Government of Newfoundland and Labrador

Department of Health and Community Services
Provincial Blood Coordinating Program

MAXIMUM SURGICAL BLOOD ORDERING SCHEDULE (MSBOS)	NLBCP-044

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Overview

The Maximum Surgical Blood Ordering Schedule (MSBOS) designates the appropriate pre-transfusion testing secondary to the estimated quantity of blood product units required to facilitate the potential need of 90 per cent of patients undergoing specific surgical procedures. Adoption of the MSBOS allows for efficient allocation of blood on the day of scheduled surgery.

Effective use of the MSBOS will yield a reduction in the amount of unnecessary type and screen blood samples drawn from the patient, and unnecessary testing will not be performed. To ensure efficient use of blood products, an ordered crossmatch-to-transfusion (C:T) ratio of less than or equal to (≤) 2 is considered appropriate.

MSBOS are useful and beneficial for:

- The promotion of efficient use of blood inventory.
- The avoidance of the outdating of blood units as the shelf life of a unit decreases each time a unit is held or crossmatched for a patient that does not require transfusion.
- The reduction of unnecessary pre-transfusion crossmatch testing.
- Providing a guide for autologous testing.
- The enhancement of quality of care.
- Enhancing cost effectiveness (decreasing unnecessary pre-transfusion crossmatch testing and outdating of blood products).

Policy

1. Each Regional Health Authority (RHA) shall develop and maintain written standard operating procedures in ensuring the safety, efficacy, and quality of blood products and components along with the safety of recipients, donors, and facility personnel.
2. Each RHA should develop guidelines for maximum surgical blood ordering schedules based on the needs of individual patients, utilization practices, and facility experience.
3. MSBOS shall be reviewed and modified as necessary, in conjunction with evidenced based standards of practice.

4. Ordering clinicians may override the MSBOS and make special requests for individuals that may require increased transfusion demands (for example, patients with alloantibodies, anemia or bleeding disorders).
5. The MSBOS shall allow for flexibility of ordering, dependent on exceptional circumstances in conjunction with clinical judgment of the prescriber.

Guidelines

See the following maximum surgical blood ordering schedules

Appendix A- Gynecology & Obstetrics

Appendix B- General Surgery

Appendix C- Head & Neck/ Oral Surgery

Appendix D- Neurosurgery

Appendix E- Orthopedics

Appendix F- Urology

Appendix G- Vascular Surgery

Key Words

Maximum Surgical Blood Ordering Schedule, Surgery, Crossmatch, Crossmatch-to-Transfusion (C:T) ratio.

Supplemental Materials

Appendix A- Gynecology & Obstetrics

Gynecology & Obstetrics			
Type of Procedure	Type and Screen Required?		Number of Units to Cross Match?
	Yes	No	
Myomectomy	Yes	No	2
Radical Hysterectomy	Yes	No	2
Radical Vulvectomy with Groin Node Dissection	Yes	No	2
Trial of Scar	Yes	No	2
Amputation of Cervix	Yes	No	0
Anterior and Posterior Repair	Yes	No	0
Aspiration of Ovarian Cyst	Yes	No	0
Bilatetrial Salpingo Oophorectomy	Yes	No	0
Caesarian Section	Yes	No	0
Cystoscopy	Yes	No	0
Cerclage	Yes	No	0

Evacuation of the Uterus	Yes	No	0
Hysterectomy	Yes	No	0
L& D	Yes	No	0
Laparoscopy	Yes	No	0
Laparoscopy- Tubal Occlusion	Yes	No	0
Laparoscopy- Diagnostic	Yes	No	0
Laparotomy	Yes	No	0
Laparotomy for Ovarian Cancer	Yes	No	2
Ovarian Cystectomy	Yes	No	0
Posterior and Sacrospinous Vault Suspension	Yes	No	0
Transcervical Resection of Endometrium	Yes	No	0
Vaginal Termination	Yes	No	0
Vaginoplasty	Yes	No	0
Vesicovaginal Fistula Repair	Yes	No	0

Appendix B- General Surgery

General Surgery			
Type of Procedure	Type and Screen Required?		Number of Units to Cross Match?
	Yes	No	
Abdominal Perineal Resection	Yes	No	2
Adrenalectomy	Yes	No	2
Anterior Bowel Resection	Yes	No	2
Appendectomy	Yes	No	0
Bilary Bypass	Yes	No	2
Bowel Resection	Yes	No	2
CBDE	Yes	No	2
Discectomy	Yes	No	2
Distal Gastrectomy	Yes	No	2
Distal Pancreatectomy	Yes	No	4
Esophagogastrectomy	Yes	No	4
Excision Roux	Yes	No	2
Gastrectomy/ Fundoplication	Yes	No	2

Laparotomy with Lymph Node or Biopsy of Mass	Yes	No	2
Left Hemicolectomy	Yes	No	2
Lobectomy	Yes	No	4
Lung Decortication	Yes	No	2
Major Hepatic Resection	Yes	No	6
Pelvic Exenteration	Yes	No	4
Pneumonectomy	Yes	No	4
Radical Mastectomy	Yes	No	0
Radical Neck Dissection	Yes	No	2
Radical Prostatectomy	Yes	No	2
Resection of Abdomen Wall Tumor	Yes	No	4
Retroperitoneal Node Dissection or Resection of Tumor	Yes	No	4
Right Hemicolectomy	Yes	No	2
Roux-en-y	Yes	No	2
Splenectomy	Yes	No	2
Sub-total Gastrectomy	Yes	No	2

Thoractomy/ Lung Resection	Yes	No	4
Thoracoscopy	Yes	No	4
Total Colectomy	Yes	No	4
Total Gastrectomy	Yes	No	4
Total Proctocolectomy	Yes	No	4
Transhiatal Esophagectomy	Yes	No	4
Tumor Pancreatectomy	Yes	No	4
Vagotomy/ Antrectomy	Yes	No	2
Wedge Resection of Liver	Yes	No	4
Wedge Resection of Lung	Yes	No	4
Whipple's Procedure	Yes	No	4
Amputation of Limb	Yes	No	0
Amputations (Other)	Yes	No	0
Apronectomy	Yes	No	0
AV Fistula	Yes	No	0
Axillary Dissection	Yes	No	0
Bronchoscopy/ Mediastinoscopy	Yes	No	0

Cholecystectomy and Exploration CBD	Yes	No	0
Choleduojajunostomy	Yes	No	0
Closure Ileostomy/ Colostomy	Yes	No	0
Colostomy	Yes	No	0
Enteroenterostomy	Yes	No	0
Exc. Transanal Villous Adenoma	Yes	No	0
Exploratory Laparotomy	Yes	No	0
Gastroenterostomy	Yes	No	0
Insertion of Gastrostomy Tube	Yes	No	0
Laparoscopic Cholecystectomy	Yes	No	0
Lap; Lysis of Adhesions	Yes	No	0
Laparoscopy	Yes	No	0
Loop Ilieostomy	Yes	No	0
Lumpectomy	Yes	No	0
Mastectomy	Yes	No	0
Mini Thoracotomy	Yes	No	0

Modified Radical Mastectomy	Yes	No	0
Parotidectomy	Yes	No	0
Partial Gastrectomy Nissen Fundoplication	Yes	No	0
Partial Mastectomy	Yes	No	0
Repair of Incisional/Ventral Hernia	Yes	No	0
Repair of Inguinal/Umbilical	Yes	No	0
Reversal/ revision Resection	Yes	No	0
Small Bowel Resection	Yes	No	0
Superficial & Ilii femoral Node Dissection	Yes	No	0
Thyroidectomy	Yes	No	0
Traverse Colostomy	Yes	No	0

Appendix C- Head & Neck/ Oral Surgery

Head & Neck/ Oral Surgery			
Type of Procedure	Type and Screen Required?		Number of Units to Cross Match?
	Yes	No	
Commando Procedure	Yes	No	4
Laryngectomy	Yes	No	2
Neck Dissection	Yes	No	0
Thyroidectomy with Sternal Split	Yes	No	2
Tonsillectomy/Adenoidectomy	Yes	No	0
Branchial Cleft Cyst/ Sinus	Yes	No	0
Bronchoscopy	Yes	No	0
Cochlear Implant	Yes	No	0
Excision of Vocal Cord Nodule	Yes	No	0
Excision Submandibular Gland	Yes	No	0
Excision Thyroglossal	Yes	No	0
External Septorhinoplasty	Yes	No	0

Glossectomy Partial Glossectomy	Yes	No	0
Hemithyroidectomy	Yes	No	0
Mastoidectomy	Yes	No	0
Maxillectomy	Yes	No	0
Open Reduction Nasal Fracture	Yes	No	0
Oral Surgery	Yes	No	0
Ossiculoplasty	Yes	No	0
Osteoplastic Flap	Yes	No	0
Osteotomy	Yes	No	0
Parathyroidectomy	Yes	No	0
Septorhinoplasty	Yes	No	0
Sinus Surgery	Yes	No	0
Stapedectomy	Yes	No	0
Thyroidectomy with Sternal Split	Yes	No	0
Tympanomastoidectomy	Yes	No	0
Uvulopalatopharyngoplasty	Yes	No	0

Appendix D- Neurosurgery

Neurosurgery			
Type of Procedure	Type and Screen Required?		Number of Units to Cross Match?
	Yes	No	
Anteriovenous Malformation	Yes	No	2
Craniotomy for Cerebral Aneurysm	Yes	No	2
Other intracranial Procedures	Yes	No	0
Spinal Operations (Spine Tumor, Posterior Cervical Spine Fusion, Spine Incision and Drainage)	Yes	No	2
Spinal Hardware Removal/Biopsy	Yes	No	0
Extracranial	Yes	No	0
CSF/Shunt Procedure	Yes	No	0

Appendix E- Orthopedics

Orthopedics			
Type of Procedure	Type and Screen Required?		Number of Units to Cross Match?
	Yes	No	
AO Hip Pinning	Yes	No	2
C-Spine Discectomy with Fusion	Yes	No	2
Fractured Pelvis	Yes	No	2
IM Nailing Femur	Yes	No	2
Intertrochanteric Fracture DHS	Yes	No	2
Laminectomy with Fusion	Yes	No	2
Moores Arthroplasty	Yes	No	2
Open Reduction femoral Fracture	Yes	No	2
ORIF Humerus	Yes	No	2
Revision Total Hip	Yes	No	2
Shoulder Arthroplasty	Yes	No	0

Spinal (Fusion in situ, Fusion XIA, Instrumental, Stenosis)	Yes	No	2
Thompson Hip/ End conversion	Yes	No	2
TK Revision and TH Revision	Yes	No	2
Total Hip Replacement	Yes	No	3
Total Knee Replacement	Yes	No	0
Arthroplasty (Other)	Yes	No	0
Above/ Below Knee Amputation	Yes	No	2
Acromioplasty/ Rotator Cuff Repair	Yes	No	0
Anterior Shoulder Repair	Yes	No	0
Disarticulation	Yes	No	0
Discectomy	Yes	No	0
IM Nailing Tibia	Yes	No	0
Laminectomy	Yes	No	0
Neer's Shoulder Procedure	Yes	No	0
ORIF Hip	Yes	No	0

Upper/lower extremity arthroscopy	Yes	No	0
Closed: Shoulder, Tibial/Fibular	Yes	No	0
Open: Humerus, Shoulder, Knee	Yes	No	0
Fasciotomy	Yes	No	0
Wrist Fusion with Graft	Yes	No	0

Appendix F- Urology

Urology			
Type of Procedure	Type and Screen Required?		Number of Units to Cross Match?
	Yes	No	
Nephrectomy	Yes	No	2
Nephrolithotomy	Yes	No	2
Pereyra-Raz Procedure (Bladder- Neck Suspension)	Yes	No	2
Pubovaginal Sling	Yes	No	2
Pyelolithotomy	Yes	No	2
Radical Cystectomy	Yes	No	2
Radical Nephrectomy	Yes	No	2
Radical Prostatectomy	Yes	No	2
SP. RP, and RP Prostatectomy	Yes	No	2
Bladder Neck Suspension	Yes	No	0
Cystolithotomy	Yes	No	0
Epididymectomy	Yes	No	0

Excision Cyst from Kidney and Partial Nephrectomy	Yes	No	0
Exploration of Ureter	Yes	No	0
L Node Dissection; L Nephroureterectomy with Cuff of Bladder	Yes	No	0
Pelvic Lymph Node Dissection	Yes	No	0
Percutaneous procedures	Yes	No	0
Pyeloplasty	Yes	No	0
Reimplantation Ureter	Yes	No	0
SPARC Sling	Yes	No	0
Transurethral Resection Bladder Neck	Yes	No	0
Transurethral Resection Bladder Tumor (TURBT)	Yes	No	0
Transurethral Resection Prostate (TURP)	Yes	No	0
Ureterolithotomy	Yes	No	0
Cysto/ureter/urethra	Yes	No	0

Appendix G- Vascular Surgery

Vascular Surgery			
Type of Procedure	Type and Screen Required?		Number of Units to Cross Match?
	Yes	No	
Aortic Stents	Yes	No	0
Axillary Bifemoral Graft	Yes	No	0
Axillary/ Femoral Graft	Yes	No	0
Carotid Endarterectomy	Yes	No	0
Femoral Crossover Bypass	Yes	No	0
Femoral/ Popliteal Graft	Yes	No	0
PTFE Graft/A-V Fistula/ AV Access	Yes	No	0
Subclavian/ Axillary Graft	Yes	No	0
Subclavian Carotid Graft	Yes	No	0
Varicose Veins	Yes	No	0
Abdominal Aneurysm (Elective)	Yes	No	4
	Yes	No	4

Abdominal Aneurysm (Emergency)			6 RBC Units
Abdominal Aortic Aneurysm	Yes	No	6
Aortic Grafts	Yes	No	2
Aortobifemoral Graft	Yes	No	4
Aortofemoral Bypass Graft	Yes	No	4
Aortoiliac Bypass Graft	Yes	No	4
Aorto-Popliteal Bypass Graft	Yes	No	4
Axillobifemeral Bypass Graft	Yes	No	4
Aortic Stents	Yes	No	0
Axillary Bifemoral Graft	Yes	No	0
Axillary/ Femoral Graft	Yes	No	0
Carotid Endarterectomy	Yes	No	0
Femoral Crossover Bypass	Yes	No	0
Femoral/ Popliteal Graft	Yes	No	0
PTFE Graft/A-V Fistula/ AV Access	Yes	No	0
Subclavian/ Axillary Graft	Yes	No	0
Subclavian Carotid Graft	Yes	No	0

Varicose Veins	Yes	No	0
Balloon Angioplasty	Yes	No	0
Cardiovascular Surgery	Yes	No	4
Coronary Artery Bypass Graft	Yes	No	4
Elective Aneurysm Repair	Yes	No	6
Embolectomy/ Endarterectomy/ Thrombectomy	Yes	No	2
Femoral Distal Reconstruction	Yes	No	2
Femoral- Popliteal Bypass Graft	Yes	No	2
Valves	Yes	No	4

References

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