

MAXIMUM SURGICAL BLOOD ORDERING SCHEDULE (MSBOS)

3rd EDITION
2019

HOSPITAL UMUM SARAWAK

Disciplines / Procedures	RECOMMENDATION (Units of blood)
1. OBSTETRIC & GYNAECOLOGY	
1.1 GYNAECOLOGY SURGERY	
1. Abdominal	
-Radical hysterectomy	4
-Extending hysterectomy	4
-Debulking surgery with gross ascites	4
-Complicated / difficult hysterectomy	4
-Simple hysterectomy	2
-Myomectomy	2-4
-Cystectomy / Oophorectomy	GSH
-Exploratory laparotomy	2
-Adhesiolysis	GSH
-Burch Colposuspension	GSH
-Vault suspension	GSH
-Salpingectomy for non bleeding ectopic pregnancy	GSH
-Salpingectomy for bleeding ectopic pregnancy	4
-Tubal sterilization	-
-TVT / TVT	GSH
-TAHBSO	GSH
2. Laparoscopic	
-Diagnostic Laparoscopy & Dye Insufflation	-
-Laparoscopic Tubal Ligation	-
-Laparoscopic Adhesiolysis	GSH
-Laparoscopic cyst aspiration	-
-Laparoscopic cystectomy / oophorectomy	GSH
-Laparoscopic assisted vaginal hysterectomy	2
-Total laparoscopic hysterectomy	4
-Laparoscopic salpingectomy	GSH
3. Vaginal	
-Vulvectomy with lymph nodes sampling	2
-Vaginal hysterectomy & pelvic floor repair	2
-Le fort operation	-
-I&D of vulva hematoma	GSH
-Vulva biopsy	GSH
-Pelvic floor repair	GSH
-Vaginal reconstruction	GSH
-Marsupialisation	-
-Hymenectomy	-
-Cold knife cone biopsy	GSH
-LLETZ	-
-Excision of cervical fibroid	GSH
-Cervical cerclage	-
-EUA, staging, cystoscopy and cervical biopsy	-
-Polypectomy	-
-Suction & curettage for molar pregnancy	
<20 weeks size	2
>20 weeks size	4
-ERPOC	GSH
-EUA and DD&C	-
-Hysteroscopy and DD&C	-

-Hysteroscopy +/- endometrial biopsy -Removal of IUCD	- -
1.2 OBSTETRIC SURGERY	
1. Lower Segment Caesarean Section (LSCS):	
-Anemia Hb < 8.0g/dL	2
-Placenta praevia major with previous scar	4
-Placenta praevia major with no previous scar	4
-ANY PLACENTA PREVIA TYPE 4	4
-Abruptio placenta without coagulopathy	2
-Abruptio placenta with coagulopathy	4
-Severe pre-eclampsia/ eclampsia with coagulopathy	2
-Obstructed labour	2
Others:	
-Fetal distress	GSH
-Cord prolapsed	GSH
-Abnormal Presentation	GSH
-Failed Induction	GSH
-Breech	GSH
-CPD	GSH
-Poor progress	GSH
- >2 previous scars	2
-Twin pregnancy	GSH
2. Classical Caesarean Section	2
3. Caesarean hysterectomy	4
4. Post-partum hysterectomy	4
5. Evacuation of vulva haematoma	2
2. SURGERY	RECOMMENDATION (Units of blood)
2.1 GENERAL SURGERY	
1. Gastric	
-Total gastrectomy	2
-Partial gastrectomy	1
2. Liver	
-Resection	4
-Biopsy	GSH
3. Biliary	
-Cholecystectomy:	GSH
-Laparoscopy	1
Open	
4. Bowel:	
-Small gut resection	2
-Large gut resection	2
-AP resection	4
-Whipple's	4
-Appendicectomy	-
-Colostomy	-
5. Head & neck:	
-Parotidectomy	GSH
-Hemithyroidectomy	1
-Thyroidectomy	2
-Parathyroidectomy	1
6. Breast:	
-Wide local Excision	GSH

-Mastectomy	2
-Excision biopsy	-
7. Vascular	
-Embolectomy	2
-Aortic aneurysms	6
8. Others:	
-Abscess	-
-Carbuncle: saucerisation	GSH
-Laparotomy	
a. Gut resection	2
b. Traumatic bleeding	4
-Splenectomy	2
-Herniorrhaphy/Herniotomy	-
-Mayo repair: large hernia	GSH
-Haemorrhoidectomy	-
-Anal cutback	-
2.2 NEUROSURGERY	
1. Cranioplasty	GSH
2. Burr hole in chronic subdural haematoma	2
3. VP Shunt	2
4. Craniotomy for tumour	4
5. Craniotomy for AVM/ aneurysm	4-6
6. Transphenoidal for pituitary adenoma	4
7. Spine operations:	
-Omectomy cervical	4
-Fusion and directom	4
-Tumour	4
-Lumbar mini dissection	2
2.3 UROSURGERY	
1.Urology:	
-Pyelolithotomy : Simple	GSH
Extended	2
-Nephrolithotomy	2
-Nephrolithotomy-anatropic	4
-Nephrectomy	4
-PCNL	4
-TURP/TURBT : Small	GSH
Bulky	2
-Prostectomy: Robotic	2
-Cystectomy	4
-Vesicolithotomy	GSH
-Orchidopexy	-
2.4 PLASTIC SURGERY	
1. Craniofacial surgery :	
-Surgery of nasal encephalocoele	6
2. Free tissue transfer	2
3. Head & neck malignancy with radical neck dissection	4
4. Facial trauma (Emergency) :	
-Very severe	4
-Tear of maxillary artery	6
5. Excision of benign / malignant lesion with flap coverage	4
6. Partial glossectomy with radical block dissection of neck	3-4
7. Total glossectomy with / without neck dissection	4
8. Tongue flaps	2

9. Malignant lesion with reconstruction of oral cavity	2
10. Head & neck malignancy excision including bone reconstruction	2
11. Mandible :	
-Removal of adamantinosis	GSH
-Cyst removal	GSH
12. Reconstruction of facial fractures (very severe)	4
13. Reconstruction of facial injury soft tissues (very severe)	GSH
14. Reduction of fibrous – dysplasia	GSH
15. Repair of trachea-cutaneous fistula	-
16. Burns (very severe)	4-6
17. Px of sequelae (very severe) :	
-Release of contracture & joint	GSH
18. Breast :	
-Augmentation	-
-Reduction	GSH
19. Myocutaneous / Osteomyocutaneous dissection	4
20. Rib graft removal	-
21. Hand reconstruction with soft/bony injury (very severe)	GSH
22. Bladder reconstruction	4
23. Vaginal reconstruction	GSH
24. Radical vulvectomy	4
25. Reconstruction of naevi including congenital/giant hairy naevus (very severe)	GSH
26. Rhytidectomy	-
27. Abdominoplasty	GSH
28. Reconstructive surgery of haemangioma (very severe)	6
29. Reconstructive surgery of lymphangioma	4
30. Reconstructive surgery of AV malformation	6
31. Excision of benign / malignant lesion with primary closure	-
32. Burns with flaps closure	GSH
33. Burns with skin grafts (scalp)	2
34. Exenteration of orbit	GSH
35. Leukoplakia excision & grafting-mouth (severe)	GSH
36. Cleft palate :	
-Children	GSH
-Adults	GSH
37. Pharyngoplasty	-
38. Partial glossectomy	2
39. Oral cavity – Benign / malignant lesion excision with primary closure	-
40. Split Skin Grafting (SSG) – severe	4-6
41. Bone grafting	-
2.6 PAEDIATRIC SURGERY	
1. Appendicectomy	-
2. Herniotomy	-
3. Orchidopexy	-
4. Marsupialisation/ Circumcision/Trimming of excessive foreskin/Hypospadias repair/Chordae release/Release of buried penis/Patent urachus repair/Labial synechia for separation	-
5. Cholecystectomy	GSH
6. Liver resection	
-Hemangiomatous malformation	4
7. OGDS under GA	GSH

8. PSARP	-
9. Laparotomy	2
10. CDH repair	GSH
11. Duodeno-duodenostomy	GSH
12. Minor Surgery:	
-Biopsy	-
-CVL insertion/removal	-
-Chemoport insertion/removal	-
-Sistrunk procedure	-
-Stoma closure	-
-Cyst excision	-
-PEG tube insertion	-
2.7 OPHTHALMOLOGICAL SURGERY	
1. Retinoblastoma	GSH
2. Orbital Tumour	GSH
3. Dacryocystorhinostomy	GSH
2.8 EAR, NOSE & THROAT (ENT) SURGERY	
1. Adenoidectomy	GSH
2. Adenotonsillectomy	GSH
3. Angiofibroma excision	4-6
4. Bronchoscopy + biopsy	GSH
5. Caldwell Luc	GSH
6. Craniofacial resections / skull base tumors	4
7. Direct Laryngoscopy + Biopsy	-
8. Drainage of postauricular abscess	-
9. Drainage of retropharyngeal + parapharyngeal abscess	-
10. Elective microlaryngeal surgery	-
11. Endoscopic Nasopharyngectomy	-
12. Examination of nose or PNS under GA	-
13. Examination of ear under microscope	-
14. Examination under anaesthesia	-
15. Excision of pre-auricular sinus	-
16. Free Flap Reconstructions	4
17. Intranasal endoscopic ethmoidectomy	-
18. Intranasal polypectomy for single polyp	-
19. Intranasal antrostomy	-
20. Laryngeal stenosis-repair	-
21. Laryngectomy -total/partial	4
22. Lateral rhinotomy	4
23. Ligation of external carotid	-
24. Mastoidectomy- modified radical	-
25. Mastoidectomy-radical	2
26. Maxillectomy	-
27. Modified radical mastoidectomy	-
28. Myringoplasty	-
29. Myringotomy	-
30. Nasal polypectomy	-
31. Oesophagoscopy	-
32. Parotidectomy-complete/partial	2
33. Panendoscopy	-
34. Radical neck dissection	4
35. Removal of foreign bodies- ENT	-
36. Removal of submandibular salivary gland	-
37. Repair of laryngeal and tracheal stenosis	-

38. Rhinoplasty- augmentation/reduction/prosthesies	-
39. Septoplasty	-
40. Tonsillectomy	GSH
41. Total laryngopharyngectomy	4
42. Tracheal stenosis-repair	-
43. Tracheostomy	-
44. Tympanoplasty	-
Note : Blood requirement may increase in cases of previously received radiotherapy.	
2.9 ORAL & MAXILLOFACIAL SURGERY	
A) MINOR ORAL SURGERY	
1. Removal of impacted & unerupted teeth	-
2. Incision biopsy	-
3. Aveolectomy	-
4. Apicectomy	-
5. Surgical removal of roots	-
6. Frenectomy	-
7. Excision of mucocele	-
8. Cervical lymph node biopsy	-
9. Localised periodontal flap	-
10. Repair of minor orofacial lacerations	-
11. Removal of salivary calculus	-
12. Removal of roots in antrum and closure of oroantral fistula	-
13. Sinus lift	GSH
B) MAXILLOFACIAL TRAUMA	
a) Hard tissues	
Open reduction & internal fixation:	
- Orbital exploration & reconstruction	GSH
- Frontal sinus fracture	GSH
- Nasal fracture	-
- Maxillary & pan-facial fracture	-
- Mandibular fracture	GSH
- Condylar fracture	GSH
- Dentoalveolar fracture	-
- Zygomatic complex fracture	GSH
b) Soft tissues	
1) Primary repair of soft tissue injury	-
2) Reconstruction of large hard & soft tissue loss of the face	GSH
C) ONCOLOGY	
1) Excision of benign / malignant lesion with local /non-vascularised flap	2
2) Partial glossectomy with radical block dissection of neck	2-4
3) Glossectomy with / without neck dissection	6
4) Lip reconstruction with tongue flap	GSH
D) ORTHONAGTHIC SURGERY	
1) Bimaxillary osteotomy	2
2) Sagittal split mandibular osteotomy	GSH
3) Genioplasty	-
E) Repair of cleft lip and cleft palate	-
F) Alveolar bone grafting	-
G) Temporomandibular joint surgery	-

H) Surgical correction of development jaw deformity	2-4
I) Preprosthetic surgery	-
J) Dental implants with / without bone grafting	-
K) Sinus lift surgery	GSH
L) Excision of haemangioma (depends on the size)	GSH
M) AV malformation	2-4
N) Surgery of salivary glands	-
O) Management of severe infection of the jaw with surgery	-
P) Enucleation or marsupialization of cysts of the jaw	2
3. ORTHOPAEDIC SURGERY	RECOMMENDATION (Units of blood)
1. Spine:	
- Cervical Spine :	
a. Posterior fusion	2
b. Anterior discectomy, coprectomy and fusion	2
- Thoracic & Lumbar :	
a. Anterior Fusion	4
b. Posterior Procedure	
-Posterior fusion	2
-Spinal decompression	2
c. Others	
- Kenocort/Steroid injection	-
- Transpedicular biopsy	-
- Laminoplasty/Vertebroplasty	-
2. Shoulder :	
- Plating/Biplating of Humerus	GSH
- ILN of Humerus	GSH
- Arthroplasty	GSH
- Forequarter amputation +/- Flap and SSG	2
- Shoulder diagnostic arthroscopy/arthoscopic stabilization	-
- Trucut/Incisional biopsy of humerus	-
- Lipoma excision	-
3. Arm & Forearm :	*All GSH not used*
- Elbow arthroplasty:	
a. Total elbow replacement	GSH
b. Tension band wiring	-
c. Variable angle locking plate	-
- Other surgery at or below the elbow:	
a. Plating of ulnar and radius	-
b. Corrective osteotomy	-
c. Removal of TENS	-
d. Lipoma/Ganglion cyst/Soft tissue excision	-
- Other surgery at or below the wrist:	
a. With artery involvement	2
b. Without artery involvement	-
4. Hip & Pelvis :	
- Total Hip Replacement (THR)	2
- Revision of THR	GSH
- Thompson Hemiarthroplasty	GSH

- Dynamic screw fixation	GSH
- Reconstruction plating of acetabulum	2
- Biopsy of iliac bone	-
5. Thigh & Knee:	
- Open :	
a. K nail	GSH
b. Plating	GSH
- Closed :	
a. ILN	2
b. PFNA	2
- Total knee replacement (TKR)	GSH
- Femur osteotomy	2
- Patellar procedure:	
a. Tension band wiring	-
b. Tension relieving wiring	-
- Arthroscopic procedure:	
a. Diagnostic	-
b. Knee ligament reconstruction	-
c. With meniscus procedure	-
d. Debridement and washout	2
- Excision of lipoma/soft tissue tumour	-
- Incisional biopsy	-
- Removal of implants/TENS	-
6. Leg & Foot :	
- Tibia:	
a. Ilizarov +/- Bone transporting/correction +/- SSG	GSH
b. ILN	GSH
c. Locking plate	GSH
d. Corticotomy	-
e. Osteotomy	-
f. Epiphysiodesis	-
g. Removal of implant, readjustment of external fixators, change of antibiotic spacers	-
- Ankle:	
a. Screw fixation	-
b. Syndesmotoc joint fixation	-
c. Plating of fibula	-
d. Tension band wiring	-
e. Ankle fusion with Ilizarov	GSH
- Release of CTEV	GSH
- Trucut/Incision biopsy	-
- Excision of lipoma/soft tissue tumour	-
- SSG of lower limb	GSH
- Other surgery below the ankle or at the foot	-
7. Tumour surgery (others not mentioned above):	
- Excision +/- reconstruction	*Depends on size of tumour and site of anatomy in accordance to the clinical judgement of the surgical team.

