



Guidelines for Requesting Type and Screen Testing for Elective Surgical Adult Patients within the WRHA Surgery Program

BACKGROUND

Request for preoperative blood testing, specifically Type and Screen (T&S) is often done without consistent criteria according to risk and is often not required. T&S is required in order to determine blood group type so that type specific blood can be administered if needed. It also determines the presence of antibodies which can delay crossmatching of blood and increase risk of alloimmunization or transfusion reaction.

If a blood transfusion is not required urgently, then this testing is of no value and is associated with unnecessary costs and workload. The WRHA Surgery Program is committed to ensuring appropriate allocation of resources and relies on evidenced based criteria to inform clinical decision making. This guideline aims to provide rationale for limiting the ordering of pre-operative T&S in the elective surgical patient when risk of transfusion is low.

During one month 211 samples for T&S were collected in the Preoperative Assessment Clinic (PAC) setting at HSC. Of those, 17 patients had transfusion during their hospital stay. It is possible that these were not intraoperative or even day of surgery.

From January to May 2017 HSC Diagnostic Services of Manitoba (DSM) processed 615 samples for T&S. Of those samples, only 34 red cell units were issued.

1.0 PRACTICE OUTCOMES

- 1.1 To provide standardized, evidenced based clinical practice guideline for ordering pre-operative Type and Screen (T&S) for elective surgical patients in the WRHA.
- 1.2 To provide specific criteria for when an order for T&S is required.

- 1.3 To decrease unnecessary testing and the related patient visits and travel in the elective surgical patients.
- 1.4 To improve patient flow within the Surgery Program by decreasing wait time for T&S results prior to procedures.
- 1.5 To support WRHA Pre-operative Assessment Clinics by providing evidence based criteria for informed decision making.

2.0 **DEFINITIONS:**

- 2.1 **ABO Compatibility:** All blood and blood components should be ABO compatible except in an emergency when non-ABO specific products can be substituted. Apart from the A and B antigens on red blood cells, there are many more but less common antibodies that can develop as a result of transfusion or pregnancy. Testing of a patient specimen to determine the presence of ABO and RH type and screening for the presence of atypical red cell antibodies in the plasma is known as Type & Screen (T&S). The presence of these antibodies makes crossmatch more difficult.
- 2.2 **Alloimmunization:** An immune response to foreign antigens after exposure to genetically different cells or tissue. Alloimmunization can be a complication of receiving incompatible blood.
- 2.3 **Antigen:** Any various substances including toxins, bacteria, foreign blood cells, and the cells of transplanted organs, that when introduced into the body stimulates the production of antibodies. Any antigen that is 'foreign' to our immune system is destroyed by an antibody.
- 2.4 **Antibody:** A protein produced in the blood or tissues in response to a specific antigen, as a bacterium or a toxin that destroys or weakens bacteria and neutralized organic poisons, thus forming the basis of immunity.
- 2.5 **Anemia:** Is defined as a hemoglobin level of less than 120 g/L in non-pregnant females and less than 130 g/L in males. Anemia is related to symptoms such as fatigue and lowered exercise tolerability.
- 2.6 **Crossmatch:** Is a testing method used to ensure compatibility between donor and recipient of blood. It is required before a blood transfusion to determine if the donor's blood is compatible with the blood of an intended recipient.



- 2.7 Crossmatch Transfusion Ratio: The ratio of units of red blood cells (RBC) that are crossmatched in the hospital blood bank for potential transfusion during a surgical procedure to number of units transfused.
- 2.8 Guidelines: Address practice related issues; assist care providers to make safe decisions regarding Best Practice. Guidelines offer some flexibility and are suggested to be the most effective and efficient way of attaining safe practice. These are suggestions but may not be absolute requirements.
- 2.9 In date: Refers to expiry date of blood components. Opposite of out date. A T&S will have a valid in date for 72 hours. In the PAC setting, T&S remains valid for 21 days.
- 2.10 Maximum Surgical Blood Ordering Schedule: (MSBOS) A list of common surgical procedures that define the number of units of blood to be crossmatched prior to surgery.
- 2.11 Staged Surgeries: Are procedures that are planned to occur within 3-6 months apart. This increases the risk of transfusion.
- 2.12 Traceline: Is the software that Canadian Blood Services and Diagnostic Services of Manitoba use to track blood and blood products from donation through distribution, transfusion and follow up.
- 2.14 Type and Screen (T&S): Testing of patient specimen to determine the patient's ABO and Rh type and screening for the presence of atypical red cell antibodies in the plasma. If a clinical need arises for blood products, the in date specimen can be cross matched later, when/if required.

3.0 GUIDING PRINCIPLES

Clinical practice guidelines are not designed to replace physician clinical judgment in deciding upon appropriate medical interventions for their patients, nor do they compromise physician's right and obligations to practice medicine with diligence in determining the appropriate medical care for his or her patient.

The need for T&S should be evaluated based on the following considerations.

- 3.1 Uncrossmatched blood is safe to give in emergency situations.
- 3.2 There is no shortage of emergency blood.

- 3.3 Turnaround time for T&S is usually within 90 minutes. Transfusions can often be delayed for a number of hours in stable patients.
- 3.4 Alloimmunization (those that have antibodies and would have prolonged testing requirements) is present in about 1-3 % of the local population.
- 3.5 The decision to order a T&S for elective surgical patients should be guided by the clinical history, comorbidities, and physical examination findings and estimated blood loss.
- 3.6 Transfusion risk should be the primary factor in the consideration of pre-operative T&S.

4.0 **STANDARDIZED CRITERIA FOR ORDERING T&S.**

Best practice includes having available crossmatched blood for elective surgical patients when needed. A thorough assessment of the patients risk for blood transfusion should preclude each decision regarding the request for T&S. In elective surgical adult patients a T&S should be considered if one or more of the following are present. Blood Management Service may be consulted for anemia management.

1. anemia - male less than 130g/L, female less than 120g/L
2. low body weight <60kg
3. estimated procedural blood loss (EBL) >500ml
4. previously diagnosed difficult cross-match; rare blood types; or multiple antibodies
5. staged procedure or multiple surgeries
6. known bleeding disorder or family history of bleeding disorders

T&S should not be requested in surgeries when the risk of transfusion is low. For surgery with >30% risk of transfusion, order T&S.

The following surgeries should have a transfusion rate of < 10% and do not require a routine T&S:

- appendectomy
- transurethral resection of prostate
- hernia repair
- single knee replacement
- primary total hip replacement
- laparoscopic cholecystectomy
- isolated laminectomy
- upper limb surgery
- vaginal hysterectomy



5.0 REFERENCES:

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