Prophylactic Platelet Transfusions Not Recommended For Autologous Stem-Cell Transplant Patients

Platelet transfusions play an important role in the prevention and treatment of bleeding in patients with thrombocytopenia. Prophylactic platelet transfusions are usually given at platelet counts <10,000/μL in stable, non-bleeding patients, and at <50,000/μL in patients who are undergoing major invasive procedures or surgery.

Platelet transfusions can be associated with potential adverse effects such as febrile and allergic reactions, transfusion related acute lung injury, bacterial contamination, sepsis, etc. In addition, platelets are expensive blood components. Therefore, the overuse of platelet transfusions should be avoided by following evidence-based transfusion practices and identifying patients who are most likely to benefit.


In the updated guidelines, prophylactic platelet transfusions are not recommended by ASCO in adult patients undergoing autologous stem-cell transplantation. Platelet transfusions should only be given at the first sign of bleeding for these patients instead of prophylactically based on data from randomized controlled trials. (Type of recommendation: evidence based; Evidence quality: high; Strength of recommendation: strong).

ASCO still recommends prophylactic platelet transfusion for all patients undergoing allogeneic stem-cell transplantation and pediatric patients undergoing autologous hematopoietic stem-cell transplants.

Further recommendations include a threshold of <10,000/μL for prophylactic platelet transfusions in patients with solid organ tumors, hematologic malignancies and in the setting of hematopoietic stem-cell transplantation.

Conservative platelet transfusion approach was recommended for patients with chronic, stable, severe thrombocytopenia, such as individuals with myelodysplasia or aplastic anemia, who are not receiving active treatment. Prophylactic transfusions were not recommended by ASCO and platelet transfusions should be reserved only for episodes of hemorrhage or during times of active treatment.

Threshold of 40,000-50,000/μL platelet count for performing major invasive procedures in the absence of associated coagulation abnormalities and 20,000/μL for minor procedures such as bone marrow aspirations and biopsies, and insertion or removal of central venous catheters were recommended. Approaches to prevent Rh alloimmunization, and monitoring for refractoriness to platelet transfusions in cancer patients were also provided.

SLHS is committed to providing evidence based quality patient care and utilizes clinical guidelines like these to support patient blood management efforts.

Transfusion Reaction Workup

Transfusion of blood components can be lifesaving and play a critical role in the management of many patient populations. However, transfusions are associated with infectious and non-infectious risks. Donor screening and infectious disease testing of blood components has significantly reduced the risk of transfusion-transmitted infections. However, non-
infectious transfusion reactions are still quite common.

Most transfusion reactions are benign (allergic and febrile) and do not require any change in transfusion practices. However, some reactions (hemolytic, anaphylactic, TRALI, TACO) can be severe and life threatening, requiring additional testing and changes in transfusion practices. Clinical signs/symptoms and laboratory testing can help in identifying the type of transfusion reaction.

Whenever a transfusion reaction is suspected, blood transfusion should be stopped immediately and supportive care provided as indicated. The blood component bag, IV set and a post-transfusion blood specimen should be sent to blood bank for transfusion reaction workup.

The workup performed in blood bank is designed to rule-in or rule-out acute hemolytic reaction, which may be immediately life threatening and is identified by testing performed in blood bank. Appropriate blood products can then be provided if the patient requires additional transfusions. Other severe reactions (TRALI, TACO, etc.) rely more on clinical diagnosis and/or diagnosis of exclusion.

Transfusion reaction workup in blood bank includes:
- Review of sign/symptoms and vital sign changes
- Clerical check for labelling errors
- Visual inspection of blood component
- Confirming patients’ ABO type on record
- Confirming the issued product was ABO compatible
- Visual inspection for hemolysis in post-transfusion specimen
- DAT on the post-transfusion specimen
- Review of laboratory tests (bilirubin, haptoglobin, LDH, etc.)

At SLHS, blood bank pathologists review all transfusion reactions reported to blood bank. Usually when workup is negative additional transfusion can be approved, when indicated. Further testing is sometimes needed and blood products are not released while workup is pending.

If a patient requires additional transfusions while the transfusion reaction workup is in progress, the ordering physician will need to sign an Emergency Blood Release Form (SYS-145). By doing so, he/she acknowledges that the urgency of the patients’ medical condition is sufficiently grave as to warrant the blood bank personnel to issue blood before completion of transfusion reaction investigation. Transfusion medicine pathologists are always available for consultation through all Saint Luke’s laboratories’ blood banks.

**Restrictive RBC Transfusions Safe for Cardiac Surgery**

Restrictive transfusion thresholds, such as Hb <7 g/dL and symptomatic anemia, have been found to be safe in most patient populations including critically ill patients. However, higher thresholds have usually been suggested for patients with cardiac diseases because of theoretical greater risk of anemia-induced tissue hypoxia or worse outcomes. The effect of a restrictive versus liberal RBC transfusion strategy on clinical outcomes in patients undergoing cardiac surgery remains unclear.

A recent multicenter, open-label, non-inferiority randomized trial published in The New England Journal of Medicine (N Engl J Med 2017;377:2133-44), compared a restrictive threshold (transfuse when hemoglobin <7.5 g/dL) to a liberal threshold for RBC transfusion (transfuse when hemoglobin <9.5 g/dL in operating room/ICU or <8.5 g/dL otherwise) among 5243 cardiac surgery patients.

The primary composite outcome was death from any cause, myocardial infarction, stroke, or new onset renal failure with dialysis by hospital discharge or by day 28, whichever came first. Secondary outcomes included red-cell transfusion and other clinical outcomes.

The primary outcome occurred in 11.4% of the patients in the restrictive-threshold group, as compared with 12.5% of those in the liberal-threshold group (absolute risk difference, −1.11% points; 95% CI, −2.93 to 0.72; odds ratio, 0.90; 95% CI, 0.76 to 1.07; P<0.001 for noninferiority). Mortality was also similar in both groups, 3.0% of patients died in the restrictive group compared to 3.6% in the liberal group (odds ratio, 0.85; 95% CI, 0.62 to 1.16). These findings suggest that a restrictive approach to transfusions for cardiac surgery patients is safe.

C. E. Essmyer, M.D. • S. Nanua, M.D., Ph.D. • G. Mathur, M.D., M.B.A.