

MAXIMUM SURGICAL BLOOD ORDERING SCHEDULE (MSBOS)

HTAA



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Hospital Tengku Ampuan Afzan (HTAA)
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FOREWORD BY THE DIRECTOR OF HOSPITAL TENGKU AMPUAN AFZAN.



Blood transfusion service offered by the Transfusion Medicine Unit of Pathology Department of Hospital Tengku Ampuan Afzan has over the years made significant progress by providing adequate, safe and high quality blood and blood products. Nevertheless despite the advancement made in the field of Transfusion Medicine, blood transfusion carries with it intrinsic and irremovable component of risks. Hence, it is my sincere hope that with the publication of this Maximum Surgical Blood Ordering Schedule (MSBOS) the Transfusion Medicine practice in this hospital is taken a step higher where utilization of blood is optimized and the concept of Judicious Use of Blood and Blood Products is further reiterated.

Finally, I would like to express my greatest gratitude to the committee members of Transfusion Medicine Unit, Pathology Department and all Heads of Department of the respective clinical fields for their contributions and commitment shown in producing this booklet.

A handwritten signature in black ink, consisting of a large, stylized 'A' followed by a series of loops and a horizontal line.

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SURGERY	
A) GENERAL SURGERY	
Hemicolectomy - Emergency	GSH
Hemicolectomy - Elective	GSH
Mastectomy with axillary clearance	GSH
Saucerization	GSH
Small bowel surgery / intestinal obstruction	GSH
Thyroidectomy - hemi/partial/total	GSH
Anterior resection - high / low / ultra-low	GSH
Perforated viscus	GSH
Exploratory laparotomy	GSH
Partial gastrectomy	GSH
Panproctocolectomy	GSH
Splenectomy - elective	GSH
Hiatus hernia repair - transthoracic	2 units
Abdomino - perineal resection	2 units
Bleeding gastric /duodenal ulcer	4 units
Total gastrectomy	2 units
Intra abdominal injury	4 units
Esophagectomy	2 units
Pancreatectomy	2 units
Splenectomy - emergency	2 units
Thoracotomy / transthoracic surgery	2 units

B) VASCULAR SURGERY	
Ligation of mycotic aneurysm	GSH
Angiogram KIV PTCA	GSH
Varicose vein	GSH
Abdominal aortic aneurysm	6 units
C) HEPATOBILIARY SURGERY	
Biliary bypass/ duct repair/ intubation/ biopsy	GSH
Bile duct exploration with/without T-tube drainage	GSH
Biopsy	GSH
Cholecystectomy - open/laparoscopic	GSH
Drainage / deroofing of liver cyst	GSH
Pancreatic pseudocyst drainage	GSH
Transduodenal sphincteroplasty	GSH
Hemihepatectomy - left/right, extended left/right	4 units
Hepatectomy	6 units
Distal/proximal pancreatectomy	2-4 units
Total pancreatectomy	4-6 units
Pancreatic debridement/necrosectomy	4 units
Exploratory laparotomy for liver trauma	4 units
Non-anatomical liver resection	4-6 units
Segmental liver resection	4-6 units
Hepatic arterial thrombectomy	2 units

Hepatic artery cannulation with chemoport replacement	2 units
Hepatic artery reconstruction	2 units
Hepatic vein / IVC repair	4 units
Portal vein reconstruction	4 units
Portal thrombectomy	2 units
Portosystemic shunts	6 units
Splenectomy with variceal ligation	6 units
Whipple's Procedure	4 units
Liver Transplant	30 units
D) PLASTIC & RECONSTRUCTIVE SURGERY	
Abdominoplasty	GSH
Debridement of Fournier's gangrene and locoregional flap/SSG	GSH
ORIF for facial fracture	GSH
Groin & axillary lymph nodes dissection	GSH
Palatoplasty	GSH
Pharyngoplasty	GSH
Repair of myelomeningoceles	GSH
SSG - moderate size area	GSH
Superficial parotidectomy	GSH
SSG - large size area	GSH
Craniofacial surgery (craniosynotosis, encephaloceles)	GSH

Excision of vascular anomaly - small to medium size	GSH
Resection of head, neck tumor and neck dissection	GSH
Tangential excision	GSH
Pressure sore surgery	2 units
Large skin and soft tissue cancers with reconstruction	2 units
Free flap surgery - breast, trunk & lower extremity reconstruction	2 units
Excision of vascular anomaly - large size (head, upper & lower limb)	2 - 4 units
Excision / debulking of neurofibromatosis	4 units
Orthognatic surgery	4 units

OTORHINOLARYNGOLOGY (ENT)	
Tonsillectomy	GSH
Tonsillectomy + adenoidectomy	GSH
Frontoethmoidectomy	GSH
Lateral rhinotomy	GSH
Ligation of ethmoid vessel	GSH
Submandibulectomy	GSH
Excision of benign tumors	GSH
Parotidectomy	GSH
Excision of angiofibroma	6 units
Excision of malignant tumors (Except BCC)	4 - 6 units
Laryngectomy	2 units
Ligation of carotid artery	2 units
Maxillectomy	6 units
Partial pharyngectomy without reconstruction	6 units
Radical neck dissection	4 units
Repair of laryngeal and tracheal stenosis	4 units
Surgery for cancer of jaw or neck	6 units
Surgery of ptergopalatine fossa	6 units
Total laryngopharyngectomy with reconstruction	6 units
Trans palatal removal of postnasal tumor	6 units

CARDIOTHORACIC	
Angioplasty	GSH
Bronchoscopy	GSH
Cardiac Catheterization	GSH
Coronary Angiogram	GSH
Pacemaker Insertion	GSH
Open Pleural / Lung Biopsy	1 unit
ASD / VSD repair	4 units, 1 cycle DIVC
Bullectomy	2 units
CABG	6 units, 2 cycle DIVC
Lobectomy / pneumonectomy	2 units
Open Heart Surgery	6 units, 2 cycle DIVC
Open Thoracotomy	4 - 6 units
PDA repair	4 units, 1 cycle DIVC
Pleural Abrasion	2 units
Pleurectomy	2 units
VATS	4 units

NEUROSURGERY	
Aneurysm angiography / embolization	GSH
Anterior cervical discectomy and fusion (ACDF)	GSH
Arteriovenous malformation (AVM) coiling	GSH
Burr hole biopsy	GSH
Cranioplasty	GSH
Endoscopic third ventriculostomy (ETV)	GSH
Stereotactic biopsy	GSH
Trapping of internal carotid artery (ICA)	GSH
Ventriculoscapy	GSH
VP shunt	GSH
Chiari malformation - post fossa decompression	GSH
Aneurysm clipping	4 units
Arteriovenous malformation (AVM) excision	4 units
Craniotomy biopsy of tumor	2 units
Craniotomy evacuation of intracranial haematoma	3 units
Craniotomy excision of tumor glioma / schwannoma	2 units
Craniotomy meningioma - for debulking	4 units
Endoscopic transphenoidal adenectomy	2 units
Excision and repair of myelomeningocele	1 unit
Laminectomy	2 units
Pedical screw and post spinal fixation	2 units
STA - MCA bypass	2 units

UROLOGY	
Nephrectomy (simple -non functioning / tumor)	GSH
Penectomy (total / partial)	GSH
Percutaneous nephrolithotomy	GSH
Pyelolithotomy (simple)	GSH
Renal angiogram	GSH
Renal Recipient	GSH
Transurethral resection of bladder tumor (TURBT)	GSH
Transurethral resection of prostate (TURP)	GSH
Urethroplasty	GSH
Pyelolithotomy, complicated or large calculus	GSH
Renal Biopsy	2 units
Adrenalectomy	4 units
Anatrophic nephrolithotomy	2 units
Cystectomy + Ileal Conduit / Neobladder	4 units
Exploration / complicated AVF operation	2 units
Partial nephrectomy	2 units
Radical prostatectomy	4 units
Renal Transplant	4 units
Retropubic prostatectomy	2 units
Nephrectomy (simple - non functioning /donor)	2 units
Radical nephrectomy	2 - 4 units (large vascular tumor)

OBSTETRICS & GYNECOLOGY	
OBSTETRIC SURGERY	
A) LOWER SEGMENT CAESAREAN SECTION (LSCS)	
Fetal distress	GSH
Cord prolapsed	GSH
Abnormal presentation	GSH
Failed induction	GSH
Breech	GSH
Cephalopelvic Disproportion (CPD)	GSH
Poor progress	GSH
≥ 2 previous scar	GSH
Obstructed labour	GSH
Placenta praevia major posterior	2 units
Placenta praevia major anterior	4 units
Abruptio placenta without coagulopathy	2 units +/- 1 DIVC
Abruptio placenta with coagulopathy	4 units + 1 DIVC
Severe pre-eclampsia / eclampsia with coagulopathy	2 units + 1 DIVC
B) CLASSICAL CAESAREAN SECTION	2 units
C) HYSTERECTOMY (CAESAREAN / POST PARTUM)	4 units + 1 DIVC
D) EVACUATION OF VULVA HAEMATOMA	2 units + 1 DIVC

GYNECOLOGICAL SURGERY	
A) ABDOMINAL	
TVT	GSH
Vault suspension	GSH
Burch colposuspension	GSH
Adhesiolysis	GSH
Exploratory laparotomy	GSH
Cystectomy / Oophorectomy	GSH
Simple hysterectomy	GSH
Radical hysterectomy (wertheim)	4 units
Extended hysterectomy	4 units
Debulking surgery with gross ascites	4 units
Complicated / difficult hysterectomy	2 units
Myomectomy	2 - 4 units
Salpingectomy for bleeding ectopic pregnancy	2 - 4 units
B) LAPAROSCOPIC	
Salphingectomy for ectopic pregnancy	GSH
Laparoscopic adhesiolysis	GSH
Laparoscopic cystectomy/oophorectomy	GSH
Laparoscopic vaginal hysterectomy	GSH
Total laparoscopic hysterectomy	GSH

C) VAGINAL	
I & D of vulva haematoma	GSH
Vaginal reconstruction	GSH
Cold knife cone biopsy	GSH
Excision of cervical fibroid	GSH
Polypectomy	GSH
ERPOC	GSH
Vulvectomy with lymph nodes sampling	4 units
Vaginal hysterectomy & pelvic floor repair	1 unit
Suction & curettage for molar pregnancy	2 units

ORTHOPAEDICS	
A) UPPER LIMB OPERATION	
Putti-Platt Shoulder Repair	GSH
Shoulder Arthroscopy	GSH
Soft Tissues & Ligament Reconstruction of Shoulder	GSH
Total Shoulder Replacement	GSH
ORIF of Humerus / Radius / Ulna	GSH
Radius and ulna (other than ORIF)	GSH
Hand (any procedure)	GSH
Ray Amputation of finger	GSH
Ilizarov fixation of humerus/radius/ulna	GSH
Hand Amputation	2 units
Brachial Plexus Repair	2 units
Transhumeral Amputation	2 units
Shoulder Disarticulation	2 units
B) LOWER LIMB OPERATION	
ORIF of Neck of Femur fracture	GSH
Proximal Femur (Dynamic Hip Screw/PFN/plating)	GSH
ORIF of Distal Femur fracture	GSH
Bone Transport or lengthening (Femur / Tibia)	GSH
ORIF (intraarticular fracture/Proximal and Distal Tibia)	GSH
Foot / Ankle (any procedure)	GSH

Ray Amputation of Toe	GSH
Patellectomy	GSH
Ilizarov fixation of Femur / Tibia	GSH
Soft Tissues & Ligamental Reconstruction of Knee	GSH
Arthrodesis Hip/ Knee	GSH
Above Knee Amputation (AKA) / Transfemoral Amputation	2-4 units
Below Knee Amputation (BKA) / Transtibial Amputation	2 units
Total Knee Replacement (TKR)	2 units
Bilateral Total Knee Replacement	2-4 units
Revision or Complex Total Knee Replacement (TKR)	3 units
Total Hip Replacement (THR)	2 units
Revision or Complex Total Hip Replacement (THR)	3 units
Hip Disarticulation	2 units
Hemiarthroplasty	2 units
Open Reduction of DDH	1 unit
Femoral Osteotomy	2 units
ORIF of Femur / Tibia	2 units
Foot Amputation	2 units
Multi Ligamental Reconstruction of Knee	2 units
Massive bone resection	2 units

C) SPINE OPERATION	
Disc Surgery	GSH
Anterior Decompression and Fusion of Spine	3 units
Posterior Decompression and Fusion of Spine	2 units
Anterior Spine Decompression and Instrumentation / Fusion of Thoracolumbar Spine	4 units
Posterior Spinal Decompression (Discectomy, Laminotomy)	2 units
Harrington Rods	4 units
Laminectomy	2 units
Spinal Decompression for Tumours	2 units
Spinal Fusion	2 units

D) PELVIS/ACETABULUM OPERATION	
Pelvic Fracture	2 units
Pelvic Osteotomy	2 units
Pelvic Trauma	6 units
Pelvic and Acetabulum – Open Reduction Internal Fixation	2 units
Complex Posterior Acetabular Fracture	2 units
Complex Anterior Acetabular Fracture	3 units
Complex Anterior and Posterior Acetabular Fracture	4 units

E) MISCELLANEOUS	
Arthroscopic Repair/ Reconstruction	GSH
Bone Grafting	GSH
Skin Grafting (SSG/FTSG)	GSH
Open Reduction of Fracture	GSH
Removal of Nail/Plate	GSH
Revision/Removal of K-wire	GSH
Wound debridement	GSH
Tendon transfer	GSH
Regional Flaps (eg: Groin, Forearm)	GSH
Contracture Release	GSH
Resection of Soft Tissue Tumours; <10cm >10cm	GSH 2 units
Paediatric Pelvic Osteotomy	1 unit
Massive Skin Grafting (requiring mesh and Dermatone)	2 units
Resection of Vascular Tumours (eg: Hemangioma)	2 units
Vascularised Fibular Graft	2 units
Deformity Correction of Long Bone	2 units
Interlocking Nails/Plating of long bones	2 units