Choosing Wisely Canada™
In partnership with the Canadian Medical Association

CSTM SCMT
Canadian Society for Transfusion Medicine
Société Canadienne de Médecine Transfusionnelle

Ten Things Physicians and Patients Should Question

1 Don't transfuse blood if other non-transfusion therapies or observation would be just as effective.

Blood transfusion should not be given if other safer non-transfusion alternatives are available. For example, patients with iron deficiency without hemodynamic instability should be given iron therapy.

2 Don't transfuse more than one Red cell unit at a time when transfusion is required in stable, non-bleeding patients.

Indications for red blood transfusion depend on clinical assessment and the cause of the anemia. In a stable, non-bleeding patient, often a single unit of blood is adequate to relieve patient symptoms or to raise the hemoglobin to an acceptable level. Transfusions are associated with increased morbidity and mortality in high-risk hospitalized inpatients. Transfusion decisions should be influenced by symptoms and hemoglobin concentration. Single unit red cell transfusions should be the standard for non-bleeding, hospitalized patients. Additional units should only be prescribed after re-assessment of the patient and their hemoglobin value.

3 Don't transfuse plasma to correct a mildly elevated (<1.8) international normalized ratio (INR) or activated partial thromboplastin time (aPTT) before a procedure.

A mildly elevated INR is not predictive of an increased risk of bleeding. Furthermore, transfusion of plasma has not been demonstrated to significantly change the INR value when the INR was only minimally elevated (<1.8).

4 Don't routinely transfuse platelets for patients with chemotherapy-induced thrombocytopenia if the platelet count is greater than 10 X 109/L in the absence of bleeding.

A platelet count of 10 X 109/L or greater usually provides adequate hemostasis. Platelet transfusions are associated with adverse events and risks. Considerations in the decision to transfuse platelets include the cause of the thrombocytopenia, comorbid conditions, symptoms of bleeding, risk factors for bleeding, and the need to perform an invasive procedure.

5 Don't routinely use plasma or prothrombin complex concentrates for non-emergent reversal of vitamin K antagonists.

Patients requiring non-emergent reversal of warfarin can often be treated with vitamin K or by discontinuing the warfarin therapy. Prothrombin complex concentrates should only be used for patients with serious bleeding or for those who need urgent surgery. Plasma should only be used in this setting if prothrombin complex concentrates are not available or are contraindicated.

6 Don't use immunoglobulin therapy for recurrent infections unless impaired antibody responses to vaccines are demonstrated.

Immunoglobulin (gammaglobulin) replacement does not improve outcomes unless there is impairment of antigen-specific IgG antibody responses to vaccine immunizations or natural infections. Isolated decreases in immunoglobulins (isotypes or subclasses), alone, do not indicate a need for immunoglobulin replacement therapy. Exceptions include genetically defined/suspected disorders. Measurement of IgG subclasses is not routinely useful in determining the need for immunoglobulin therapy. Selective IgA deficiency is not an indication for administration of immunoglobulin.

7 Don't order unnecessary pre-transfusion testing (type and screen) for all pre-operative patients.

Pre-operative transfusion testing is not necessary for the vast majority of surgical patients (e.g., appendectomy, cholecystectomy, hysterectomy and hernia repair) as those patients usually do not require transfusion. Ordering pre-transfusion testing for patients who will likely not require transfusion will lead to unnecessary blood drawn from a patient and unnecessary testing performed. It may also lead to unnecessary delay in the surgical procedure waiting for the results. To guide you whether pre-transfusion testing is required for a certain surgical procedure, your hospital may have a maximum surgical blood ordering schedule or specific testing guidelines based on current surgical practices.

8 Don't routinely order perioperative autologous and directed blood collection.

There is no role for routine perioperative autologous donation or directed donation except for selected patients (for example, patients with rare red blood cell antigen types). Medical evidence does not support the concept that autologous (blood donated by one's self) or directed blood (blood donated by a friend/family member) is safer than allogeneic blood. In fact, there is concern that the risks of directed donation may be greater (higher rates of positive test results for infectious diseases). Autologous transfusion has risks of bacterial contamination and clerical errors (wrong unit/patient transfused). As well, autologous blood donation before surgery can contribute to perioperative anemia and a greater need for transfusion.

9 Don't transfuse O negative blood except to O negative patients and in emergencies for female patients of child-bearing potential of unknown blood group.

Males and females without childbearing potential can receive O Rh-positive red cells. O-negative red cell units are in chronic short supply, in some part due to over utilization for patients who are not O-negative. To ensure O-negative red cells are available for patients who truly need them, their use should be restricted to: (1) patients who are O-Rh-negative; (2) patients with unknown blood group requiring emergent transfusion who are female and of child-bearing age. Type specific red cells should be administered as soon as possible in all emergency situations.

10 Don't transfuse group AB plasma to non-group AB patients unless in emergency situations where the ABO group is unknown.

The demand for AB plasma has increased. Group AB individuals comprise only 3% of Canadian blood donors. Those donors who are group AB are universal donors for plasma, thus are the most in-demand type for plasma transfusion. Type-specific plasma should be issued as soon as possible in emergency situations to preserve the AB plasma inventory for those patients where the blood group is unknown.

How the list was created

The Canadian Society for Transfusion Medicine (CSTM) compiled its *Choosing Wisely Canada* list of recommendations by putting out a call to its membership for suggested list items. Members were asked to provide suggestions, rationale and references. Once all suggestions for list items had been received and the deadline for submissions had passed, the CSTM board voted on the accumulated list and ranked the items according to our assessment of what was most important. We met by conference call to discuss the outcome of the voting and worked together to refine the wording and the order of the list items and to find additional references as required.

Sources

1

Carson JL, Grossman BJ, Kleinman S, et al. Red blood cell transfusion: a clinical practice guideline from the AABB*. Ann. Intern. Med. Jul 3 2012;157(1):49-58.

Retter A, Wyncoll D, Pearse R, et al. Guidelines on the management of anaemia and red cell transfusion in adult critically ill patients. Br. J. Haematol. Feb 2013;160(4):445-464.

Szczepiorkowski ZM, Dunbar NM. Transfusion guidelines: when to transfuse. Hematology Am. Soc. Hematol. Educ. Program. 2013;2013:638-644.

2

Bracey AW, Radovancevic R, Riggs SA, et al. Lowering the hemoglobin threshold for transfusion in coronary artery bypass procedures: effect on patient outcome. Transfusion (Paris). Oct 1999;39(10):1070-1077.

Carson JL, Carless PA, Hebert PC. Transfusion thresholds and other strategies for guiding allogeneic red blood cell transfusion. Cochrane Database Syst Rev. 2012;4:Cd002042.

Carson JL, Grossman BJ, Kleinman S, et al. Red blood cell transfusion: a clinical practice guideline from the AABB*. Ann. Intern. Med. Jul 3 2012;157(1):49-58.

Hebert PC, Wells G, Blajchman MA, et al. A multicenter, randomized, controlled clinical trial of transfusion requirements in critical care. Transfusion Requirements in Critical Care Investigators, Canadian Critical Care Trials Group. N. Engl. J. Med. Feb 11 1999;340(6):409-417.

Marik PE, Corwin HL. Efficacy of red blood cell transfusion in the critically ill: a systematic review of the literature. Crit. Care Med. Sep 2008;36(9):2667-2674.

Retter A, Wyncoll D, Pearse R, et al. Guidelines on the management of anaemia and red cell transfusion in adult critically ill patients. Br. J. Haematol. Feb 2013;160(4):445-464.

Szczepiorkowski ZM, Dunbar NM. Transfusion guidelines: when to transfuse. Hematology Am. Soc. Hematol. Educ. Program. 2013;2013:638-644.

Villanueva C, Colomo A, Bosch A, et al. Transfusion strategies for acute upper gastrointestinal bleeding. N. Engl. J. Med. Jan 3 2013;368(1):11-21.

3

Abdel-Wahab OI, Healy B, Dzik WH. Effect of fresh-frozen plasma transfusion on prothrombin time and bleeding in patients with mild coagulation abnormalities. Transfusion (Paris). Aug 2006;46(8):1279-1285.

Estcourt L, Stanworth S, Doree C, et al. Prophylactic platelet transfusion for prevention of bleeding in patients with haematological disorders after chemotherapy and stem cell transplantation. Cochrane Database Syst Rev. 2012;5:Cd004269.

Szczepiorkowski ZM, Dunbar NM. Transfusion guidelines: when to transfuse. Hematology Am. Soc. Hematol. Educ. Program. 2013;2013:638-644.

4

Estcourt L, Stanworth S, Doree C, et al. Prophylactic platelet transfusion for prevention of bleeding in patients with haematological disorders after chemotherapy and stem cell transplantation. Cochrane Database Syst Rev. 2012;5:Cd004269.

Guidelines for the use of platelet transfusions. Br. J. Haematol. Jul 2003;122(1):10-23.

Slichter SJ, Kaufman RM, Assmann SF, et al. Dose of prophylactic platelet transfusions and prevention of hemorrhage. N. Engl. J. Med. Feb 18 2010;362(7):600-613.

Szczepiorkowski ZM, Dunbar NM. Transfusion guidelines: when to transfuse. Hematology Am. Soc. Hematol. Educ. Program. 2013;2013:638-644

5

Holbrook A, Schulman S, Witt DM et al. Evidence-Based Management of Anticoagulant Therapy: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest. 2012; 141(2_suppl):e152S-e184S.

Keeling D, Baglin T, Tait C et al. for the British Committee for Standards in Haematology. Guidelines on oral anticoagulation with warfarin - fourth edition. Br. J. Haematol. 2011; 154:311-324.

National Advisory Committee on Blood and Blood Products (NAC). [Internet]. [cited 2014 May 16]. NAC PCC Working Group. Recommendations for Use of Prothrombin Complex Concentrates in Canada. Available from: http://www.nacblood.ca/resources/guidelines/PCC.html

Scottish Intercollegiate Guidelines Network (SIGN). Antithrombotics: indications and management. Edinburgh (UK): 2012. 75 p. Report No. 129.

6

Ballow, M. "Immunoglobulin Therapy: Replacement and Immunomodulation" in Clinical Immunology: Principles and Practice. 3rd edition. Rich RR, editor. St. Louis (MO): Mosby/Elsevier; 2008. 1265-80 pp.

Bonilla FA, Bernstein IL, Khan DA, et al. Practice parameter for the diagnosis and management of primary immunodeficiency. Ann Allergy Asthma Immunol. 2005 May;94(5 Suppl 1):S1-63.

Orange JS, Hossny EM, Weiler CR, et al. Use of intravenous immunoglobulin in human disease: a review of evidence by members of the Primary Immunodeficiency Committee of the American Academy of Allergy, Asthma and Immunology. J Allergy Clin Immunol. 2006 Apr;117(4 Suppl):S525-53.

Stiehm ER, Orange JS, Ballow M, et al. Therapeutic use of immunoglobulins. Adv Pediatr. 2010;57(1):185-218.

7

Guidelines for implementation of a maximum surgical blood order schedule. The British Committee for Standards in Haematology Blood Transfusion Task Force. Clin Lab Haematol. 1990;12(3):321-7.

Newfoundland and Labrador Provincial Blood Coordinating Office. Guidelines for Maximum Surgical Blood Ordering Schedule, Version 1.0 [Internet]. 2012 Dec 28 [cited 2015 Apr 28]. Available from: http://www.health.gov.nl.ca/health/bloodservices/pdf/Maximum_Surgical_Blood_Ordering_Schedule_NL2012-044_Ver1.pdf.

Ontario Regional Blood Coordinating Network (ORBCoN). Maximum Surgical Blood Order Schedule (MSBOS): Development Tool, Version 1 [Internet]. 2014 Dec 5 [cited 2015 Apr 28]. Available from: http://transfusionontario.org/en/cmdownloads/categories/inventory-management-toolkits/.

University of Michigan. Providing Blood Components for Perioperative Patients [Internet]. 2010 Jan 4 [cited 2015 Apr 28]. Available from: http://www.pathology.med.umich.edu/bloodbank/manual/bbch_2/.

8

Engelbrecht S, Wood EM, Cole-Sinclair MF. Clinical transfusion practice update: haemovigilance, complications, patient blood management and national standards. Med J Aust. 2013 Sep 16;199(6):397-401.

King K, Gottschall JL, editors. Blood Transfusion Therapy: A Physician's Handbook. 10th edition. Bethesda (MD): AABB; 2011.

Lesley P, Clarke G. "Preoperative Autologous Donation" in Clinical Guide to Transfusion [Internet]. Clarke G, Charge S, editors. Canadian Blood Services; 2013 [cited 2015 Apr 28]. Accessed from: http://www.transfusionmedicine.ca/sites/transfusionmedicine/files/articles/CGTTChapter%2016_June2013_FINAL.pdf.

Wales PW, Lau W, Kim PC. Directed blood donation in pediatric general surgery: Is it worth it? J Pediatr Surg. 2001 May;36(5):722-5.

9

British Committee for Standards in Haematology, Stainsby D, MacLennan S, Thomas D, Isaac J, Hamilton PJ. Guidelines on the management of massive blood loss. Br J Haematol. 2006 Dec;135(5):634-41.

The Chief Medical Officer's National Blood Transfusion Committee (UK). The appropriate use of group O RhD negative red cells. Manchester (UK): National Health Service; 2008. 4 p.

United Blood Services. A New Standard of Transfusion Care: Appropriate use of O-negative red blood cells [Internet]. [Cited 2015 Apr 28]. Available from: http://hospitals.unitedbloodservices.org/pdfs/New-Standard-Transfusion-Care.pdf.

10

Canadian Blood Services. Donating Plasma, What You Need to Know About Donating Plasma [Internet]. 2015 [cite 2015 May 5]. Available from: https://blood.ca/en/plasma.

Canadian Blood Services. The Facts About Whole Blood [Internet]. 2015 [cited 2015 My 5]. Available from: https://blood.ca/en/blood/we-need-your-type.

Petraszko T. Transfusion Related Acute Lung Injury (TRALI) [Internet]. [Cited 2015 May 5]. Available from: http://www.transfusionmedicine.ca/articles/transfusion-related-acute-lung-injury-trali.

Yazer M, Eder AF, Land KJ. How we manage AB plasma inventory in the blood center and transfusion service. Transfusion. 2013 Aug;53(8):1627-33.

About Choosing Wisely Canada

Choosing Wisely Canada is a campaign to help physicians and patients engage in conversations about unnecessary tests, treatments and procedures, and to help physicians and patients make smart and effective choices to ensure high-quality care.

For more information on *Choosing Wisely Canada* or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwiselycanada.org. Join the conversation on Twitter @ChooseWiselyCA.

About The Canadian Society for Transfusion Medicine

The Canadian Society for Transfusion Medicine (CSTM) is a proud partner of the *Choosing Wisely Canada* campaign. The CSTM is a multidisciplinary society which promotes and supports best practice in Transfusion Medicine in Canada through education, communication and partnerships.