



GUIDELINES FOR MAXIMUM SURGICAL BLOOD ORDERING SCHEDULE



1.0 Policy Statement

- 1.1 Each facility shall develop and maintain written policies and standard operating procedures for activities that affect the safety, efficacy, and quality of blood components and safety of recipients, donors and facility personnel.
- 1.2 Each facility should develop guidelines for maximum surgical blood ordering schedules (MSBOS) based on the needs of individual patients, utilization practices and facility experience.
- 1.3 MSBOS should be reviewed periodically and modified.

2.0 Definitions

- 2.1 **Crossmatch:** a method used to detect incompatibilities between donor and recipient blood prior to transfusion. It also involves the request for a specified number of red blood cell units.
- 2.2 **Crossmatch-to-Transfusion (C:T) ratio:** a C:T ratio ≤ 2 is usually considered appropriate.
- 2.3 **Maximum Surgical Blood Ordering Schedule(MSBOS):** a list of commonly performed procedures and the most appropriate pre-transfusion testing including type and screen and number of units crossmatched used to predict surgical blood needs prior to surgery.
- 2.4 **Type and Screen:** a method used to determine ABO Group, Rh Type and screen for antibodies on recipients and donors.

3.0 General Information

- 3.1 The MSBOS is a tool used to predict 90 % of the blood needs for particular surgery procedures.
- 3.2 MSBOS are used to efficiently allocate blood on the day of surgery.



- 3.3** MSBOS are used to:
 - 3.3.1 Promote efficient use of blood inventory
 - 3.3.2 Avoid outdating of blood units
 - 3.3.3 Reduce pre-transfusion testing, minimize unnecessary crossmatching
 - 3.3.4 Provide a guide for autologous testing
 - 3.3.5 Enhance quality of care.
- 3.4** Crossmatch –to-Transfusion (C:T) ratio can be used to evaluate blood ordering practices.
- 3.5** The ordering schedule shall be flexible depending on the circumstances to allow for exceptional cases and individual clinical judgment.

4.0 Procedure

- 4.1** Examine the surgery schedule prior to performing ordered crossmatches.
- 4.2** Compare patient orders with MSBOS.
- 4.3** Crossmatch if patient orders meet the recommendations of the MSBOS.
- 4.4** Consult with ordering physician if order does not meet recommendations with MSBOS.

5.0 References

- 5.1** American Association of Blood Banks. Blood transfusion therapy: A physician's handbook, 9th ed. Bethesda, Maryland: American Association of Blood Banks; 2008.
- 5.2** American Association of Blood Banks. Guidelines for blood utilization review. Bethesda, Maryland: American Association of Blood Banks; 2001.
- 5.3** Canadian Standards Association. Blood and blood components, Z902-10. Mississauga (ON): Canadian Standards Association; 2010.
- 5.4** Canadian Society for Transfusion Medicine. CSTM standards for hospital transfusion service. Version 3. Ottawa: Canadian Society for Transfusion Medicine; February 2011.



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Procedures for Crossmatch			
	Units to X-Match		Units to X-Match
Gynecology		NeuroSurgery	
Laparotomy for Ovarian Cancer	2	Anteriovenous Malformation	2
Myomectomy	2	Craniotomy for Cerebral Aneurysm	2
Radical Hysterectomy	2	Orthopedics	
Radical Vulvectomy with Groin Node Dissection	2	AO Hip Pinning	2
Trial of Scar	2	C-Spine Disectomy with Fusion	2
General Surgery		Fractured Pelvis	3
Abdominal Perineal Resection	2	IM Nailing Femur	2
Adrenalectomy	2	Intertrochanteric Fracture DHS	2
Anterior Bowel Resection	2	Laminectomy with Fusion	2
Biliary Bypass	3	Moores Arthroplasty	2
Bowel Resection	2	Open Reduction femoral Fracture	2
CBDE	2	ORIF Humerus	2
Disectomy	2	Revision Total Hip	4
Distal Gastrectomy	2	Shoulder Arthroplasty	2
Distal Pancreatectomy	4	Spinal Fusion in situ	2
Esophagogastrectomy	4	Spinal Fusion XIA	2
Excision Roux	2	Spinal Instrumental	2
Gastrectomy/ Fundoplication	2	Spinal Stenosis	2
Laparotomy with Lymph Node or Biopsy of Mass	2	Thompson Hip/ Endoconversion	2
Left Hemicolectomy	2	TK Revision and TH Revision	2
Lobectomy	4	Total Hip Replacement	3
Lung Decortication	2	Total Knee Replacement	3
Major Hepatic Resection	6	Urology	
Pelvic Exenteration	6	Nephrectomy	2
Pneumonectomy	4	Nephrolithotomy	2
Radical Mastectomy	2	Percutaneous Nephrolithotomy	2
Radical Neck Dissection	2	Pereyra-Raz Procedure	2
Radical Prostatectomy	2	Pubovaginal Sling	2
Resection of Abdomen Wall Tumor	4	Pyelolithotomy	2
Retroperitoneal Node Dissection or Resection of Tumor	4	Radical Cystectomy	4
Right Hemicolectomy	2	Radical Nephrectomy	4
Roux-en-y	2	Radical P rostatectomy	4
Splenectomy	2	SP, RP, and RP Prostatectomy	2
Sub-total Gastrectomy	2	Vascular Surgery	
Thoractomy/ Lung Resection	4	Abdominal Aneurysm (Elective)	4
Thoroscopy	4	Abdominal Aneurysm (Emergency)	4 FFP & 6 units
Total Colectomy	4	Abdominal Aortic Aneurysm	6
Total Gastrectomy	4	Aortic Grafts	2
Total Proctocolectomy	4	Aorto-Bifemoral Graft	4
Transhiatal Esophagectomy	4	Aorto- Femoral Bypass Graft	6
Tumor Pancreatectomy	4	Aorto- Iliac Bypass Graft	6
Vagotomy/ Antrectomy	2	Aorto-Popliteal Bypass Graft	6
Wedge Resection of Liver	4	Axillo- Bifemoral Bypass Graft	6
Wedge Resection of Lung	4	Balloon Angioplasty	2
Whipple's Procedure	6	Cardiovascular Surgery	6
		Coronary Artery Bypass Graft	6
Head & Neck/ Oral Surgery			
Commando Procedure	4	Elective Aneurysm Repair	6
Laryngectomy	4	Embolectomy/ Endarterectomy/ Thrombectomy	4
Neck Dissection	2	Femoral Distal Reconstruction	2
Thyroidectomy with Sternal Split	2	Femoral- Popliteal Bypass Graft	6
		Valves	6

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Procedures for Type and Screen			
Gynecology	T/S	Head & Neck/ Oral Surgery	T/S
Amputation of Cervix	T/S	Branchial Cleft Cyst/ Sinus	T/S
Anterior and Posterior Repair	T/S	Excision of Vocal Cord Nodule	T/S
Aspiration of Ovarian Cyst	T/S	Excision Submandibular Gland	T/S
Bilateral Salpingo Oophorectomy	T/S	Excision Thyroglossal	T/S
Caesarian Section	T/S	External Septorhinoplasty	T/S
Evacuation of the Uterus	T/S	Glossectomy Partial Glossectomy	T/S
Hysterectomy	T/S	Hemithyroidectomy	T/S
L& D	T/S	Mastoidectomy	T/S
Lapararoscopy	T/S	Maxillectomy	T/S
Laparoscopy- Tubal Occlusion	T/S	Open Reduction Nasal Fracture	T/S
Laparoscopy- Diagnostic	T/S	Ossiculoplasty	T/S
Laparotomy	T/S	Osteoplastic Flap	T/S
LAVS	T/S	Osteotomy	T/S
Oophorectomy	T/S	Parathyroidectomy	T/S
Ovarian Cystectomy	T/S	Septorhinoplasty	T/S
Posterior and Sacrospinous Vault Suspension	T/S	Stapodectomy	T/S
Transcervical Resection of Endometrium	T/S	Thyroidectomy with Sternal Split	T/S
Vaginal Termination	T/S	Tympanomastoidectomy	T/S
Vaginoplasty	T/S	Uvulopalatopharyngoplasty	T/S
Vesico Vaginal Fistula Repair	T/S	NeuroSurgery	
General Surgery		Other intracranial Procedures	T/S
Amputation of Limb	T/S	Spinal Operations	T/S
Amputations	T/S	Orthopaedics	
Apronectomy	T/S	Above Knee Amputation	T/S
AV Fistula	T/S	Acromioplasty/ Rotator Cuff Repair	T/S
Axillary Dissection	T/S	Anterior Shoulder Repair	T/S
Bronchoscopy/ Mediastinoscopy	T/S	Below the Knee Amputation	T/S
Cholecystectomy and Exploration CBD	T/S	Disarticulation	T/S
Choledochojunostomy	T/S	Discoideotomy	T/S
Closure Ileostomy/ Colostomy	T/S	IM Nailing Tibia	T/S
Colostomy	T/S	Laminectomy	T/S
Enteroenterostomy	T/S	Neer's Shoulder Procedure	T/S
Exc. Transanal Villous Adenoma	T/S	ORIF Hip	T/S
Exploratory Laparotomy	T/S	Spinal Surgery	T/S
Gastroenterostomy	T/S	Wrist Fusion with Graft	T/S
Insertion of Gastrostomy Tube	T/S	Plastics	
Lap Chole	T/S	Maxillofacial	T/S
Lap; Lysis of Adhesions	T/S	TRAM Flap	T/S
Laparoscopy	T/S	Urology	
Loop Ileostomy	T/S	Bladder Neck Suspension	T/S
Lumpectomy	T/S	Cystolithotomy	T/S
Mastectomy	T/S	Epididynectom	T/S
Mini Thoracotomy	T/S	Excision Cyst from Kidney and Partial Nephrectomy	T/S
Modified Radical Mastectomy	T/S	Exploration of Ureter	T/S
Parotidectomy	T/S	L Node Dissection; L Nephroureterectomy with Cuff of Bladder	T/S
Parial Gastectomy Nissen Fondoplication	T/S	Pelvic Lymph Node Dissection	T/S
Partial Mastectomy	T/S	Percutaneous procedures	T/S
Repair of Incisional Hernia	T/S	Pureterolithotomy	T/S
Repair of Ventral/ Epigastric Hernia	T/S	Pyeloplasty	T/S
Reversal/ revision Resection	T/S	Reimplantation Ureter	T/S
Small Bowel Resection	T/S	Reimplentation of Ureter	T/S
Superficial & Iliifemoral Node Dissection	T/S	SPARC	T/S
Thyroidectomy	T/S	Transurethral Resection Bladder Neck	T/S
Traverse Colostomy	T/S	Transurethral Resection Bladder Tumor	T/S

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Urology Continued			
Transurethral Resection Prostate	T/S		
U.V.Suspension	T/S		
Ureterolithotomy	T/S		
Vascular Surgery			
Aortic Stents	T/S		
Axillary Bifemoral Graft	T/S		
Axillary/ Femoral Graft	T/S		
Carotid Endarterectomy	T/S		
Femoral Crossover Bypass	T/S		
Femoral/ Popliteal Graft	T/S		
PTFE Graft/A-V Fistula/ AV Access	T/S		
Subclavian/ Axillary Graft	T/S		
Subclavian Caroyid Graft	T/S		
Varicose Veins	T/S		

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