fit for surgery  
|            | 2. Delay operation due to  
|            |  a. OT use for other urgent operation/ procedure  
|            |  b. OT closed due to technical/ structural problem  
|            | **Type of indicator:** Rate based outcome indicator  
|            | **Numerator:** No. of cases given appointment for surgery ≤ 1 month  
|            | **Denominator:** Total no. of cases given appointment for surgery  
|            | **Formula:**  
|            |  
|            |  
|            | **Standard:** ≥90%  
| Data Collection | 1. **Where:** Data will be collected at Hepatobiliary Surgery Unit/ Department.  
|                | 2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
|                | 3. **How frequent:** 3 Monthly data collection.  
|                | 4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
|                | 5. **How to collect:** Data is suggested to be collected from appointment book/ record book (refer to KPI MOH Guidelines).  
| Remarks |  |

### Indicator 3

| Indicator 3 | **Discipline:** Hepatobiliary Surgery  
| Remarks |  |
### Clinical Performance Surveillance Unit - Medical Programme 2016

#### Indicator

**Indicator**
Percentage of cancellation of listed elective hepatobiliary surgical cases

**Dimension of Quality**
Customer Centeredness

**Rationale**
Cancellation of operations in hospitals is a significant problem. Cancellation of elective operations is a parameter to assess quality of patient care and quality of management system.

**Definition of Terms**

**Criteria**

- **Inclusion**: All elective hepatobiliary surgery cases admitted and listed for surgery however the operation was cancelled on the day of surgery

  **Exclusion**:
  1. Cancellation due to emergency surgery.
  2. Cadaveric liver transplant

**Type of indicator**
Rate based process indicator

**Numerator**
All cancelled elective hepatobiliary cases

**Denominator**
No. of cases admitted and listed for elective surgery

**Formula**
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard**
\(< 10\%\)

**Data Collection**

1. **Where**: Data will be collected at Hepatobiliary Surgery Unit/ Department.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from appointment book/ record book (refer to KPI MOH Guidelines).

**Remarks**

---

#### Indicator 4

**Indicator**
Mortality ≤ 30 days following elective Hepatic Resection

**Dimension of Quality**
Effectiveness

**Rationale**
Hepatic resection is a major surgical procedure routinely performed for various indications, both benign and malignant. Low mortality is now achievable.

**Definition of Terms**
Mortality will be defined as death of a patient within 30 days following an elective procedure.

**Criteria**

- **Inclusion**: All elective hepatic resection

  **Exclusion**: Emergency liver resections, e.g liver trauma

**Type of indicator**
Rate based outcome indicator

**Numerator**
No. of patients die within 30 days after having an elective liver resection

**Denominator**
Total no. of patients having elective liver resection

**Formula**
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard**
\(\leq 5\%\)

**Data Collection**

1. **Where**: Data will be collected at Hepatobiliary Surgery Unit/ Department.
### Indicator 5

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Hepatobiliary Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Mortality ≤ 30 days following elective Whipple’s operation</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
<tr>
<td>Rationale</td>
<td>Whipple’s operation is a major surgical procedure routinely performed for various indications, both benign and malignant. Low mortality is now achievable.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Mortality will be defined as death of a patient within 30 days following an elective procedure.</td>
</tr>
</tbody>
</table>
| Criteria              | Inclusion: All elective Whipple’s operation  
                          Exclusion: Emergency Whipple’s operation |
| Type of indicator     | Rate based outcome indicator |
| Numerator             | No. of patient die within 30 days after having an elective Whipple’s operation. |
| Denominator           | Total no. of patient having an elective Whipple’s operation |
| Formula               | Numerator x 100%  
                          Denominator |
| Standard              | ≤ 5% |

### Data Collection

1. **Where**: Data will be collected at Hepatobiliary Surgery Unit/ Department.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

### Remarks

### Indicator 6

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Hepatobiliary Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Percentage of attendance for department CME</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>As a subspecialty service, postgraduate educational programs are essential for the education and training in hepatobiliary surgery. The department have regular postgraduate educational programs for the benefit of trainees.</td>
</tr>
</tbody>
</table>

### Remarks
### Definition of Terms
- **CME**: Continuous Medical Education conducted by the department/hospital

### Criteria
- **Inclusion**: Only CME related to Hepatobiliary topic
- **Exclusion**: All non-clinical CME/ not related to Hepatobiliary topic

### Type of indicator
- Rate based structure indicator

### Numerator
- No. of CME attended

### Denominator
- Total no. of CME

### Formula
- Numerator x 100%
  
  Denominator

### Standard
- ≥ 80%

### Data Collection
1. **Where**: Data will be collected at Hepatobiliary Surgery Unit/ Department.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

### Remarks
## NEUROSURGERY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of newly diagnosed brain or spine tumour patients with waiting time of less than 3 months for elective surgery</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Mild head injury case fatality rate</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of safe CSF shunt surgery for paediatric patients conducted by Neurosurgeon</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients with wound infection following clean elective neurosurgical surgery</td>
<td>Safety</td>
<td>≤ 8%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of safe cranioplasty surgery for paediatric patients conducted by Neurosurgeon</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

- **Departmental**: Departmental
- **Discipline**: Neurosurgery
- **Name of indicator**: Percentage of newly diagnosed brain or spine tumour patients with waiting time of less than 3 months for elective surgery
- **Dimension of Quality**: Timely
- **Rationale**
  1. When surgery is the treatment option for the relief or cure of their ailments, patient should be able to undergo the surgery within a reasonable waiting time.
  2. This is especially true if the delay can result in complications of the condition or prolong suffering.
- **Definition of Terms**
  - **Waiting time**: Time taken from decision made for surgery to the schedule date (inclusive of public holidays and weekends).
- **Criteria**
  - **Inclusion**: NA
  - **Exclusion**
    1. Time taken is not inclusive of the day when the operating theatre is not operating, delay due to medical or patient factors.
    2. Multidisciplinary team cases (e.g; ORL (transphenoidal), Orthopaedic)
- **Type of indicator**: Rate-based process indicator
- **Numerator**: Number of newly diagnosed brain or spine tumour patients with waiting time of less than 3 months for elective surgery
- **Denominator**: Total number of newly diagnosed brain or spine tumour patients given appointment for surgery
- **Formula**: Numerator x 100% / Denominator
**TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES MEDICAL PROGRAMME 2016**

<table>
<thead>
<tr>
<th>Standard</th>
<th>≥ 80%</th>
</tr>
</thead>
</table>

**Data Collection**

1. **Where:** Data will be collected from Neurosurgical Clinic/ OT/ wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from OT schedule/ record book (refer to KPI MOH Guidelines).

**Remarks**:

---

**Indicator 2**

| Departmental |
| Neuromsurgery |

**Name of indicator:** Mild head injury case fatality rate

**Dimension of Quality:** Safety

**Rationale**

1. Commonest cause for neurosurgical admission.
2. Admission is largely for observation because of potential deterioration.
3. Mild head injury has a low fatality rate.
4. Indicate the quality of care given to patients.

**Definition of Terms**

- **Fatality:** Death of patients with isolated mild head injury (GCS of 14-15) within same admission.

**Criteria**

- **Inclusion:**
  1. All isolated mild head injury patient admitted to neurosurgical ward.

- **Exclusion:**
  1. Polytrauma associated with mild head injury.
  2. Death not related to head injury (e.g. Myocardial Infarct).

**Type of indicator:** Rate-based outcome indicator

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of mild head injury death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of patients with mild head injury admitted</td>
</tr>
</tbody>
</table>

**Formula**

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard**

≤ 5%

**Data Collection**

1. **Where:** Data will be collected from Neurosurgical wards or wards that cater for the above condition/ ICU/ CCU/ CRW/ NICU.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from admission book/ record book (refer to KPI MOH Guidelines).

**Remarks**

---
## Indicator 3

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Neurosurgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of safe CSF shunt surgery for paediatric patients conducted by Neurosurgeon</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
</tbody>
</table>
| Rationale                      | 1. Special care needed for Paediatric group.  
                                    | 2. Quality and safety driven by competency of the care provider. |
| Definition of Terms            | CSF shunt surgery: Implantation of a device that channels CSF sway from the brain to another part of the body where it can be absorbed.  
                                    | Save surgery: Complication free intervention within 30 days of surgery  
                                    | Paediatric patient: Patient population is below 12 years of age.  
                                    | Neurosurgeon: Neurosurgeon under gazettement or gazetted. |
| Type of indicator              | Rate-based outcome indicator |
| Criteria                       | Inclusion: All patients for first time CSF shunt surgery  
                                    | Exclusion:  
                                    | 1. Revision surgery  
                                    | 2. Previously infection  
                                    | 3. Complicated hydrocephalus |
| Numerator                      | Number of safe CSF shunt surgery for paediatric patients conducted by Neurosurgeon |
| Denominator                    | Total number of paediatric patient undergoing first time CSF shunt surgery conducted by Neurosurgeon |
| Formula                        | Numerator x 100%  
                                    | Denominator |
| Standard                       | ≥ 75% |
| Data Collection                | 1. Where: Data will be collected from Neurosurgical wards or wards that cater for the above condition/ Clinic.  
                                    | 2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
                                    | 4. Who should verify: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
                                    | 5. How to collect: Data is suggested to be collected from COTDS data/ patient's case note/ record book (refer to KPI MOH Guidelines). |
| Remarks                        | |

## Indicator 4

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Neurosurgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of patients with wound infection following clean elective neurosurgical surgery</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
<tr>
<td>Rationale</td>
<td>1. Based on US centre for Disease Control and Prevention (CDC) definition.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Elective surgery: Planned, scheduled, and well prepared patient.</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Clean Surgery: Surgery in patients with no prior laceration wound at the surgical site or presence of wound/sore/infection in the body, or presence of acute severe soft tissue injury.</td>
</tr>
<tr>
<td></td>
<td>Surgical site infection (SSI): Includes both the superficial and deep infection (Centers of Disease Control and Prevention guideline). The cut off point to be considered SSI is 3 months post-surgery. Therefore, all the clean elective operative patients must be seen/reviewed at around 3 months post-op.</td>
</tr>
</tbody>
</table>
| Centers of Disease Control and Prevention (CDC) Definitions of surgical site infection (SSI): | 1. Superficial infection: Involves only the skin and subcutaneous tissue of the incision AND the patient has at least one of the following:  
   a. Purulent drainage from the superficial incision.  
   b. Organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.  
   c. At least one of the following signs or symptoms of infection (pain or tenderness, localized swelling, redness or heat)  
   d. Superficial incision is deliberately opened by surgeon, unless incision is culture-negative  
   e. Diagnosis of superficial incisional SSI by the surgeon or attending physician.  
  2. Deep infection: Infection involved deep soft tissues (e.g. fascia and muscle layers) of the incision AND the patient has at least one of the following:  
   a. Purulent drainage from the deep incision but not from the organ/space component of the surgical site.  
   b. A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms (unless incision is culture-negative):  
      i. Fever (>38°C).  
      ii. Localized pain or tenderness.  
      iii. An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination.  
      iv. Diagnosis of deep incisional surgical site infection by a surgeon or attending physician.  
  **Note:**  
  - Do not count stitch abscesses (minimal inflammation and discharge confined to the points of suture penetration), or a localized stab wound infection as a surgical site infection.  
  - If the incisional site infection involves or extends into the fascia and muscle layers, report as a deep incisional SSI.  
  - An infection that involves both the superficial and deep incision sites should be classified as a deep incisional surgical site infection. |
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES MEDICAL PROGRAMME 2016

**Criteria**

<table>
<thead>
<tr>
<th>:</th>
<th><strong>Inclusion:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>All cases undergoing clean elective neurosurgical surgery.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Exclusion:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Re-opening cases of post-operative complications.</td>
</tr>
<tr>
<td>2. Re-surgery cases for residual or recurrence pathology.</td>
</tr>
<tr>
<td>4. Infection proven prior to surgery.</td>
</tr>
<tr>
<td>5. Stitch abscesses.</td>
</tr>
<tr>
<td>6. Combine multidisciplinary surgery</td>
</tr>
<tr>
<td>7. Surgery involving sinuses</td>
</tr>
</tbody>
</table>

**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of patients with wound infection following clean elective neurosurgical surgery

**Denominator**: Total number of patients underwent clean elective neurosurgical surgery

**Formula**: 

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard**: ≤ 8%

**Data Collection**

1. **Where**: Data will be collected from Neurosurgical wards or wards that cater for the above condition/ ICU/ CCU/ CRW/ NICU.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).

**Remarks**

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**Indicator 5**

<table>
<thead>
<tr>
<th>:</th>
<th><strong>Individual</strong></th>
</tr>
</thead>
</table>

** Discipline**: Neurosurgery

**Name of indicator**: Percentage of safe cranioplasty surgery for paediatric patients conducted by Neurosurgeon

**Dimension of Quality**: Effectiveness

**Rationale**

1. Special care needed for Paediatric group.
2. Quality and safety driven by competency of the care provider.

**Definition of Terms**

- **Cranioplasty surgery**: Surgical repair of a defect or deformity of a skull.
- **Save surgery**: Complication free intervention within 30 days of surgery
- **Paediatric patient**: Patient population is below 12 years of age.
- **Neurosurgeon**: Neurosurgeon under gazettement or gazetted.

**Criteria**

<table>
<thead>
<tr>
<th>:</th>
<th><strong>Inclusion:</strong></th>
</tr>
</thead>
</table>

**Exclusion**: Patient with comorbidity that may precipitate complication (e.g: connective tissue disease)

**Type of indicator**: Rate-based process indicator
### Numerator
Number of safe cranioplasty surgery for paediatric patients conducted by Neurosurgeon

### Denominator
Total number of paediatric patient undergoing cranioplasty surgery by Neurosurgeon

### Formula
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard
≥ 75%

### Data Collection
| 1. Where: | Data will be collected from Neurosurgical wards or wards that cater for the above condition/ Clinic. |
| 2. Who: | Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/ unit. |
| 4. Who should verify: | Data will be verified by Head of Department/ Head of Unit/ Hospital Director. |
| 5. How to collect: | Data is suggested to be collected from COTDS data/ patient’s case note/ record book (refer to KPI MOH Guidelines). |

### Remarks

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**TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES**

**MEDICAL PROGRAMME 2016**

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**CLINICAL PERFORMANCE SURVEILLANCE UNIT**

**D(Departmental); I(Individual)**

---

**PERFORMANCE SURVEILLANCE 4.0**
### OBSTETRICS AND GYNAECOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with eclampsia administered Magnesium Sulphate (MgSO₄)</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of massive postpartum haemorrhage (PPH) incidence in cases delivered in the hospital</td>
<td>Safety</td>
<td>≤ 1%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients hospitalised &gt; 24 hours seen by specialist at least once before discharge</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of cases with Erythromycin Ethinyl Succinate (EES) administration for preterm pre-labour rupture of membrane (PPROM) cases</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of unrecognised ureteric injury intraoperatively during benign gynaecological condition</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients diagnosed antenatally with morbidly adherent placenta have their caesarean section performed or supervised by consultant/ specialist</td>
<td>Safety</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

- **Type:** Departmental
- **Discipline:** Obstetrics and Gynaecology
- **Indicator:** Percentage of patients with eclampsia administered Magnesium Sulphate (MgSO₄)
- **Dimension of Quality:** Effectiveness

**Rationale**

1. This indicator is selected to ensure all mothers with eclampsia are given Magnesium Sulphate.
2. Eclampsia occurs in about 1.6 - 10 cases/ 10000 deliveries. The diagnosis of eclampsia is unambiguous and data is currently collected in an established manner. The incidence of eclampsia is reflective of the effectiveness of hypertensive disorder in pregnancy which occurs in 3 - 5% of pregnant mothers. The use of this indicator would reflect conformance to current evidence based management strategies by the O&G discipline.
3. Literature review:
   - Current evidence suggests that Magnesium Sulphate is the drug of choice in the treatment of women with eclampsia. It reduces the number of maternal deaths as well as respiratory and neurological complications. It also reduces
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

#### CLINICAL PERFORMANCE SURVEILLANCE UNIT

**D(Departmental); I(Individual)**

**PERFORMANCE SURVEILLANCE 4.0**

---

<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Eclampsia: Occurrence of one or more generalized tonic clonic convulsions with underlying hypertensive disorder in pregnancy, in the absence of other neurological conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administered Magnesium Sulphate (MgSO₄): At least administration of loading dose of MgSO₄.</td>
<td></td>
</tr>
</tbody>
</table>

#### Criteria

**Inclusion:**
1. All patients who have eclampsia.
2. No contraindication for MgSO₄

**Exclusion:** None

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with eclampsia administered Magnesium Sulphate (MgSO₄)</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients with eclampsia</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>

#### Data Collection

1. **Where:** Data will be collected in Labour ward/ High Dependency Ward (HDW).
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).

#### Remarks

---

#### Indicator 2

**Departmental**

**Discipline:** Obstetrics and Gynaecology

**Indicator:** Percentage of massive postpartum haemorrhage (PPH) incidence in cases delivered in the hospital.

**Dimension of Quality:** Safety

**Rationale:**
1. The incidence of massive obstetric haemorrhage is reflective of the effectiveness of the management of haemorrhage at delivery. Post-partum haemorrhage occurs in 3-5% of pregnant mothers and is still the leading cause of maternal death in Malaysia. The use of this indicator would be reflective of prompt diagnosis and speed of instituting multidisciplinary care.
2. **References:**
   b) CEMD Training Module for PPH.
<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Massive post-partum haemorrhage: Total amount of blood loss of &gt; 1.5 litres within (≤) 24 hours of delivery. Delivery includes both the vaginal and abdominal routes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria</td>
<td>Inclusion: NA</td>
</tr>
<tr>
<td></td>
<td>Exclusion: Patients with adherent placenta</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>No. of patients with massive Primary Post Partum Hemorrhage</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total no. of deliveries</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≤ 1%</td>
</tr>
</tbody>
</table>

### Data Collection

1. **Where**: Data will be collected in Labour ward/ High Dependency Ward (HDW).
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).

### Remarks


<table>
<thead>
<tr>
<th>Indicator 3</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Obstetrics and Gynaecology</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of patients hospitalised &gt; 24 hours seen by specialist at least once before discharge</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
<tr>
<td>Rationale</td>
<td>Patient centered services must give priority to quality of care which given attention to specialist involvement in patient care. This is in line with MOH client charter.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Hospitalised &gt; 24 hours: Duration of stay in ward &gt; 24 hours</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: All patients hospitalised &gt; 24 hours</td>
</tr>
<tr>
<td></td>
<td>Exclusion: None</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based outcome indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>No. of patients admitted &gt; 24 hours seen by specialist at least once before discharge</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total no. of patient admitted &gt; 24 hours</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 80%</td>
</tr>
</tbody>
</table>

### Data Collection

1. **Where**: Data will be collected in Obstetrics and Gynaecology Department
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit
3. **How frequent**: Monthly data collection
4. **Who should verify**: All performance data must be verified by Head of
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

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<table>
<thead>
<tr>
<th>Remarks</th>
<th>Department/ Head of Unit/ Hospital Director</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5. <strong>How to collect:</strong> Data is suggested to be collected from record book/ patients note (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

---

**Indicator 4**

- **Discipline:** Obstetrics and Gynaecology
- **Indicator:** Percentage of cases with Erythromycin Ethinyl Succinate (EES) administration for preterm pre-labour rupture of membrane (PPROM) cases

**Dimension of Quality:** Effectiveness

**Rationale**

1. PPROM complicates 2% of pregnancies but is associated with 40% of preterm deliveries which can result in significant neonatal morbidity and mortality. This would result in use of vast hospital resources.
2. The ORACLE study demonstrated that the short term respiratory function, chronic lung disease and major neonatal cerebral problem were reduced with the prescription of Erythromycin ethinyl succinate.
3. This indicator was chosen to ensure all cases of PPROM are started on EES in line with current evidence based practice.

**Definition of Terms**

**Preterm pre-labour rupture of membrane (PPROM):** Leaking of liquor with or without rupture of membrane in preterm pregnancy (<37 completed weeks) with no signs of labour at diagnosis.

**Criteria**

**Inclusion:** All cases of confirmed PPROM not in labour.

**Exclusion:**

1. Previous history of hypersensitivity to EES.
2. PPROM with meconium-stained liquor, fetal distress or chorioamnionitis at diagnosis which needed immediate delivery.
3. When different antibiotic used tailored with culture and sensitivity result

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of cases with Erythromycin Ethinyl Succinate (EES) administration for preterm pre-labour rupture of membrane (PPROM) cases

**Denominator:** Total number of preterm pre-labour rupture of membrane (PPROM) cases

**Formula:**

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard:** \( \geq 90\% \)

**Data Collection**

1. **Where:** Data will be collected in Obstetrics and Gynaecology ward.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note (refer to KPI MOH Guidelines).
## Indicator 5

**Discipline**: Obstetrics and Gynaecology  
**Indicator**: Percentage of unrecognised ureteric injury intraoperatively during benign gynaecological condition  
**Dimension of Quality**: Patients safety  
**Rationale**:  
1. Patient safety is the important emphasis in delivering medical care in MOH hospital. However, complications during surgery do occur but failure to recognise the complication is not acceptable.  
2. In gynaecological surgery, ureteric injury is a recognisable complication but it is the responsibility of the surgeon to recognise it during surgery which primary repair can be arranged.  
3. To ensure competency and adherence to safety in performing hysterectomy for benign gynaecological conditions.  

### Definition of Terms  
- **Ureteric injury**: Any type of ureteric injury  
- **Benign Gynaecological surgery**: Hysterectomy for benign gynaecological condition  
- **Failure to recognise ureteric injury**: Ureteric injury undiagnosed during surgery  

### Criteria  
**Inclusion**: All cases of unrecognised intraoperative ureteric injury  
**Exclusion**: None  

### Type of indicator  
Rate-based outcome indicator  

### Numerator  
No. of patients with unrecognised intraoperative ureteric injury  

### Denominator  
Total no. of hysterectomy done for benign gynaecological condition  

### Formula  
\[
\text{Numerator} \times 100\% = \frac{\text{Numerator}}{\text{Denominator}}
\]

### Standard  
\( \leq 5\% \)

### Data Collection  
1. **Where**: Data will be collected in Obstetrics and Gynaecology wards.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from patient's case note/record book (refer to KPI MOH Guidelines).  

### Remarks

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### Indicator 6

**Discipline**: Obstetrics and Gynaecology  
**Indicator**: Percentage of patients diagnosed antenatally with morbidly adherent placenta have their caesarean section performed or supervised by consultant/ specialist
<table>
<thead>
<tr>
<th>Dimension of Quality</th>
<th>Patients safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale</td>
<td>Morbidly adherent placenta is a recognised risk factor for difficult caesarean section and likely to require caesarean hysterectomy. It's associated with increased in maternal morbidity and mortality. Involvement of senior personnel as early as possible during surgery is crucial in reducing morbidity associated with it.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Morbidly adherent placenta: All morbidly adherent placenta which diagnosed antenatally</td>
</tr>
</tbody>
</table>
| Criteria | **Inclusion:** All patients diagnosed antenatally with morbidly adherent placenta  
**Exclusion:** Undiagnosed morbidly adherent placenta |
| Type of indicator | Rate-based process indicator |
| Numerator | No. of cases with morbidly adherent placenta which had surgery done or supervised by consultant/specialist |
| Denominator | Total no. of caesarean section for morbidly adherent placenta |
| Formula | Numerator x 100 %  
Denominator |
| Standard | ≥ 90% |
| Data Collection | 1. **Where:** Data will be collected in Obstetrics and Gynaecology Department.  
2. **Who:** Data will be collected by Officer/Paramedic/Nurse in-charge (indicator coordinator) of the department/unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.  
5. **How to collect:** Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines). |
<p>| Remarks | |</p>
<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>SUBSPECIALTY</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>-</td>
<td>Percentage of diabetic mellitus patients that were given appointment for first consultation within (≤) 6 weeks at Ophthalmology Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>-</td>
<td>Percentage of patients developed infectious endophthalmitis following cataract surgery (2 cases per 1000 operations)</td>
<td>Effectiveness</td>
<td>&lt; 0.2%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>-</td>
<td>Percentage of patients without ocular co-morbidity obtained visual acuity of 6/12 or better within (≤) 3 months following cataract surgery</td>
<td>Effectiveness</td>
<td>&gt; 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>General</td>
<td>Percentage of patients with unplanned readmission within (≤) 24 hours of discharge</td>
<td>Effectiveness</td>
<td>≤ 2%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>General</td>
<td>Percentage of involvement in targeted outreach service</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>General/ Public Health</td>
<td>Percentage of unplanned return to operating theatre within (≤) one week after cataract surgery</td>
<td>Effectiveness</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Surgical Retina</td>
<td>Percentage of port related break during vitrectomy</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Medical Retina</td>
<td>Percentage of lens touch post intravitreal therapy</td>
<td>Effectiveness</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>9</td>
<td>Cornea</td>
<td>Percentage of unplanned return to operating theatre within (≤) 24 hours post-corneal transplant surgery</td>
<td>Effectiveness</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>10</td>
<td>Glaucoma</td>
<td>Percentage of button hole of conjunctiva in primary trabeculectomy</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>11</td>
<td>Paediatric Ophthalmology</td>
<td>Percentage of muscle slip in strabismus surgery</td>
<td>Effectiveness</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>12</td>
<td>Oculoplastic Surgery</td>
<td>Percentage of skin wound breakdown within (≤) one month after elective oculoplastic surgery</td>
<td>Effectiveness</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>13</td>
<td>Neuro-ophthalmology</td>
<td>Percentage of cases with incorrect placement of botulinum toxin therapy</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>
**Indicator 1**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Ophthalmology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of diabetic mellitus patients that were given appointment for first consultation within (≤) 6 weeks at Ophthalmology Clinic</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
</tbody>
</table>
| Rationale | 1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.  
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.  
| Definition of Terms | Appointment: Time taken from the date of referral received to the date of appointment given.  
*Diabetic mellitus patients that require ophthalmologist review only.  
*Screening already done at Jabatan Pesakit Luar (JPL) using CPG-DR survey. |
| Criteria | Inclusion: NA  
Exclusion:  
1. Patients who request to delay the appointment date.  
2. Patients who request to see a specific doctor.  
3. Patients who default the first appointment given. |
| Type of indicator | Rate-based process indicator |
| Numerator | Number of diabetic mellitus patients that were given appointment for first consultation within (≤) 6 weeks at Ophthalmology Clinic |
| Denominator | Total number of diabetic mellitus patients referred to Ophthalmology Clinic |
| Formula | Numerator $\times$ 100%  
Denominator |
| Standard | ≥ 80% |
| Data Collection | 1. Where: Data will be collected from Ophthalmology clinic.  
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
3. How frequent: 3 monthly data collection.  
4. Who should verify: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from appointment book/record book (refer to KPI MOH Guidelines). |
| Remarks | |

**Indicator 2**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Ophthalmology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of patients developed infectious endophthalmitis following cataract surgery</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>To reduce visual morbidity.</td>
</tr>
</tbody>
</table>
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

#### MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria Inclusion</td>
<td>NA</td>
</tr>
<tr>
<td>Exclusion</td>
<td>Traumatic cataract.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of patients developed infectious endophthalmitis following cataract surgery</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients underwent cataract surgery</td>
</tr>
<tr>
<td>Formula</td>
<td>( \text{Numerator} \times \frac{100}{\text{Denominator}} )</td>
</tr>
<tr>
<td>Standard</td>
<td>&lt; 0.2%</td>
</tr>
</tbody>
</table>
| Data Collection | 1. **Where**: Data will be collected from Ophthalmology clinic.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: 3 monthly data collection.  
4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines). |
| Remarks | |

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### Indicator 3

#### Departmental

**Discipline**: Ophthalmology

**Name of indicator**: Percentage of patients without ocular co-morbidity obtained visual acuity of 6/12 or better within (≤) 3 months following cataract surgery

**Dimension of Quality**: Effectiveness

**Rationale**: To improve visual outcome.

**Definition of Terms**: NA

<table>
<thead>
<tr>
<th>Criteria Inclusion</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion</td>
<td>Cases with ocular co-morbidity that will affect visual outcome.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based outcome indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of patients without ocular co-morbidity obtained visual acuity 6/12 or better within (≤) 3 months following cataract surgery</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients without ocular co-morbidity underwent cataract surgery</td>
</tr>
<tr>
<td>Formula</td>
<td>( \text{Numerator} \times \frac{100}{\text{Denominator}} )</td>
</tr>
<tr>
<td>Standard</td>
<td>&gt; 85%</td>
</tr>
</tbody>
</table>
| Data Collection | 1. **Where**: Data will be collected from Ophthalmology clinic.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: 3 monthly data collection.  
4. **Who should verify**: Data will be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines). |
## Indicator 4
- **Discipline**: Ophthalmology
- **Indicator**: Percentage of patients with unplanned readmission within (≤) 24 hours of discharge
- **Dimension of Quality**: Effectiveness
- **Rationale**: Unplanned readmission is often considered to be the result of suboptimal care in the previous admission leading to readmission
- **Definition of Terms**:
  - **Unplanned readmission**: Patients readmitted for the management of the same clinical condition he/she was discharged with
- **Criteria**:
  - **Inclusion**: Readmission with similar condition in same hospital
  - **Exclusion**:  
    1. At own risk (AOR) discharged patients
    2. Patients admitted to different hospital
- **Type of indicator**: Rate-based process indicator
- **Numerator**: No. of patients with unplanned readmission within (≤) 24 hours of discharged
- **Denominator**: Total no. of patients discharged
- **Formula**: \[
  \text{Numerator} \times \frac{100}{\text{Denominator}}
\]
- **Standard**: ≤ 2%
- **Data Collection**:
  1. **Where**: Data will be collected in Ophthalmology Ward
  2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
  3. **How frequent**: 3 Monthly data collection
  4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
  5. **How to collect**: Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines).

## Indicator 5
- **Discipline**: Ophthalmology
- **Indicator**: Percentage of involvement in targeted outreach service
- **Dimension of Quality**: Customer Centeredness
- **Rationale**:
  1. To provide quality care to patients outside the hospital
  2. Improve patient and parental satisfaction by providing services nearer to home.
  3. Provide expertise to those in need.
  4. Provide training for onsite medical personnel.
- **Definition of Terms**:
  - **Targeted outreach service**: Each ophthalmologist is expected to perform 4 outreach programs per year
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: Any outreach activities that involved Ophthalmology Department.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of indicator</td>
<td>Rate-based structure indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>No. of involvement of ophthalmologist in ophthalmology outreach service</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total no. of yearly planning targeted ophthalmology outreach service</td>
</tr>
</tbody>
</table>
| Formula | \[
\text{Numerator} \times 100\% \\
\text{Denominator}
\] |
| Standard | \(\geq 75\%\) |
| Data Collection | 1. Where: Data will be collected in Ophthalmology Department  
2. Who: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
3. How frequent: Yearly data collection  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director  
5. How to collect: Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines) |
| Remarks | |

### Indicator 6

| discipline | Ophthalmology (General/ Public Health Ophthalmology) |
| Name of indicator | Percentage of unplanned return to operating theatre within (≤) one week after cataract surgery |
| Dimension of Quality | Effectiveness |
| Rationale | To ensure the quality of clinical competence and surgical skills. |
| Definition of Terms | NA |
| Criteria | Inclusion:  
1. All patients undergoing uncomplicated cataract surgery.  
Exclusion:  
1. Complicated cataract surgery. |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of unplanned return to operating theatre within (≤) one week after cataract surgery |
| Denominator | Total number of cataract surgeries performed |
| Formula | \[
\text{Numerator} \times 100\% \\
\text{Denominator}
\] |
| Standard | < 5\% |
| Data Collection | 1. Where: Data will be collected from Ophthalmology wards or wards that cater |
TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
MEDICAL PROGRAMME 2016

| Indicator 7 | : | Individual |
| Discipline : | Ophthalmology (Surgical Retina) |
| Name of indicator : | Percentage of port related break during vitrectomy |
| Dimension of Quality : | Safety |
| Rationale : | 1. To ensure the quality of clinical competence and surgical skills. |
| Definition of Terms : | NA |
| Criteria : | Inclusion: All patients undergoing primary vitrectomy. |
| Exclusion : | Complicated vitrectomy. |
| Type of indicator : | Rate-based process indicator |
| Numerator : | Number of port related break during vitrectomy |
| Denominator : | Total number of vitrectomy performed |
| Formula : | \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \) |
| Standard : | < 5\% |
| Data Collection : | 1. \textbf{Where:} Data will be collected from Ophthalmology wards or wards that cater for the above condition. |
| | 2. \textbf{Who:} Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit. |
| | 3. \textbf{How frequent:} 3 monthly data collection. |
| | 4. \textbf{Who should verify:} All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director. |
| | 5. \textbf{How to collect:} Data is suggested to be collected from patient’s case note/ OT note (refer to KPI MOH Guidelines). |
| Remarks : | |

| Indicator 8 | : | Individual |
| Discipline : | Ophthalmology (Medical Retina) |
| Name of indicator : | Percentage of lens touch post intravitreal therapy |
| Dimension of Quality : | Effectiveness |
| Rationale : | To ensure the quality of clinical competence and surgical skills. |
| Definition of Terms : | NA |
### Criteria

**Inclusion:** All patients undergoing intravitreal therapy.

**Exclusion:**
1. Pseudophakic patients.
2. Aphakic patients.

### Type of indicator
Rate-based process indicator

### Numerator
Number of lens touch post intravitreal therapy

### Denominator
Total number of intravitreal therapy performed

### Formula
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard
< 5%

### Data Collection
1. **Where:** Data will be collected from Ophthalmology wards or wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note/ OT note (refer to KPI MOH Guidelines).

### Remarks

### Indicator 9

**Individual Discipline:** Ophthalmology (Cornea)

**Name of indicator:** Percentage of unplanned return to operating theatre within (≤) 24 hours post-corneal transplant surgery

**Dimension of Quality:** Effectiveness

**Rationale:** To ensure the quality of clinical competence and surgical skills.

**Definition of Terms:** NA

**Criteria**

**Inclusion:** All patients undergoing corneal transplant.

**Exclusion:**
1. Corneal or scleral thinning
2. Chemical burn.

**Type of indicator** Rate-based process indicator

**Numerator** Number of unplanned return to operating theatre within (≤) 24 hours post-corneal transplant surgery

**Denominator** Total number of corneal transplant surgery performed

**Formula**
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard** < 5%

**Data Collection**
1. **Where:** Data will be collected from Ophthalmology wards or wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
**MEDICAL PROGRAMME 2016**

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Indicator 10</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Ophthalmology (Glaucoma)</td>
</tr>
<tr>
<td><strong>Name of indicator</strong></td>
<td>Percentage of button hole of conjunctiva in primary trabeculectomy</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Safety</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>To ensure the quality of clinical competence and surgical skills.</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
<td>NA</td>
</tr>
</tbody>
</table>
| **Criteria** | **Inclusion:** All patients undergoing primary trabeculectomy.  

**Exclusion:**  
1. Complicated trabeculectomy  
2. Secondary trabeculectomy. |
| **Type of indicator** | Rate-based process indicator |
| **Numerator** | Number of button hole of conjunctiva in primary trabeculectomy |
| **Denominator** | Total number of primary trabeculectomy performed |
| **Formula** | Numerator \times \frac{100}{\text{Denominator}} |
| **Standard** | < 5% |
| **Data Collection** | 1. **Where:** Data will be collected from Ophthalmology wards or wards that cater for the above condition.  
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** 3 monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from patient’s case note/ OT note (refer to KPI MOH Guidelines). |
| **Remarks** |

<table>
<thead>
<tr>
<th>Indicator 11</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Ophthalmology (Paediatric Ophthalmology)</td>
</tr>
<tr>
<td><strong>Name of indicator</strong></td>
<td>Percentage of muscle slip in strabismus surgery</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Effectiveness</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>To ensure the quality of clinical competence and surgical skills.</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
<td>NA</td>
</tr>
<tr>
<td><strong>Criteria</strong></td>
<td><strong>Inclusion:</strong> All patients undergoing strabismus surgery.</td>
</tr>
</tbody>
</table>

---

**CLINICAL PERFORMANCE SURVEILLANCE UNIT**  
*D(Departmental); I(Individual)*

**PERFORMANCE SURVEILLANCE 4.0**
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Exclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Syndrome related squint.</td>
</tr>
<tr>
<td></td>
<td>2. Repeat surgery.</td>
</tr>
</tbody>
</table>

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of muscle slip in strabismus surgery

**Denominator:** Total number of strabismus surgery performed

**Formula:** \[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%\]

**Standard:** < 5%

---

**Data Collection**

1. **Where:** Data will be collected from Ophthalmology clinic/ Ophthalmology wards or wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient's case note (refer to KPI MOH Guidelines).

---

**Indicator 12**

**Individual**

**Discipline:** Ophthalmology (Oculoplastic Surgery)

**Name of indicator:** Percentage of skin wound breakdown within (≤) one month after elective oculoplastic surgery

**Dimension of Quality:** Effectiveness

**Rationale:** To ensure the quality of clinical competence and surgical skills.

**Definition of Terms:** NA

**Criteria**

**Inclusion:** All patients undergoing oculoplastic surgery involving skin incision.

**Exclusion:**
1. Patients with chemical or thermal burn.
2. Trauma patients.
3. Repeat surgery.

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of cases with skin wound breakdown within (≤) one month after elective oculoplastic surgery

**Denominator:** Total number of elective oculoplastic surgeries performed

**Formula:** \[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%\]

**Standard:** < 5%

**Data Collection**

1. **Where:** Data will be collected from Ophthalmology clinic.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note (refer to KPI MOH Guidelines).

### Indicator 13

<table>
<thead>
<tr>
<th><strong>Indicator 13</strong></th>
<th><strong>Individual</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Ophthalmology (Neuro-ophthalmology)</td>
</tr>
<tr>
<td><strong>Name of indicator</strong></td>
<td>Percentage of cases with incorrect placement of botulinum toxin therapy</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Effectiveness and safety</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>To ensure the quality of clinical competence and surgical skills.</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
<td><strong>Inclusion:</strong> All patients undergoing botulinum toxin therapy.</td>
</tr>
<tr>
<td><strong>Criteria</strong></td>
<td><strong>Exclusion:</strong> NA</td>
</tr>
<tr>
<td><strong>Type of indicator</strong></td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td><strong>Numerator</strong></td>
<td>Number of cases with incorrect placement of botulinum toxin therapy</td>
</tr>
<tr>
<td><strong>Denominator</strong></td>
<td>Total number of cases underwent botulinum toxin therapy</td>
</tr>
</tbody>
</table>
| **Formula** | \[
\text{Numerator} \times 100\% \over \text{Denominator}
\] |
| **Standard** | \(< 5\%\) |

**Data Collection**

1. **Where:** Data will be collected from Ophthalmology wards or wards that cater to the above condition/ clinic.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** Data will be verified by Head of Department/ Hospital Director.
5. **How to collect: Data is suggested to be** collected from patient’s case note.

### Remarks

- **Remarks** :
TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
MEDICAL PROGRAMME 2016

ORTHOPAEDIC

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation within (≤) 4 weeks at Orthopaedic Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of unplanned return to the operating room/ theatre within (≤) 24 hours of surgery</td>
<td>Effectiveness</td>
<td>&lt; 1%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with waiting time of ≤ 7 working days for fixation of long bone closed fracture(s) as decided by attending doctor</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of surgical site infection in clean elective orthopaedic surgery</td>
<td>Safety</td>
<td>&lt; 3%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of unacceptable internal fixation of fracture requiring revision</td>
<td>Effectiveness</td>
<td>&lt; 3%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of post primary total knee replacement patients with length of stay in hospital of ≤ 5 working days</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

Indicator 1 : Departmental
Discipline : Orthopaedic
Indicator : Percentage of non-urgent cases that were given appointment for first consultation within (≤) 4 weeks at Orthopaedic Clinic
Dimension of Quality : Customer centeredness
Rationale : 1. Patient-centred services must give priority to prompt attention to patient’s needs by reducing waiting times for consultation. 2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.
Definition of Terms : Cases: The patients can be either:
1. Patients who come for the first time with orthopaedic problem; or
2. Patients who present with a new/ different problem after being discharged from the clinic.

Non-urgent cases: These include chronic pain, degenerative joints, neglected fractures, implant removal, congenital deformity, and entrapment neuropathy. These are cases that have been attended to by primary health care providers.

Appointment: Time taken from the date of referral received to the date of first consultation with the doctor.
Criteria : Inclusion: NA
**Exclusion:**
1. Cases which need early/ urgent attention such as acute traumatic injury (fracture or dislocation), suspected malignancy, acute infection, spine problem with acute neurological involvement, orthopaedic problem with intolerable pain. Such cases can be referred to A&E or given an earlier appointment date.
2. Sub-speciality cases.
3. Patients who requested for specific doctor/ specific date.
4. Patients defaulted first appointment date given.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of non-urgent cases that were given appointment for first consultation within (≤) 4 weeks at Orthopaedic Clinic

**Denominator**: Total number of non-urgent cases referred to Orthopaedic Clinic

**Formula**: Numerator x 100 %

**Standard**: ≥ 90%

**Data Collection**
1. Where: Data will be collected in Orthopaedic Clinic.
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. How to collect: Data is suggested to be collected from appointment book/ record book/ Hospital IT system (refer to KPI MOH Guidelines).

**Remarks**:

**Indicator 2**
- **Departmental**
- **Orthopaedic**

**Indicator**
- Percentage of unplanned return to the operating room/ theatre within (≤) 24 hours of surgery

**Dimension of Quality**
- Effectiveness

**Rationale**
1. Unplanned return to OT is usually due to complications of a surgical procedure.
2. It could be life threatening and/ or increase morbidity.

**Definition of Terms**
- **Unplanned return**: Cases where any immediate post-op complications that may cause ischaemia, excessive bleeding or neurological deficit that require re-surgery within (≤) 24 hours.

**Criteria**
- **Inclusion**: NA
- **Exclusion**: Return to operating room/ theatre due to another illness/ medical problem.

**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of unplanned return to the operating room/ theatre within (≤) 24 hours of surgery

**Denominator**: Total number of orthopaedic surgeries performed
### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

**Medical Programme 2016**

**Formula**

<table>
<thead>
<tr>
<th>Formula</th>
<th>Numerator x 100 %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Denominator</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Standard**

| Standard | < 1% |

**Data Collection**

1. **Where**: Data will be collected in Orthopaedic wards/wards that cater to the above patient.
2. **Who**: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from OT note/patient’s case note/record book (refer to KPI MOH Guidelines).

**Remarks**

---

### Indicator 3

**Departmental**: Orthopaedic

**Indicator**: Percentage of patients with waiting time of ≤ 7 working days for fixation of long bone closed fracture(s) as decided by attending doctor

**Dimension of Quality**: Customer centeredness

**Rationale**

1. This indicator was selected as an indicator of the quality of planning for operations in orthopaedic surgery.
2. The long waiting time for long bone closed fracture internal fixation varies from few days to weeks, thus reflecting on the workload, facilities available and planning besides increase intra-operative difficulty.
3. Prolonged waiting time will lead to morbidity, extended hospital length of stay and increased health cost and also the fracture is technically more difficult to fix.

**Definition of Terms**

**Long bone**: Humerus, Radius, Ulna, Femur, Tibia, Fibula.

**Criteria**

**Inclusion**: All patients decided for fixation by attending doctor (doctor in-charge of patient).

**Exclusion**:

1. Medically unfit patients.
2. Difficulty in obtaining consent and/or implant. (Patients may not be eligible for free implants and are required to pay. Difficulty in private funding, obtaining resources or referral to welfare bodies for sanction may require time).
3. Patient with additional open fracture(s).

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients with waiting time of ≤ 7 working days for fixation of long bone closed fracture(s)

**Denominator**: Total number of patients with long bone closed fracture fixations done

**Formula**

<table>
<thead>
<tr>
<th>Formula</th>
<th>Numerator x 100 %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Denominator</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Standard**: ≥ 75%
### Data Collection

1. **Where**: Data will be collected in Orthopaedic clinic/ Orthopaedic wards/wards that cater to the above patient.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines).

### Remarks

### Indicator 4

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Orthopaedic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Percentage of surgical site infection in clean elective orthopaedic surgery</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
</tbody>
</table>

#### Rationale

1. Surgical site infection is multi-factorial. The surgeon has a role in its prevention. Attention to details that includes, pre-operative preparation, intra-operative soft tissue handling and post-operative wound care. Surgical site infection would be a reflection of such care.
2. Infection of surgical wounds is a significant nosocomial infection problem in hospitals, which in turn is an important issue in patient safety. Timely investigation of higher than expected rates of infection may identify issues relating to preventative factors for corrective action.

#### Definition of Terms

**Elective surgery**: Planned, scheduled, and well prepared patient.

**Clean Surgery**: Surgery in patients with no prior laceration wound at the surgical site or presence of wound/ sore/ infection in the body, or presence of acute severe soft tissue injury.

**Surgical site infection (SSI)**: Includes both the superficial and deep infection (Centers of Disease Control and Prevention guideline). The cut off point to be considered SSI is 3 months post-surgery. Therefore, all the clean elective operative patients must be seen/ reviewed at around 3 months post-op.

**Centers of Disease Control and Prevention (CDC) Definitions of surgical site infection (SSI)**:

3. **Superficial infection**: Involves only the skin and subcutaneous tissue of the incision AND the patient has at least one of the following:
   a. Purulent drainage from the superficial incision.
   b. Organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.
   c. At least one of the following signs or symptoms of infection (pain or tenderness, localized swelling, redness or heat)
   d. Superficial incision is deliberately opened by surgeon, unless incision is culture-negative
   e. Diagnosis of superficial incisional SSI by the surgeon or attending
4. **Deep infection:** Infection involved deep soft tissues (e.g. fascia and muscle layers) of the incision AND the patient has at least one of the following:
   a. Purulent drainage from the deep incision but not from the organ/space component of the surgical site.
   b. A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms (unless incision is culture-negative):
      i. Fever (>38°C).
      ii. Localized pain or tenderness.
      iii. An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination.
      iv. Diagnosis of deep incisional surgical site infection by a surgeon or attending physician.

**Note:**
- Do not count stitch abscesses (minimal inflammation and discharge confined to the points of suture penetration), or a localized stab wound infection as a surgical site infection.
- If the incisional site infection involves or extends into the fascia and muscle layers, report as a deep incisional SSI.
- An infection that involves both the superficial and deep incision sites should be classified as a deep incisional surgical site infection.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Arthroplasty.</td>
</tr>
<tr>
<td></td>
<td>2. Arthroscopy.</td>
</tr>
<tr>
<td></td>
<td>4. Deformity correction.</td>
</tr>
<tr>
<td></td>
<td>5. Non-union.</td>
</tr>
<tr>
<td></td>
<td>6. Delayed union.</td>
</tr>
</tbody>
</table>

**Exclusion:**
1. Acute fracture fixation.
2. External fixation.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of surgical site infection in clean elective orthopaedic surgery</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of clean elective orthopaedic surgery</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
</tbody>
</table>

**Standard:** < 3%

| Data Collection | Where: Data will be collected in Orthopaedic clinic/ Orthopaedic wards/wards that cater to the above patient. |
|                | Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit. |
|                | How frequent: Monthly data collection. |
|                | Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director. |
| Indicator 5 | Individual |
| Discipline | Orthopaedic |
| Indicator | Percentage of unacceptable internal fixation of fracture requiring revision |
| Dimension of Quality | Effectiveness |
| Rationale | 1. Suboptimal fracture fixations delay/prevent early recovery of patient. Increases morbidity and mortality, cost, and contribute to resource wastage. 2. Re-surgery also increases risk of nosocomial infection and length of hospital stay. |
| Definition of Terms | Internal fixation: Any form of device use to hold the bone fragments internally, includes any form of plate, nail, screw or wire buried under the skin. Unacceptable: Fixations that are considered to result in poor fracture reduction, this may refer to the bone or fixation device. The decision will be made by the treating/attending surgeon(s). Revision: Corrective surgery to redo the fracture alignment or device configuration in areas as stated in the inclusion criteria. *Decision made by the attending surgeon or the Department Committee. |
| Criteria | Inclusion: 1. All long bone fractures as in femur, tibia, fibula, humerus, radius and ulna. 2. Peri-articular fractures around shoulder, elbow, wrist, hip (neck of femur), knee and ankle. 3. Small bone fractures (including carpal, metacarpal, metatarsal and tarsal bone) in the hand or foot. Exclusion: 1. The treating/attending surgeon/department committee accepts the suboptimal alignment or device configuration. 2. Pelvic and acetabulum fractures, scapula and glenoid fractures, and also spine injury. 3. Any fixation involving external devices. |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of unacceptable internal fixation of fracture requiring revision |
| Denominator | Total number of internal fixation of fracture performed |
| Formula | Numerator \times \% 100 \%
| Denominator |
| Standard | < 3% |
| Data Collection | 1. Where: Data will be collected in Orthopaedic wards/wards that cater to the above patient. 2. Who: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit. |
### Indicator 6

**Discipline:** Orthopaedic  

**Indicator:** Percentage of post primary total knee replacement patient with length of stay in hospital of ≤ 5 working days

**Dimension of Quality:** Customer centeredness

**Rationale:**
1. Knee replacement surgery (arthroplasty) involves replacing a damaged, worn or diseased knee with an artificial joint.
2. It's a routine operation for knee pain most commonly caused by arthritis.

**Definition of Terms:**
- **Primary total knee replacement:** A surgical procedure to replace both sides of the knee joint with artificial material.
- **Length of stay:** Time taken from Day 1 post operation to the time when the patient discharged home.

**Criteria:**
**Inclusion:** All non complicated primary total knee replacement.

**Exclusion:**
1. Bilateral total knee replacement.
2. Complex knees.
3. Revision surgery.
4. Patient with co-morbidities.

**Type of indicator:** Rate-based outcome indicator

**Numerator:** Number of post primary total knee replacement patients with length of stay in hospital of ≤ 5 working days

**Denominator:** Number of patients who underwent primary total knee replacement

**Formula:**
\[
\text{Numerator} \times 100 \% \div \text{Denominator}
\]

**Standard:** ≥ 80%

**Data Collection:**
1. **Where:** Data will be collected in Orthopaedic wards/wards that cater to the above patient.
2. **Who:** Data will be collected by Officer/Paramedic/Nurse in-charge (indicator coordinator) of the department/unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect:** Data is suggested to be collected from registration book/record book (refer to KPI MOH Guidelines).

**Remarks:**
<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Otorhinolaryngology Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of less than 3 months for elective surgery</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Incidence of post-tonsillectomy haemorrhage</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4.1</td>
<td>Percentage of complication following; Mastoidectomy: Facial nerve injury</td>
<td>Safety</td>
<td>&lt; 10%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4.2</td>
<td>Percentage of complication following; <em>Functional endoscopic sinus surgery</em> (FESS); Eye injury/ Cerebro-spinal fluid (CSF) leak</td>
<td>Safety</td>
<td>&lt; 10%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4.3</td>
<td>Percentage of complication following; Superficial parotidectomy: Facial nerve injury</td>
<td>Safety</td>
<td>&lt; 10%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5.1</td>
<td>Success rate following surgery; Myringoplasty: Closure of perforation.</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5.2</td>
<td>Success rate following surgery; Septum Related Surgery: No septal perforation</td>
<td>Safety</td>
<td>≥ 95%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5.3</td>
<td>Success rate following surgery; Head and neck surgery: Wound healing with primary intention</td>
<td>Effectiveness</td>
<td>≥ 95%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6.1</td>
<td>Percentage of oesophageal perforation following elective diagnostic rigid oesophagoscopy</td>
<td>Safety</td>
<td>≤ 2%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6.2</td>
<td>Percentage of pneumothorax in elective paediatric tracheostomy procedure</td>
<td>Safety</td>
<td>≤ 2%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6.3</td>
<td>Percentage of perforation and pneumothorax in elective paediatric bronchoscopy procedure</td>
<td>Safety</td>
<td>≤ 2%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1** : Departmental  
**Discipline** : Otorhinolaryngology  
**Indicator** : Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Otorhinolaryngology Clinic  
**Dimension of Quality** : Customer centeredness  
**Rationale** : 1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting time for consultation. Waiting time to see doctor at the specialist clinic reflects on proper clinic management and therefore
efficiency and punctuality. Patients should receive services at the time promised.
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the circular of the Director-General of Health Malaysia No. 6/2004 – Steps to reduce the waiting time in MOH facilities.

<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Waiting time: Time of registration/ appointment (whichever is later) to the time patient is first seen by the doctor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria</td>
<td>Inclusion: NA</td>
</tr>
<tr>
<td></td>
<td>Exclusion:</td>
</tr>
<tr>
<td></td>
<td>1. Patients who request to see a specific doctor.</td>
</tr>
<tr>
<td></td>
<td>2. Patients who come without an appointment (“walk-in” patients).</td>
</tr>
<tr>
<td></td>
<td>3. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.</td>
</tr>
<tr>
<td></td>
<td>4. Patients with multiple appointments on the same day.</td>
</tr>
<tr>
<td></td>
<td>5. Patients slotted in for special consultation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with waiting time of ≤ 90 minutes to see the doctor at Otorhinolaryngology Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients seen at the Otorhinolaryngology Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100 %</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected in Otorhinolaryngology Clinic.</td>
</tr>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from record book/ waiting time slip/ outpatient card/ Hospital Information System (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

| Remarks             |                                                                                                 |

| Indicator 2         | Departmental                                                                                   |
| Discipline          | Otorhinolaryngology                                                                            |
| Indicator           | Percentage of patients with waiting time of less than 3 months for elective surgery           |
| Dimension of Quality| Customer centeredness                                                                        |
| Rationale           | 1. Patient-offered surgery for the relief of their ailments should be able to undergo the surgery within a reasonable time. |
|                     | 2. This is especially true if the delay can result in complications of the condition or prolong the suffering of the patients. |
| Definition of Terms | Elective surgery: Functional endoscopic sinus surgery (FESS), Septoplasty, Myringoplasty, Tonsillectomy. |
| Criteria            | Inclusion: NA                                                                                  |
## Exclusion:
1. Patients who request to delay the appointment date.
2. Patients who default the first appointment given.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with waiting time of less than 3 months for elective surgery</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients underwent elective surgery</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100 % / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>

### Data Collection:
1. **Where**: Data will be collected in Otorhinolaryngology clinic/ OT book in clinic/ Otorhinolaryngology wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from OT schedule/ appointment book/ record book/ Hospital Information System (refer to KPI MOH Guidelines).

### Indicator 3

**Departmental**

**Discipline**: Otorhinolaryngology

**Indicator**: Incidence of post-tonsillectomy haemorrhage

**Dimension of Quality**: Safety

**Rationale**: 1. Tonsillectomy is one of the commonest otorhinolaryngological surgical procedures and can be conducted by the specialist as well as trained Medical Officers.
2. It can potentially cause significant morbidity and mortality.

**Definition of Terms**

**Haemorrhage**: 1. Haemorrhage which occurs after recovery from general anaesthesia.
2. The haemorrhage shall be objectively identified clinically e.g. active bleeding or clots on the tonsillar bed.
3. Post-tonsillectomy haemorrhage includes the following:
   - **Reactionary haemorrhage**: Bleeding within 24 hours of surgery.
   - **Secondary haemorrhage**: Bleeding after 24 hours of surgery.

**Criteria**

**Inclusion**:
1. Bleeding from tonsils only.
2. Visible evidence of active bleeding.

**Exclusion**:
1. Tonsillectomy done as part of other procedures (e.g. sleep apnoea surgery).
2. Bleeding due to patient's premorbid or comorbid condition

**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of post-tonsillectomy haemorrhages
### Denominator
Total number of tonsillectomies performed

### Formula
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard
< 5%

### Data Collection
1. **Where**: Data will be collected in Otorhinolaryngology clinic/ Otorhinolaryngology wards or wards that cater for the above condition.
   2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
   3. **How frequent**: Monthly data collection.
   4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
   5. **How to collect**: Data is suggested to be collected from patient’s case note/ record book/ Hospital Information System (refer to KPI MOH Guidelines).

### Remarks

### Indicator 4.1

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Otorhinolaryngology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Percentage of complication following surgery: Mastoidectomy: Facial nerve injury</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
<tr>
<td>Rationale</td>
<td>Provide safe surgery and good outcome.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Facial nerve injury: Permanent and grade IV / V facial nerve palsy</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: NA</td>
</tr>
</tbody>
</table>

### Exclusion:
1. Cases done by other surgeon/hospital.
2. Pre-operative facial nerve palsy.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of complications following surgery</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of surgeries performed</td>
</tr>
</tbody>
</table>

### Formula
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard
< 10%

### Data Collection
1. **Where**: Data will be collected in Otorhinolaryngology clinic/ Otorhinolaryngology wards or wards that cater for the above condition.
   2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
   3. **How frequent**: 6 monthly data collection.
   4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
   5. **How to collect**: Data is suggested to be collected from patient’s case note/ OT note/ mortality or morbidity meeting/ record book (refer to KPI MOH Guidelines).

### Remarks
| Indicator 4.2 | Individual |
| Discipline | Otorhinolaryngology |
| Indicator | Percentage of complication following surgery: Functional endoscopic sinus surgery (FESS): Eye injury/ Cerebro-spinal fluid (CSF) leak |
| Dimension of Quality | Safety |
| Rationale | Provide safe surgery and good outcome. |
| Definition of Terms | CSF Leak: Is an escape of the fluid that surrounds the brain and spinal cord. Eye injury: Orbital haematoma/ pre-orbital ecchymosis. |
| Criteria | Inclusion: NA |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of complications following surgery |
| Denominator | Total number of surgeries performed |
| Formula | \[ \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \] |
| Standard | < 10% |
| Data Collection | 1. Where: Data will be collected in Otorhinolaryngology clinic/ Otorhinolaryngology wards or wards that cater for the above condition. 2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit. 3. How frequent: 6 monthly data collection. 4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director. 5. How to collect: Data is suggested to be collected from patient’s case note/ OT note/ mortality or morbidity meeting/ record book/ Hospital Information System (refer to KPI MOH Guidelines). |
| Remarks | |

| Indicator 4.3 | Individual |
| Discipline | Otorhinolaryngology |
| Indicator | Percentage of complication following surgery: Superficial Parotidectomy: Facial nerve injury |
| Dimension of Quality | Safety |
| Rationale | Provide safe surgery and good outcome. |
| Definition of Terms | Facial nerve injury: Permanent and grade IV / V facial nerve palsy. |
| Criteria | Inclusion: NA |
| Exclusion: | |

Remarks:
### Table 1: Technical Specifications for Key Performance Indicators (KPI) Clinical Services

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Numerator</th>
<th>Denominator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate-based outcome indicator</td>
<td>Number of complications following surgery</td>
<td>Total number of surgeries performed</td>
</tr>
</tbody>
</table>

**Formula**: \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \)

**Standard**: < 10%

**Data Collection**
1. **Where**: Data will be collected in Otorhinolaryngology clinic/Otorhinolaryngology wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/OT note/ mortality or morbidity meeting/ record book/ Hospital Information System (refer to KPI MOH Guidelines).

**Remarks**

---

**Indicator 5.1**

**Discipline**: Otorhinolaryngology

**Indicator**: Success rate following surgery: Myringoplasty: Closure of perforation.

**Dimension of Quality**: Effectiveness

**Rationale**: To measure effectiveness of surgeries.

**Definition of Terms**
1. **Success of surgery**: Myringoplasty: Closure of perforation.

**Criteria**
- **Inclusion**: NA

**Exclusion**
1. Revision surgery
2. Total perforation

**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of successful outcomes of surgery

**Denominator**: Total number of surgeries done

**Formula**: \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \)

**Standard**: ≥ 70%

**Data Collection**
1. **Where**: Data will be collected in Otorhinolaryngology clinic/Otorhinolaryngology wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
<table>
<thead>
<tr>
<th>Indicator 5.2</th>
<th>Individual</th>
<th>Otorhinolaryngology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Success rate following surgery:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Septum Related Surgery: No septal perforation.</td>
<td></td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td>To measure effectiveness of surgeries.</td>
<td></td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Success of surgery:</td>
<td></td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: NA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exclusion:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Minor complication like stitch abscess, small wound break down.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Revision surgery.</td>
<td></td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based outcome indicator</td>
<td></td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of successful outcomes of surgery</td>
<td></td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of surgeries done</td>
<td></td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100%</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 95%</td>
<td></td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected in Otorhinolaryngology clinic / Otorhinolaryngology wards or wards that cater for the above condition.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from patient’s case note/ OT note/ Morbidity and Mortality meeting/ record book/ Hospital Information System (refer to KPI MOH Guidelines).</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: 

<table>
<thead>
<tr>
<th>Indicator 5.3</th>
<th>Individual</th>
<th>Otorhinolaryngology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Success rate following surgery:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Head and Neck Surgery: Wound healing with primary intention.</td>
<td></td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td>To measure effectiveness of surgeries.</td>
<td></td>
</tr>
</tbody>
</table>
### Definition of Terms

<table>
<thead>
<tr>
<th><strong>Success of surgery:</strong></th>
</tr>
</thead>
</table>

### Criteria

<table>
<thead>
<tr>
<th><strong>Inclusion:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
</tr>
</tbody>
</table>

**Exclusion:**

1. Minor complication like stitch abscess, small wound break down.
2. Revision surgery.
4. Post-radiotherapy

### Type of indicator

Rate-based outcome indicator

### Numerator

Number of successful outcomes of surgery

### Denominator

Total number of surgeries done

### Formula

\[
\text{Numerator} \times 100\% \div \text{Denominator}
\]

### Standard

\[ \geq 95\% \]

### Data Collection

1. **Where:** Data will be collected in Otorhinolaryngology clinic / Otorhinolaryngology wards or wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 6 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note/ OT note/ Morbidity and Mortality meeting/ record book/ Hospital Information System (refer to KPI MOH Guidelines).

### Remarks


### Indicator 6.1

<table>
<thead>
<tr>
<th><strong>Individual</strong></th>
</tr>
</thead>
</table>

### Discipline

Otorhinolaryngology

### Indicator

Percentage of:

- Oesophageal perforation following elective diagnostic rigid oesophagoscopy

### Dimension of Quality

Safety

### Rationale

1. Oesophagoscopy under general anaesthesia is common ORL procedure with morbidity in unskilled hands.

### Definition of Terms

1. Complication of perforation following elective diagnostic rigid oesophagoscopy under general anaesthesia (GA).

### Criteria

<table>
<thead>
<tr>
<th><strong>Inclusion:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients undergoing diagnostic rigid oesophagoscopy under GA</td>
</tr>
</tbody>
</table>

**Exclusion:**

1. Removal of sharp and penetrating object.
2. Emergency oesophagoscopy
3. Pre-existing perforation

### Type of indicator

Rate-based outcome indicator

### Numerator

No. of perforation or pneumothorax
### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

**MEDICAL PROGRAMME 2016**

#### Denominator
- **Formula**: No. of procedures performed

#### Standard
- **≤ 2%**

#### Data Collection
- **1. Where**: Data will be collected in Otorhinolaryngology wards/ OT or wards that cater for the above condition.
- **2. Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/ unit.
- **3. How frequent**: 6 Monthly data collection.
- **4. Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
- **5. How to collect**: Data is suggested to be collected from record book/ patients’ case note/ OT note/ Morbidity and Mortality meeting/ Hospital Information System (refer to KPI MOH Guidelines).

#### Remarks
- **Indication 6.2**: Individual

### Indicator 6.2
- **Discipline**: Otorhinolaryngology

#### Indicator
- **Percentage of**: Pneumothorax in elective paediatric tracheostomy procedure

#### Dimension of Quality
- **Safety**

#### Rationale
- 1. Paediatric tracheostomy is a common procedure in ORL with potential morbidity in unskilled hands.

#### Definition of Terms
- **1. Pneumothorax in paediatric tracheostomy**

#### Criteria
- **Inclusion**:
  1. Paediatrics patients undergoing tracheostomy under GA

- **Exclusion**:
  1. Emergency tracheostomy

#### Type of indicator
- **Rate-based outcome indicator**

#### Numerator
- **No. of pneumothorax**

#### Denominator
- **No. of procedures performed**

#### Formula
- **Numerator** x 100 %

#### Standard
- **≤ 2%**

#### Data Collection
- **1. Where**: Data will be collected in Otorhinolaryngology wards/ OT or wards that cater for the above condition.
- **2. Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/ unit.
- **3. How frequent**: 6 Monthly data collection.
- **4. Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
- **5. How to collect**: Data is suggested to be collected from record book/ patients’ case note/ OT note/ Morbidity and Mortality meeting/ Hospital Information System (refer to KPI MOH Guidelines).
### Indicator 6.3

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Otorhinolaryngology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Percentage of perforation and pneumothorax in elective paediatric bronchoscopy procedure</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
<tr>
<td>Rationale</td>
<td>1. Paediatric bronchoscopy either diagnostic or therapeutic is a common procedure in ORL with potential morbidity in unskilled hands.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>1. Perforation and pneumothorax in paediatric bronchoscopy</td>
</tr>
</tbody>
</table>
| Criteria | Inclusion:  
1. Paediatrics patients undergoing bronchoscopy under GA  
Exclusion:  
1. Removal of sharp and penetrating object.  
2. Emergency rigid bronchoscopy  
3. Pre-existing perforation |
| Type of indicator | Rate-based outcome indicator |
| Numerator | No. of perforation or pneumothorax |
| Denominator | No. of procedures performed |
| Formula | \( \text{Numerator} \times \frac{100}{\text{Denominator}} \) |
| Standard | \( \leq 2\% \) |
| Data Collection | 1. Where: Data will be collected in Otorhinolaryngology wards/ OT or wards that cater for the above condition.  
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/ unit.  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from record book/ patients' case note/ OT note/ Morbidity and Mortality meeting/ Hospital Information System (refer to KPI MOH Guidelines). |
| Remarks | : |
### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

**Medical Programme 2016**

#### Clinical Services

<table>
<thead>
<tr>
<th>Type</th>
<th>No.</th>
<th>Indicator</th>
<th>Dimension</th>
<th>Standard</th>
<th>Hospital Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of white/normal appendix during appendicectomy</td>
<td>Safety</td>
<td>≤ 5%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of anastomotic leak post-tracheoesophageal fistula (TOF) repair</td>
<td>Safety</td>
<td>≤ 20%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at specialist clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Anastomotic leak rate</td>
<td>Effectiveness</td>
<td>≤ 10%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of targeted paediatric surgical services that provided by paediatric surgeon to the designated hospital (Outreach Program)</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of successful hypospadias repair</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

---

**Indicator 1**

- **Type**: Departmental
- **Discipline**: Paediatric Surgery
- **Indicator**: Percentage of white/normal appendix during appendicectomy
- **Dimension of Quality**: Safety
- **Rationale**:
  1. To prevent unnecessary appendicectomy in children
  2. To avoid wastages of consumables and human resources
  3. Literature reviews available and most quoted 5-10%.
- **Definition of Terms**:
  - **White/normal appendix**: Appendix that looked normal at surgery. Must be supported by histological findings.
- **Criteria**:
  - **Inclusion**:
    1. All appendicectomies.
  - **Exclusion**:
    1. Incidental appendicectomy.
    2. Detection of other pathologies that required surgery e.g. torsion of ovary, perforated Meckel diverticulum
    3. Interval appendicectomy
- **Type of indicator**: Rate-based outcome indicator
- **Numerator**: Number of white/normal appendix during appendicectomy
- **Denominator**: Total number of appendicectomy performed
- **Formula**: \[ \text{Numerator} \times 100 \% \]
- **Standard**: ≤ 5%
- **Data Collection**:
  1. **Where**: Data will be collected in Paediatric Surgical Clinic or wards that cater for the above condition
### Indicator 2

**Discipline**: Paediatric Surgery  
**Indicator**: Percentage of anastomotic leak post-tracheoesophageal fistula (TOF) repair  
**Dimension of Quality**: Safety  

#### Rationale
1. Safe TOF repair is the standard in which all Neonatal Surgical Units are measured.  
2. One of the complications that might occur is leak of contents at the point of anastomosis.  
3. The consequences of anastomotic leaks can lead to severe morbidity and mortality.  
4. This indicator will measures clinical competency of the surgical team.

#### Definition of Terms
**Tracheoesophageal fistula (TOF)**: A congenital or acquired communication between the trachea and oesophagus.  
**Leak**: Only includes anastomotic leak which are clinically evident

#### Criteria
**Inclusion**:  
1. All primary tracheoesophageal fistula (TOF) repairs.  

**Exclusion**:  
1. Delayed primary repair.  
2. Repairs done in babies of < 1.5 kg.  
3. Any repair requiring lengthening procedure.

#### Type of indicator
Rate-based outcome indicator

#### Numerator
Number of patient with anastomotic leak in post-primary tracheoesophageal fistula repair performed

#### Denominator
Total number of primary tracheoesophageal fistula repair performed

#### Formula
\[
\text{Formula} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\% 
\]

#### Standard
≤ 20%

#### Data Collection
1. **Where**: Data will be collected in wards/ OT/ ICU/ CCU/ CRW/ NICU.  
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: 6 Monthly data collection.  
4. **Who should verify**: All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from OT registry/ patient’s case note/ admission book/ record book/ Hospital IT system (refer to KPI MOH Guidelines).
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
### MEDICAL PROGRAMME 2016

### Indicator 3

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of patients with waiting time of (≤) 90 minutes to see the doctor</td>
</tr>
<tr>
<td></td>
<td>at specialist clinic</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
<tr>
<td>Rationale</td>
<td>1. Patient-centred services must give priority to prompt attention to patient</td>
</tr>
<tr>
<td></td>
<td>needs by reducing waiting times for consultation.</td>
</tr>
<tr>
<td></td>
<td>2. It is the aim of the MOH to reduce the waiting times to a minimum in line</td>
</tr>
<tr>
<td></td>
<td>with the Circular of the Director-General of Health Malaysia No. 6/2004 –</td>
</tr>
<tr>
<td></td>
<td>Steps to Reduce the Waiting Time in MOH Facilities.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Waiting Time: Time of registration/appointment (whichever is later) to the</td>
</tr>
<tr>
<td></td>
<td>time patient is first seen by the doctor.</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: NA</td>
</tr>
<tr>
<td></td>
<td>Exclusion:</td>
</tr>
<tr>
<td></td>
<td>1. Patients who request to see a specific doctor.</td>
</tr>
<tr>
<td></td>
<td>2. Patients who come without an appointment (&quot;walk-in&quot; patients).</td>
</tr>
<tr>
<td></td>
<td>3. Patients that need to do procedures on the same day before seeing the</td>
</tr>
<tr>
<td></td>
<td>doctors e.g. blood taking and ultrasound.</td>
</tr>
<tr>
<td></td>
<td>4. Patients with multiple appointments on the same day.</td>
</tr>
<tr>
<td></td>
<td>5. Patients slotted in for special consultation.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based structure indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of patients with waiting time of (≤) 90 minutes to see the doctor at</td>
</tr>
<tr>
<td></td>
<td>specialist clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients seen at the specialist clinic in the specified</td>
</tr>
<tr>
<td></td>
<td>period of time</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100%</td>
</tr>
<tr>
<td></td>
<td>Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected in Paediatric Surgical Outpatient Clinic.</td>
</tr>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator</td>
</tr>
<tr>
<td></td>
<td>coordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: All performance must be verified by Head of Department/</td>
</tr>
<tr>
<td></td>
<td>Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from registration slip/</td>
</tr>
<tr>
<td></td>
<td>record book (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>

### Indicator 4

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of patients with waiting time of (≤) 90 minutes to see the doctor</td>
</tr>
<tr>
<td></td>
<td>at specialist clinic</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Customer centeredness</td>
</tr>
<tr>
<td>Rationale</td>
<td>1. Patient-centred services must give priority to prompt attention to patient</td>
</tr>
<tr>
<td></td>
<td>needs by reducing waiting times for consultation.</td>
</tr>
<tr>
<td></td>
<td>2. It is the aim of the MOH to reduce the waiting times to a minimum in line</td>
</tr>
<tr>
<td></td>
<td>with the Circular of the Director-General of Health Malaysia No. 6/2004 –</td>
</tr>
<tr>
<td></td>
<td>Steps to Reduce the Waiting Time in MOH Facilities.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Waiting Time: Time of registration/appointment (whichever is later) to the</td>
</tr>
<tr>
<td></td>
<td>time patient is first seen by the doctor.</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: NA</td>
</tr>
<tr>
<td></td>
<td>Exclusion:</td>
</tr>
<tr>
<td></td>
<td>1. Patients who request to see a specific doctor.</td>
</tr>
<tr>
<td></td>
<td>2. Patients who come without an appointment (&quot;walk-in&quot; patients).</td>
</tr>
<tr>
<td></td>
<td>3. Patients that need to do procedures on the same day before seeing the</td>
</tr>
<tr>
<td></td>
<td>doctors e.g. blood taking and ultrasound.</td>
</tr>
<tr>
<td></td>
<td>4. Patients with multiple appointments on the same day.</td>
</tr>
<tr>
<td></td>
<td>5. Patients slotted in for special consultation.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based structure indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of patients with waiting time of (≤) 90 minutes to see the doctor at</td>
</tr>
<tr>
<td></td>
<td>specialist clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients seen at the specialist clinic in the specified</td>
</tr>
<tr>
<td></td>
<td>period of time</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100%</td>
</tr>
<tr>
<td></td>
<td>Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected in Paediatric Surgical Outpatient Clinic.</td>
</tr>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator</td>
</tr>
<tr>
<td></td>
<td>coordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: All performance must be verified by Head of Department/</td>
</tr>
<tr>
<td></td>
<td>Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from registration slip/</td>
</tr>
<tr>
<td></td>
<td>record book (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>
**Indicator** : Anastomotic leak rate  
**Dimension of Quality** : Effectiveness  
**Rationale** :  
1. Measures clinical competency and judgement of the respective surgeon.  
2. Minimize morbidity and mortality.  
**Definition of Terms** :  
- **Anastomosis**: All anastomosis of hollow viscus with the exception of TOF repair and oesophageal repair.  
- **Leak**: With the evidence of both clinical and radiological.  
**Criteria** :  
- **Inclusion**: All patients who underwent anastomosis and suture of hollow viscus operation inclusive of neonate.  
- **Exclusion**: Radiological leak in oesophageal repair.  
**Type of indicator** : Rate-based outcome indicator  
**Numerator** : Number of patients with anastomotic leak  
**Denominator** : Total number of patients underwent anastomosis of hollow viscus operation  
**Formula** :  
\[
\text{Numerator} \times \frac{100\%}{\text{Denominator}}
\]  
**Standard** : ≤ 10%  
**Data Collection** :  
1. **Where**: Data will be collected in wards or wards that cater for the above condition/OT/ICU/CCU/CRW/NICU  
2. **Who**: Data will be collected by Officer/Nurse in-charge (indicator coordinator) of the department/unit.  
3. **How frequent**: 6 monthly data collection.  
4. **Who should verify**: All performance must be verified by Head of Department/Head of Unit/Hospital Director.  
5. **How to collect**: Data is suggested to be collected from OT registry/patient’s case note/admission book/Hospital IT system (refer to KPI MOH Guidelines).  

**Remarks** :  

**Indicator 5** : Individual  
**Discipline** : Paediatric Surgery  
**Indicator** : Percentage of targeted paediatric surgical services that provided by paediatric surgeon to the designated hospital (Outreach Program)  
**Dimension of Quality** : Customer centeredness  
**Rationale** :  
1. Paediatric surgery deal with fairly rare conditions. In order to improve outcomes, there must be some degree of centralization in performing the surgeries. However the follow-up can be done in hospital closer to their locality.  
2. Improve patient and parental satisfaction by providing services nearer to home.  
3. Provide expertise to those in need.  
4. Provide training for onsite medical personnel.  
5. To ensure involvement of Head of Department.  
**Definition of Terms** : **Targeted paediatric surgical services**: Each surgeon is expected to perform at least 4 outreach programs per year. (It depends on the availability of the specialist...
and workload of the department. The number of outreach program is suggested to be decided by the Head of Department).

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: Emergency and elective visits for surgery or clinics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exclusion:</td>
</tr>
<tr>
<td></td>
<td>1. Surgeon posted less than 6 months in a particular hospital</td>
</tr>
<tr>
<td></td>
<td>2. Availability/ capability of surgeon involved in the Outreach Program (surgeon is needed in the hospital)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based structure indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of paediatric surgical services that provided by paediatric surgeon to the designated hospital</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of targeted paediatric surgical services that provided by paediatric surgeon to the designated hospital</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator \times 100 % / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>\geq 75%</td>
</tr>
</tbody>
</table>

| Data Collection | 1. Where: Data will be collected from Department Office. |
|                | 2. Who: Data will be collected by Officer/ Nurse/ Staff in-charge (indicator coordinator) of the department/unit. |
|                | 4. Who should verify: All performance date must be verified by Head of Department/ Head of Unit/ Hospital Director. |
|                | 5. How to collect: Data is suggested to be collected from task schedule/ record book (refer to KPI MOH Guidelines). |

| Remarks | It is suggested that hospital with lesser Paediatric Surgeon will have lesser target of the year. |

| Indicator 6 | Individual |
| Discipline  | Paediatric Surgery |
| Indicator   | Percentage of successful hypospadias repair |
| Dimension of Quality | Effectiveness |
| Rationale   | Hypospadias is a common congenital condition affecting about 1 in 300 boys. This would translate to about 1000 new cases yearly in Malaysia. |

| Definition of Terms | Hypospadias: A congenital defect in which the urethral opening does not form completely to the tip of the penis. Instead, the opening may be located anywhere along the underside of the penis. |
|                     | **Successful repair**: Absence of SEVERE complication within (≤) 1 month of surgery: |
|                     | 2. Severe stricture leading to urinary retention. |

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exclusion: Any re-do surgery.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based outcome indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of successful hypospadias repair</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number hypospadias repair performed</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100 % Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 75%</td>
</tr>
</tbody>
</table>
| Data Collection | 1. **Where**: Data will be collected from Paediatric Surgical Outpatient Clinic/ wards/ ICU/ CCU/ CRW/ NICU.  
                     2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/ unit.  
                     3. **How frequent**: 6 Monthly data collection.  
                     4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
                     5. **How to collect**: Data is suggested to be collected from patient’s case note/ admission book/ Hospital IT system (refer to KPI MOH Guidelines). |
| Remarks         | :                                      |
### PLASTIC AND RECONSTRUCTIVE SURGERY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of cleft lip/palate patients that were given appointment for first consultation within (≤) 6 weeks at Plastic Surgical Outpatient Department (Plastic SOPD)</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of basal cell carcinoma (BCC) patients with waiting time of (≤) 4 weeks for definitive surgery</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Plastic Surgical Outpatient Department (Plastic SOPD)</td>
<td>Customer</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of full thickness skin graft (FTSG) with ≥ 80% graft take following elective surgery</td>
<td>Effectiveness</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of post-palatoplasty haemorrhage patients reintubated and/ or returned to operating theatre within (≤) 24 hours of primary palate repair</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Rate of complete excision of basal cell carcinoma (BCC)</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

**Discipline**: Plastic and Reconstructive Surgery  
**Indicator**: Percentage of cleft lip/palate patients that were given appointment for first consultation within (≤) 6 weeks at Plastic Surgical Outpatient Department (Plastic SOPD)  
**Dimension of Quality**: Customer centeredness  
**Rationale**: Early commencement of multidisciplinary involvement in the management of cleft lip/palate patients.  
**Definition of Terms**:  
- **Appointment**: Time taken from the date of receiving referrals to the date of first consultation with the doctor.  
- **Inclusion**: NA  
- **Exclusion**:  
  1. Patients who request to delay the appointment date.  
  2. Patients who request to see a specific doctor.  
  3. Patients who default the first appointment given.  
**Type of indicator**: Rate-based structure indicator  
**Numerator**: Number of cleft lip/palate patients that were given appointment for first consultation within (≤) 6 weeks at Plastic Surgical Outpatient Department (Plastic SOPD)
### Indicator 2

**Departmental**

**Discipline**: Plastic and Reconstructive Surgery

**Indicator**: Percentage of basal cell carcinoma (BCC) patients with waiting time of (≤) 4 weeks for definitive surgery

**Dimension of Quality**: Customer centeredness

**Rationale**: To ensure early access to definitive surgery.

**Definition of Terms**
- **Waiting time**: Time taken from the date of BCC diagnosis proven by clinical/biopsy to the date of surgery.

**Criteria**
- **Inclusion**: NA
- **Exclusion**:
  1. Advanced BCC requiring complex reconstruction.
  2. Undiagnosed BCC.
  3. Patients who request to delay the surgery date.
  4. Patients who default the first date given.

**Type of indicator**: Rate-based structure indicator

**Numerator**: Number of basal cell carcinoma (BCC) patients with waiting time of (≤) 4 weeks for definitive surgery

**Denominator**: Total number of basal cell carcinoma (BCC) patients for definitive surgery

**Formula**: \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \)

**Standard**: ≥ 85%

**Data Collection**
- **Where**: Data will be collected in Plastic Surgical Outpatient Department (Plastic SOPD).
- **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
- **How frequent**: 3 monthly data collection.
- **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
- **How to collect**: Data is suggested to be collected from clinic registry/ record book (refer to KPI MOH Guidelines).

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**Denominator**: Total number of cleft lip/ palate patients referred to Plastic Surgical Outpatient Department (Plastic SOPD)

**Formula**: \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \)

**Standard**: ≥ 85%

**Data Collection**
- **Where**: Data will be collected in Plastic Surgical Outpatient Department (Plastic SOPD).
- **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
- **How frequent**: 3 monthly data collection.
- **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
- **How to collect**: Data is suggested to be collected from clinic registry/ record book (refer to KPI MOH Guidelines).
### Indicator 3

**Discipline:** Plastic and Reconstructive Surgery  
**Indicator:** Percentage of patients with waiting time of \( \leq 90 \) minutes to see the doctor at Plastic Surgical Outpatient Department (Plastic SOPD)  
**Dimension of Quality:** Customer centeredness  
**Rationale:** To keep a check on the waiting time for a patient to see the doctor.  
**Definition of Terms:**  
- **Waiting time:** Time of registration/appointment (whichever is later) to the time the patient is first seen by the doctor.  
- **Inclusion:** NA  
**Criteria:**  
- **Inclusion:** None.  
- **Exclusion:**  
  1. Patients who request to see a specific doctor.  
  2. Patients who come without an appointment ("walk-in" patients).  
  3. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.  
  4. Patients with multiple appointments on the same day.  
  5. Patients slotted in for special consultation.  
**Type of indicator:** Rate-based structure indicator  
**Numerator:** Number of patients with waiting time of \( \leq 90 \) minutes to see the doctor at Plastic Surgical Outpatient Department (Plastic SOPD)  
**Denominator:** Total number of patients seen at Plastic Surgical Outpatient Department (Plastic SOPD)  
**Formula:**  
\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\% 
\]  
**Standard:** \( \geq 85\% \)  
**Data Collection:**  
1. **Where:** Data will be collected in Plastic Surgical Outpatient Department (Plastic SOPD).  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book/ waiting time slip/ outpatient card (refer to KPI MOH Guidelines).  
**Remarks:**

### Indicator 4

**Discipline:** Plastic and Reconstructive Surgery  
**Indicator:** Percentage of full thickness skin graft (FTSG) with \( \geq 80\% \) graft take following elective surgery
<table>
<thead>
<tr>
<th>Dimension of Quality</th>
<th>Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale</td>
<td>Delivery of quality care and clinical competence of surgeon.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>NA</td>
</tr>
</tbody>
</table>
| Criteria             | **Inclusion:** 1. All patients undergoing FTSG following elective surgery.  
                      | **Exclusion:** 1. Patients with known skin disease. |
| Type of indicator    | Rate-based process indicator |
| Numerator            | Number of full thickness skin graft (FTSG) with ≥ 80% graft take following elective surgery |
| Denominator          | Total number of full thickness skin graft (FTSG) performed during elective surgery |
| Formula              | Numerator \( \times \) 100 \%  
                      | Denominator |
| Standard             | ≥ 85\% |
| Data Collection      | 1. **Where:** Data will be collected in Plastic Surgical Outpatient Department (Plastic SOPD)/ ward/ OT.  
                      | 2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
                      | 3. **How frequent:** 3 monthly data collection.  
                      | 4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
                      | 5. **How to collect:** Data is suggested to be collected from OT registry/ record book (refer to KPI MOH Guidelines). |
| Remarks              | |

**Indicator 5**

**Discipline:** Plastic and Reconstructive Surgery

**Indicator:** Percentage of post-palatoplasty haemorrhage patients reintubated and/or returned to operating theatre within (≤) 24 hours of primary palate repair

<table>
<thead>
<tr>
<th>Dimension of Quality</th>
<th>Effectiveness</th>
</tr>
</thead>
</table>
| Rationale            | 1. Primary haemorrhage is a common complication of palate repair.  
                      | 2. It is a surgical emergency.  
| Definition of Terms  | NA            |
| Criteria             | **Inclusion:** 1. All patients undergoing primary cleft palate repair.  
                      | **Exclusion:** 1. Patients more than 12 years old.  
                      | 2. Patients with blood dyscrasia. |
| Type of indicator    | Rate-based process indicator |
| Numerator            | Number of post-palatoplasty patients with haemorrhage returned to operating theatre within (≤) 24 hours of primary palate repair |
| Denominator          | Total number of patients underwent primary palate repair |
| Formula              | Numerator \( \times \) 100 \% |
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

**CLINICAL PERFORMANCE SURVEILLANCE UNIT**

**D(Departmental); I(Individual)**

---

<table>
<thead>
<tr>
<th>Denominator</th>
<th>≤ 5%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Data Collection</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
</tr>
<tr>
<td><strong>Denominator</strong></td>
</tr>
<tr>
<td><strong>Where:</strong> Data will be collected in Plastic and Reconstructive Surgery wards or wards that cater for the above condition/ OT.</td>
</tr>
<tr>
<td><strong>Who:</strong> Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td><strong>How frequent:</strong> 3 monthly data collection.</td>
</tr>
<tr>
<td><strong>Who should verify:</strong> All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td><strong>How to collect:</strong> Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

**Remarks**

---

<table>
<thead>
<tr>
<th>Indicator 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline:</strong> Plastic and Reconstructive Surgery</td>
</tr>
<tr>
<td><strong>Indicator:</strong> Rate of complete excision of basal cell carcinoma (BCC)</td>
</tr>
<tr>
<td><strong>Dimension of Quality:</strong> Effectiveness</td>
</tr>
<tr>
<td><strong>Rationale:</strong> Complete surgical excision is important in reducing the risk of recurrence. Incomplete excision may necessitate further surgery.</td>
</tr>
<tr>
<td><strong>Definition of Terms:</strong> Complete excision: Excision with clear surgical margin based on histopathological examination (HPE) report.</td>
</tr>
<tr>
<td><strong>Criteria</strong></td>
</tr>
<tr>
<td><strong>Inclusion:</strong> All cases of BCC involving the skin.</td>
</tr>
<tr>
<td><strong>Exclusion:</strong> Locally advanced tumour including lesions whereby satisfactory margins cannot be achieved (e.g.: close to punctum, external auditory canal)</td>
</tr>
<tr>
<td><strong>Type of indicator:</strong> Rate-based outcome indicator</td>
</tr>
<tr>
<td><strong>Numerator:</strong> Number of complete excision of basal cell carcinoma (BCC)</td>
</tr>
<tr>
<td><strong>Denominator:</strong> Total number of basal cell carcinoma (BCC) excised</td>
</tr>
<tr>
<td><strong>Formula</strong></td>
</tr>
<tr>
<td>Numerator x 100%</td>
</tr>
<tr>
<td>Denominator</td>
</tr>
<tr>
<td><strong>Standard:</strong> ≥ 90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Data Collection</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Where:</strong> Data will be collected in Plastic Surgical Outpatient Department (Plastic SOPD)/ ward/ OT.</td>
</tr>
<tr>
<td><strong>Who:</strong> Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td><strong>How frequent:</strong> 3 monthly data collection.</td>
</tr>
<tr>
<td><strong>Who should verify:</strong> All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td><strong>How to collect:</strong> Data is suggested to be collected from OT registry/ Histopathological examination (HPE) report / record book (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

**Remarks**
### Upper Gastrointestinal Surgery

<table>
<thead>
<tr>
<th>Type</th>
<th>No</th>
<th>Indicator</th>
<th>Dimension</th>
<th>Standard</th>
<th>Hospital Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with gastric tumour who undergo potential curative surgical resection in which surgical margin is clear</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with oesophageal tumour who undergo potential curative surgical resection in which surgical margin is clear</td>
<td>Customer</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with oesophageal or gastric tumours should be operated within (≤) 2 weeks after pre-operative optimization</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients with oesophageal anastomotic leak after oesophago-gastric surgery</td>
<td>Effectiveness</td>
<td>&lt; 30%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients with gastric adenocarcinoma who undergo curative surgical resection (RO) where ≥15 lymph nodes are resected and pathologically examined</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients with benign stomach disorder who undergo elective surgery and receive blood transfusion intra-operatively more than 4 units</td>
<td>Customer</td>
<td>&lt; 15%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**
- **Departmental**
- **Discipline**: Upper Gastrointestinal Surgery
- **Name of indicator**: Percentage of patients with gastric tumour who undergo potential curative surgical resection in which surgical margin is clear
- **Dimension of Quality**: Customer centeredness
- **Rationale**:
  1. Tumour involvement of surgical resection margins is a negative prognostic factor.
  2. Curative cancer surgery (RO) should aim to ensure complete excision of the tumour, as this affects the prognosis and long-term patient outcome.
- **Definition of Terms**: NA
- **Criteria**
  - **Inclusion**:
    1. All elective gastric tumour surgery with curative intent (RO)
    2. Margins inclusive of proximal and distal margins
    3. Inclusive of cases post neo-adjuvant therapy
  - **Exclusion**:
    1. Stage 4 disease
### Type of indicator
- **Rate-based outcome indicator**

### Numerator
- **Number of patients with gastric tumour who undergo surgical resection with curative intent with clear surgical margin**

### Denominator
- **Number of patients with gastric tumour who undergo surgical resection with curative intent**

### Formula
- \[ \text{Numerator} \times \frac{100}{\text{Denominator}} \]

### Standard
- \( \geq 75\% \)

### Data Collection
1. **Where**: Data will be collected in wards that cater for the above condition/ clinic/ OT.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from admission book, OT list / histopathology examination (HPE) report / record book/ Hospital IT System (refer to KPI MOH Guidelines).

### Remarks

---

### Indicator 2
- **Departmental**

### Discipline
- **Upper Gastrointestinal Surgery**

### Name of indicator
- **Percentage of patients with oesophageal tumour who undergo potential curative surgical resection in which surgical margin is clear**

### Dimension of Quality
- **Customer centeredness**

### Rationale
1. Tumour involvement of surgical resection margins is a negative prognostic factor.
2. Curative cancer surgery should aim to ensure complete excision of the tumour, as this affects the prognosis and long-term patient outcome.

### Definition of Terms
- **NA**

### Criteria
- **Inclusion:**
  1. All patients who undergo cancer surgery with curative intent.

- **Exclusion:**
  1. Stage 4 disease

### Type of indicator
- **Rate-based outcome indicator**

### Numerator
- **Number of patients with oesophageal tumour who undergo surgical resection with curative intent with clear surgical margin**

### Denominator
- **Number of patients with oesophageal tumour who undergo surgical resection with curative intent**

### Formula
- \[ \text{Numerator} \times \frac{100}{\text{Denominator}} \]

### Standard
- \( \geq 75\% \)

### Data Collection
1. **Where**: Data will be collected in wards that cater for the above condition/ clinic/ OT.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
### Indicator 3

**Discipline:** Upper Gastrointestinal Surgery  
**Name of indicator:** Percentage of patients with oesophageal or gastric tumours should be operated within (≤) 2 weeks after pre-operative optimization

**Dimension of Quality:** Effectiveness

**Rationale:**
1. Surgical resection remains the gold standard for these tumours.
2. Timing is very crucial to avoid tumour progression.

**Definition of Terms**

**Pre-operative optimization:** From the point of time final treatment option is decided till the actual day of surgery.

**Criteria**

**Inclusion:**
1. All patients who are deemed to respond to treatment.

**Exclusion:**
1. Terminally ill patients.
2. Patient's refusal.

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of patients with oesophageal or gastric tumours who are operated within (≤) 2 weeks after pre-operative optimization

**Denominator:** Number of patients with oesophageal or gastric tumours who are operated after pre-operative optimization

**Formula:**

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard:** ≥ 75%

**Data Collection**

1. **Where:** Data will be collected in wards that cater for the above condition/ clinic/ OT.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 6 monthly data collection.
4. **Who should verify:** All data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from admission book/ OT list / histopathology examination (HPE) report / record book/ Hospital IT System (refer to KPI MOH Guidelines).

**Remarks:**

---

### Indicator 4

**Discipline:** Individual
<table>
<thead>
<tr>
<th>Discipline</th>
<th>Upper Gastrointestinal Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of patients with oesophageal anastomotic leak after oesophago-gastric surgery</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>
| Rationale                  | 1. Preoperative preparation for any major oesophageal surgery is important for a positive clinical outcome.  
2. Improvement in preoperative general condition, stabilization of co-morbidities and proper patient selection are pertinent to improved clinical outcome. |
| Definition of Terms        | Oesophageal anastomosis leak which causes significant clinical symptoms |
| Criteria                   | Inclusion:  
1. All patients who undergo elective oesophago-gastric surgery for benign or malignant disease either conventional or thoracoscopic assisted surgery (inclusive of 2 or 3 stage oesophagectomy, total gastrectomy, total gastrectomy with distal oesophagectomy and any bowel interposition to the remnant to the oesophagus)  
Exclusion:  
1. Emergency oesophago-gastric surgery  
2. Asymptomatic radiological leak |
| Type of indicator          | Rate-based outcome indicator |
| Numerator                  | Number of patients with anastomotic leak after undergoing elective oesophago-gastric surgery for benign or malignant disease either conventional or thoracoscopic assisted surgery |
| Denominator                | Number of patients undergoing elective oesophago-gastric surgery for benign or malignant disease either conventional or thoracoscopic assisted surgery |
| Formula                    | Numerator x 100%  
Denominator |
| Standard                   | < 30% |
| Data Collection            | 1. Where: Data will be collected in wards that cater for the above condition/ OT.  
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from admission book/ OT list/ patient's case note/ record book/ Hospital IT System (refer to KPI MOH Guidelines). |
| Remarks                    | |
| Indicator 5                | Individual |
| Discipline                 | Upper Gastrointestinal Surgery |
| Name of indicator          | Percentage of patients with gastric adenocarcinoma who undergo curative surgical resection (RO) where ≥15 lymph nodes are resected and pathologically examined |
| Dimension of Quality       | Effectiveness |
| Rationale                  | Maximizing the number of lymph nodes resected and analysed enables reliable |
### Definition of Terms

**NA**

### Criteria

**Inclusion:**
1. All patients who undergo gastric surgery with curative intent (RO) for gastric adenocarcinoma

**Exclusion:**
1. Palliative gastrectomy

### Type of indicator

Rate-based outcome indicator

### Numerator

Number of patients with gastric adenocarcinoma who undergo curative surgical resection (RO) where ≥15 lymph nodes are resected and pathologically examined

### Denominator

Number of patients with gastric adenocarcinoma who undergo curative surgical resection (RO) with curative intent

### Formula

\[
\frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

### Standard

≥ 70%

### Data Collection

1. **Where:** Data will be collected in wards that cater for the above condition/clinic/OT.
2. **Who:** Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** 6 monthly data collection.
4. **Who should verify:** All performance must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note/record book/OT list/Hospital IT System (refer to KPI MOH Guidelines).

### Remarks


### Indicator 6

**Individual**

**Upper Gastrointestinal Surgery**

**Name of indicator**

**Percentage of patients with benign stomach disorder who undergo elective surgery and receive blood transfusion intra-operatively more than 4 units**

**Dimension of Quality**

Customer centeredness

**Rationale**

1. Massive blood transfusion contributes to poor surgical outcome i.e. immune system, oxygen carrying capacity and anastomotic leak.
2. It reflects to one’s surgical skill if happens rampantly.
3. Inefficient usage of resources.

**Definition of Terms**

**Benign stomach surgery:** Fundoplication, obesity surgery, excisions, pyloric stenosis, gastrectomies etc.

**Criteria**

**Inclusion:**
1. All patients who undergo surgery for benign stomach disorder (fundoplication, cardiomyotomy, obesity surgery, excisions, pyloric stenosis and laparoscopy/open bypass procedure)

**Exclusion:**
1. Emergency surgery.
2. Patients with blood dyscrasia.
**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of patients with benign stomach disorder who undergo elective surgery and receive blood transfusion intra-operatively more than 4 units

**Denominator**: Total number of patients with benign stomach disorder who undergo elective surgery

**Formula**: \[ \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \]

**Standard**: < 15%

**Data Collection**
1. **Where**: Data will be collected in wards that cater for the above condition/ OT/ Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from OT list/ patient’s case notes/ record book/ Hospital IT System (refer to KPI MOH Guidelines).

**Remarks**: 

---

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with benign stomach disorder who undergo elective surgery and receive blood transfusion intra-operatively more than 4 units</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients with benign stomach disorder who undergo elective surgery</td>
</tr>
<tr>
<td>Formula</td>
<td>[ \frac{\text{Numerator}}{\text{Denominator}} \times 100% ]</td>
</tr>
<tr>
<td>Standard</td>
<td>&lt; 15%</td>
</tr>
</tbody>
</table>
| Data Collection   | 1. **Where**: Data will be collected in wards that cater for the above condition/ OT/ Clinic.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: 6 monthly data collection.  
4. **Who should verify**: All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from OT list/ patient’s case notes/ record book/ Hospital IT System (refer to KPI MOH Guidelines). |
| Remarks           | |
**UROLOGY**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of suspected renal cancer cases that were given appointment for first consultation within (≤) 14 working days at Urology Clinic</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with suspected bladder tumour undergo elective transurethral resection of bladder tumour (TURBT) within (≤) 1 month</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of ureteric stents inserted post urological procedures removed either before or on the date of appointment given</td>
<td>Safety</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of safe percutaneous nephrolithotripsy (PCNL)</td>
<td>Safety</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of safe transurethral resection of the prostate (TURP)</td>
<td>Safety</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of safe ureterorenoscopy (URS) with lithotripsy</td>
<td>Safety</td>
<td>≥ 95%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

**Discipline**: Urology  
**Indicator**: Percentage of suspected renal cancers cases that were given appointment for first consultation within (≤) 14 working days at Urology Clinic  
**Dimension of Quality**: Customer centeredness  
**Rationale**: Patient-centred services must give priority to cancer cases to reassure the patients that they are receiving prompt/timely care for potentially life-threatening condition.  
**Definition of Terms**:  
- **Appointment**: Time taken from the date of referrals received to the date of first consultation with the doctor.  
**Criteria**  
- **Inclusion**: NA  
- **Exclusion**:  
  1. Patients who request to delay the appointment date.  
  2. Patients who default the first appointment given.  
**Type of indicator**: Rate-based process indicator  
**Numerator**: Number of suspected renal cancer cases that were given appointment for first consultation within (≤) 14 working days at Urology Clinic  
**Denominator**: Total number of suspected renal cancer cases referred to Urology Clinic  
**Formula**: Numerator x 100 %
## Indicator 2

**Discipline**: Urology

**Indicator**: Percentage of patients with suspected bladder tumour undergoing elective transurethral resection of bladder tumour (TURBT) within (≤) one month

**Dimension of Quality**: Customer centeredness

**Rationale**: Bladder tumour is a lethal urological malignancy where early intervention will make a difference.

**Definition of Terms**: Bladder tumour: Any bladder mass detected either endoscopically or radiologically.

**Criteria**

**Inclusion**: NA

**Exclusion**:
1. Patients with multiple medical co-morbidities who require optimization.
2. Patients who are not fit for any surgical intervention.
3. Patients who request for specific appointment date/ specific doctor.
4. Patients who default first appointment date given.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients with suspected bladder tumour undergoing elective transurethral resection of bladder tumour (TURBT) within (≤) one month

**Denominator**: Total number of patients with suspected bladder tumour

**Formula**: \[
\text{Numerator} \times 100 \% \over \text{Denominator}
\]

**Standard**: ≥ 80%

**Data Collection**

1. **Where**: Data will be collected in Urology wards/ Clinic/ OT or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from appointment book/ admission book/ record book (refer to KPI MOH Guidelines).

**Remarks**:

---

<table>
<thead>
<tr>
<th>Denominator</th>
<th>≥ 80%</th>
</tr>
</thead>
</table>
| **Data Collection** | 1. **Where**: Data will be collected in Urology Clinic.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from appointment book/ admission book/ record book (refer to KPI MOH Guidelines). |
| **Remarks** | : |
### Indicator 3
**Discipline:** Departmental  
**Indicator:** Departmental Discipline: Urology  
**Indicator:** Percentage of ureteric stents inserted post urological procedures removed either before or on the date of appointment given  
**Dimension of Quality:** Safety  
**Rationale:** Retained ureteric stents have significant morbidities to the patient (stent encrustation, pain, bleeding and infections) and have potential medico-legal implications.  
**Definition of Terms:** Ureteric stents: Indwelling stents double J stents which can be inserted after elective Urological procedures. The stents provide drainage and act as a temporary measure to overcome potential post operative ureteric obstruction. The stents can easily be removed endoscopically under local anaesthesia as a day procedure.  
**Criteria:**  
**Inclusion:**  
1. Stent inserted post elective urological procedures e.g. Ureterorenoscopy (URS), Retrograde Intrarenal Surgery (RIRS), Percutaneous nephrolithotomy (PCNL) and ureteric reconstructive procedures.  
**Exclusion:**  
1. Ureteric stents inserted by other departments or institutions.  
2. Ureteric stents inserted for palliative malignant conditions.  
**Type of indicator:** Rate-based outcome indicator  
**Numerator:** Number of patients with ureteric stents inserted post urological procedures removed either before or on the date of appointment given  
**Denominator:** Total number of patients with ureteric stents inserted post urological procedures  
**Formula:**  
\[ \text{Numerator} \times 100 \% \]  
\[ \text{Denominator} \]  
**Standard:** ≥ 80%  
**Data Collection:**  
1. **Where:** Data will be collected in Urology Clinic/OT or wards that cater for the above condition.  
2. **Who:** Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** All performance must be verified by Head of Department/Head of Unit/Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines).  
**Remarks:**  

### Indicator 4
**Discipline:** Departmental  
**Indicator:** Individual Discipline: Urology  
**Indicator:** Percentage of safe percutaneous nephrolithotripsy (PCNL)  
**Dimension of Quality:** Safety  
**Rationale:**  
1. Endo-urological or minimally invasive Urological procedures form the bulk of present day Urological practice.  
2. PCNL is the major Urological procedure performed for the treatment of large or...
3. As urolithiasis forms 60% - 70% of Urological practice in Malaysia, the safe performance of this procedure is an accurate reflection of the quality of care in Urology.

**Definition of Terms**: Safe percutaneous nephrolithotripsy (PCNL): Absence of either one or more of the following complications:
1. Septicaemia.
2. Bleeding requiring transfusion of more than 2 units of blood intraoperatively.
3. Injury to adjacent organ e.g. lung, bowel.
4. Wound infection.
5. Unplanned admission to ICU.

**Criteria**

**Inclusion**: NA

**Exclusion**:  
1. Significant co-morbidities (ASA III).  
2. Full staghorn calculi.  
3. Patients with stents/ nephrostomies.  

**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of safe percutaneous nephrolithotripsy (PCNL) cases performed

**Denominator**: Total number of percutaneous nephrolithotripsy (PCNL) performed

**Formula**:  
\[ \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \]

**Standard**: ≥ 85%

**Data Collection**

1. **Where**: Data will be collected in Urology wards/OT or wards that cater the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

**Remarks**

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**Indicator 5**

**Discipline**: Urology

**Indicator**: Percentage of safe transurethral resection of the prostate (TURP)

**Dimension of Quality**: Safety

**Rationale**:  
1. Transurethral resection of the prostate (TURP) is the gold standard surgical treatment for Benign Prostatic Hyperplasia (BPH).
2. BPH is predominantly treated by medication and surgery is reserved for severe symptomatic BPH, failure of medical management and in situations where there are complications of BPH such as urinary retention.
3. The safe manner in which TURP is performed is a reflection of the standard of Urological training.
4. It also indicates appropriate case selection and supervision.
## Definition of Terms

<table>
<thead>
<tr>
<th>Safe transurethral resection of the prostate (TURP): Absence of either one or more of the following complications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Post op length of stay greater than 5 days.</td>
</tr>
<tr>
<td>2. Bleeding requiring blood transfusion.</td>
</tr>
<tr>
<td>3. Return to OT during the same admission.</td>
</tr>
<tr>
<td>4. Perforation of the bladder.</td>
</tr>
<tr>
<td>5. TUR syndrome.</td>
</tr>
<tr>
<td>7. Unplanned admission to ICU.</td>
</tr>
</tbody>
</table>

## Criteria

**Inclusion:**
- NA

**Exclusion:**
- Significant co-morbidities (ASA III).
- Patients on anticoagulants/antiplatelets.
- Patients admitted due to complication of comorbidity

## Type of indicator

- Rate-based outcome indicator

## Numerator

Number of safe transurethral resection of the prostate (TURP) cases performed

## Denominator

Total number of transurethral resection of the prostate (TURP) performed

## Formula

\[
\text{Numerator} \times 100\% \quad \text{Denominator}
\]

## Standard

\( \geq 90\% \)

## Data Collection

1. **Where:** Data will be collected in Urology wards/OT or wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

## Remarks

Indicator 6

- Individual
- Urology
- Percentage of safe ureterorenoscopy (URS) with lithotripsy
- Safety

## Rationale

1. Endo-urological or minimally invasive Urological procedures form the bulk of present day Urological practice.
2. Ureterorenoscopy (URS) with ureteric stone lithotripsy is the commonest Endourological procedure performed.
3. As Urolithiasis forms 60-70% of Urological practice in Malaysia, the safe performance of this procedure is an accurate reflection of the quality of care in Urology.

## Definition of Terms

| Safe ureterorenoscopy (URS) with lithotripsy: Absence of either one or more of the following complications: |
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
### MEDICAL PROGRAMME 2016

**CLINICAL PERFORMANCE SURVEILLANCE UNIT**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exclusion:</strong></td>
<td></td>
</tr>
<tr>
<td>1. Retrograde Intrarenal Surgery (RIRS).</td>
<td></td>
</tr>
<tr>
<td>2. Therapeutic URS for other indications such as ureteric stricture and ureteric tumours.</td>
<td></td>
</tr>
<tr>
<td>3. Bilateral URS.</td>
<td></td>
</tr>
<tr>
<td>4. More than 1 ureteric stone or single stone &gt; 1.5 cm.</td>
<td></td>
</tr>
<tr>
<td>5. Patients with prolonged stents &gt; 3 months.</td>
<td></td>
</tr>
<tr>
<td>6. Previous history of urosepsis.</td>
<td></td>
</tr>
<tr>
<td>7. Significant co-morbidities (ASA III).</td>
<td></td>
</tr>
<tr>
<td>8. Patients on anti-coagulants.</td>
<td></td>
</tr>
<tr>
<td>9. URS with emergency indication (renal failure).</td>
<td></td>
</tr>
<tr>
<td>10. Patients on anticoagulants/antiplatelets.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numerator</strong></td>
<td>Number of safe Ureterorenoscopy (URS) with lithotripsy performed</td>
</tr>
<tr>
<td><strong>Denominator</strong></td>
<td>Total number of Ureterorenoscopy (URS) with lithotripsy performed</td>
</tr>
</tbody>
</table>
| **Formula** | \[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\] |
| **Standard** | ≥ 95% |

**Data Collection**

1. **Where:** Data will be collected in Urology wards/OT or wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

**Remarks**
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

**VASCULAR SURGERY**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Post-operative mortality rate for elective open repair of abdominal aortic aneurysm (AAA)</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients undergoing secondary amputation following intervention for critical limb ischaemia (CLI)</td>
<td>Effectiveness</td>
<td>&lt; 40%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at General Surgery Clinic (General Surgery)</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of dialysis-access induced limb ischemia following native arterio-venous fistula creation</td>
<td>Effectiveness</td>
<td>&lt; 2%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of lower limb ischemia following an elective open abdominal aortic aneurysm repair</td>
<td>Safety</td>
<td>&lt; 1%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of cases with unplanned return to the operating theatre within the same admission following an elective surgical procedure (General Surgery)</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

### Indicator 1

**Discipline**: Vascular Surgery

**Indicator**: Post-operative mortality rate for elective open repair of abdominal aortic aneurysm (AAA)

**Dimension of Quality**: Effectiveness

**Rationale**: 1. Ruptured AAA carries a high morbidity with mortality rates as high as 80-90% in cases of free rupture.
2. Exclusion of AAA via open repair on the elective schedule lowers the mortality between 5-10% in patients without significant co-morbid medical problems.

**Definition of Terms**

- **Abdominal aortic aneurysm (AAA)**: Dilatation of the abdominal aorta of more than 3 cm at its widest diameter.
- **Post-operative mortality**: Mortality following an open repair of AAA within the same admission or within (≤) 30 days after surgery.

**Criteria**

- **Inclusion**: All patients undergoing open repair for AAA as an elective or semi-emergency procedure.
<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of death post elective open repair of abdominal aortic aneurysm (AAA)</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients undergoing open repair of abdominal aortic aneurysm (AAA)</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>&lt; 10%</td>
</tr>
</tbody>
</table>

**Exclusion:**
1. Ruptured aneurysms.
2. Patients undergoing intervention for exclusion of AAA as an emergency procedure.

**Data Collection:**
1. **Where:** Data will be collected in surgical wards or wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from OT registration book (refer to KPI MOH Guidelines).

**Remarks:**

---

**Indicator 2**
- **Departmental**
- **Discipline:** Vascular Surgery
- **Indicator:** Percentage of patients undergoing secondary amputation following intervention for critical limb ischaemia (CLI)
- **Dimension of Quality:** Effectiveness
- **Rationale:**
  1. Incidence of CLI is on the rise due to, amongst others, the increasing incidence of diabetes mellitus in the country.
  2. Intervention to re-vascularise the affected limb by means of endovascular or open bypass surgery is aimed to avoid limb amputation.
  3. In certain situation, limb salvage may not be achieved following revascularization due to failure of revascularization, ascending infection or extent of ischaemia.
- **Definition of Terms:**
  - **Critical limb ischaemia (CLI):** Chronic ischaemic rest pain, ulcer or gangrene attributable to objectively proved arterial occlusive disease.
  - **Intervention:** Procedure(s), either open, endovascular or a combination of both, performed to re-vascularise an ischaemic limb.
  - **Secondary amputation:** A major limb amputation (below knee or above knee) performed within 14 days following a revascularization procedure.
- **Criteria:**
  - **Inclusion:**
    1. All patients undergoing revascularization procedure(s) for chronic limb ischaemia.
  - **Exclusion:**
### Indicator 3

**Discipline**: Vascular Surgery  
**Indicator**: Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at General Surgery Clinic  
**Dimension of Quality**: Customer centeredness  
**Rationale**: 1. Waiting time to see doctor at the Specialist Clinic reflects on proper clinic management and therefore efficiency and punctuality. Ideally, patients should receive services at the stipulated time.  
2. It is the aim of the MOH to reduce waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities  
**Definition of Terms**: Waiting time: Time of registration/appointment (whichever is later) to the time patient is first seen by the doctor.  
**Criteria**:  
**Inclusion**: NA  
**Exclusion**: 1. Patients who request to see a specific doctor. 2. Patients who come without an appointment (“walk-in” patients). 3. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound. 4. Patients with multiple appointments on the same day. 5. Patients slotted in for special consultation.  
**Type of indicator**: Rate-based process indicator  
**Numerator**: Number of patients with waiting time of ≤ 90 minutes to see the doctor at General Surgery Clinic

---

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients undergoing secondary amputation within 14 days following intervention for critical limb ischaemia (CLI)</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients undergoing intervention for critical limb ischaemia (CLI)</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator \times 100 % Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>&lt; 40%</td>
</tr>
</tbody>
</table>

**Data Collection**:  
1. **Where**: Data will be collected in surgical wards or wards that cater for the above condition.  
2. **Who**: Data will be collected by Officer/Nurse in-charge (indicator co-ordinator) of the department/unit.  
3. **How frequent**: 3 monthly data collection.  
4. **Who should verify**: All performance must be verified by Head of Department/Head of Unit/Hospital Director.  
5. **How to collect**: Data is suggested to be collected from OT registration book (refer to KPI MOH Guidelines).
<table>
<thead>
<tr>
<th>Denominator</th>
<th>Total number of patients seen at General Surgery Clinic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>
| Data Collection | 1. **Where:** Data will be collected at General Surgery Clinic.  
|              | 2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
|              | 3. **How frequent:** 3 monthly data collection.  
|              | 4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
|              | 5. **How to collect:** Data is suggested to be collected from record book/ waiting time slip/outpatient card (refer to KPI MOH Guidelines).  |
| Remarks     |                                                        |

**Indicator 4**

| Discipline | Vascular Surgery |
| Indicator | Percentage of dialysis-access induced limb ischemia following native arteriovenous fistula (AVF) creation |
| Dimension of Quality | Effectiveness |
| Rationale | 1. A huge number of AVF’s are performed due to the increasing incidence of diabetes mellitus, which is the most common cause of renal failure.  
|            | 2. Dialysis-access induced limb ischemia is a known complication from AVF creation and this can lead to tissue loss or even limb loss. With careful selection of patients, this can be avoided.  |
| Definition of Terms | Native AVF: Arterio-venous fistula configuration from one of the following:  
|                      | 1. Radio-cephalic AVF.  
|                      | 2. Brachio-cephalic AVF.  
|                      | 3. Brachio-basilic AVF.  
| Upper limb ischemia: Reduced perfusion to the ipsi-lateral upper limb within 14 days following AVF creation with significant signs and symptoms of ischemia.  |
| Criteria | Inclusion:  
|          | 1. All native AVF performed for haemodialysis vascular access.  
|          | Exclusion:  
|          | 1. Vascular access procedures performed using prosthetic grafts and catheters.  
|          | 2. Vascular access procedures involving the lower limbs.  |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of dialysis-access induced limb ischemia within 14 days following native arterio-venous fistula (AVF) creation |
| Denominator | Total number native arterio-venous fistula (AVF) created |
| Formula | Numerator x 100 % Denominator |
| Standard | < 2% |
| Data Collection | 1. **Where:** Data will be collected in surgical wards or wards that cater the above condition.  |
## Technical Specifications for Key Performance Indicators (KPI) Clinical Services

### Clinical Services Medical Programme 2016

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
</table>
| 2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: 3 Monthly data collection.  
4. **Who should verify**: All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from OT registration book (refer to KPI MOH Guidelines). |

### Indicator 5

| Discipline | Vascular Surgery |
| Indicator | Percentage of lower limb ischemia following an elective open abdominal aortic aneurysm (AAA) repair |
| Dimension of Quality | Safety |
| Rationale | 1. Lower limb ischemia is a known complication following open AAA repair.  
2. This can be due to embolisation of thrombus during dissection or clamping or technical problems during anastomoses.  
3. Its occurrence can be avoided with careful dissection and proper anastomotic techniques. |
| Definition of Terms |  
**Open abdominal aortic aneurysm (AAA) repair**: Exclusion of an abdominal aortic aneurysm by means of conventional aneurysmectomy via a laparotomy.  
**Lower limb ischemia**: Reduced perfusion to the lower limb(s) following an open AAA repair. |
| Criteria |  
**Inclusion**: All cases of lower limb ischemia following an elective open aneurysm repair.  
**Exclusion**:  
1. Lower limb ischemia following emergency open AAA repair.  
2. Lower limb ischemia secondary to thromboembolic disease or trauma. |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of lower limb ischemia following an elective open abdominal aortic aneurysm (AAA) repair |
| Denominator | Total number of elective open abdominal aortic aneurysm (AAA) repair performed |
| Formula | \( \text{Numerator} \times \frac{100}{\text{Denominator}} \) |
| Standard | < 1% |
| Data Collection | 1. **Where**: Data will be collected in surgical wards or wards that cater for the above condition.  
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: 3 Monthly data collection.  
4. **Who should verify**: All performance must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from OT registration book (refer to KPI MOH Guidelines). |
### Indicator 6

<table>
<thead>
<tr>
<th>Remarks</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Vascular Surgery</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Percentage of cases with unplanned return to the operating theatre within the same admission following an elective surgical procedure</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Dimension of Quality</th>
<th>Effectiveness</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Rationale</th>
<th>Any unplanned return to the operation theatre may indicate a quality problem due to the occurrence of intra-operative problems that are serious enough to warrant intervention post-operatively.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Unplanned return: Unexpected return to the operating theatre to address a previous complication of the original operation.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Elective surgical procedure performed under general anaesthesia.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Endoscopy cases.</td>
</tr>
<tr>
<td>2. Day care cases.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of cases with unplanned return to the operating theatre within the same admission following an elective surgical procedure</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Denominator</th>
<th>Total number of cases undergo elective surgical procedure</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Formula</th>
<th>Numerator x 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard</th>
<th>≤ 5%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>1. Where: Data will be collected at surgical wards/wards that cater for the above condition.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Who: Data will be collected by Officer/Nurse in-charge (indicator co-ordinator) of the department/unit.</td>
<td></td>
</tr>
<tr>
<td>4. Who should verify: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.</td>
<td></td>
</tr>
<tr>
<td>5. How to collect: Data is suggested to be collected from OT book/registration book/patient's case note (refer to KPI MOH Guidelines).</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>National Institutes of Health (NIH) USA data reports an unplanned return rate of between 5% and 15%, depending on the type of surgery performed.</td>
</tr>
</tbody>
</table>
TECHNICAL SPECIFICATION

CLINICAL SUPPORT DISCIPLINES
# ANAESTHESIOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>SUB-SPECIALTY</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>-</td>
<td>Percentage of major elective surgery patients received Acute Pain Service (APS)</td>
<td>Customer</td>
<td>≥ 60%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>-</td>
<td>Ventilator care bundle (VCB) compliance rate</td>
<td>Safety</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>-</td>
<td>Percentage of elective surgical cancellations after pre-operative assessment in the Anaesthetic Clinic</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>General</td>
<td>Percentage of re-intubation in the operating room (OR) or recovery room (RR)</td>
<td>Effectiveness</td>
<td>≤ 0.3%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>General</td>
<td>Percentage of patients on Acute Pain Service (APS) with pain score of less than 4 within the first 24 hours after surgery at rest</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>General</td>
<td>Percentage of cases with accidental dural puncture</td>
<td>Safety</td>
<td>&lt; 3%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Pain</td>
<td>Percentage of inpatients referred for chronic pain management seen within (≤) 24 hours</td>
<td>Customer</td>
<td>&gt; 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Pain</td>
<td>Percentage of unplanned admissions after day-case pain procedures</td>
<td>Effectiveness</td>
<td>&lt; 1%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>9</td>
<td>ICU</td>
<td>Percentage of readmission within 48 hours of ICU discharge</td>
<td>Effectiveness</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>10</td>
<td>ICU</td>
<td>Percentage of unplanned extubation</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**
- **Discipline**: Anaesthesiology
- **Name of indicator**: Percentage of major elective surgery patients received Acute Pain Service (APS)
- **Dimension of Quality**: Customer centeredness
- **Rationale**:
  1. Effective postoperative pain relief via APS helps reduce morbidity, aids recovery and decrease hospital length of stay. 
  2. The APS is a dedicated team that provides pain relief for major elective surgical patients.
# Definition of Terms

**Elective Surgery**: Planned surgery.

**Major surgery**: Classification under the hospital operating schedule. Cases category A and B in *Akta Fi 1951* (*Pindaan Fi 2003*).

# Criteria

**Inclusion**:
1. All major elective surgical cases from General Surgery (Colorectal, Vascular, Breast & Endocrine, Hepatobiliary, Bariatric), Obstetrics and Gynaecology and Orthopaedics inpatient who received General and Regional Anaesthesia.
2. The operation is classified as Major if they belong to category A and B in the *Akta Fi 1951* (*Pindaan Fi 2003*).

**Exclusion**:
1. Patients admitted to ICU post-operatively.
2. Patient who died intra-operatively.
3. Patients who underwent surgery under Local Anaesthesia.

# Type of indicator

Rate-based process indicator

# Numerator

Number of major elective surgical cases from General Surgery, Obstetrics and Gynaecology and Orthopaedic inpatient who received General and Regional Anaesthesia and who are put on the Acute Pain Service.

# Denominator

Total number of major elective surgery patients from General Surgery, Obstetrics and Gynaecology and Orthopaedic inpatient who receive anaesthesia.

# Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

# Standard

≥ 60%

# Data Collection

1. **Where**: Data will be collected in wards/OT that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

# Remarks


---

**Indicator 2**

**Discipline**: Anaesthesiology

**Name of indicator**: Ventilator care bundle (VCB) compliance rate

**Dimension of Quality**: Safety

**Rationale**:
1. Ventilator care bundle (VCB) is a set of interventions to reduce the incidence of ventilator-associated pneumonia.
2. Ventilator-associated pneumonia (VAP) is a complication that develops in a patient after 48 hours of mechanical ventilation, which carries morbidity and mortality.
### Indicator 3: Ventilator Care Bundle (VCB)

**Definition of Terms**: Ventilator Care Bundle (VCB): A set of 4 interventions which are:
1. Head elevation > 30 degrees.
2. The use of stress ulcer prophylaxis.
3. The use of deep vein thrombosis prophylaxis.

**Criteria**
- **Inclusion**: All patients on invasive mechanical ventilation in General ICU.
- **Exclusion**: NA

**Type of Indicator**: Rate-based process indicator

**Numerator**: Number of patients on invasive mechanical ventilation and compliant to VCB bundle

**Denominator**: Total number of patients on invasive mechanical ventilation

**Formula**: \[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard**: \( \geq 90\% \)

**Data Collection**
1. **Where**: Data will be collected in General ICU or wards that cater the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book/ audit report from the audit conducted by the Department/ Hospital (refer to KPI MOH Guidelines).

**Remarks**: It is suggested that 25% sampling is applied to the total number of patients. Sample taken for 3 days per month at 8am.

---

**Indicator 3**
- **Departmental**
- **Anaesthesiology**
- **Percentage of elective surgical cancellations after pre-operative assessment in the Anaesthetic Clinic**
- **Effectiveness**

**Rationale**: The effectiveness of the anaesthetic clinic should reflect in the reduced rate of cancellation for elective surgeries.

**Definition of Terms**: Elective surgery: Planned surgery.

**Criteria**
- **Inclusion**: 1. Cancellation by Anaesthetic Team
- Cancellation due to anaesthetic and/ or medical reasons such as uncontrolled diabetes, hypertension, heart disease etc.

**Exclusion**: None
<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of elective surgical cancellations after pre-operative assessment in the Anaesthetic Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of pre-operative assessment performed in the Anaesthetic Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≤ 5%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected in Anaesthetic clinic.</td>
</tr>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>

**Indicator 4**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Anaesthesiology (General)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of re-intubation in the operating room (OR) or recovery room (RR)</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>1. The occurrence of adverse events leading to re-intubation in the post-anaesthetic patient in the OR or RR may be multi-factorial.</td>
</tr>
<tr>
<td></td>
<td>2. Re-intubation leads to increased morbidity.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Re-intubation: Patient that requires endotracheal intubation following anaesthesia in the OR or RR.</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: Patients under regional anaesthesia or general anaesthesia.</td>
</tr>
<tr>
<td></td>
<td>Exclusion: 1. Patients operated under sedation or local anaesthesia administered by surgeons.</td>
</tr>
<tr>
<td></td>
<td>2. Patient re-intubated for surgical indications e.g. bleeding.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of patients requiring re-intubation in the operating room (OR) or recovery room (RR)</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients administered anaesthesia</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≤ 0.3%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected in operating theatre.</td>
</tr>
</tbody>
</table>
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>Indicator 5</th>
<th>:</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>:</td>
<td>Anaesthesiology (General)</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>:</td>
<td>Percentage of patients on Acute Pain Service (APS) with pain score of less than 4 within the first 24 hours after surgery at rest</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>:</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>:</td>
<td>Post-operative patients in the wards sometimes do not have adequate pain relief despite being managed by the acute pain team.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>:</td>
<td>Pain score: Measures a patient’s pain intensity using the MOH Pain scale (zero to ten).</td>
</tr>
<tr>
<td>Criteria</td>
<td>:</td>
<td>Inclusion:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. All patients on acute pain service.</td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Exclusion:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Day care and ICU patients.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>:</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>:</td>
<td>Number of patients on APS with pain score of less than 4 within the first 24 hours after surgery at rest</td>
</tr>
<tr>
<td>Denominator</td>
<td>:</td>
<td>Total number of patients on APS after surgery</td>
</tr>
<tr>
<td>Formula</td>
<td>:</td>
<td>Numerator \times 100%</td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>:</td>
<td>≥75%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>:</td>
<td>1. Where: Data will be collected in wards that cater for the above condition.</td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>5. How to collect: Data is suggested to be collected from record book designated form (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td>Remarks</td>
<td>:</td>
<td></td>
</tr>
</tbody>
</table>

## Indicator 6

<table>
<thead>
<tr>
<th>Indicator 6</th>
<th>:</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>:</td>
<td>Anaesthesiology (General)</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>:</td>
<td>Percentage of cases with accidental dural puncture</td>
</tr>
</tbody>
</table>
### Dimension of Quality: Safety

**Rationale:**
1. Patients should receive adequate and effective anaesthesia and analgesia for certain types of surgery.
2. Epidural anaesthesia is one of the techniques used for instillation of local anaesthetic into the epidural space to provide anaesthesia.
3. Accidental dural puncture is a known complication of epidural anaesthesia and it can lead to morbidity.

**Definition of Terms:** *Accidental dural puncture*: Process whereby epidural needle or catheter accidentally punctures the dura at the level of the injection site.

**Criteria:**
- **Inclusion:**
  1. Epidural anaesthesia.
  2. Epidural analgesia.
  3. Therapeutic epidural interventions e.g. steroid, blood patch.
  5. Obstetric Analgesia Service (OAS)

- **Exclusion:** NA

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of cases of accidental dural puncture

**Denominator:** Total number of cases received epidural anaesthesia/ analgesia and CSE

**Formula:**
- Numerator x 100%
- Denominator

**Standard:** < 3%

**Data Collection:**
1. **Where:** Data will be collected in OT.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book designated form (refer to KPI MOH Guidelines).

**Remarks:**

---

### Indicator 7

**Discipline:** Anaesthesiology (Pain)

**Name of indicator:** Percentage of inpatients referred for chronic pain management seen within (≤) 24 hours

**Dimension of Quality:** Customer centeredness

**Rationale:** In-patients referred for chronic pain should be seen in a timely manner to ensure adequate assessment and formulation of a management plan.

**Definition of Terms:** *Chronic pain*: Pain that has lasted longer than 3 months.

**Criteria:**
- **Inclusion:**
  1. All referred in-patient chronic pain cases.

- **Exclusion:**
  1. Patients with acute pain or pain lasted for less than 3 months.
## Type of indicator
- Rate-based process indicator

## Numerator
- Number of inpatients referred for chronic pain management seen within 24 hours

## Denominator
- Total number of inpatients referred for chronic pain management

## Formula
- \[ \text{Numerator} \times 100\% \div \text{Denominator} \]

## Standard
- > 90%

## Data Collection
1. **Where**: Data will be collected in wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator coordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Hospital Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

## Remarks

---

### Indicator 8

- **Type of indicator**: Individual
- **Discipline**: Anaesthesiology (Pain)
- **Name of indicator**: Percentage of unplanned admissions after day-case pain procedure
- **Dimension of Quality**: Effectiveness

## Rationale
1. The majority of pain-related procedures are done as day cases under local anaesthesia with or without sedation.
2. Unplanned admission will be required for complications related to the procedure and therefore this indicator will reflect the quality and safety of performance of these procedures.

## Definition of Terms
- **Pain procedure**: Any procedure done by pain specialists for relief of pain (includes chronic non-cancer and chronic cancer pain) e.g. epidural steroid injection, facet joint block, lignocaine infusion, acupuncture, etc.
- **Unplanned admission**: Admission of a patient who is scheduled for a day procedure.

## Criteria
- **Inclusion**: All patients done as day-cases (with or without sedation) for pain procedures.
- **Exclusion**: Pain procedures done for in-patients or planned admissions (e.g. coeliac plexus block for patient with advanced cancer, intrathecal catheter insertion).

## Type of indicator
- Rate-based process indicator

## Numerator
- Number of patients with unplanned admission after day-case pain procedure

## Denominator
- Total number of patients received day-case pain procedure

## Formula
- \[ \text{Numerator} \times 100\% \div \text{Denominator} \]

## Standard
- < 1%
Data Collection:

1. **Where:** Data will be collected in OT/ Day care.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

Remarks:

---

**Indicator 9**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Anaesthesiology (ICU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of indicator</td>
<td>Percentage of readmission within 48 hours of ICU discharge</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>Premature discharge of ICU patients to general wards may expose them to inadequate levels of care. Premature discharge may result in ICU readmission and has been associated with increased morbidity and mortality, longer length of stay and increased hospital costs.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Readmission within 48 hours refers to readmission due to unforeseen causes, whether or not related to the underlying diagnosis on the first admission.</td>
</tr>
</tbody>
</table>
| Criteria                 | **Inclusion:**
|                          | 1. All patients who are admitted to ICU |
|                          | **Exclusion:**
|                          | 1. Patients request for readmission
|                          | 2. Direct readmission by non-A naesthetic Team |
| Type of indicator        | Rate-based process indicator |
| Numerator                | Number of readmission within 48 hours of ICU discharge |
| Denominator              | Total number of admission to ICU |
| Formula                  | Numerator x 100%
|                          | Denominator |
| Standard                 | <5% |

**Data Collection**

1. **Where:** Data will be collected in General ICU.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

Remarks:
| Indicator 10 | Individual |
| Discipline | Anaesthesiology (ICU) |
| Name of indicator | Percentage of unplanned extubation |
| Dimension of Quality | Safety |
| Rationale | Unplanned extubation is associated with a high rate of reintubation and with increased risk of hospital-acquired pneumonia and death. |
| Definition of Terms | Unplanned extubation refers to unintended or accidental dislodgement or removal of endotracheal or tracheostomy tube from the trachea by the patient or staff |
| Criteria | **Inclusion:**  
1. All patients who are on invasive ventilator.  

**Exclusion:** NA |
| Type of indicator | Rate-based process indicator |
| Numerator | Number of unplanned extubations |
| Denominator | Total number of patients invasively ventilated |
| Formula | Numerator x 100% / Denominator |
| Standard | < 5% |
| Data Collection | 1. **Where:** Data will be collected in General ICU.  
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines). |
| Remarks | |
## CARDIAC ANAESTHESIA

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of major elective surgery patients received Acute Pain Service (APS) (Anaesthesiology)</td>
<td>Customer</td>
<td>≥ 60%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Ventilator care bundle (VCB) compliance rate (Anaesthesiology)</td>
<td>Safety</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of elective surgical cancellations after pre-operative assessment in the Anaesthetic Clinic (Anaesthesiology)</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of post-elective cardiopulmonary bypass adult patients with blood glucose level ≥ 10mmol/L on arrival to Cardiac Intensive Care Unit (CICU)</td>
<td>Effectiveness</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of accidental carotid arterial puncture during central venous cannulation via internal jugular vein (IJV) approach</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients require re-intubation in Cardiac Intensive Care Unit (CICU) after open heart surgeries</td>
<td>Effectiveness</td>
<td>≤ 5%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

**Discipline** : Cardiac Anaesthesia  
**Name of indicator** : Percentage of major elective surgery patients received Acute Pain Service (APS)  
**Dimension of Quality** : Customer centeredness  
**Rationale** : 1. Effective postoperative pain relief via APS helps reduce morbidity, aids recovery and decrease hospital length of stay.  
2. The APS is a dedicated team that provides pain relief for major elective surgical patients.  
**Definition of Terms** :  
**Elective Surgery**: Planned surgery.  
**Major surgery**: Classification under the hospital operating schedule.
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

### MEDICAL PROGRAMME 2016

#### Criteria

**Inclusion:**
1. All major elective surgical patients who received anaesthesia.

**Exclusion:**
1. Patients admitted to ICU post-operatively.
2. Patient who died intra-operatively.

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of major elective surgery patients received anaesthesia under Acute Pain Service (APS)

**Denominator:** Total number of major elective surgery patients

**Formula:**
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

**Standard:** ≥ 60%

**Data Collection**
1. **Where:** Data will be collected in wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/Nurse in-charge (indicator coordinator) of the department/unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

**Remarks**

#### Indicator 2

**Departmental**

**Discipline:** Cardiac Anaesthesia

**Name of indicator:** Ventilator care bundle (VCB) compliance rate

**Dimension of Quality:** Safety

**Rationale**
1. Ventilator care bundle (VCB) is a set of interventions to reduce the incidence of ventilator-associated pneumonia.
2. Ventilator-associated pneumonia (VAP) is a complication that develops in a patient after 48 hours of mechanical ventilation, which carries morbidity and mortality.
3. The VCB is an on-going quality improvement initiative under the Malaysian Registry of Intensive Care.

**Definition of Terms**
- **Ventilator Care Bundle (VCB):** A set of 4 interventions which are:
  1. Head elevation > 30 degrees.
  2. The use of stress ulcer prophylaxis.
  3. The use of deep vein thrombosis prophylaxis.

**Criteria**

**Inclusion:**
1. All patients on invasive mechanical ventilation in GICU.

**Exclusion:** NA

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of patients on invasive mechanical ventilation and compliant to VCB bundle
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

<table>
<thead>
<tr>
<th>Denominator</th>
<th>Total number of patients on invasive mechanical ventilation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formula</strong></td>
<td>Numerator × 100%</td>
</tr>
<tr>
<td></td>
<td>Denominator</td>
</tr>
<tr>
<td><strong>Standard</strong></td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>
| **Data Collection** | 1. Where: Data will be collected in GIUC.  
2. Who: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from record book/ audit report from the audit conducted by the Department/ Hospital (refer to KPI MOH Guidelines). |
| **Remarks** | |

<table>
<thead>
<tr>
<th>Indicator 3</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Cardiac Anaesthesia</td>
</tr>
<tr>
<td><strong>Name of indicator</strong></td>
<td>Percentage of elective surgical cancellations after pre-operative assessment in the Anaesthetic Clinic</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Effectiveness</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>The effectiveness of the anaesthetic clinic should reflect in the reduced rate of cancellation for elective surgeries.</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
<td>Elective surgery: Planned surgery.</td>
</tr>
</tbody>
</table>
| **Criteria** | Inclusion:  
1. Cancellation by Anaesthetic Team  
2. Cancellation due to anaesthetic and/ or medical reasons such as uncontrolled diabetes, hypertension, heart disease etc.  
Exclusion:  
1. Lack of ICU bed.  
2. URTI.  
3. Lack of OT time.  
4. Mechanical and electrical problem.  
5. Operation cancelled by surgeon |
| **Type of indicator** | Rate-based process indicator |
| **Numerator** | Number of elective surgical cancellations after pre-operative assessment in the Anaesthetic Clinic |
| **Denominator** | Total number of pre-operative assessment performed in the Anaesthetic Clinic |
| **Formula** | Numerator × 100% |
|             | Denominator |
| **Standard** | ≤ 5% |
| **Data Collection** | 1. Where: Data will be collected in Anaesthetic clinic.  
2. Who: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
4. Who should verify: All performance data must be verified by Head of |
## Indicator 4

**Discipline:** Cardiac Anaesthesia  

**Name of indicator:** Percentage of post-elective cardiopulmonary bypass adult patients with blood glucose level ≥ 10 mmol/L on arrival to Cardiac Intensive Care Unit (CICU)  

**Dimension of Quality:** Effectiveness  

**Rationale:**  
1. Post-operative patient with high blood glucose level is associated with surgical wound infection and prolonged hospital stay.  

**Definition of Terms:** Adult: Age >18 years.  

**Criteria:**  
1. Inclusion: All adult elective cardiac surgery that underwent cardiopulmonary bypass.  

**Type of indicator:** Rate-based process indicator  

**Numerator:** Number of post-elective cardiopulmonary bypass adult patients with blood glucose level ≥ 10mmol/L on arrival to CICU  

**Denominator:** Total number of post-elective cardiopulmonary adult patients in CICU  

**Formula:** \[ \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \]  

**Standard:** < 5%  

**Data Collection:**  
1. **Where:** Data will be collected in CICU.  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book/ CICU chart (refer to KPI MOH Guidelines).  

**Remarks:**

## Indicator 5

**Discipline:** Cardiac Anaesthesia  

**Name of indicator:** Percentage of accidental carotid arterial puncture during central venous cannulation via internal jugular vein (IJV) approach  

**Dimension of Quality:** Safety  

**Rationale:**  
1. The use of central venous catheter via the IJV approach is frequently required in the management of cardiothoracic patients.  
2. Accidental carotid artery puncture has an incidence of 6-25% and is
**Definition of Terms**

**Accidental carotid artery puncture**: Process whereby the cannulating needle accidentally punctures the carotid artery during insertion.

**Criteria**

**Inclusion**: 1. All IJV cannulations done in cardiothoracic cases.

**Exclusion**: NA

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of accidental carotid arterial punctures during central venous cannulation via internal jugular vein (IJV) approach

**Denominator**: Total number of central venous cannulation via internal jugular vein (IJV) approach performed

**Formula**: \[ \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \]

**Standard**: < 5%

**Data Collection**

1. Where: Data will be collected in operating theatre and Cardiac ICU/ CRW or wards that cater the above condition.
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. How to collect: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

**Remarks**

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**Indicator 6**

**Discipline**: Cardiac Anaesthesia

**Name of indicator**: Percentage of patients require re-intubation in Cardiac Intensive Care Unit (CICU) after open heart surgeries

**Dimension of Quality**: Effectiveness

**Rationale**

1. Early extubation is desirable to facilitate early mobility and reduce incidence of VAP.
2. However, these patients need to be assessed carefully prior to extubation and subsequently monitored closely to prevent re-intubation.
3. There is an increase in morbidity and delay in patient recovery after re-intubation.

**Definition of Terms**

**Re-intubation**: Patients requiring endotracheal intubation in CICU within (≤) 24 hours of extubation.

**Criteria**

**Inclusion**: 1. All patients who underwent cardiac surgery and subsequently admitted to CICU.

**Exclusion**: NA
**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients required re-intubation in CICU after open heart surgery

**Denominator**: Total number of patients extubated after open heart surgery

**Formula**: Numerator × 100% / Denominator

**Standard**: ≤ 5%

**Data Collection**:
1. **Where**: Data will be collected in CICU.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

**Remarks**
## Technical Specifications for Key Performance Indicators (KPI) Clinical Services

**Medical Programme 2016**

**Clinical Performance Surveillance Unit**

### Indicator 1: Departmental Discipline: Clinical Genetic

**Name of Indicator:** Percentage of non-urgent cases that were given an appointment for first consultation ≤ 8 weeks

**Dimension of Quality:** Customer centeredness

**Rationale:** Patient centred services must give priority to prompt attention to patients need by reducing waiting time for first consultation

**Definition of Terms:**

- **New cases:** Cases referred to the clinic (General Genetic/ Metabolic) for the first time. These patients will not have prior records in the department.

- **First consultation:** The first contact the patient has with a specialist, registrar or medical officer undergoing training in a medical specialist clinic.

- **Appointment:** Time taken from the date of referral received to the date of first consultation

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Dimension</th>
<th>Standard</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>D 1</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D 2</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D 3</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I 4</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I 5</td>
<td>Effectiveness</td>
<td>&lt; 1%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I 6</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I 7</td>
<td>Safety</td>
<td>&gt; 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I 8</td>
<td>Safety</td>
<td>&gt; 90%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

### Clinical Genetic

<table>
<thead>
<tr>
<th>Type</th>
<th>NO</th>
<th>Indicator</th>
<th>Dimension</th>
<th>Standard</th>
<th>Reporting Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of non-urgent cases that were given appointment for first consultation ≤ 8 weeks</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Genetic Clinic</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of ward referrals to be seen by specialist ≤ 2 working days</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of new cases with written feedback to the referring clinician ≤ 2 weeks of clinic attendance</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of unplanned readmission for patients treated for intoxication type IEM ≤ 48 hours of discharge</td>
<td>Effectiveness</td>
<td>&lt; 1%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients with intoxication type IEM with &gt; 3 admission in a year for metabolic decompensation</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Percentage of care pathway usage in patients with Marfan Syndrome</td>
<td>Safety</td>
<td>&gt; 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Percentage of care pathway usage in patients with Tuberous Sclerosis</td>
<td>Safety</td>
<td>&gt; 90%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>Consultation with the doctor.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Referrals:</strong> A referral may be received via a phone call, e-mail, fax or attendance to the clinic with a referral letter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Criteria

<table>
<thead>
<tr>
<th><strong>Inclusion:</strong> All referred patients including self referral</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exclusion:</strong></td>
</tr>
<tr>
<td>1. Inpatients discharged from the care of the Clinical Genetic Department and attending the clinic for the first time.</td>
</tr>
<tr>
<td>2. Patients who request to delay the appointment date.</td>
</tr>
<tr>
<td>3. Patients who request to see a specific doctor.</td>
</tr>
<tr>
<td>4. Patients who default the first appointment given.</td>
</tr>
<tr>
<td>5. Specialised Genetic Clinic</td>
</tr>
</tbody>
</table>

### Type of indicator

- Rate-based process indicator

### Numerator

- No. of new patients given appointment within 8 weeks for first consultation

### Denominator

- Total no. of new cases referred

### Formula

\[ \text{Numerator} \times \frac{100}{\text{Denominator}} \]

### Standard

\[ \geq 90\% \]

### Data Collection

1. **Where:** Data will be collected in Clinical Genetic Unit
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/unit.
3. **How frequent:** 3 Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book/ new referral letter folder (refer to KPI MOH Guidelines).

### Remarks

---

### Indicator 2

- **Departmental**
- **Clinical Genetic**
- **Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Genetic Clinic**
- **Customer centeredness**
- **Patient centered services must give priority to prompt attention to patients need by reducing waiting time for consultation**
- **Time of registration/ appointment (whichever is later) to the time the patient is first seen by the doctor.**
- **Inclusion:**
  - All patients with appointment
- **Exclusion:**
  - Patients who request to see specific doctor on clinic day
  - Patients who come without an appointment ("walk-in" patients)
### Indicator 3

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>No. of patients seen within 90 minutes of appointment</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total no. of patient seen in the clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator × 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>
| Data Collection   | 1. Where: Data will be collected in Clinical Genetic Unit  
2. Who: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator coordinator) of the department/unit.  
4. Who should verify: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.  
5. How to collect: Data is suggested to be collected from record book/clinic appointment list (refer to KPI MOH Guidelines). |

### Indicator 3 Details

- **Departmental**
- **Clinical Genetic**
- **Name of indicator**: Percentage of ward referrals to be seen by specialist ≤ 2 working days
- **Dimension of Quality**: Customer centeredness
- **Rationale**: To ensure optimal patient care
- **Definition of Terms**: NA

#### Criteria

**Inclusion**: All in patients referrals  
**Exclusion**:  
1. Patients discharged ≤ 2 working days  
2. Patients already under Genetic Department follow up

#### Type of indicator

Rate-based process indicator

#### Numerator

No. of in-patient referral seen by specialist ≤ 2 working days

#### Denominator

Total no. of in-patient referral

#### Formula

Numerator × 100% Denominator

#### Standard

≥ 90%

#### Data Collection

1. Where: Data will be collected in Clinical Genetic Unit  
2. Who: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator coordinator) of the department/unit.  
4. Who should verify: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.  
5. How to collect: Data is suggested to be collected from record book/patient referral record (refer to KPI MOH Guidelines).
### Indicator 4

**Discipline:** Clinical Genetic  
**Name of indicator:** Percentage of new cases with written feedback to the referring clinician ≤ 2 weeks of clinic attendance  
**Dimension of Quality:** Customer centeredness  
**Rationale:** To facilitate effective communication between doctors for optimal care  
**Definition of Terms:** Written feedback:  
1. Acknowledge letter with inclusion of  
   - Diagnosis by Genetic Department  
   - Plan of treatment/ management  
   - Follow up date  
   - Name of attending Specialist/ Medical Officer  
   OR  
2. Dysmorphology Report  
**Criteria:**  
**Inclusion:** All new patients seen in the Genetic Clinic  
**Exclusion:**  
1. Appointment for cascade family screening  
2. Appointments initiated by patients/ Genetic Department  
3. New patients seen in Specialised Genetic Clinic or wards  
**Type of indicator:** Rate-based process indicator  
**Numerator:** No. of new cases with written feedback provided ≤ 2 weeks  
**Denominator:** Total no. of new cases referred and seen at Clinical Genetic Unit/ Department  
**Formula:** \[
\text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]  
**Standard:** ≥ 90%  
**Data Collection:**  
1. **Where:** Data will be collected in Clinical Genetic Unit  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/ unit.  
3. **How frequent:** 3 Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book/ new cases feedback monitoring sheet(s) (refer to KPI MOH Guidelines).  
**Remarks:**

### Indicator 5

**Discipline:** Clinical Genetic  
**Name of indicator:** Percentage of unplanned readmission for patients treated for intoxication type IEM ≤ 48 hours of discharge  
**Dimension of Quality:** Effectiveness  
**Rationale:** Early readmission is significantly associated with the process of inpatient care. The risk of early readmission is increased when care is substandard.
<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Intoxication type inborn error of metabolism (IEM) includes urea cycle disorder (OTC, CPS 1, Citrullinaemia ASA), organic acidurias (PA, MMA, IVA), maple syrup urine disease.</th>
</tr>
</thead>
</table>
| Criteria            | **Inclusion:** All patients with intoxication type IEM admitted for acute metabolic decompensation  
**Exclusion:**  
1. Readmission for elective procedures  
2. Readmission due to unrelated indication (e.g. accident) |
| Type of indicator   | Rate-based process indicator |
| Numerator           | No. of patients readmitted for metabolic decompensation ≤ 48 hours of discharge |
| Denominator         | Total no. of patients with intoxication type IEM admitted for acute metabolic decompensation |
| Formula             | Numerator x 100%  
Denominator |
| Standard            | < 1% |
| Data Collection     | 1. **Where:** Data will be collected in Clinical Genetic Unit/ wards that cater for the above condition.  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/ unit.  
3. **How frequent:** 3 Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book/ IEM patients’ admission book (refer to KPI MOH Guidelines). |
| Remarks             | |

**Indicator 6**  
**Discipline:** Clinical Genetic  
**Name of indicator:** Percentage of patients with intoxication type IEM with > 3 admissions in a year for metabolic decompensation  
**Dimension of Quality:** Effectiveness  
**Rationale:** Frequent metabolic decompensation is significantly associated with suboptimal baseline metabolic control which reflects the process of outpatient care.  
**Definition of Terms:** Intoxication type inborn error of metabolism (IEM) includes urea cycle disorder (OTC, CPS 1, Citrullinaemia ASA), organic acidurias (PA, MMA, IVA), maple syrup urine disease.  
**Criteria**  
**Inclusion:** All patients with intoxication type IEM on follow up ≥ 6 months  
**Exclusion:** NA  
**Type of indicator:** Rate-based process indicator  
**Numerator**  
No. of patients with intoxication type IEM with > 3 admissions in a year for metabolic decompensation  
**Denominator**  
Total no. of patients with intoxication type IEM on follow up ≥ 6 months  
**Formula**  
Numerator x 100%  
Denominator
### Indicator 7

**Discipline:** Clinical Genetic  
**Name of indicator:** Percentage of care pathway usage in patients with Marfan Syndrome  
**Dimension of Quality:** Safety  
**Rationale:** For the provision of effective and standardised care  
**Definition of Terms:** Marfan Syndrome is a multi-systemic genetic disorder that can cause aortic dilatation, lens dislocation and many skeletal complications.

#### Criteria

**Inclusion:** All patients follow up for Marfan Syndrome in the Marfan Clinic  

**Exclusion:**
1. Patients who defaulted  
2. Patients who decline to comply with set recommendation

**Type of indicator:** Rate-based process indicator

**Numerator:** No. of patients follow up for Marfan Syndrome using care pathway  
**Denominator:** Total no. of patients follow up for Marfan Syndrome

#### Formula

\[ \text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \]

**Standard:** > 90%

**Data Collection**

1. **Where:** Data will be collected in Clinical Genetic Unit  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/unit.  
3. **How frequent:** 3 Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book/ Marfan Syndrome Clinic record book (refer to KPI MOH Guidelines).

**Remarks:** Referred to the care pathway certified by Clinical Genetic Team, MOH
<table>
<thead>
<tr>
<th>Dimension of Quality</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rationale</td>
<td>For the provision of effective and standardised care</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td><strong>Tuberous Sclerosis</strong> is a multi-system genetic disease that causes tumours to grow in the brain and on other vital organs such as kidneys, heart, eyes, lungs and skin. It can also cause mental retardation, epilepsy and behaviour difficulties.</td>
</tr>
</tbody>
</table>
| Criteria             | **Inclusion:** All patients follow up for Tuberous Sclerosis in the Tuberous Sclerosis Clinic  

**Exclusion:**  
1. Patients who defaulted  
2. Patients who decline to comply with set recommendation |
| Type of indicator    | Rate-based process indicator |
| Numerator            | No. of patients follow up for Tuberous Sclerosis using care pathway |
| Denominator          | Total no. of patients follow up for Tuberous Sclerosis |
| Formula              | Numerator x 100% / Denominator |
| Standard             | > 90% |
| Data Collection      | 1. **Where:** Data will be collected in Clinical Genetic Unit  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator coordinator) of the department/ unit.  
3. **How frequent:** 3 Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book/ Tuberous Sclerosis Clinic record book (refer to KPI MOH Guidelines). |
| Remarks              | Referred to the care pathway certified by Clinical Genetic Team, MOH |
## EMERGENCY MEDICAL AND TRAUMA SERVICES

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of MTC Yellow patients where treatment is instituted by ED staff within (≤) 30 minutes</td>
<td>Effectiveness</td>
<td>≥ 85%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of inappropriate triaging (under triaging): Category Green patients who should have been triaged as Category Red</td>
<td>Safety</td>
<td>≤ 0.5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of ambulance preparedness and dispatch for primary response within (≤) 5 minutes</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of ST Elevation Myocardial Infarction (STEMI) patients receiving thrombolytic therapy within (≤) 30 minutes of presentation at the Emergency Department</td>
<td>Effectiveness</td>
<td>≥ 85%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of severe sepsis patient managed according to Modified Surviving Sepsis Bundle within (≤) 60 minutes of diagnosis</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Procedural sedation and analgesia (PSA) complication rate in Emergency and Trauma Department</td>
<td>Safety</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

### Indicator 1
- **Departmental**
- **Discipline**: Emergency Medical and Trauma Services
- **Name of indicator**: Percentage of MTC Yellow patients where treatment is instituted by ED staff within (≤) 30 minutes
- **Dimension of Quality**: Effectiveness
- **Rationale**:
  1. Waiting time relative to triage category is the critical performance indicator for an Emergency Department.
  2. Triage is an essential function in Emergency Departments (EDs), where many patients may present simultaneously. It aims to ensure that patients are treated in the order of their clinical urgency and that their treatment is appropriately timely. It also allows for allocation of the patient to the most appropriate assessment and treatment area.
- **Definition of Terms**: Triage category: The category assigned to a patient as a result of an initial assessment by medical or nursing staff in an Accident and Emergency Department. The triage category is used to determine the patient's priority for treatment, and to inform the patient of their waiting time.
### Institution of treatment:
Initiation of assessment and/or minimal treatment rendered to patient such as setting up IV line, instituting oxygen therapy, placing immobilizations (e.g. splinting, cervical collar, etc.) and wound management.

**ED staff:** Specialist/ Medical officers/ House officers/ Paramedics.

### Criteria

| Inclusion: | All cases at the Emergency Unit/ Department categorized as yellow attended by ED staff. |
| Exclusion: | 1. During mass casualty incident (as defined by local Disaster Action Plan).  
2. Patients re-triaged from red/ green. |

### Type of indicator
Rate-based process indicator

### Numerator
Number of MTC Yellow patients where treatment is instituted by ED staff within (≤) 30 minutes

### Denominator
Total number of MTC Yellow patients

### Formula
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard
≥ 85%

### Data Collection
1. **Where:** Data will be collected in Emergency Department.  
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

### Remarks

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### Indicator 2
**Discipline:** Emergency Medical and Trauma Services

**Name of indicator:** Percentage of inappropriate triaging (under-triaging): Category Green patients who should have been triaged as Category Red

**Dimension of Quality:** Safety

**Rationale:**
1. Triage is an essential function in Emergency Departments (EDs), where many patients may present simultaneously. Triage aims to ensure that patients are treated in the order of their clinical urgency and that treatment is appropriate. Triage also allows for allocation of the patient to the most appropriate assessment and treatment area.
2. It is a scale for rating clinical urgency. The scale directly relates triage category with a range of outcome measures (inpatient length of stay, ICU admission, mortality rate) and resource consumption (staff time, cost).
3. Studies have shown that the “under triaging” of critically ill patients can increase their morbidity and mortality due to delay in their resuscitation and the provision of definitive care. Urgency refers to the need for time-critical intervention.
4. This indicator measures the accuracy and appropriateness of the Triaging system in the Emergency Department (ED) to ensure that critically ill patients are not missed and categorized as “non-critical”.

**Definition of Terms**: Under-triaged: Critically ill patient (MTC Red) who was triaged as “non-critical” (MTC Green).

**Criteria**: Inclusion: NA

**Exclusion**: 1. Period of time when the hospital unable to function as usual because involved in mass casualty/disaster/crisis.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of MTC GREEN patients who should have been triaged as MTC RED

**Denominator**: Total number of MTC GREEN patients

**Formula**: \[
\text{Numerator} \times 100\% \div \text{Denominator}
\]

**Standard**: ≤ 0.5%

**Data Collection**: 1. **Where**: Data will be collected in Emergency Department.
2. **Who**: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

**Remarks**:
completed to the despatch of the ambulance from the hospital to the scene.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: NA</th>
</tr>
</thead>
</table>

**Exclusion:**
1. Request for inter-hospital transfer.
2. Patient transportation.
5. Non-emergency cases.
6. Diverted calls to other agencies.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of ambulance preparedness and dispatch for primary response within (≤) 5 minutes</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of ambulance calls</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
</tbody>
</table>

**Standard:** ≥ 90%

Data Collection:
1. **Where:** Data will be collected in Emergency Department/ area that cater the above condition.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

**Remarks**:

<table>
<thead>
<tr>
<th>Indicator 4</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Emergency Medical and Trauma Services</td>
</tr>
<tr>
<td>Name of indicator</td>
<td>Percentage of ST Elevation Myocardial Infarction (STEMI) patients receiving thrombolytic therapy within (≤) 30 minutes of presentation at the Emergency Department</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>

**Rationale**:
1. Randomised controlled trials have shown that timing of thrombolytic therapy has significant impact on mortality and morbidity of patients with STEMI (ST Elevation Myocardial Infarction).
2. The earlier the reperfusion is achieved, the more myocardial muscle can be salvaged and morbidity will be reduced.
3. Thrombolytic therapy administered within 1 hour after onset of chest pain reduced mortality by 23% while thrombolytic therapy administered 3 hours to 6 hours after onset of chest pain reduced mortality by 17%.

**Definition of Terms**:
- **ST Elevation Myocardial Infarction (STEMI):** A part of Acute Coronary Syndrome as defined in the latest CPG.
- **Thrombolytic therapy:** Any thrombolytic agent.
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

#### MEDICAL PROGRAMME 2016

**Criteria**

- **Inclusion:**
  1. For atypical symptoms/ ECG, time is counted from the time of the first diagnostic ECG changes to the thrombolytic therapy given.
  2. During designated duty period (during on-call and designated specialist during office hours).

- **Exclusion:**
  1. Presence of relative/ absolute contraindications to thrombolytic therapy.
  2. All cases referred for cardiologists’ opinion/ intervention.
  3. Unstable patients requiring resuscitation at initial presentation.
  4. Hospital with in-house Cardiology Department

**Type of indicator**

- Rate-based process indicator

**Numerator**

- Number of patients with STEMI who received thrombolytic therapy within (≤) 30 minutes of presentation at the Emergency Department

**Denominator**

- Total number of patients with STEMI presented at the Emergency Department

**Formula**

\[
\text{Numerator} \times 100\% \quad \frac{\text{Numerator}}{\text{Denominator}}
\]

**Standard**

- ≥ 85%

**Data Collection**

1. **Where:** Data will be collected in Emergency Department.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

**Remarks**

---

### Indicator 5

- **Indication:** Individual

- **Discipline:** Emergency Medical and Trauma Services

- **Name of indicator:** Percentage of severe sepsis patients managed according to Modified Surviving Sepsis Bundle within (≤) 60 minutes of diagnosis

- **Dimension of Quality:** Effectiveness

**Rationale**

1. The Surviving Sepsis Campaign Bundles are the core of the sepsis improvement efforts. Using "bundles" simplifies the complex processes of the care of patients with severe sepsis.
2. A bundle is a selected set of elements of care distilled from evidence-based practice guidelines that, when implemented as a group, have an effect on outcomes beyond implementing the individual elements alone.
**Definition of Terms**

**Severe sepsis**: Sepsis with at least one sign of hypoperfusion or organ dysfunction, that is new, and not explained by other known aetiology of organ dysfunction.

**Criteria of severe sepsis:**
- Hypotension (< 90/60 or MAP < 65)
- Lactate > 2
- Areas of mottled skin or capillary refill > 3 seconds
- Creatininine > 2.0 mg/dl
- Disseminated intravascular coagulation (DIC)
- Platelet count < 100,000
- Acute renal failure or urine output < 0.5ml/kg/hr for at least 2 hours
- Hepatic dysfunction as evidence by bilirubin > 2 or INR > 1.5
- Cardiac dysfunction
- Acute lung injury or ARDS

**Modified Surviving Sepsis Bundle**: Obtaining blood cultures and administration of broad-spectrum antibiotics within (≤) 60 minutes of diagnosis of severe sepsis.

**Criteria**

**Inclusion**:
1. Adult patient >18 years old.
2. During designated duty period (during on-call and designated specialist during office hours).

**Exclusion**:
1. No consent available for the procedures.

**Type of indicator**

Rate-based process indicator

**Numerator**

Number of severe sepsis patients managed according to modified surviving sepsis bundle within (≤) 60 minutes of diagnosis

**Denominator**

Total number of severe sepsis patients

**Formula**

\[
\text{Numerator} \times 100\% / \text{Denominator}
\]

**Standard**

≥ 70%

**Data Collection**

1. **Where**: Data will be collected in Emergency Department.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

**Remarks**

- **Indicator 6**: Individual
- **Discipline**: Emergency Medical and Trauma Services
<table>
<thead>
<tr>
<th>Name of indicator</th>
<th>Procedural sedation and analgesia (PSA) complication rate in Emergency and Trauma Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
<tr>
<td>Rationale</td>
<td>Procedural sedation and analgesia is a core competency in emergency medicine and a daily part of emergency &amp; Trauma department (ETD) practice.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Procedural sedation and analgesia (PSA): Technique of administering sedatives or dissociative agents with or without analgesics to induce an altered state of consciousness that allows the patient to tolerate unpleasant procedures while preserving cardiorespiratory function (ACEP Recommendations for Physician Credentialing, Privileging and Practice 2011).</td>
</tr>
</tbody>
</table>
| Complications | 1. Hypotension.  
2. Respiratory depression.  
3. Desaturation with SpO2 <90%.  
4. Requiring endotracheal intubation after the procedure. |
| Criteria | Inclusion:  
1. All patients.  
2. During designated duty period (during on-call and designated specialist during office hours).  
Exclusion: Patients with condition that mimics the PSA complication before the procedure commenced such as  
1. Hypotension  
2. Respiratory depression  
3. Desaturation with SpO2 <90%.  
4. Requiring endotracheal intubation after the procedure. |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of patients with procedural sedation and analgesia (PSA) complication |
| Denominator | Total number of patients received procedural sedation and analgesia (PSA) |
| Formula | Numerator x 100% / Denominator |
| Standard | < 10 % |
| Data Collection | 1. Where: Data will be collected in Emergency Department.  
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from record book (refer to KPI MOH Guidelines). |
| Remarks | |
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

### MEDICAL PROGRAMME 2016

### FORENSIC MEDICINE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of completeness in registration of deaths from the wards for non-police cases by the Forensic Medicine Department/ Forensic Unit</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Turnaround time of ≤ 3 hours for releasing bodies (non-police cases) to the appropriate claimant from the registration of bodies by the Forensic Medicine Department/ Forensic Unit</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of bodies released to the right claimant by the Forensic Medicine Department/ Forensic Unit</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Turnaround time of ≤ 48 hours for performing forensic autopsies of police/ medico-legal cases from the issuance of 'Polis 61' order by the Forensic Specialist</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Turnaround time of ≤ 12 weeks for preparing forensic autopsy reports of police cases from the performance of autopsy by the Forensic Specialist</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of compliance of forensic autopsy reports on homicide cases prepared by the Forensic Specialist</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

### Indicator 1
- **Type**: Departmental
- **Discipline**: Forensic Medicine
- **Name of indicator**: Percentage of completeness in the registration of deaths from the wards for non-police cases by the Forensic Medicine Department/ Forensic Unit
- **Dimension of Quality**: Effectiveness
- **Rationale**: To ensure that the process of management of the dead is handled efficiently, effectively and with due respect of the dead by the Forensic Medicine Department or Forensic Unit.
**Definition of Terms**: Non-police cases: Deaths certified by doctors in the wards and which do not necessitate police investigations.

**Completeness**: Fair or good documentation that should include:
1. Hospital registration number
2. Time and date of admission and death
3. Name and identity document number of deceased
4. Demographic details
5. Underlying cause of death
6. Doctor whom certified cause of death

**Note**: Criteria for assessment – refer to Appendix KPI 1.

**Criteria**

<table>
<thead>
<tr>
<th>Inclusion</th>
<th>Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All deaths in the wards.</td>
<td>1. All brought in dead cases to the Emergency Department or deaths pronounced at the Emergency Department.</td>
</tr>
<tr>
<td>2. All brought in dead cases to the mortuary by the police.</td>
<td>2. All brought in dead cases to the Emergency Department or deaths pronounced at the Emergency Department.</td>
</tr>
</tbody>
</table>

**Type of indicator**: Rate-based outcome indicator

**Numerator**: Number of acceptable completeness (fair or good) in the registration of deaths from the wards for non-police cases at the Forensic Department/ Forensic Unit

**Denominator**: Total number of registration of deaths from the wards for non-police cases at the Forensic Department/ Forensic Unit

**Formula**: \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \)

**Standard**: \( \geq 75\% \)

**Data Collection**

1. **Where**: Data will be collected in Forensic Medicine Department/ Forensic Unit.
2. **Who**: Data will be collected by assigned Officers/ senior Assistant Medical Officers or Forensic Scientific Officers of the department/ unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance data must be verified by Assigned Medical Officers/ Forensic Specialists/ Head of Department/ Head of Unit/ Hospital Director/
5. **How to collect**: Data is suggested to be collected from death registration book/ death registration information system/ audit form of the Forensic Department of the particular hospital (refer to KPI MOH Guidelines).

**Remarks**: 
## AUDIT FORM FOR COMPLETENESS IN REGISTRATION OF WARD DEATHS
*(NON-POLICE CASES)*

<table>
<thead>
<tr>
<th>Case No ................../........</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

### 1. CASE DETAILS
- Hospital registration number
- Ward/ Unit
- Date and time of admission
- Date and time of death
- Date and time of registration at mortuary
- Date and time of body release

### 2. DECEASED DETAILS
- Deceased’s name
- Age
- Sex
- Race/ Nationality
- Religion
- Identity document number
- Address

### 3. DEATH DETAILS
- Immediate cause of death
- Underlying aetiology/ cause
- Doctor whom certified death

## REPORT

<table>
<thead>
<tr>
<th>Is the registration of ward death (non-police cases) of acceptable standard?</th>
<th>≤ 10</th>
<th>11 – 13</th>
<th>14 - 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fair</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If poor, please comment

--------------------------------------------------------------------------------------------------------------------------------------

**ASSESSED BY:**

Signature

Name

Position

Note: Please tick the relevant boxes
Indicator 2: Departmental  
**Discipline:** Forensic Medicine  
**Name of indicator:** Turnaround time of ≤ 3 hours for releasing bodies (non-police cases) to the appropriate claimant from the registration of bodies by the Forensic Medicine Department/ Forensic Unit  
**Dimension of Quality:** Effectiveness  
**Rationale:**
1. To ensure that the process of management of the deceased is handled effectively, efficiently and with due respect for the dead by the forensic medicine department and forensic unit.
2. To expedite the release of bodies to the rightful claimant for burial or cremation in accordance with the respective religious beliefs.

**Definition of Terms**:
- **Body released**: Claim of body (non-police case) by the appropriate claimant – next of kin/ authorized representative or handing over the document to the next of kin with the statement that body are ready to be claimed in term of Forensic Department Procedure.
- **Appropriate Claimant**:
  1. **Next-of-kin**: spouse(s), daughter(s)/ son(s), parent(s), sibling(s), grandparent(s), first degree relative(s) e.g. uncle(s), aunt(s), cousin(s), grand-uncle(s), grand-aunt(s), and the likes.
  2. **Authorised representative**: representative of next-of-kin and relatives, representative of Embassy/ High Commission, religious authorities, employer.

**Note**: Criteria for assessment – refer to Appendix KPI 1.

**Criteria**
**Inclusion:**
1. All bodies (non-police cases) with availability of claimant.

**Exclusion:**
1. Unidentified body (no identification/ decomposed body / mutilated body/ skeletonised remains).
2. Incomplete body (only body parts found/ fragmented human bones).
3. Communicable or infectious disease case
4. Export/ repatriation case
5. Non-availability of appropriate claimant
7. Foreigner
8. Brought in dead
9. Claimants whom request for body storage and not immediately claimed

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of bodies (non-police cases) released to the appropriate claimant within (≤) 3 hours from the time of receipt of body at Forensic Medicine Department/ Forensic Unit

**Denominator**: Total number of bodies (non-police cases) released to the appropriate claimant at Forensic Medicine Department/ Forensic Unit

**Formula**: \( \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \)

**Standard**: \( \geq 75\% \)

**Data Collection**: 1. **Where**: Data will be collected in Forensic Medicine Department/ Forensic Units
| Remarks | 2. Who: Data will be collected by assigned Officers/ Senior Assistant Medical Officers or Forensic Scientific Officers of the department/ unit.  
4. Who should verify: All performance data must be verified by Assigned Medical Officers/ Forensic Specialists/ Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from record book (refer to KPI MOH Guidelines). |

- It is suggested that CLOCK IN time (time of the body registered at forensic unit/ Department) and CLOCK OUT time (time of the release of body or handing of body released documents to the appropriate claimant) be recorded at Mortuary Unit/ Forensic Department.  
- Standard operating procedure (SOP) of releasing body to appropriate claimant:  
  - Claimant to produce relevant documents such as marriage certificate, birth certificate, certificate from religious department, where possible.  
  - Claimant's identification document will be copied and documented  
  - Police report by claimant if necessary to ensure correct next of kin if no supporting documents available. |

| Indicator 3 | Departmental |
| Discipline | Forensic Medicine |
| Name of indicator | Percentage of bodies released to the right claimant by the Forensic Medicine Department/ Forensic Unit. |
| Dimension of Quality | Effectiveness |
| Rationale | To respect the rights of the appropriate claimants which are the next-of-kin or authorised representative |
| Definition of Terms | Right claimant: Person who is next-of-kin or authorized representative.  
Next-of-kin: spouse(s), daughter(s)/ son(s), parent(s), sibling(s), grandparent(s), first-degree relative(s) e.g. uncle(s), aunt(s), cousin(s), granduncle(s), grandaunt(s), and the like.  
Authorised representative: representative of next-of-kin and relatives, representative of Embassy/ High Commission, religious authorities, employer. |
| Criteria | Inclusion:  
1. All bodies with appropriate claimant.  
Exclusion:  
1. Non-availability of appropriate claimant/ unclaimed bodies. |
| Type of indicator | Rate-based outcome indicator |
| Numerator | Number of correct bodies released to the right claimant |
| Denominator | Total number of bodies released |
| Formula | Numerator x 100%  
Denominator |
TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>Standard</th>
<th>≥ 90%</th>
</tr>
</thead>
</table>
| Data Collection | 1. **Where:** Data will be collected in Forensic Medicine Department/ Forensic Units.  
2. **Who:** Data will be collected by assigned Officers/ Senior Assistant Medical Officers or Forensic Scientific Officers of the department/unit.  
3. **How frequent:** 6 monthly data collection.  
4. **Who should verify:** All performance data must be verified by Assigned Medical Officers/ Forensic Specialists/ Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from death registration record book/ death registration information system/ incident reports (refer to KPI MOH Guidelines). |
| Remarks | To comply with the Standard operating procedure (SOP) of:  
1. Receiving and registration of bodies from the wards or brought in dead to the forensic medicine department or emergency department.  
2. Releasing bodies to the appropriate claimants. |

**Indicator 4**

**Discipline:** Forensic Medicine  
**Name of indicator:** Turnaround time of ≤ 48 hours for performing forensic autopsies of police/ medico-legal cases from the issuance of ‘Polis 61’ order by the Forensic Specialist  
**Dimension of Quality:** Effectiveness  
**Rationale:** To ensure that forensic/ medico-legal autopsies are performed efficiently and effectively in accordance with the Malaysian law.  
**Definition of Terms:** Forensic/ medico-legal autopsy: Autopsy of police/ medico-legal cases with the issuance of Polis 61 order.  
Police/ medico-legal case: A death case under police investigation and the purview of the law.  
**Criteria:**  
**Inclusion:**  
1. Autopsies of forensic / medico-legal cases such as homicides and other cases performed by the forensic specialists.  
**Exclusion:**  
1. Autopsies of forensic cases performed by the medical officers.  
2. Autopsies of forensic cases performed upon referral at external centres.  
3. Autopsies of forensic cases involved in mass disasters and infectious disease outbreaks and anthropological/ human skeletal examinations.  
**Type of indicator:** Rate-based outcome indicator  
**Numerator:** Number of forensic/ medico-legal autopsies on police/ medico-legal cases performed ≤ 48 hours by Forensic specialists  
**Denominator:** Total number of forensic/ medico-legal autopsies on police/ medico-legal cases performed by Forensic specialist  
**Formula:** Numerator ÷ Denominator x 100%
<table>
<thead>
<tr>
<th>Standard</th>
<th>≥ 80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Collection</td>
<td></td>
</tr>
<tr>
<td>1. <strong>Where</strong>: Data will be collected in Forensic Medicine Department/ Forensic Unit.</td>
<td></td>
</tr>
<tr>
<td>2. <strong>Who</strong>: Data will be collected by Forensic Medical Officer/ Forensic Assistant Medical Officer/ Forensic Scientific Officer/ Forensic Record Officers of the department/ unit.</td>
<td></td>
</tr>
<tr>
<td>3. <strong>How frequent</strong>: 6 monthly data collection.</td>
<td></td>
</tr>
<tr>
<td>4. <strong>Who should verify</strong>: All performance data must be verified by Head of Department/ Head of Unit/ Senior Forensic Specialists/ Hospital Director/ National Head of Forensic Medicine Services.</td>
<td></td>
</tr>
<tr>
<td>5. <strong>How to collect</strong>: Data is suggested to be collected from death or post-mortem registration record book/ death or post-mortem registration information system (refer to KPI MOH Guidelines).</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>To comply with the standard operating procedure/ work procedure for handling autopsies/ post-mortem examinations of the Forensic Medicine Department.</td>
</tr>
</tbody>
</table>

**Indicator 5**: Individual

**Discipline**: Forensic Medicine

**Name of indicator**: Turnaround time of ≤ 12 weeks for preparing forensic autopsy reports of police cases from the performance of autopsy by the Forensic Specialist

**Dimension of Quality**: Effectiveness

**Rationale**: To ensure that autopsy reports are prepared in a timely manner for legal purposes and the administration of justice.

**Definition of Terms**:
- Forensic autopsy: Autopsy of police / medico-legal cases with the issuance of Polis 61 order.
- Forensic autopsy report: Report drawn up detailing the autopsy findings and the cause of death.
- Police/ medico-legal case: A death case under police investigation and the purview of the law.

**Criteria**:

**Inclusion**:
1. Forensic autopsy reports of police/ medico-legal cases with ascertained cause of death.
2. Homicide and non-homicide cases.

**Exclusion**:
- Forensic autopsy reports of
  1. skeletonised human remains/ human bones.
  2. undetermined/ unascertained cause of death
  3. pending laboratory investigation results
  4. mass disasters/ infectious disease outbreaks.

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of forensic autopsy reports of police/ medico-legal cases prepared within (≤) 12 weeks by forensic specialists

**Denominator**: Total number of forensic autopsy reports of police/ medico-legal cases performed
## Indicator 6

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Forensic Medicine</th>
</tr>
</thead>
</table>

### Name of indicator

Percentage of compliance of forensic autopsy reports on homicide cases prepared by the Forensic Specialist

### Dimension of Quality

Effectiveness

### Rationale

To ensure that the quality of the forensic autopsy reports is in accordance with the acceptable standards of the profession and the requirements of the law.

### Definition of Terms

- **Forensic autopsy**: Autopsy of police/ medico-legal cases with the issuance of Polis 61 order.

- **Forensic autopsy report**: Report drawn up detailing the autopsy findings and the cause of death.

- **Police/ Medico legal case**: A death case under police investigation and the purview of the law.

- **Homicide cases**: Death of a person caused by another person/ third party which include murder cases.

Compliance of the forensic autopsy reports should include:

1. external examination
2. marks of trauma/ medical intervention
3. internal examination of all systems
4. investigations
5. conclusion/ summary of the case
6. cause of death

**Note**: Criteria for assessment – refer to Appendix KPI 6.
<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Forensic autopsy reports of homicide cases prepared by forensic specialists.</td>
</tr>
</tbody>
</table>

**Exclusion:**
1. Forensic autopsy reports of non-homicidal cases, skeletonised human remains/ human bones, autopsy cases with undetermined/ unascertained causes of death, autopsy cases with pending laboratory investigation results and autopsy cases of mass disasters and infectious disease outbreaks.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of compliance forensic autopsy reports of homicide cases prepared by Forensic Specialist</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of forensic autopsy reports of homicide cases prepared by Forensic Specialist</td>
</tr>
</tbody>
</table>
| Formula           | Numerator x 100% \[
|                   | Denominator \] |
| Standard          | ≥ 80% |

| Data Collection   | 1. **Where**: Data will be collected in Forensic Medicine Department/ Forensic Unit. |
|                   | 2. **Who**: Data will be collected by Forensic Medical Officers/ Forensic Scientific Officers/ Forensic Assistant Medical Officers of the department/ unit. |
|                   | 3. **How frequent**: 6 monthly data collection. |
|                   | 4. **Who should verify**: All performance data must be verified by Senior Forensic Specialists/ Head of Department/ Head of Unit/ Hospital Director/ National Head of Forensic Medicine Specialists. |
|                   | 5. **How to collect**: Data is suggested to be collected from autopsy reports record book / audit form of the Forensic Department of the particular hospital (refer to KPI MOH Guidelines). |

| Remarks            | : |
AUDIT FORM FOR COMPLIANCE OF AUTOPSY REPORT ON HOMICIDE CASES
(ASSESSMENT BASED ON MINIMUM STANDARD)

Case No ................../........

Particulars of deceased correctly recorded
If not, error is ...................................................... YES ☐ NO ☐

Date/ Time of Autopsy correctly recorded
If not, error is ...................................................... YES ☐ NO ☐

External examination includes
General appearance/ Identification features YES ☐ NO ☐
Medical interventions (where appropriate) YES ☐ NO ☐
Documentation of injuries – type, size and site YES ☐ NO ☐
(if any) YES ☐ NO ☐

Internal examination includes the mention or description of organs in the following systems
CNS YES ☐ NO ☐
CVS YES ☐ NO ☐
RS YES ☐ NO ☐
GIS YES ☐ NO ☐
GUS YES ☐ NO ☐
RES YES ☐ NO ☐
ENDOCRINE YES ☐ NO ☐
MS YES ☐ NO ☐

Specimen collected as required by case history
(e.g: for alcohol test ± drugs of abuse) YES ☐ NO ☐

Cause of death YES ☐ NO ☐

Summary/ Conclusion/ Comments included in report YES ☐ NO ☐

Report signed/ dated/ released within time-frame YES ☐ NO ☐

REPORT

Is the autopsy report of acceptable standard?
(Number of ‘YES’ x 100%)

17 Compliant (≥ 70%)
Non-Compliant (≤ 69%)

If non-compliant, please comment
........................................................................................................................................

ASSESSED BY:
Signature ..............................................................................................................................
Name ....................................................................................................................................
Position ...............................................................................................................................
Note: Please tick the relevant boxes
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

### MEDICAL PROGRAMME 2016

### NUCLEAR MEDICINE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of repeat studies in diagnostic nuclear medicine</td>
<td>Safety</td>
<td>&lt; 3%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ( \leq 90 ) minutes to see the doctor at Nuclear Medicine Clinic</td>
<td>Customer</td>
<td>( \geq 90% )</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients with benign thyroid disease received radioiodine therapy within ( (\leq) 1 ) month</td>
<td>Timely</td>
<td>( \geq 80% )</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Turnaround time of ( \leq 7 ) working days for diagnostic nuclear medicine reports after completion of studies</td>
<td>Timely</td>
<td>( \geq 80% )</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Turnaround time of ( \leq 2 ) working days for urgent diagnostic nuclear medicine reports after completion of studies</td>
<td>Timely</td>
<td>( \geq 80% )</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients counselled against pregnancy within ( (\leq) 4 ) months post radioiodine therapy</td>
<td>Safety</td>
<td>100%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**

**Departmental**

**Discipline**: Nuclear Medicine

**Name of indicator**: Percentage of repeat studies in diagnostic nuclear medicine

**Dimension of Quality**: Safety

**Rationale**: To avoid the following:
1. Delay in patient’s management.
2. Additional radiation.
3. Increase cost, time and man power.

**Definition of Terms**

**Repeat study**: Cases that require reinjection of the same radiopharmaceutical when and where the first injected radiopharmaceutical has not achieved its intended purposes as a result of any technical or non-technical causes.

**Criteria**

**Inclusion**: NA

**Exclusion**: 1. Postponement of study not involving re-injection.

**Type of indicator**: Rate-based process indicator
### Indicator 1
- **Numerator**: Number of repeat studies in diagnostic nuclear medicine
- **Denominator**: Total number of studies done in diagnostic nuclear medicine
- **Formula**: Numerator x 100% / Denominator
- **Standard**: < 3%

### Data Collection
1. **Where**: Data will be collected in nuclear medicine scanning room.
2. **Who**: Data will be collected by Officer/ Nuclear Medicine Technologists/ Paramedic/ Nurses in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).

### Indicator 2
- **Name of indicator**: Percentage of patients with waiting time of \( \leq 90 \) minutes to see the doctor at Nuclear Medicine Clinic
- **Dimension of Quality**: Customer centeredness

### Rationale
1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

### Definition of Terms
- **Waiting time**: Time of registration/ appointment time (whichever is later) to the time patient is first seen by the doctor.

### Criteria
1. **Inclusion**: All patients attending the nuclear medicine clinic (these include all patients attending clinic for diagnostic, therapy or follow up).
2. **Exclusion**:
   1. Patients who request to see a specific doctor.
   2. Patients who come without an appointment (“walk-in” patients).
   3. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.
   4. Patients with multiple appointments on the same day.
   5. Patients slotted in for special consultation.

### Type of indicator
- Rate-based process indicator

### Numerator
- **Numerator**: Number of patients with waiting time of \( \leq 90 \) minutes to see the doctor at Nuclear Medicine Clinic

### Denominator
- **Denominator**: Total number of patients seen at the Nuclear Medicine Clinic

### Formula
- **Formula**: Numerator x 100% / Denominator

### Standard
- **Standard**: \( \geq 90\% \)

### Data Collection
1. **Where**: Data will be collected in Nuclear Medicine Clinic.
### Indicator 3

**Discipline**: Nuclear Medicine  

**Name of indicator**: Percentage of patients with benign thyroid disease received radioiodine therapy within (≤) 1 month  

**Dimension of Quality**: Timely  

**Rationale**:  
1. Radioiodine therapy is a treatment option for benign thyroid diseases.  
2. Delay in treatment can result in complications and sufferings.  

**Definition of Terms**:  
**Within (≤) 1 month**: Time taken from date of request to the date of administration of therapy.  

**Criteria**  
**Inclusion**:  
1. All patients with benign thyroid diseases referred for radioiodine therapy.  

**Exclusion**:  
1. Patients deferred from therapy due to poor preparation or medically not fit.  
2. Patients who request to delay the therapy.  
3. Centres with facility not able to provide liquid radioiodine administration  

**Type of indicator**: Rate-based process indicator  

**Numerator**: Number of patients with benign thyroid disease received radioiodine therapy within (≤) 1 month  

**Denominator**: Total number of patients with benign thyroid disease received radioiodine therapy  

**Formula**:  
\[ \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \]  

**Standard**: ≥ 80%  

**Data Collection**  
1. **Where**: Data will be collected in Nuclear Medicine Clinic.  
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from appointment book/ record book (refer to KPI MOH Guidelines).  

**Remarks**:  

---

### Indicator 4

**Discipline**: Nuclear Medicine  

---
<table>
<thead>
<tr>
<th>Name of indicator</th>
<th>Turnaround time of ≤ 7 working days for diagnostic nuclear medicine reports after completion of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension of Quality</td>
<td>Timely</td>
</tr>
<tr>
<td>Rationale</td>
<td>Early completions of reports are important for patient’s management plan and treatment.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Turnaround time: Time taken after completion of studies to the availability of reports.</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: 1. All diagnostic nuclear medicine studies.</td>
</tr>
<tr>
<td></td>
<td>Exclusion: 1. Repeat studies.</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of diagnostic nuclear medicine reports available within (≤) 7 working days after completion of studies</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of diagnostic nuclear medicine studies performed</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100%</td>
</tr>
<tr>
<td></td>
<td>Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 80%</td>
</tr>
</tbody>
</table>
| Data Collection | 1. **Where:** Data will be collected in Nuclear Medicine Clinic.  
2. **Who:** Data will be collected by Officer/ Nuclear Medicine Technologist/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book/ procedure book (refer to KPI MOH Guidelines). |
| Remarks | |

| Indicator 5 | Individual |
| Discipline | Nuclear Medicine |
| Name of indicator | Turnaround time of ≤ 2 working days for urgent diagnostic nuclear medicine reports after completion of studies |
| Dimension of Quality | Timely |
| Rationale | Early completions of reports are important for patient’s management plan and treatment. |
| Definition of Terms | Turnaround time: Time taken after completion of studies to the availability of reports. |
| | Urgent: Case that is not in the routine list of appointment. The urgent appointment is only given after discussion between the referral team and the nuclear medicine physician/ doctor based on clinical nature and urgency of the disease management. |
### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

#### Medical Programme 2016

**Criteria**

- **Inclusion:**
  1. All urgent requests for diagnostic nuclear medicine studies.
  2. All hepatobiliary studies done for evaluation of neonatal hyperbilirubinemia

- **Exclusion:** NA

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of urgent diagnostic nuclear medicine reports available within (≤) 2 working days after completion of studies

**Denominator:** Total number of diagnostic nuclear medicine studies performed

**Formula:**

\[
\frac{\text{Numerator} \times 100}{\text{Denominator}}
\]

**Standard:** ≥ 80%

**Data Collection**

1. **Where:** Data will be collected in Nuclear Medicine Clinic.
2. **Who:** Data will be collected by Officer/ Nuclear Medicine Technologist/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book/ procedure book (refer to KPI MOH Guidelines).

**Remarks**

---

**Indicator 6**

**Discipline:** Nuclear Medicine

**Name of indicator:** Percentage of patients counselled against pregnancy within (≤) 4 months post-radioiodine therapy

**Dimension of Quality:** Safety

**Rationale**

1. Female in the reproductive age group shall be counselled prior to therapy to prevent harmful effects to the unborn child.

**Definition of Terms**

- **Patients:** Female in the reproductive age group.
- **Reproductive age group:** Female in the age group 15 – 49 years old or having active menses.
- **Counsel:** Counselling shall be done prior to therapy and documented in the patient's case note.

**Criteria**

- **Inclusion:**
  1. All female in the reproductive age group receiving radioiodine therapy.

- **Exclusion:** NA

**Type of indicator:** Rate-based process indicator

**Numerator:** Number of patients counselled against pregnancy within (≤) 4 months post-radioiodine therapy
<table>
<thead>
<tr>
<th>Denominator</th>
<th>Total number of patients received radioiodine therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula</td>
<td>Numerator x 100%</td>
</tr>
<tr>
<td></td>
<td>Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>100%</td>
</tr>
<tr>
<td>Data Collection</td>
<td></td>
</tr>
<tr>
<td>1. <strong>Where</strong>: Data will be collected in Nuclear Medicine Clinic.</td>
<td></td>
</tr>
<tr>
<td>2. <strong>Who</strong>: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.</td>
<td></td>
</tr>
<tr>
<td>3. <strong>How frequent</strong>: Monthly data collection.</td>
<td></td>
</tr>
<tr>
<td>4. <strong>Who should verify</strong>: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
<td></td>
</tr>
<tr>
<td>5. <strong>How to collect</strong>: Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>
### PATHOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>SUB-SPECIALTY</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td></td>
<td>Percentage of laboratory turnaround time (LTAT) for urgent Full Blood Count (FBC) within (≤) 45 minutes</td>
<td>Timeliness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td></td>
<td>Notification of neonatal total bilirubin results &gt; 300 µmol/L within 30 minutes after result verification</td>
<td>Safety</td>
<td>≥ 95%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td></td>
<td>Percentage of correct species identification of malaria parasites</td>
<td>Customer</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Chemical Pathology</td>
<td>Percentage of Laboratory Turn Around Time (LTAT) for Thyroid Function Tests is 3 working days</td>
<td>Timely</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Chemical Pathology</td>
<td>Glucose analytical imprecision is not more than 3.4%</td>
<td>Efficiency</td>
<td>≤ 3.4%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Chemical Pathology</td>
<td>Validation of abnormal Haemoglobin A1c (HbA1c)</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Anatomical Pathology</td>
<td>Percentage of amended histopathology reports</td>
<td>Safety</td>
<td>≤ 1%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Anatomical Pathology</td>
<td>Percentage of outstanding histopathology report</td>
<td>Timely</td>
<td>≤ 5%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>9.1</td>
<td>Anatomical Pathology</td>
<td>Percentage of Histopathology correlation for FNAC of breast lesion</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>9.2</td>
<td>Anatomical Pathology</td>
<td>Accuracy of reporting the General Module of Histopathology External Quality Assurance (EQA) Program</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>10</td>
<td>Haematology</td>
<td>Percentage of outstanding bone marrow aspiration (BMA) reports</td>
<td>Timely</td>
<td>≤ 5%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>11</td>
<td>Haematology</td>
<td>Percentage of amended reports by individual pathologists</td>
<td>Safety</td>
<td>≤ 1%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>12</td>
<td>Haematology</td>
<td>Accuracy of the External Quality Assurance (EQA) report for morphology</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>13</td>
<td>Medical Microbiology</td>
<td>Percentage of Amended Report for tests scheduled and reported by the respective Clinical Microbiologist</td>
<td>Safety</td>
<td>≤ 1%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>14</td>
<td>Medical Microbiology</td>
<td>Percentage of complete positive culture results released within 3 days</td>
<td>Timely</td>
<td>≥ 70%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>15</td>
<td>Medical Microbiology</td>
<td>Percentage of outstanding result of reactive HIV antibody by EIA with supplementary particle agglutination (PA) testing</td>
<td>Safety</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>
### Indicator 1

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Departmental Disciplines: Pathology</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of laboratory turnaround time (LTAT) for urgent Full Blood Count (FBC) within (≤) 45 minutes</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Timeliness</td>
</tr>
</tbody>
</table>
| Rationale         | 1. One of the objectives of a haematology laboratory is to provide fast laboratory results for the management of medical emergency.  
2. Timelines of the services is the capability of the laboratory providing fast results.  
3. A fast laboratory turnaround time (LTAT) is desirable and is one of the indicators of efficient laboratory service.  
4. FBC is a basic and commonly requested test provided in all healthcare facilities. |
| Definition of Terms | Full Blood Count (FBC): Automated measurement of blood cell parameters.  
Laboratory turnaround time (LTAT): Measuring the time laboratory receives the specimen to the time the test results is validated.  
Urgent FBC: FBC requested as urgent for immediate management of patient or emergency cases. |
| Criteria          | Inclusion:  
1. All requests sent for full blood counts that are labelled as urgent.  
Exclusion:  
1. Requests for non-urgent FBC.  
2. Request short turnaround time (STAT) not for immediate management of patient or emergency cases.  
3. FBC done at POCT site. |
| Type of indicator | Rate-based process indicator |
| Numerator         | Number of urgent Full Blood Count (FBC) with LTAT within (≤) 45 minutes |
| Denominator       | Total number of urgent Full Blood Count (FBC) requested |
| Formula           | Numerator x 100 %  
Denominator |
| Standard          | ≥ 90% |
| Data Collection   | 1. **Where:** Data will be collected in all laboratories providing the tests.  
2. **Who:** Data will be collected by Officer/ assigned laboratory personnel (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** Monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from record book/ registry system/ request form/ LIS (refer to KPI MOH Guidelines). |
| Remarks           | : |
TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
MEDICAL PROGRAMME 2016

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Notification of neonatal total bilirubin results &gt; 300 µmol/L within 30 minutes after result verification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
</tbody>
</table>
| Rationale | Neonatal jaundice is a common medical condition in newborn babies. High levels of unconjugated bilirubin may lead to acute and chronic bilirubin encephalopathy if appropriate treatment is not promptly instituted. Prolonged hyperbilirubinemia in neonates may cause neurodevelopmental problem including athetoid cerebral palsy, hearing loss and visual impairment. Acute hyperbilirubinemia can result in kernicterus. Active communication of critical results is part of overall responsibilities of patient care in clinical pathology service. Requestor has a responsibility to ensure contact details are clear. Individual laboratory must defined their pathway for critical result reporting and define a failsafe system. This is in line with the Malaysian Patient Safety Guideline 2012, Patient Safety Goal No. 8, which require critical result to be notified within 30 minutes from result is ready to be reported. Failure of timely communication and follow-up of critical laboratory values (results) can lead to errors, increased morbidity and mortality. Hyperbilirubinemia > 300 µmol/L is indication for urgent medical intervention e.g exchange transfusion to avoid complication. Therefore, it is important to ensure timely critical result communication between the laboratory and the clinician. Reference:  
- Paediatric Protocol for Malaysian Hospitals 3rd edition 2012  

| Definition of Terms | Critical result: Test result or value that falls outside the critical limits or the presence of any unexpected abnormal findings which may cause imminent danger to the patient and/or required immediate medical attention.  
Critical limit: Boundaries of the low and high laboratory test results beyond which may cause imminent danger to patient and / or require immediate medical attention.  
Result verification: Means results analysed, confirmed and ready to be reported  
Neonate: Day 1 to Day 28 of life  
Notification: Any mode of communication e.g telephone, SMS. All communication must be documented. |

| Criteria | Inclusion: First sample of neonatal total bilirubin results > 300 µmol/L  
Exclusion  
1. Neonatal total bilirubin results >300 µmol/L in babies more than 28 days old  
2. Neonatal total bilirubin results >300 µmol/L but the requesting location (ward or clinic) cannot be identified from the request form  
3. Subsequent sample of neonatal total bilirubin results >300 µmol/L |
### Type of Indicator
- **Rate-based process indicator**

### Numerator
- **Number of neonatal total bilirubin results >300 µmol/L notified within 30 minutes after result verification**

### Denominator
- **Total number of neonatal bilirubin results >300 µmol/L**

### Formula
\[
\text{Numerator} \times 100\% \div \text{Denominator}
\]

### Standard
- \( \geq 95\% \)

### Data Collection
1. Where: Data will be collected in all laboratories providing the tests.
2. Who: Data will be collected by Officer/ assigned laboratory personnel (indicator co-ordinator) of the department/ unit.
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. How to collect: Data is suggested to be collected from record book/ LIS/ request forms/ specimen record (refer to KPI MOH Guidelines).

### Remarks
- All data must be kept for year

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### Indicator 3
- **Departmental**
- **Discipline**: Pathology
- **Indicator**: Percentage of correct species identification of malaria parasites
- **Dimension of Quality**: Customer centeredness

#### Rationale
- Correct identification of malaria parasite is crucial for the clinician
  - to decide choice of anti-malaria treatment
  - malaria infection surveillance purposes
- BFMP is performed by all laboratories with or without pathologist.

#### Definition of Terms
- Correctness as determined by designated personnel in local or national malaria control program or malaria reference laboratory or External Quality Assurance (EQA) program samples.

#### Criteria
**Inclusion**:
1. All first positive peripheral blood smears for malaria parasite examined
2. All malaria slides submitted for review by local or national malaria control program and malaria reference laboratory
3. All malaria EQA program samples examined and reported. False negative patient sample and/or EQA sample will be included e.g. testing laboratory report as negative but actual EQA or reference laboratory result is positive.

**Exclusion**:
1. All negative smears for malaria
2. Poor quality smear provided by requestor.
3. If local or national malaria control program or reference laboratory or EQA provider confirms by method other than microscopy.

#### Type of indicator
- **Rate-based outcome indicator**

#### Numerator
- Number of correct malaria detection and parasite speciation on slides examined
### Indicator 4

**Discipline**: Pathology – Chemical Pathology  
**Indicator**: Percentage of Laboratory Turn Around Time (LTAT) for Thyroid Function Tests is 3 working days  
**Dimension of Quality**: Timely  
**Rationale**: Chemical Pathology test results are used by clinicians mainly to assist them in making diagnosis, for treatment and management of patients, and to monitor patients’ response towards treatment and their progress.

One of the objectives of chemical pathology laboratory is to provide timely laboratory results for effective patient management. Timeliness of the services is the capability of the laboratory to consistently provide test results within the stipulated time.

However turnaround time (TAT) of a test is affected by a number of factors, includes time of specimen collection and delivery, type of specimen, workload, adequacy of staffs, method used (manual or automated), instrumentation (readiness of instrument – calibrated, faulty) and mode of result dissemination.

**Definition of Terms**: Laboratory turnaround time (LTAT): Time measured from the time laboratory receives the specimen to the time the test results are validated.

**Criteria**: Inclusion: All thyroid function test (TFT) requests (TSH/ FT4 only and / or TSH & FT4) validated by Resident/s Chemical Pathologist.

- Additional FT3 test
- Request of cord blood TSH
- TFT requested together with other tests in the same sample

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of TFT requests meeting the LTAT of 3 working days validated by Resident/s Chemical Pathologist
### Denominator
Total number of TFT requests validated by Resident/s Chemical Pathologist

### Formula
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard
\( \geq 90\% \)

### Data Collection
1. **Where**: Data will be collected in all laboratories providing the tests.
2. **Who**: Data will be collected by Officer/assigned laboratory personnel (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book/LIS/request forms (refer to KPI MOH Guidelines).

### Remarks
All raw data must be kept for year.

---

**Indicator 5**

**Individual**: 

**Discipline**: Pathology – Chemical Pathology

**Indicator**: Glucose analytical imprecision is not more than 3.4%

**Dimension of Quality**: Efficiency

**Rationale**: Good analytical performance is important in providing reliable laboratory results for the patients. Variability of results within patients, within and between methods and laboratories should be kept to a minimum.

Monitoring the CV is a measure to ensure that the analytical performance is fit for use.

**Reference**;
- Desirable Specifications for Total Error, Imprecision, and Bias, derived from intra- and inter- individual biologic variation- [www.westgard.com/biodatabase1.htm](http://www.westgard.com/biodatabase1.htm)

**Definition of Terms**

**Analytical imprecision**: Variation of results between multiple evaluations of the same specimen that can be quantified by computing the coefficient variation (CV) of the analytical module. The higher the CV, the greater the variation.

**Criteria**

- **Inclusion**: All accepted glucose internal quality control (IQC) results for normal level
- **Exclusion**: All rejected glucose internal quality control (IQC) results for normal level

**Type of indicator**: Rate-based process indicator

**Numerator**: NA

**Denominator**: NA

**Formula**
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]
**TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES**

**MEDICAL PROGRAMME 2016**

<table>
<thead>
<tr>
<th>Standard</th>
<th>≤ 3.4%</th>
</tr>
</thead>
</table>
| **Data Collection** | 1. **Where**: Data will be collected in all laboratories providing the tests.  
2. **Who**: Data will be collected by Officer/ assigned laboratory personnel (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from record book/ system/ monthly Internal Quality Control Data (refer to KPI MOH Guidelines). |
| **Remarks** | All raw data must be kept for a year. |

<table>
<thead>
<tr>
<th>Indicator 6</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Pathology – Chemical pathology</td>
</tr>
<tr>
<td><strong>Indicator</strong></td>
<td>Validation of abnormal Haemoglobin A1c (HbA1c)</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>
| **Rationale** | Validation of abnormal HbA1c is important in patient's management and shall only be performed by competent personnel.  
Certain methodology use to analyze Haemoglobin A1c has analytical measurement interferences of affected by red blood cells life span. Condition that interferes with the analytical measurement of HbA1c includes Haemoglobin variants, Haemoglobin F, carbamylated haemoglobin, acetylated haemoglobin, labile A1c, alcohol and ascorbic acid. Factors that affect the life span of red blood cells include haemoglobinopathy, anaemia, haemolytic disease, splenectomy and pregnancy.  
Clinical validation is important in providing reliable laboratory results and interpretation for patients with all the mentioned interferences, especially patient with haemoglobinopathies.  
Patients with abnormal chromatograms may require other methods of diabetes monitoring and further testing, thus interpretation and further testing shall be recommended by the chemical pathologist. |
| **Definition of Terms** | Abnormal HbA1c: Abnormal chromatograms which are not reportable according to criteria based on dedicated product specifications and/ or do not produce result by the analyzer. |
| **Criteria** | **Inclusion**: All first abnormal chromatograms analyzed by chromatography method that fulfil the definition of terms as above and validated by the Chemical Pathologist.  
**Exclusion**:  
1. All normal chromatograms  
2. Subsequent abnormal chromatograms that do not produce results for the same patient  
3. HbA1c analyzed by bononate affinity chromatography, immunoassay or enzymatic method. |
<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of abnormal chromatograms which is not reportable according to criteria based on dedicated product specifications and/or do not produce result by the analyzer and validated by chemical pathologists</td>
</tr>
<tr>
<td>Denominator</td>
<td>The total number of abnormal chromatograms which is not reportable according to criteria based on dedicated product specifications and/or do not produce result by the analyzer</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>
| Data Collection   | 1. Where: Data will be collected in all laboratories with Resident Chemical Pathologist validating the abnormal HbA1c results.  
2. Who: Data will be collected by Officer/assigned laboratory personnel (indicator co-ordinator) of the department/unit.  
4. Who should verify: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.  
5. How to collect: Data is suggested to be collected from record book/request forms/data collection forms (refer to KPI MOH Guidelines). |
| Remarks           | : |
### Indicator 8: Percentage of outstanding histopathology report

**Discipline**: Pathology – Anatomical Pathology

**Indicator**: Percentage of outstanding histopathology report

**Dimension of Quality**: Timely

**Rationale**: All histopathology cases should be reported and reports issued within stipulated time for proper/ definitive patient management.

**Definition of Terms**: Percentage of histopathology reports issued exceeding 6 weeks from the time of specimen receipt at the reporting laboratory.

- Issued histopathology report is defined as:
  - Validated/ verified online in Total Hospital Information System (THIS) or
  - Printed, verified and ready for dispatch or electronic transmission (e.g email, facsimile etc)

  Six (6) weeks duration means continuous 42 days including weekends and public holidays.

**Criteria**

- **Inclusion**: All cases submitted for histopathology examination (HPE).
- **Exclusion**:
  1. Cases that are referred out either for expert opinion or additional test(s)
  2. Autopsy cases
  3. Complex referral cases received by the laboratory
  4. Coverage cases in the form of prepared slides received by the laboratory for reporting
  5. Cases that are reported after the calendar year

**Type of indicator**: Rate-based process indicator

<table>
<thead>
<tr>
<th><strong>Numerator</strong></th>
<th>Number of outstanding reports by an individual pathologist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Denominator</strong></td>
<td>Total number of cases reported and issued by the individual Pathologist for the current calendar year</td>
</tr>
</tbody>
</table>

**Formula**: \[ \text{Numerator} \times \frac{100}{\text{Denominator}} \]

**Standard**: \(\leq 5\%\)
**Data Collection**

1. Where: Data will be collected in all laboratories providing the tests.
2. Who: Data will be collected by Officer/ assigned laboratory personnel (indicator co-ordinator) of the department/ unit.
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. How to collect: Data is suggested to be collected from record book/ LIS (refer to KPI MOH Guidelines).

**Remarks**

**Indicator 9.1**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Pathology – Anatomical Pathology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Percentage of Histopathological correlation for FNAC of breast lesion</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>Fine needle aspiration cytology (FNAC) has a range of sensitivity and specificity hence verification by tissue biopsy is required for confirmation. This indicator is used to assess the competency of individual pathologist in reporting FNAC of breast lesions using histopathology finding as gold standard.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Correctness of FNAC interpretation is based on accurate categorization of breast lesions into benign, borderline or malignant as verified by histopathology report</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: All histopathology reports of breast lesions in the current calendar year, with prior FNAC reports within the current, as well as, preceding 1 year. Exclusion:</td>
</tr>
<tr>
<td></td>
<td>1. Unsatisfactory smear (C1)</td>
</tr>
<tr>
<td></td>
<td>2. Non-representative samples (based on cytology review/ look-back)</td>
</tr>
<tr>
<td></td>
<td>3. Nipple discharge</td>
</tr>
<tr>
<td></td>
<td>4. Papillary lesion and phylloides tumour based on histopathology reports</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of correct FNAC interpretation by an individual histopathologist, based on correlation with histology</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of breast lesion having both cytology and histology reports</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected in all laboratories providing the tests/ Specialist Clinic.</td>
</tr>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ assigned laboratory personnel (indicator co-ordinator) of the department/ unit.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from record book/ LIS/ THIS (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
</tr>
</tbody>
</table>
### Indicator 9.2

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Pathology – Anatomical Pathology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Accuracy of reporting the General Module of Histopathology External Quality Assurance (EQA) Program</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>EQA is one of the methods to monitor the quality of histopathology diagnosis and competency of individual histopathologist.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>EQA is defines as a system for objectively checking the laboratory’s performance using the external agency or facility. The General Module of the Histopathology EQA program comprises of unknown cases encountered in general histopathology. Accurate diagnoses include concordant and minor discordant reports.</td>
</tr>
</tbody>
</table>
| Criteria | **Inclusion**: Results from at least 2 cycles of General Module of Histopathology EQA Program participated by an individual histopathologist in the current calendar year.  
**Exclusion**: EQA results received after the calendar year. |
| Type of indicator | Rate-based process indicator |
| Numerator | Number of accurate diagnoses achieved by an individual histopathologist. |
| Denominator | Number of all cases attempted by the individual histopathologist within calendar year |
| Formula | \[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\] |
| Standard | ≥ 80% |
| Data Collection | 1. Where: Data will be collected in all laboratories providing the tests  
2. Who: Data will be collected by Officer/ assigned laboratory personnel (indicator co-ordinator) of the department/ unit.  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from record book/ LIS/ THIS (refer to KPI MOH Guidelines). |
| Remarks | |

### Indicator 10

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Pathology – Haematology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Percentage of outstanding bone marrow aspiration (BMA) reports.</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Timely</td>
</tr>
<tr>
<td>Rationale</td>
<td>All BMA report should be reported and validated within stipulated time for proper/ definitive patient management.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td><strong>Bone marrow aspiration (BMA)</strong>: Bone marrow aspiration morphological assessment.</td>
</tr>
</tbody>
</table>
### Outstanding BMA reports

- **Definition:** BMA reported and validated more than 7 working days.

#### Criteria

- **Inclusion:**
  1. All bone marrow aspiration reported by individual pathologists

- **Exclusion:**
  1. Difficult BMA interpretation requiring correlations with other tests e.g. trephine biopsy.
  2. Referral cases for second opinion.
  3. Samples were suboptimal/ unsuitable for testing.

#### Type of indicator

- Rate-based process indicator

#### Numerator

- Number of outstanding BMA reported and validated by individual pathologist in three (3) months

#### Denominator

- Total number of BMA reported and validated by individual pathologist in three (3) months

#### Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

#### Standard

- \( \leq 5\% \)

#### Data Collection

1. **Where:** Data will be collected in all laboratories providing the tests.
2. **Who:** Data will be collected by Officer/ assigned laboratory personnel (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from registration book/ record book/ LIS (refer to KPI MOH Guidelines).

#### Remarks

---

### Indicator 11

- **Indicator:** Individual
- **Discipline:** Pathology – Haematology
- **Indicator:** Percentage of amended reports by individual pathologists
- **Dimension of Quality:** Safety
- **Rationale:** To ensure correct diagnosis for appropriate patient management
- **Definition of Terms:** Amended report: Any haematology reports which defer from previous report and have implication on patient management.

#### Criteria

- **Inclusion:**
  1. Any amendments or changes made to the diagnosis or interpretation for bone marrow aspirate (BMA) and haemoglobin (Hb) analysis.

#### Exclusion

1. Spelling or typing errors
2. Cases referred for second opinion
3. Addition of supplementary report (e.g molecular tests)
4. Cases reported in the preceding calendar year
5. Sampling error

#### Type of indicator

- Rate-based process indicator

#### Numerator

- Total number of amended BMA and Hb analysis reported by individual pathologist
### Indicator 12

#### Individual

**Discipline**: Pathology – Haematology  

**Indicator**: Accuracy of the External Quality Assurance (EQA) program report for morphology  

**Dimension of Quality**: Effectiveness  

**Rationale**: To monitor clinical effectiveness of morphological reporting by Pathologist via assessing the accuracy of the report  

**Definition of Terms**  

- **EQA Program**: A method that allows for comparison of a laboratory’s testing to a source outside the laboratory. This comparison can be made to the performance of a peer group of laboratories or to the performance of a reference laboratory.  

- **Total score**: Score for both morphological descriptions and final diagnosis by individual pathologist.  

- **Maximum score**: Score for both morphological and final diagnosis given by EQA provider.  

**Criteria**  

- **Inclusion**: EQA Program that consist of both the descriptive and diagnostic findings with minimum of 9 cases a year.  

- **Exclusion**: NA  

**Type of indicator**: Rate-based process indicator  

**Numerator**: Total score achieved for both the description and diagnosis by individual pathologist for first nine cases per year.  

**Denominator**: Maximum score for both the description and diagnosis given by the EQA provider for first nine cases per year.  

**Formula**: \[ \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \]  

**Standard**: ≥ 80%  

**Data Collection**  

1. **Where**: Data will be collected in all laboratories subscribing the EQA morphology program.
### Technical Specifications for Key Performance Indicators (KPI) Clinical Services

#### Medical Programme 2016

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Indicator 13</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Pathology – Medical Microbiology</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of Amended Report for tests scheduled and reported by the respective Clinical Microbiologist</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
<tr>
<td>Rationale</td>
<td>To ensure results/reports are properly reviewed before validation to ensure its reliability for appropriate patient management.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Amended report: Alteration or changes in result or clinical interpretation in reports</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: Any amendments or changes made to the result or clinical interpretation in report by the initial scheduled Clinical Microbiologist.</td>
</tr>
<tr>
<td>Exclusion:</td>
<td>1. Clerical errors which do not affect outcome of the result/report</td>
</tr>
<tr>
<td></td>
<td>2. Additional or supplementary results/reports received for test submitted to referral laboratory for further testing e.g. resistance mechanism (CRE-NDM1)</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of amended reports for the specific test reports/results released by the individual clinical microbiologist</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of the specific test reports/results validated and released by the individual clinical microbiologist</td>
</tr>
<tr>
<td>Formula</td>
<td>$\frac{\text{Numerator}}{\text{Denominator}} \times 100%$</td>
</tr>
<tr>
<td>Standard</td>
<td>≤ 1%</td>
</tr>
<tr>
<td>Data Collection</td>
<td>1. Where: Data will be collected in all laboratories providing the tests.</td>
</tr>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/assigned laboratory personnel (indicator co-ordinator) of the department/unit.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from record book/LIS/request forms (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td>Remarks</td>
<td>:</td>
</tr>
</tbody>
</table>
## Indicator 14

**Discipline**: Pathology – Medical Microbiology  
**Indicator**: Percentage of complete positive culture results released within 3 days  
**Dimension of Quality**: Timely  
**Rationale**: Culture and sensitivity results within 3 days are needed to support antimicrobial stewardship program so that appropriate antibiotic stop, change or de-escalation can be implemented.  
**Definition of Terms**: Positive culture with ID and sensitivity done.  
Blood – Day 1 starts on the date once gram stain smears of a positive bottle done.  
Other specimen – Day 1 starts from date specimen received in Microbiology Unit  
**Criteria**:  
**Inclusion**:  
1. Positive culture with pure single growth.  
2. Selected test bench(s) as scheduled to the respective clinical microbiologist.  
**Exclusion**:  
1. Contaminated sample/ cultures. Significant mixed growth but with no single isolated colonies, thus requiring further subculture.  
2. Growth on solid media requires more than 24 hours (1 day) incubation to obtain adequate colony numbers for testing.  
3. Culture requires additional enrichment media/ special process  
4. Scheduled clinical microbiologist is away from laboratory.  
**Type of indicator**: Rate-based process indicator  
**Numerator**: Number of specific culture results scheduled to the clinical microbiologist and released within 3 days.  
**Denominator**: Total number of the specific test/ culture results scheduled to and validated by the clinical microbiologist.  
**Formula**: \[
\text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\% 
\]  
**Standard**: \( \geq 70\% \)  
**Data Collection**:  
1. **Where**: Data will be collected in all laboratories providing the tests.  
2. **Who**: Data will be collected by Officer/ assigned laboratory personnel (indicator co-ordinator) of the department/ unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect**: Data is suggested to be collected from record book/ LIS/ request forms (refer to KPI MOH Guidelines).  
**Remarks**: In the absence of the clinical microbiologist scheduled to verify the specific test, another on site clinical microbiologist or science officer will validate the result.

## Indicator 15

**Discipline**: Pathology – Medical Microbiology  
**Indicator**: Percentage of outstanding result of reactive HIV antibody by EIA with
##supplementary particle agglutination (PA) testing

<table>
<thead>
<tr>
<th>Dimension of Quality</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rationale</strong></td>
<td>The time taken for HIV antibody test processing and the issuance of results is crucial in the diagnosis for the patients. Patient management and treatment can be decided based on the diagnosis. It is the responsibility of the scheduled Clinical Microbiologist to ensure timely release of the positive HIV antibody test result.</td>
</tr>
<tr>
<td><strong>Definition of Terms</strong></td>
<td>The duration between received of serum specimen in the laboratory and time issuing report should be within 4 working days.</td>
</tr>
<tr>
<td><strong>Criteria</strong></td>
<td><strong>Inclusion:</strong> 100 consecutive HIV antibody screening tests followed by supplementary PA test or if unable to achieve 100 within 3 months, to collect all samples tested. <strong>Exclusion:</strong> 1. Laboratory only provide HIV EIA test without PA. 2. Autopsy sample 3. Second sample received for patient verification 4. Further testing needed such as immunoblot or HIV antigen or HIV RNA PCR.</td>
</tr>
<tr>
<td><strong>Type of indicator</strong></td>
<td>Rate-based outcome indicator</td>
</tr>
<tr>
<td><strong>Numerator</strong></td>
<td>Number of HIV EIA and PA results reported more than 4 working days.</td>
</tr>
<tr>
<td><strong>Denominator</strong></td>
<td>100 HIV EIA and PA results or if unable to achieve 100 in total to collect all HIV EIA and PA tests performed in 3 consecutive months.</td>
</tr>
<tr>
<td><strong>Formula</strong></td>
<td>Numerator x 100 %</td>
</tr>
<tr>
<td><strong>Standard</strong></td>
<td>&lt; 5%</td>
</tr>
<tr>
<td><strong>Data Collection</strong></td>
<td>1. <strong>Where:</strong> Data will be collected in all laboratories providing the tests. 2. <strong>Who:</strong> Data will be collected by Officer/ assigned laboratory personnel (indicator co-ordinator) of the department/unit. 3. <strong>How frequent:</strong> Monthly data collection. 4. <strong>Who should verify:</strong> All performance data must be verified by Head of Department/Head of Unit/Hospital Director. 5. <strong>How to collect:</strong> Data is suggested to be collected from record book/ LIS (refer to KPI MOH Guidelines).</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Some laboratories may not achieve a total number of 100 HIV ELISA with subsequent PA test performed over a three month period, thus if unable to achieve a total of 100, all tested within the consecutive 3 months will be collected.</td>
</tr>
</tbody>
</table>
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
### MEDICAL PROGRAMME 2016

### RADIOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with significant pneumothorax/haemorrhage requiring intervention following percutaneous interventional procedures in the thorax, abdomen and pelvis</td>
<td>Safety</td>
<td>≤ 10%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 60 minutes for commencement of ultrasound examination</td>
<td>Timely</td>
<td>≥ 80%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of rejected radiographs/radiographic images</td>
<td>Efficiency</td>
<td>&lt; 5%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Turnaround time of ≤ 2 working days for final report of special radiological examinations done on inpatients</td>
<td>Timely</td>
<td>≥ 97%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Turnaround time of ≤ 14 days for final report of special radiological examinations done on outpatients</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients developed significant contrast media extravasation following CT examination with intravenous (IV) contrast media</td>
<td>Safety</td>
<td>&lt; 1%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**: Departmental
**Discipline**: Radiology
**Indicator**: Percentage of patients with significant pneumothorax/haemorrhage requiring intervention following percutaneous interventional procedures in the thorax, abdomen and pelvis

**Dimension of Quality**: Safety

**Rationale**:
1. These are commonly performed invasive procedures, which may be associated with morbidity.
2. Thus, the morbidity arising from these procedures should be kept to an absolute minimum.

**Definition of Terms**:
- **Pneumothorax**: Defined as the presence of air in FIRST post-procedural chest imaging.
- **Note**: The first post-procedural chest imaging is defined as occurring from 0-4 hours after the procedure.
- **Significant pneumothorax**: One that requires chest tube insertion.
- **Significant haemorrhage**: Defined as bleeding requiring fluid resuscitation within
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

#### Criteria

(≤) 24 hours of the procedure.

<table>
<thead>
<tr>
<th>Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inclusion:</strong></td>
<td>1. All percutaneous interventional procedures performed on organs within thorax/abdomen/pelvis.</td>
</tr>
<tr>
<td><strong>Exclusion:</strong></td>
<td>1. Procedures performed on breasts, superficial lesions and for vascular access.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with significant pneumothorax/hemorrhage requiring intervention following percutaneous interventional procedures in the thorax, abdomen and pelvis</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients underwent percutaneous interventional procedures in the thorax, abdomen and pelvis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard</th>
<th>≤ 10%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Data Collection</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Where:</strong> Data will be collected in Radiology Department/Unit.</td>
<td></td>
</tr>
<tr>
<td><strong>Who:</strong> Data will be collected by Officer/Paramedic/Nurse/Radiographer in-charge (indicator co-ordinator) of the department/unit.</td>
<td></td>
</tr>
<tr>
<td><strong>How frequent:</strong> Monthly data collection.</td>
<td></td>
</tr>
<tr>
<td><strong>Who should verify:</strong> All performance data must be verified by Head of Department/Head of Unit/Hospital Director.</td>
<td></td>
</tr>
<tr>
<td><strong>How to collect:</strong> Data is suggested to be collected from procedure book/record book (refer to KPI MOH Guidelines).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Remarks</th>
<th></th>
</tr>
</thead>
</table>

### Indicator 2

**Discipline:** Radiology

**Indicator:** Percentage of patients with waiting time of ≤ 60 minutes for commencement of ultrasound examination

<table>
<thead>
<tr>
<th>Dimension of Quality</th>
<th>Timely</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rationale:</strong></td>
<td>1. Patient satisfaction.</td>
</tr>
<tr>
<td>2. Waiting time for patient to undergo an ultrasound examination should be kept to a minimum.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Waiting time: Time of appointment/registration (whichever is later) to the time the ultrasound examination is performed.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inclusion:</strong></td>
<td>1. All patients with scheduled appointments.</td>
</tr>
<tr>
<td><strong>Exclusion:</strong></td>
<td>1. Patients without prior appointments/unscheduled.</td>
</tr>
<tr>
<td>2. Unprepared cases.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with waiting time of ≤ 60 minutes for commencement of ultrasound examination</td>
</tr>
</tbody>
</table>
### Denominator

Total number of patients commenced ultrasound examination

### Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard

≥ 80%

### Data Collection

1. **Where:** Data will be collected in Radiology Department/Unit.
2. **Who:** Data will be collected by Officer/Paramedic/Nurse/Radiographer in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect:** Data is suggested to be collected from appointment book/record book (refer to KPI MOH Guidelines).

### Remarks

Sample taken on every Monday per week. It is suggested that 25% sampling is applied to the total number of patients.

### Indicator 3

- **Departmental Discipline:** Radiology
- **Indicator:** Percentage of rejected radiographs/radiographic images
- **Dimension of Quality:** Efficiency

### Rationale

1. This indicator is a reflection of many of the processes carried out in an imaging department.
2. This indicator has great relevance as it reflects on almost all the processes in the department namely radiographic techniques, performance of x-ray machines, film/image processing and storage of films.

### Definition of Terms

- **Radiographs:** Films produced using conventional (non-digital) system.
- **Radiographic images:** Images acquired using digital (DR/CR) system.
- **Rejected radiograph/radiographic image:** Any radiograph/radiographic image that has no diagnostic value and has to be discarded.

### Criteria

**Inclusion:**
- Radiographs/radiographic images rejected by the radiographer.
- Radiographs/radiographic images rejected by clinicians and radiologists.

**Exclusion:**
- Radiograph/radiographic images discarded due to testing purposes.
- Radiograph/radiographic images used for quality assurance procedures.
- Period of time when the machine breakdown/technical problem.

### Type of indicator

Rate-based process indicator

### Numerator

Number of rejected radiographs/radiographic images

### Denominator

Total number of radiographs/radiographic images made

### Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard

< 5%

### Data Collection

1. **Where:** Data will be collected in Radiology Department/Unit.
2. **Who:** Data will be collected by Officer/Paramedic/Nurse/Radiographer in-
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

**MEDICAL PROGRAMME 2016**

<table>
<thead>
<tr>
<th>Indicator 4</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Radiology</td>
</tr>
<tr>
<td><strong>Indicator</strong></td>
<td>Turnaround time of ≤ 2 working days for final report of special radiological examinations done on inpatients</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Timely</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>For a radiological examination to have any impact on patient management, it should be available to the clinician in a timely manner.</td>
</tr>
</tbody>
</table>
| **Definition of Terms** | **Turnaround time**: The time taken between completion of the examination to the availability of report (not including public holidays and weekend).
**Final report**: Reports that have been verified by a radiology specialist.
**Special radiological examinations**: All contrast examinations, CT, MRI, Ultrasound, Mammograms and Angiograms. |
| **Criteria** | **Inclusion**: All special radiological examinations performed on inpatients.
**Exclusion**: Cases done when the resident radiologist is not available in the hospital. |
| **Type of indicator** | Rate-based process indicator |
| **Numerator** | Number of special radiological examinations performed on inpatients reported within (≤) 2 working days |
| **Denominator** | Total number of special radiological examinations performed on inpatients |
| **Formula** | Numerator x 100 % Denominator |
| **Standard** | ≥ 97% |
| **Data Collection** | 1. **Where**: Data will be collected in Radiology Department/ Unit.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse/ Radiographer in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines). |
| **Remarks** | For hospital with digital system, number of patients being exposed to the imaging activity more than once is also counted as rejected radiograph image (e.g. CXR taken with 2 shots is counted as 1 rejected radiograph) |
### Indicator 5

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Radiology</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
<tr>
<td>Rationale</td>
<td>For a radiological examination to have any impact on patient management, it should be available to the clinician in a timely manner.</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Turnaround time: The time taken between completions of the examination to the availability of report. Final report: Reports that have been verified by a radiology specialist. Special radiological examinations: All contrast examinations, CT, MRI, Ultrasound, Mammograms and Angiograms.</td>
</tr>
<tr>
<td>Criteria</td>
<td>Inclusion: All special radiological examinations performed on outpatients. Exclusion: NA</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Rate-based process indicator</td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of special radiological examinations performed on outpatients reported within (≤) 14 days</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of special radiological examinations performed on outpatients</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100 % Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>
| Data Collection | 1. **Where**: Data will be collected in Radiology Department/unit.  
2. **Who**: Data will be collected by Officer/Paramedic/Nurse/Radiographer in-charge (indicator co-ordinator) of the department/unit.  
3. **How frequent**: Monthly data collection.  
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.  
5. **How to collect**: Data is suggested to be collected from record book (refer to KPI MOH Guidelines). |
| Remarks | |

### Indicator 6

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Radiology</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
</tbody>
</table>
| Rationale | 1. CT with IV contrast media is a commonly performed procedure in the department of Radiology.  
2. Contrast extravasation is a known complication which occurs more frequently with power injection. It may also occur with hand injections.  
3. Large volumes (usually >50mls) of contrast media are known to induce |
significant tissue damage. However, smaller volumes may also have adverse outcomes especially in paediatric patients.

4. Contrast media are known to induce significant tissue damage such as:
   a) Skin ulceration.
   b) Soft-tissue necrosis.
   c) Compartment syndrome.

5. Thus, the incidence should be kept to the minimum.

<table>
<thead>
<tr>
<th>Definition of Terms</th>
<th>Contrast media extravasation: Contrast leaks into the tissue around the vein where the intravenous needle is inserted.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Significant contrast media extravasation: Volume &gt;50mls which necessitate referral to the primary team or volumes not more than 50mls but requiring referral to the primary team.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. All CT examinations performed involving intravenous (IV) contrast media.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclusion:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patients with comorbidity that prone to have extravasation</td>
</tr>
<tr>
<td>2. History of receiving chemotherapy/ RT</td>
</tr>
<tr>
<td>3. Intravenous Drugs Users (IVDU)</td>
</tr>
<tr>
<td>4. Age &gt; 60 years old</td>
</tr>
<tr>
<td>5. Emaciated</td>
</tr>
<tr>
<td>6. Oedematous</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of patients developed significant contrast media extravasation following CT examination with intravenous (IV) contrast media</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Denominator</th>
<th>Total number of patients undergo CT examination with intravenous (IV) contrast media</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Formula</th>
<th>Numerator x 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Denominator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard</th>
<th>&lt; 1%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>1. Where: Data will be collected in Radiology Department/unit.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Who: Data will be collected by Officer/ Paramedic/ Nurse/ Radiographer in-charge (indicator co-ordinator) of the department/unit.</td>
</tr>
<tr>
<td></td>
<td>4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. How to collect: Data is suggested to be collected from record book (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

| Remarks | |
|---------|
## RADIOTHERAPY AND ONCOLOGY

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of new cases that were given appointment for first consultation within (≤) 2 weeks at Radiotherapy and Oncology Clinic</td>
<td>Customer</td>
<td>≥ 70 %</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients who were started on chemotherapy within (≤) 2 weeks from the date of decision for chemotherapy</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of patients who were started on radical radiotherapy for head and neck cancer within (≤) 6 weeks from the date of decision</td>
<td>Timely</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of patients developed extravasation during chemotherapy treatment</td>
<td>Safety</td>
<td>&lt; 0.5%</td>
<td>6 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of patients with colorectal cancer fail to complete radical treatment in the neo-adjuvant setting before surgery</td>
<td>Effectiveness</td>
<td>&lt; 25%</td>
<td>6 Monthly</td>
</tr>
</tbody>
</table>

### Indicator 1

**Discipline**: Radiotherapy and Oncology

**Indicator**: Percentage of new cases that were given appointment for first consultation within (≤) 2 weeks at Radiotherapy and Oncology Clinic

**Dimension of Quality**: Customer centeredness

**Rationale**:
1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
2. It is the aim of the discipline to reduce the waiting time to a minimum in line with the aspirations of the Ministry of Health Malaysia.

**Definition of Terms**:
- **Appointment**: Time taken from the date of referral received to the date of appointment given.
- **Within (≤) 2 weeks**: ≤ 14 days.

**Criteria**:
- **Inclusion**: All non urgent cases referred to the Oncology Clinic.
- **Exclusion**:
  1. All urgent cases.
  2. Patients who request for the appointment to be delayed for personal/ medical reasons.
3. Patients/ referring doctors request for a specific/ particular doctor.
4. Patients who default the first appointment given.
5. Patients without HPE available call for appointment (post-op patients)

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based structure indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of new cases that were given appointment for first consultation within (≤) 2 weeks at Radiotherapy and Oncology Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of new cases referred to Radiotherapy and Oncology Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100 % / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 70%</td>
</tr>
</tbody>
</table>

**Data Collection**

1. **Where**: Data will be collected in Radiotherapy and Oncology Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from appointment book/ record book/ Hospital Information System (refer to KPI MOH Guidelines).

**Remarks**

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**Indicator 2**

**Discipline**: Radiotherapy and Oncology

**Indicator**: Percentage of patients who were started on chemotherapy within (≤) 2 weeks from the date of decision for chemotherapy

**Dimension of Quality**: Customer centeredness

**Rationale**

1. Patient-centred services must give priority to reducing waiting times to start treatment.
2. As chemotherapy is an important component of cancer treatment, it should be given promptly and timely.
3. Efforts to deliver the chemotherapy treatment within its designated time at the clinics will reflect upon the efficiency of the Oncology management.

**Definition of Terms**

- **Started on chemotherapy**: Date for the administration of the first chemotherapy schedule.
- **Date of decision**: Date of decision and/ or the date of request for chemotherapy to be part of cancer treatment.
- **Within (≤) 2 weeks**: ≤ 14 days.

**Criteria**

- **Inclusion**: All patients where chemotherapy has been decided by the oncologist as part of the cancer treatment during consultation.
- **Exclusion**: 1. Patients whose treatment is delayed due to personal/ medical reasons (unfit)
2. Patients who are required to finish another treatment prior to commencing chemotherapy.
### Type of indicator
- Rate-based process indicator

### Numerator
- Number of patients started on chemotherapy within (≤) 2 weeks from the date of decision for chemotherapy

### Denominator
- Total number of new requests for chemotherapy by the oncologist

### Formula
\[
\text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

### Standard
- ≥ 70%

### Data Collection
1. Where: Data will be collected in Radiotherapy and Oncology Clinic/wards that cater for the above condition
2. Who: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. How frequent: 3 monthly data collection.
4. Who should verify: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. How to collect: Data is suggested to be collected from appointment book/record book/Hospital Information System (refer to KPI MOH Guidelines).

### Remarks

---

### Indicator 3
- Departmental

### Discipline
- Radiotherapy and Oncology

### Indicator
- Percentage of patients who were started on radical radiotherapy for head and neck cancer within (≤) 6 weeks from the date of decision

### Dimension of Quality
- Timely

### Rationale
1. Treatment of head and neck cancer with radiotherapy is composed of multi-variable processes in the discipline involving human resource, facilities, equipment and support services.
2. Each of these processes can affect the administration of radiotherapy as a treatment modality for head and neck cancers as well as other cancers.

### Definition of Terms
- **Date started on radiotherapy**: Date of first fraction of radiation treatment.
- **Date of decision**: Date of request/booking for radiotherapy treatment made by the oncologist.

### Criteria
- **Inclusion**:
  1. All patients whose cancer has been decided by the oncologist as to have radiotherapy during consultation at the clinic (squamous cell carcinoma of head and neck and nasopharyngeal carcinoma)

- **Exclusion**:
  1. Patients whose treatment is delayed due to personal/medical reasons/other needed elements in initiating radiotherapy treatment.
  2. Patients who are required to finish another treatment prior to commencing radiotherapy.
  3. Patients undergoing neo-adjuvant chemotherapy.

### Type of indicator
- Rate-based process indicator
### Indicator 4

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Number of patients who were started on radiotherapy within (≤) 6 weeks from the date of decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denominator</td>
<td>Total number of patients who were decided to have radiotherapy as part of their cancer treatment by the oncologist</td>
</tr>
<tr>
<td>Formula</td>
<td>[ \frac{\text{Numerator}}{\text{Denominator}} \times 100% ]</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 70%</td>
</tr>
</tbody>
</table>

**Data Collection**

1. **Where**: Data will be collected in Radiotherapy and Oncology Clinic/wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from appointment book/record book/ Hospital Information System (refer to KPI MOH Guidelines).

**Remarks**

- **Indicator 4**: Individual Discipline: Radiotherapy and Oncology Indicator: Percentage of patients developed extravasation during chemotherapy treatment Dimension of Quality: Safety

**Rationale**

1. Extravasation is a grave complication of chemotherapy misdelivery and can lead to devastating effects on patient.
2. The aim of this KPI is to ascertain that chemotherapy delivery is being monitored by the specialists through continuing medical education and dissemination of knowledge about chemotherapy delivery to all stakeholders involved with the patient.
3. Indirect measurement of adherence to stipulated chemotherapy delivery guidelines essential to ensure safe practice, provide evidence based care and increase awareness amongst healthcare givers.

**Definition of Terms**

- **Chemotherapy treatment**: All types of intravenous administration of chemotherapeutic agents.
- **Extravasation**: Inadvertent infiltration of chemotherapy preparations and fluids into the subcutaneous or subdermal tissues surrounding the intravenous administration site.

**Criteria**

- **Inclusion**:
  1. Only hospitals with resident oncologists are included.
  2. All patients that were given intravenous chemotherapy including patients with chemoport access.
  3. Grade 3 or 4 of extravasation at any point during the chemotherapy treatment.
### Type of indicator
- Rate-based outcome indicator

### Numerator
- Number or frequency of extravasation during chemotherapy treatment

### Denominator
- Total number of chemotherapy infusion

### Formula
\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

### Standard
- < 0.5%

### Data Collection
1. **Where**: Data will be collected in Radiotherapy and Oncology wards/wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/Paramedic/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 6 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/record book/Hospital Information System (refer to KPI MOH Guidelines).

### Remarks
- All cases of suspected extravasation should be recorded and the specialist in charge must be informed.
- Any incidence of chemotherapy extravasation requires incident reporting for each occurrence.

### Indicator 5
- **Discipline**: Radiotherapy and Oncology
- **Indicator**: Percentage of patients with colorectal cancer fail to complete radical treatment in the neo-adjuvant setting before surgery
- **Dimension of Quality**: Effectiveness
- **Rationale**
  1. Colorectal cancer often requires multimodality treatment approach amongst surgeons, oncologist and radiation fraternities.
  2. This KPI will help demonstrate collaboration efforts amongst the different disciplines involved with treatment of such patients.
  3. Proper scheduling and monitoring of patients in this group will help to ensure external factors are not involved in determining outcome of the treatment.
- **Definition of Terms**
  - **Radical treatment**: Treatment intent is curative and multimodality. This multimodality treatment includes chemotherapy and/or radiotherapy (CCRT or sequential) before definitive surgery.
  - **Fail**: Inability to finished treatment due to any reasons (including death) and at any stage of the originally planned treatment.
- **Criteria**
  1. All colorectal cancer that are referred for neo-adjuvant treatment prior to surgery.
- **Exclusion**
<table>
<thead>
<tr>
<th><strong>Type of indicator</strong></th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numerator</strong></td>
<td>Number of patients with colorectal cancer fail to complete radical treatment in the neo-adjuvant setting before surgery</td>
</tr>
<tr>
<td><strong>Denominator</strong></td>
<td>Total number of patients with colorectal cancer undergo neo-adjuvant treatment during the specified period of time</td>
</tr>
<tr>
<td><strong>Formula</strong></td>
<td>$\frac{\text{Numerator}}{\text{Denominator}} \times 100%$</td>
</tr>
<tr>
<td><strong>Standard</strong></td>
<td>$&lt; 25%$</td>
</tr>
</tbody>
</table>

### Data Collection

1. **Where:** Data will be collected in Radiotherapy and Oncology wards or wards that cater for the above condition.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 6 Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note/ record book/ Hospital Information System (refer to KPI MOH Guidelines).

### Remarks

- Patients who refused any part or any modality of the neo-adjuvant treatment.
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
### MEDICAL PROGRAMME 2016

**CLINICAL PERFORMANCE SURVEILLANCE UNIT**

**D (Departmental); I (Individual)**

### REHABILITATION MEDICINE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Rehabilitation Medicine Specialist clinic</td>
<td>Timely</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of inpatients with length of stay of ≥ 120 days for Spinal Rehabilitation Program</td>
<td>Timely</td>
<td>&lt; 20%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of new cases that were given appointment for first consultation within (≤) 1 month at Rehabilitation Medicine Specialist Clinic</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Timeliness of establishment of an interdisciplinary rehabilitation plan for inpatient care within (≤) 5 working days of admission</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of inpatients received timely functional measure assessment within (≤) 5 working days of admission/ referral</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of inpatients with functional measure assessment prior to cessation of inpatient rehabilitation care</td>
<td>Effectiveness</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
</tbody>
</table>

### Indicator 1

**Type:** Departmental  
**Discipline:** Rehabilitation Medicine  
**Indicator:** Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Rehabilitation Medicine Specialist Clinic

**Dimension of Quality:** Timely

**Rationale:**
1. The need to appropriately and adequately access a needed service is inherent in achieving customer service satisfaction and meeting treatment requirements.
2. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
3. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

**Definition of Terms:**
- **Waiting time:** Time of registration/ appointment (whichever is later) to the time patient is seen by the doctor.

**Criteria:**
- **Inclusion:** Patient given appointment for Rehabilitation Medicine Specialist Clinic.
- **Exclusion:**
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES
### MEDICAL PROGRAMME 2016

1. Patients with incomplete documents.
2. Patients who request to see a specific doctor.
4. Patients that need to do procedures on the same day before seeing the doctors e.g. blood taking and ultrasound.
5. Patients with concurrent appointments in other departments.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based structure indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with waiting time of ≤ 90 minutes to see the doctor at Rehabilitation Medicine Specialist Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients seen at Rehabilitation Medicine Specialist Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100 %/ Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>

### Data Collection
1. **Where:** Data will be collected in Rehabilitation Medicine Specialist Clinic.
2. **Who:** Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** Monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from record book/ waiting time slip/ outpatient card (refer to KPI MOH Guidelines).

### Remarks

<table>
<thead>
<tr>
<th>Indicator 2</th>
<th>Departmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Rehabilitation Medicine</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of inpatients with length of stay of ≥ 120 days for Spinal Rehabilitation Program</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Timely</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>Length of stay: Period of program commencement until cessation which may include temporary interruptions that should not be more than 1/52. <strong>Spinal Rehabilitation Program:</strong> An individualized, goal directed rehabilitation program that is coordinated by a rehab medicine physician in optimizing functional outcome &amp;/ or quality of life of the individual with a spinal cord impairment.</td>
</tr>
</tbody>
</table>
| Criteria             | Inclusion: 1. All patients admitted for a spinal rehab program.

Exclusion:
1. Occurrence of an event/ complication that causes interruption of spinal rehab
### Indicator 3

**Type of indicator**: Rate-based process indicator

**Numerator**: Number of patients for spinal rehabilitation program whose length of stay exceeded 120 days

**Denominator**: Total number of patients for spinal rehabilitation program during the specified period of time

**Formula**: 
\[ \text{Numerator} \times \frac{100}{\text{Denominator}} \]

**Standard**: < 20%

**Data Collection**

1. **Where**: Data will be collected in Rehabilitation Medicine wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from inpatient admission book/ patient census/ registry/ record book/ other relevant document deemed appropriate by department concern (refer to KPI MOH Guidelines).

**Remarks**

---

**Indicator 3**

**Type of indicator**: Rate-based structure indicator

**Numerator**: Percentage of new cases that were given appointment for first consultation within (≤) 1 month at Rehabilitation Medicine Specialist Clinic

**Denominator**: Customer centeredness

**Rationale**

1. The need to appropriately and adequately access a needed service is inherent in achieving customer service satisfaction and meeting treatment requirements.
2. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
3. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

**Definition of Terms**

1 month: Defined as the day of the following month preceding the date of the month request for appointment is received.

**Criteria**

- **Inclusion**: All new patients to outpatient rehabilitation clinic.

- **Exclusion**:
  1. Patient or the referring doctor request to delay the appointment date.
  2. Patients who request to see a specific doctor.
  3. Patients who default the first appointment given.
  4. Clinic that are held at frequencies > 1/12
  5. Patients who have been seen by rehab medicine doctors from the same service either in wards or other clinics.

**Type of indicator**: Rate-based structure indicator
### Numerator
- Number of new cases that were given appointment for first consultation within (≤) 1 month at Rehabilitation Medicine Specialist Clinic

### Denominator
- Total number of new cases referred to Rehabilitation Medicine Specialist Clinic

### Formula
\[
\text{Numerator} \times 100 \%
\]
\[
\text{Denominator}
\]

### Standard
≥ 70%

### Data Collection
1. **Where**: Data will be collected in Rehabilitation Medicine Specialist Clinic.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from appointment book/record book (refer to KPI MOH Guidelines).

### Indicator 4
- **Individual Discipline**: Rehabilitation Medicine
- **Indicator**: Timeliness of establishment of an interdisciplinary rehabilitation plan for inpatient care within (≤) 5 working days of admission
- **Dimension of Quality**: Effectiveness
- **Rationale**: Rehabilitation plan for inpatient care requires a documented and agreed plan that specifies goals, interventions and time frame established via interdisciplinary consultation.
- **Definition of Terms**: Rehabilitation plan: Documented evidence of consultation and communication between the disciplines involved.

### Criteria
**Inclusion**
- All referral/admission for inpatient rehabilitation care.

**Exclusion**
- All inpatients for rehabilitation care with length of stay of less than five working days of admission.

### Type of indicator
Rate-based process indicator

### Numerator
Number of patients established interdisciplinary rehabilitation plan within (≤) 5 working days of admission

### Denominator
Total number of patients admitted/referred for inpatient rehabilitation care during the specified period of time

### Formula
\[
\text{Numerator} \times 100 \%
\]
\[
\text{Denominator}
\]

### Standard
≥ 90%

### Data Collection
1. **Where**: Data will be collected in Rehabilitation Medicine wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of...
<table>
<thead>
<tr>
<th>Indicator 5</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Rehabilitation Medicine</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of inpatients received timely functional measure assessment within (≤) 5 working days of admission/ referral</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>
| Rationale   | 1. Rehabilitation Medicine prioritizes function as the objective of service delivery.  
2. The use of objective measure of function enables assessment of this and subsequent audit of clinical effectiveness of service delivery. |
| Definition of Terms | Functional measure assessment: Documented evidence of assessment including functional scales e.g. Modified Barthel Index (MBI), Spinal Cord Independence Measure (SCIM), Functional Independence Measure (FIM), Modified Rankin Scale (MRS), Functional capacity, etc. |
| Criteria     | Inclusion: All inpatients referral/admission for inpatient rehabilitation care  
Exclusion: Patients with length of stay of less than 5 working days. |
| Type of indicator | Rate-based outcome indicator |
| Numerator    | Number of inpatients received timely functional measure assessment within (≤) 5 working days of admission/ referral |
| Denominator  | Total number of inpatients admitted or referred for rehabilitation care during the specified period of time |
| Formula      | Numerator x 100%  
Denominator |
| Standard     | ≥ 90% |
| Data Collection | 1. Where: Data will be collected in Rehabilitation Medicine wards or wards that cater for the above condition.  
2. Who: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/unit.  
4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. How to collect: Data is suggested to be collected from referral book/ interdisciplinary meeting document/ record book/ other relevant document deemed appropriate by department concern (refer to KPI MOH Guidelines). |

Remarks: 
<table>
<thead>
<tr>
<th>Indicator 6</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Rehabilitation Medicine</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of inpatients with functional measure assessment prior to cessation of inpatient rehabilitation care</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>
| Rationale             | 1. Rehabilitation Medicine prioritizes function as the objective of service delivery.  
                          2. The use of objective measure of function enables assessment of this and subsequent audit of clinical effectiveness of service delivery in adequate discharge planning and minimization of readmission risk. |
| Definition of Terms   | **Functional measure assessment**: Documented evidence of assessment including functional scales e.g. *Modified Barthel Index* (MBI), *Spinal Cord Independence Measure* (SCIM), *Functional Independence Measure* (FIM), modified Rankin Scale (MRS), Functional capacity, etc. |
| Criteria              | **Inclusion**: All patient referral/ admission for inpatient rehabilitation care.  
                          **Exclusion**:  
                          1. Patients who have an unplanned cessation of inpatient rehabilitation care.  
                          2. All inpatients for rehabilitation care with length of stay of less than 5 working days of admission. |
| Type of indicator     | Rate-based outcome indicator |
| Numerator             | Number of inpatients with functional measure assessment prior to cessation of inpatient rehabilitation Care |
| Denominator           | Total number of inpatients who ceased an inpatient rehabilitation Care during the specified period of time |
| Formula               | Numerator x 100 %  
                          Denominator |
| Standard              | ≥ 90% |
| Data Collection       | 1. **Where**: Data will be collected in Rehabilitation Medicine wards or wards that cater for the above condition.  
                          2. **Who**: Data will be collected by Officer/ Paramedic/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
                          3. **How frequent**: Monthly data collection.  
                          4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
                          5. **How to collect**: Data is suggested to be collected from inpatient patient’s case note/ registry/ record book/ other relevant documents deemed appropriate by the department concern (refer to KPI MOH Guidelines). |
| Remarks               | : |
## SPORTS MEDICINE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of new cases that were given appointment for first consultation within (≤) 4 weeks at Sports Medicine Clinic</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Sports Medicine Clinic</td>
<td>Customer</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Percentage of post-operative sports surgery patients seen within (≤) 3 days for initiation of sports rehabilitation</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>Percentage of inpatient rehabilitation patients referred for weight management program seen within 7 working days from date of referral</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Incidence of septic arthritis within (≤) 2 weeks of intra- or peri-articular injection</td>
<td>Safety</td>
<td>&lt; 1%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of patients who passed the Single Leg Hop Tests (SLHT) at 1 year post-anterior cruciate ligament (ACL) reconstruction surgery</td>
<td>Effectiveness</td>
<td>≥ 75%</td>
<td>Yearly</td>
</tr>
<tr>
<td>I</td>
<td>7</td>
<td>Percentage of new cases with knee problems who have been assessed using the Lysholm Knee Scoring Scale</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>8</td>
<td>Percentage of patients ≥ 18 years old screened for diabetes on first consultation in Sports Medicine Clinic</td>
<td>Effectiveness</td>
<td>≥ 70%</td>
<td>3 Monthly</td>
</tr>
<tr>
<td>I</td>
<td>9</td>
<td>Percentage of patients with acute musculoskeletal injury seen within (≤) 2 weeks after the first assessment in clinic</td>
<td>Effectiveness</td>
<td>&gt; 70%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

**Indicator 1**
- **Type**: Departmental
- **Discipline**: Sports Medicine
- **Indicator**: Percentage of new cases that were given appointment for first consultation within (≤) 4 weeks at Sports Medicine Clinic
- **Dimension of Quality**: Customer centeredness
- **Rationale**:
  1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
  2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to
### TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

#### MEDICAL PROGRAMME 2016

**Definition of Terms**

<table>
<thead>
<tr>
<th>Definition</th>
<th>Content</th>
</tr>
</thead>
</table>
| New case | It can be either:  
1. Patients who come with musculoskeletal problem for the first time; or  
2. Patients who present with a new/ different problem after being discharged from the clinic. |

**Musculoskeletal problems:** Bony and soft tissue injury sustained as a result of acute traumatic and/ or chronic repetitive injury that do not require urgent surgical fixation. Example of cases are:  
2. Soft tissue: muscle and muscular imbalance, tendon, ligament, joint, cartilage, meniscus, etc. |

**Criteria**

<table>
<thead>
<tr>
<th>Inclusion</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion</td>
<td></td>
</tr>
</tbody>
</table>
1. Cases need early/ urgent attention that need to be referred to the Emergency Department or given an earlier appointment date such as:  
   i. Acute traumatic injury (fracture and/ or dislocation that require surgical fixation).  
   ii. Suspected malignancy.  
   iii. Acute infection.  
   v. Musculoskeletal problem with intolerable pain.  
2. Non-musculoskeletal cases. |

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of new cases that were given appointment for first consultation within (≤) 4 weeks at Sports Medicine Clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of new cases referred to Sports Medicine Clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100 % Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>≥ 70%</td>
</tr>
</tbody>
</table>

| Data Collection |  
1. **Where:** Data will be collected in Sports Medicine Clinic.  
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
3. **How frequent:** 3 monthly data collection.  
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
5. **How to collect:** Data is suggested to be collected from appointment/ record book (refer to KPI MOH Guidelines). |

| Remarks | |

**Indicator 2**

| Departmental |
| Sports Medicine |
## Indicator

**Indicator**: Percentage of patients with waiting time of ≤ 90 minutes to see the doctor at Sports Medicine Clinic

**Dimension of Quality**: Customer centeredness

### Rationale

1. Patient-centred services must give priority to prompt attention to patient needs by reducing waiting times for consultation.
2. It is the aim of the MOH to reduce the waiting times to a minimum in line with the Circular of the Director-General of Health Malaysia No. 6/2004 – Steps to Reduce the Waiting Time in MOH Facilities.

### Definition of Terms

**Waiting time**: Time of registration/ appointment (whichever is later) to the time the patient is first seen by the doctor.

### Criteria

**Inclusion**: NA

**Exclusion**: 1. Patients who request to see a specific doctor.
2. Patients who come without an appointment ("walk-in" patients).
3. Patients with multiple appointments on the same day.
4. Patients slotted in for special consultation.
5. Patients with incomplete documents (GL, pension card, etc.)
6. Patients that need to do procedures on the same day before seeing the doctors e.g. x-rays, suture and wound management, or removal of cast or treatment procedures.

### Type of indicator

**Rate-based process indicator**

### Numerator

Number of patients with waiting time of ≤ 90 minutes to see the doctor at Sports Medicine Clinic

### Denominator

Total number of patients seen at Sports Medicine Clinic during the specified period of time

### Formula

\[ \text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\% \]

### Standard

≥ 70%

### Data Collection

1. **Where**: Data will be collected in Sports Medicine Clinic.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book/ waiting time slip/ outpatient card (refer to KPI MOH Guidelines).

### Remarks


## Indicator 3

**Indicator**: Percentage of post-operative sports surgery patients seen within (≤) 3 days for initiation of sports rehabilitation

**Dimension of Quality**: Effectiveness

**Rationale**: This indicator was selected in the aspect of quality in planning for sports
### Definition of Terms

**Sports surgery**: Sports surgery for shoulder and knee.

### Criteria

<table>
<thead>
<tr>
<th>Inclusion:</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion:</td>
<td>Patients refused for treatment after referral</td>
</tr>
</tbody>
</table>

### Type of indicator

Rate-based process indicator

### Numerator

Number of post-operative sports surgery patients seen within (≤) 3 days for initiation of sports rehabilitation

### Denominator

Total number of post-operative sports surgery patients

### Formula

\[
\text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

### Standard

≥ 70%

### Data Collection

1. **Where**: Data will be collected in Sports Medicine wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/ OT notes (refer to KPI MOH Guidelines).

### Remarks

Indicator 4: Departmental Discipline: Sports Medicine Indicator: Percentage of inpatient rehabilitation patients referred for weight management program seen within 7 working days from date of referral

### Dimension of Quality

Effectiveness

### Rationale

Patients undergoing inpatient rehabilitation in the same hospital and found to have weight issues may be referred to Sports Medicine as outpatients for weight management program. Need to optimize inpatient rehabilitation and facilities, incorporating exercise prescription for weight management with ongoing rehabilitation as well as acculturating exercise as an ongoing lifestyle after successful rehabilitation and discharge.

### Definition of Terms

**Inpatient rehabilitation patients**: Ward patients undergoing rehabilitation for spinal cord injury, amputation, stroke, traumatic brain injury, other neurological problems, paediatric inpatients

**Weights issues**: Body Mass Index (BMI) suggestive of overweight and obesity. Patients demonstrating unhealthy trend of increasing body weight (body fat) during inpatient rehabilitation.

### Criteria

<table>
<thead>
<tr>
<th>Inclusion:</th>
<th>inpatient rehabilitation patients with weight issues referred for weight management program.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion:</td>
<td>Patient with acute conditions or conditions that may limit ability to</td>
</tr>
</tbody>
</table>
adhere to exercise program. (e.g. acute infections, on intravenous fluid, repeated autonomic dysreflexia, tetraplegia)

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of ward patients referred for weight management reviewed within 7 working days from date of referral received</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of referrals received of ward patients for weight management in the specified period of time</td>
</tr>
<tr>
<td>Formula</td>
<td>(\frac{\text{Numerator}}{\text{Denominator}} \times 100%)</td>
</tr>
<tr>
<td>Standard</td>
<td>(\geq 75%)</td>
</tr>
</tbody>
</table>

**Data Collection**
1. **Where**: Data will be collected in Sports Medicine wards or wards that cater for the above condition.
2. **Who**: Data will be collected by Officer/Nurse in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: 3 monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/Head of Unit/Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/OT notes (refer to KPI MOH Guidelines).

**Remarks**

<table>
<thead>
<tr>
<th>Indicator 5</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Sports Medicine</td>
</tr>
<tr>
<td>Indicator</td>
<td>Incidence of septic arthritis within (≤) 2 weeks of intra- or peri-articular injection</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Safety</td>
</tr>
</tbody>
</table>
| Rationale   | 1. Sports physicians may utilize the administration of intra- or peri-articular injection as part of treatment. Although rare, the procedure has been recognized as a risk factor for the development of septic arthritis.
2. Septic arthritis presents an orthopaedic emergency that requires prompt recognition and early treatment to evade serious morbidity and mortality. |
| Definition of Terms | Septic arthritis: Synovial joint infection demonstrating the expected clinical manifestations and supported diagnosis with laboratory workout, especially positive synovial fluid culture.
Intra- or peri-articular injection sites: 1. Shoulder joint complex (Glenohumeral joint, Acromioclavicular joint, Subacromial space).
2. Knee joint. |
| Criteria | Inclusion:
1. Clinical manifestation of septic arthritis with evidenced by positive synovial fluid culture. |
|           | Exclusion:
1. Aseptic arthritis. |
2. Immunocompromised patients

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with septic arthritis within (≤) 2 weeks of intra- or peri-articular injection</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of patients received intra- or peri-articular injection</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>&lt; 1%</td>
</tr>
</tbody>
</table>

Data Collection:
1. **Where:** Data will be collected in Sports Medicine Clinic/ Sports Medicine wards or wards that cater the above condition.
2. **Who:** Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent:** 3 monthly data collection.
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect:** Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).

Remarks:

Indicator 6:

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Sports Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
<td>Percentage of patients who passed the Single Leg Hop Tests (SLHT) at 1 year post-anterior cruciate ligament (ACL) reconstruction surgery</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>

Rationale:
1. One difficult challenge in the rehabilitation of anterior cruciate ligament (ACL) injury and reconstruction is to determine when it is safe to return to strenuous physical activities.
2. Single Leg Hop Tests (SLHT) has demonstrated high test retest reliability in normal, young adults and high reliability for ACL reconstructed patients as well.
3. Single Leg Hop Test has shown high specificity 94-97%.
4. SLHT of 85% or greater is considered normal regardless of leg dominance, gender, or sport activity level.
5. SLHT of 85% suggested as a probable safe level for return to sports.
6. In a clinical setting, SLHT is a practical and reliable test to be used for assessment of functional outcome and serves as an indicator for a successful rehabilitation in ACL reconstructed patients.

Definition of Terms:

**Single Leg Hop Tests (SLHT):** It is a functional test in which the patient stands on tested leg and hops forward as far as possible and lands on the same leg. The subjects were instructed to perform a controlled, balanced landing and to keep the landing foot in place (i.e. no extra hops were allowed) until (2–3 s) the landing position is recorded. Failure to do so resulted in a disqualified hop. Free leg swing was allowed. The hands were placed behind the back. The distance was measured in centimetres from the toe line at the push-off to the heel where the subject landed.
### Passed the Single Leg Hop Tests (SLHT): SLHT of ≥ 85%.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion: NA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exclusion:</strong></td>
<td></td>
</tr>
<tr>
<td>1. Presence of acute pain or swelling.</td>
<td></td>
</tr>
<tr>
<td>2. Presence of associated complex trauma (e.g. fractures, multi ligament injuries, complex meniscal procedure etc.)</td>
<td></td>
</tr>
<tr>
<td>3. Significant balance impairment (e.g. visual defects, significant muscle injury, etc.)</td>
<td></td>
</tr>
<tr>
<td>4. Contralateral limb compromise (e.g. presence hip, knee or ankle defects in uninvolved limb).</td>
<td></td>
</tr>
<tr>
<td>5. Presence of significant back or spine problems.</td>
<td></td>
</tr>
<tr>
<td>6. Post op complications (e.g. infections, arthrofibrosis, revision, graft failure etc.)</td>
<td></td>
</tr>
<tr>
<td>7. Defect on operated (tested) leg (e.g. presence of hip or ankle problems on the involved leg).</td>
<td></td>
</tr>
<tr>
<td>8. Surgery that was not performed by credentialed and privileged surgeon.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numerator</strong></td>
<td>Number of patients passed SLHT at 1 year post-ACL reconstruction surgery</td>
</tr>
<tr>
<td><strong>Denominator</strong></td>
<td>Total number of patients tested with SLHT at 1 year post-ACL reconstruction surgery</td>
</tr>
</tbody>
</table>
| **Formula** | \[
\text{Numerator} \times 100\% \div \text{Denominator}
\]
| **Standard** | ≥ 75% |

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>1. <strong>Where:</strong> Data will be collected in Sports Medicine Clinic.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. <strong>Who:</strong> Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/unit.</td>
</tr>
<tr>
<td></td>
<td>3. <strong>How frequent:</strong> Yearly data collection (patient to be followed up at a year cohort).</td>
</tr>
<tr>
<td></td>
<td>4. <strong>Who should verify:</strong> All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.</td>
</tr>
<tr>
<td></td>
<td>5. <strong>How to collect:</strong> Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines).</td>
</tr>
</tbody>
</table>

| Remarks | |

---

### Indicator 7

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Percentage of new cases with knee problems who have been assessed using the Lysholm Knee Scoring Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discipline</strong></td>
<td>Sports Medicine</td>
</tr>
<tr>
<td><strong>Dimension of Quality</strong></td>
<td>Effectiveness</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>1. Knee scoring systems represent outcome measures which is used to measure clinical change in patients over time.</td>
</tr>
<tr>
<td></td>
<td>2. It serves as a baseline objective measure of knee function.</td>
</tr>
<tr>
<td></td>
<td>3. It allows for assessment of the effectiveness of rehabilitation or any intervention when the knee scoring is repeated at a later period.</td>
</tr>
</tbody>
</table>
4. There are many knee scoring systems available, one of which is the Lysholm Knee Scoring Scale.
5. It is practical, reliable and can be used in a variety of knee conditions.

Definition of Terms: **Lysholm Knee Scoring Scale**: It is mainly used to evaluate patient symptoms and function during activities of daily living and work. It is used in various conditions of knee pathology like knee ligament injury (ACL, PCL, MCL, LCL) meniscal tears, knee cartilage lesions, patellofemoral pain and knee osteoarthritis.

In case of interventions, it has been used to assess the effectiveness of knee arthroscopy, ligament reconstructions, meniscal repair, meniscectomy, microfracture, intra-articular hyaluronic acid injection and therapeutic exercise. It is an 8-item questionnaire scored on a 0-100 weighted scale measuring pain (25 points), instability (15 points), swelling (10 points), limp (5 points), stair-climbing (10 points), squatting (5 points) and use of support (5 points). The evaluation of the patient progress will be made at suitable intervals by re-administering the Lysholm Knee Scoring Scale at a later period.

Criteria: **Inclusion**: NA

**Exclusion:**
1. Patients who have already undergone knee surgery prior to first encounter at Sports Medicine Clinic.
2. Patients who were already being followed up at other centres and then referred for continued management.

Type of indicator: Rate-based outcome indicator

**Numerator**: Number of new patients with knee problems who have been assessed using Lysholm Knee Scoring

**Denominator**: Total number of new patients with knee problems seen In Sports Medicine Clinic

**Formula**: Numerator x 100 / Denominator

**Standard**: ≥ 70%

Data Collection:
1. **Where**: Data will be collected in Sports Medicine Clinic.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/ record book (refer to KPI MOH Guidelines).

Remarks: 

Indicator 8:
**Indicator**: Percentage of patients ≥ 18 years old screened for diabetes on first consultation in Sports Medicine Clinic

**Dimension of Quality**: Effectiveness

**Rationale**: National Health and Morbidity survey 2011:
### Definition of Terms

**Definition of Terms**: NA

### Criteria

**Inclusion**: All patients ≥ 18 years old with or without family history of diabetes are screened.

**Exclusion**: Known diabetic patients who already on follow up

### Type of indicator

**Rate-based outcome indicator**

### Numerator

**Number of patients ≥ 18 years old screened for diabetes**

### Denominator

**Total number of new patients in a month**

### Formula

\[
\text{Percentage} = \frac{\text{Numerator}}{\text{Denominator}} \times 100\%
\]

### Standard

**≥ 70%**

### Data Collection

1. **Where**: Data will be collected in Sports Medicine Clinic.
2. **Who**: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.
3. **How frequent**: 3 monthly data collection
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from patient’s case note/record book (refer to KPI MOH Guidelines).

### Indicator 9

**Individual Discipline**: Sports Medicine

**Indicator**: Percentage of patients with acute musculoskeletal injury seen within (≤) 2 weeks after the first assessment in clinic

**Dimension of Quality**: Effectiveness

**Rationale**

1. Acute musculoskeletal injuries are associated with local inflammatory reactions which may mask its actual clinical manifestation.
2. Reviewing the patient within 2 weeks and after appropriate acute phase rehabilitation facilitates in reaching accurate diagnosis, avoiding pitfalls and appropriate clinical decision making.

**Definition of Terms**

**Acute musculoskeletal injury**: Any musculoskeletal injury with acute onset within 6 weeks prior to first encounter. Example: fracture, strains, sprain and joint dislocations.

**Criteria**

**Inclusion**: NA

**Exclusion**

1. Post-operative or inpatient referral.
<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of patients with acute musculoskeletal injuries seen within (≤) 2 weeks after the first assessment in clinic</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number patients with acute musculoskeletal injuries seen after the first assessment in clinic</td>
</tr>
<tr>
<td>Formula</td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td>Standard</td>
<td>&gt; 70%</td>
</tr>
</tbody>
</table>
| Data Collection   | 1. Where: Data will be collected in Sports Medicine Clinic.  
              2. Who: Data will be collected by Officer/ Nurse in-charge (indicator co-ordinator) of the department/ unit.  
              3. How frequent: 3 monthly data collection.  
              4. Who should verify: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.  
              5. How to collect: Data is suggested to be collected from appointment book (refer to KPI MOH Guidelines).  
| Remarks           | |

2. Injury that has occurred more than 6 weeks before first encounter in sports medicine clinic.  
3. Overuse injuries.  
4. Recurrent or aggravated old injury (acute on chronic onset).
## TECHNICAL SPECIFICATIONS FOR KEY PERFORMANCE INDICATORS (KPI) CLINICAL SERVICES

### MEDICAL PROGRAMME 2016

#### TRANSFUSION MEDICINE

<table>
<thead>
<tr>
<th>TYPE</th>
<th>NO</th>
<th>INDICATOR</th>
<th>DIMENSION</th>
<th>STANDARD</th>
<th>HOSPITAL REPORTING FREQUENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>1</td>
<td>Percentage of blood components preparation</td>
<td>Effectiveness</td>
<td>≥ 80%</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>Incidence of incorrect blood component transfused (IBCT) due to blood bank error</td>
<td>Safety</td>
<td>0</td>
<td>Monthly</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>Timeliness of blood supply for urgent cases within (≤) 30 minutes</td>
<td>Customer</td>
<td>≥ 90%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>4</td>
<td>Percentage of newly diagnosed thalassaemia patients with new development of red cell antibody/ies (starting from July, 2014)</td>
<td>Effectiveness</td>
<td>≤ 30%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>Percentage of donation from regular blood donors</td>
<td>Safety</td>
<td>≥ 60%</td>
<td>Monthly</td>
</tr>
<tr>
<td>I</td>
<td>6</td>
<td>Percentage of elective surgeries in General Surgery and/or Orthopaedic Department cancelled or postponed after admission due to lack of blood</td>
<td>Effectiveness</td>
<td>&lt; 10%</td>
<td>3 Monthly</td>
</tr>
</tbody>
</table>

---

**Indicator 1**

**Departmental**

**Discipline**: Transfusion Medicine

**Indicator**: Percentage of blood components preparation

**Dimension of Quality**: Effectiveness

**Rationale**

1. Utilization of donated blood can be fully optimized by preparing blood components from the collected whole blood.
2. Plasma derived from these component preparation processes can be fractionated to many types of plasma-derived products (PDP) used for patient care.
3. It is anticipated that requirement for plasma will increase once the National Plasma Fractionation Program is implemented from 2016 onwards. It is a program to fractionate Malaysian plasma into plasma-derived products for patient use.

**Definition of Terms**

**Blood components**: Therapeutic components of blood (red cell, white cell, platelets, plasma) that can be prepared by centrifugation, filtration and freezing using conventional blood bank methodology.

**Criteria**

**Inclusion**:

1. Whole blood collected.

**Exclusion**:

1. Whole blood donation which does not fulfil the criteria for blood components preparation.
2. Blood collected from “rare blood group donor”.
3. Autologous blood collection.

**Type of indicator**: Rate-based structure indicator
### Indicator 2

<table>
<thead>
<tr>
<th><strong>Numerator</strong></th>
<th>Number of whole blood units prepared into blood components</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Denominator</strong></td>
<td>Total number of whole blood collected</td>
</tr>
<tr>
<td><strong>Formula</strong></td>
<td>Numerator x 100 %</td>
</tr>
<tr>
<td><strong>Standard</strong></td>
<td>≥ 80%</td>
</tr>
</tbody>
</table>

**Data Collection**
1. **Where:** Data will be collected in hospital's blood bank / Transfusion Medicine Department/ Unit.
2. **Who:** Data will be collected by Officer in-charge (indicator co-ordinator) / MLT/ Paramedics/ Nurses of the department/ unit.
3. **How frequent:** Monthly data collection. (For KPI purposes, monthly performance should be reported to JKN by the hospital via clinical performance indicator matrix).
4. **Who should verify:** All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director/ Hospital Transfusion Committee.
5. **How to collect:** Data is suggested to be collected from record book / IT System (refer to KPI MOH Guidelines).

**Remarks**
Applicable for hospital's blood bank processing centre only.

---

**Indicator 2**

<table>
<thead>
<tr>
<th><strong>Indicator</strong></th>
<th>Incidence of incorrect blood component transfused (IBCT) due to blood bank error</th>
</tr>
</thead>
</table>

**Dimension of Quality**
Safety

**Rationale**
1. Blood transfusion is a complex process which involves several personnel in the blood banks and clinical departments.
2. Transfusion error can occur at any phase of the transfusion chain. It can be divided into 3 phases:
   i. Incidence of sampling and labelling error (clinical departments).
   ii. Incidence of laboratory error.
   iii. Incidence of administrative error.
3. IBCT can contribute to patient morbidity and mortality. Incidences of IBCT must be monitored for the purpose of implementing corrective and preventive measures.

**Definition of Terms**
Incorrect blood component transfused (IBCT): Transfusion of blood or blood component that was intended for another patient or which was of inappropriate specification.

Blood bank error: Any error occurring in the laboratory, from the time of the patient sample is received until the blood and blood components are released for transfusion.

**Criteria**

<table>
<thead>
<tr>
<th><strong>Inclusion:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All requests for blood and blood components.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Exclusion:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Non ABO/ Rh specific blood or blood component given to patients in...</td>
</tr>
</tbody>
</table>
### Situation such as:

a) Rhesus negative patient was given Rhesus positive blood in an emergency situation.

b) Group O was transfused to a non-group O recipient in an emergency.

c) Group AB recipient transfused with group A or B blood and blood component in the absence Group AB blood and blood component.

d) AB plasma for neonates.

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Sentinel event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of IBCT occurred due to blood bank error</td>
</tr>
<tr>
<td>Denominator</td>
<td>NA</td>
</tr>
<tr>
<td>Formula</td>
<td>NA</td>
</tr>
<tr>
<td>Standard</td>
<td>0</td>
</tr>
</tbody>
</table>

**Data Collection**

1. **Where**: Data will be collected in hospital’s blood bank / Transfusion Medicine Department / Unit.

2. **Who**: Data will be collected by Officer in-charge (indicator co-ordinator) of the department/unit.

3. **How frequent**: Monthly data collection. (For KPI purposes, monthly performance should be reported to JKN by the hospital via clinical performance indicator matrix).

4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director/ Hospital Transfusion Committee.

5. **How to collect**: Data is suggested to be collected from report received / treatment investigation form (refer to KPI MOH Guidelines).

**Remarks**

**Indicator 3**

- **Departmental**
- **Discipline**: Transfusion Medicine
- **Indicator**: Timeliness of blood supply for urgent cases within \(\leq\) 30 minutes
- **Dimension of Quality**: Customer centeredness

**Rationale**

Timely blood supply is crucial for patient care in emergency situation and will help to reduce mortality and morbidity.

**Definition of Terms**

- **Urgent cases**: Cases that require blood immediately to save life. Blood supply will either be of safe O or group specific after emergency cross-matched procedure performed.

- **Within \(\leq\) 30 minutes**: Time taken from the time sample received at blood bank to the time first unit of blood released from blood bank.

**Criteria**

- **Inclusion**:
  1. All urgent blood request as specified by the attending clinician as stated in the request form, informed by phone call by the clinician or staff from the ward.

- **Exclusion**:
  1. All cases for elective transfusion (surgical, medical etc.).
  2. Incomplete request whereby form was returned to the ward according to
### Indicator 4

<table>
<thead>
<tr>
<th><strong>Type of indicator</strong></th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Numerator</strong></td>
<td>Number of urgent cases where blood are supplied within (≤) 30 minutes</td>
</tr>
<tr>
<td><strong>Denominator</strong></td>
<td>Total number of urgent cases where blood is requested</td>
</tr>
<tr>
<td><strong>Formula</strong></td>
<td>Numerator x 100% / Denominator</td>
</tr>
<tr>
<td><strong>Standard</strong></td>
<td>≥ 90%</td>
</tr>
</tbody>
</table>

#### Data Collection

1. **Where**: Data will be collected in hospital's blood bank / Transfusion Medicine Department/ Unit.
2. **Who**: Data will be collected by Officer in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director/ Hospital Transfusion Committee.
5. **How to collect**: Data is suggested to be collected from record book / request form (refer to KPI MOH Guidelines).

#### Remarks

**Indicator 4**
- **Discipline**: Transfusion Medicine
- **Indicator**: Percentage of newly diagnosed thalassaemia patients with new development of red cell antibody/ ies (starting from July, 2014)
- **Dimension of Quality**: Effectiveness
- **Rationale**
  1. All newly diagnosed patients with thalassaemia starting from July, 2014 should be phenotyped for clinically significant red cell antigens at diagnosis or prior to the first transfusion.
  2. Clinically significant red cell antigens are ABO, RhD, Kell, Kidd, Duffy and MNSs.
  3. They should be given phenotyped matched packed red cell for transfusions.
  4. This will prevent unnecessary red cell alloimmunisation.
- **Definition of Terms**
  - **Thalassaemia patients**: Patients who require repeated red cell transfusions.
  - **New development of red cell antibody/ ies**: Development of red cell alloimmunization due to exposure of foreign red cell antigen in the transfused blood.
- **Criteria**
  - **Inclusion**:
    1. All newly diagnosed thalassaemia patients (starting from July, 2014) who require blood transfusion as part of their disease management.
    2. Patients shall have a baseline red cells phenotyping prior to first transfusion.
  - **Exclusion**:
    1. Diagnosis has not been stated in the blood request form for blood.
    2. Patient has been transfused with red cells without baseline red cells phenotyping.
## Technical Specifications for Key Performance Indicators (KPI) Clinical Services

- **Medical Programme 2016**

### Clinical Programme

#### Performance Surveillance Unit

<table>
<thead>
<tr>
<th>Type of indicator</th>
<th>Rate-based process indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Number of thalassaemia patients supplied with phenotyped blood.</td>
</tr>
<tr>
<td>Denominator</td>
<td>Total number of thalassaemia patients.</td>
</tr>
</tbody>
</table>

#### Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

#### Standard

\[\leq 30\%\]

### Data Collection

1. **Where**: Data will be collected in hospital’s blood bank / Transfusion Medicine Department / Unit.
2. **Who**: Data will be collected by Officer in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
5. **How to collect**: Data is suggested to be collected from record book/ related document (refer to KPI MOH Guidelines).

### Remarks

- Indicator 5: Individual
- Discipline: Transfusion Medicine
- Indicator: Percentage of donation from regular blood donors
- Dimension of Quality: Safety

#### Rationale

Regular voluntary non-remunerated blood donors are safer source of blood for transfusions as they have lower risk of carrying any agents of blood borne infections.

#### Definition of Terms

- **Regular blood donor**: Qualified blood donor who have donated their blood, at a minimum frequency of 2 times within two years in the same blood centre.

#### Criteria

**Inclusion**:

1. All types of blood donors (e.g. new, regular, lapsed)

**Exclusion**:

1. Autologous Blood donor.
2. Deferred donor due to temporary and permanent deferral.

### Type of indicator

Rate-based process indicator

#### Numerator

Number of donation collected from blood donor in the same collection centre.

#### Denominator

Total number of blood donation in the same collection centre.

#### Formula

\[
\text{Numerator} \times \frac{100}{\text{Denominator}}
\]

#### Standard

\[\geq 60\%\]

### Data Collection

1. **Where**: Data will be collected in hospital’s blood bank Transfusion Medicine Department / Unit.
2. **Who**: Data will be collected by Officer in-charge (indicator co-ordinator) of the department/unit.
3. **How frequent**: Monthly data collection.
4. **Who should verify**: All performance data must be verified by Head of Department/ Head of Unit/ Hospital Director.
<table>
<thead>
<tr>
<th>Indicator 6</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>Transfusion Medicine</td>
</tr>
<tr>
<td>Indicator</td>
<td>Percentage of elective surgeries in General Surgery and/or Orthopaedic Department cancelled or postponed after admission due to lack of blood</td>
</tr>
<tr>
<td>Dimension of Quality</td>
<td>Effectiveness</td>
</tr>
</tbody>
</table>
| Rationale   | 1. Blood supply should be consistently adequate to fulfil patients’ requirements for elective surgery.  
2. Cancellation of surgery or postponement of cases will affect patient care and lead to waste of time and resources. |
| Definition of Terms | Elective surgery: Pre-planned surgical procedure where request for blood may be made as defined in Maximum Surgical Blood Ordering Schedule (MSBOS) of each hospital.  
Maximum Surgical Blood Ordering Schedule (MSBOS): A table of elective surgical procedure which lists the number of blood unit routinely cross-matched for patient pre operatively. |
| Criteria     | Inclusion:  
1. All blood requests for elective surgery from General Surgical, O&G and/or Orthopaedic Department according to MSBOS.  
Exclusion:  
1. All blood request for elective surgery NOT according to MSBOS.  
2. Rare blood groups. |
| Type of indicator | Rate-based process indicator |
| Numerator    | Number of elective surgeries in General Surgery, O&G and/or Orthopaedic Department cancelled or postponed after admission due to lack of blood |
| Denominator  | Total number of elective surgeries in General Surgery, O&G and/or Orthopaedic Department requested for blood |
| Formula      | Numerator x 100%  
Denominator |
| Standard     | <10% |
| Data Collection | 1. Where: Data will be collected in hospital’s blood bank/Transfusion Medicine Department/Unit/OT.  
2. Who: Data will be collected by Officer in-charge (indicator co-ordinator) / Paramedics/Nurses of the department/unit.  
3. How frequent: 3 monthly data collection.  
4. Who should verify: All performance data must be verified by Head of Department/Head of Unit/Hospital Director/Hospital Transfusion Committee.  
5. How to collect: Data is suggested to be collected from record book/related document (refer to KPI MOH Guidelines). |
| Remarks      | : |
Nota: Sila rujuk Garispanduan Pengukuhan Pelaksanaan dan Aplikasi Hospital Performance Indicator for Accountability (HPIA) dan Petunjuk Prestasi Utama (KPI) Perkhidmatan Klinikal Program Perubatan.

Jika terdapat sebarang pertanyaan/ maklumat lanjut berhubung pemantauan indikator sila hubungi;

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