



## Blood Shortages – How Can Hospitals Help?

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### Key Points

- The COVID-19 pandemic has worsened chronic issues with nationwide blood shortages.
- Blood donation should be encouraged and actively supported.
- Transfusion service laboratories should have standard operating procedures (SOPs) for management of blood component shortages.

**Introduction:** Blood centers have been faced with decreased blood donation levels throughout the ongoing COVID-19 pandemic. Chronic blood shortages have resulted from blood drive cancellations, blood center staffing shortages, and dramatic increases in no-show rates of scheduled blood donors due to COVID-19 infection, exposure, and social distancing recommendations. A critically low inventory level has potentially significant consequences for patient care. Blood collection establishments anticipate future challenges with the blood supply as the total number of donors presenting to donate has declined (7.1 percent decrease from 2017 to 2019 preceding the pandemic), particularly among the younger donor age groups.<sup>1</sup> Hospital blood banks, transfusion services, and clinicians play a critical role ensuring best management and utilization of the available blood supply. Hospitals can support blood availability by partnering with blood centers to increase blood donation through media support and hospital/community blood drives.

### Transfusion Practices for Good Stewardship of Blood Supply:

- Transfuse the minimum number of red blood cell (RBC) units needed to relieve symptoms.
  - Recommended threshold: Hemoglobin (Hb) <7 g/dL for stable non-cardiac, non-bleeding patients.<sup>2</sup>
  - Re-evaluate patient symptoms after each single unit transfusion.<sup>2</sup>
  - Re-check the patient's Hb if necessary, however frequent blood draws can contribute to anemia.
- Transfuse platelets according to current guidelines.
  - Prophylactic: if platelet count  $\leq 10,000/\mu\text{L}$ .<sup>3-5</sup>
  - Invasive procedures/surgery: base transfusion on platelet count, bleeding risk, procedure type.<sup>3-5</sup>
- Emergency release/massive transfusion protocol.
  - Reserve O-negative RBCs for females of childbearing potential with O-negative/unknown blood type and O-negative males with known anti-D.<sup>6</sup>
- Obtain sample for blood type as soon as possible to allow use of type-specific RBCs.<sup>7</sup>
- Consider use of Group A plasma not Group AB plasma for massively bleeding patients.<sup>8</sup>
- Transfuse any ABO-type cryoprecipitate to adult patients for fibrinogen replacement.<sup>9</sup>

### Transfusion Practice Adjustments during Blood Product Shortages:

- For platelets and RBCs:
  - Reinforce routine transfusion criteria and/or increase stringency of transfusion criteria.
  - Use prospective review by transfusion service medical or laboratory staff such as for:
    - Orders not meeting or very close to transfusion criteria.
    - Orders for >1 unit.
    - Routine orders (vs stat or massive transfusion protocol (MTP), bleeding vs stable non-bleeding patients).
    - Surgical cases with expected transfusion needs above a pre-determined threshold.
  - Consider maximum number of units for any single patient per day (consult with the bioethics committee for extreme cases such as transplants with reasonable expectation of high blood use or long-running MTP cases).
  - Consider splitting units (need supplies and validated processes) with medical director approval.
  - Consider service limitations such as for elective surgery and stable outpatients.

- For platelets:
  - Transfuse any ABO platelet to any ABO patient (with exceptions per site policy for transplant protocols and volume limits for incompatible plasma transfusion).
  - Use Rh-positive platelets for Rh-negative patients (with use of Rh immune globulin in specific patient groups per site policy).
- Work with transfusion committee, and potentially the bioethics committee, in development of blood shortage guidelines including consideration of degree of shortage, expected duration of shortage, use of alternate suppliers, time expected to restock, effect of other service limitations (such as pandemic).
- Document decisions in shortage policy/SOP.
  - Include communication plan for beginning, updates, and end of shortages.
  - Ensure policy awareness with leaders and clinicians.

### **Inventory Management during Severe Shortages:**

- Reevaluate stock levels.
  - Reduce based on what hospital transfuses on daily basis (daily “par” vs ideal “par”).
  - Blood centers may reduce orders depending on severity of shortage.
  - Communication between the blood center and the hospital blood bank is key to ensuring patient needs are met in case of unexpected heavy users or surgeries.
- Eliminate wastage/expirations.
  - Coordinate with the blood center to utilize short-dated RBCs and platelets.
  - Share/move blood products within a hospital system.

### **Blood Donation Support:**

- Work with the blood center to set up blood drives onsite and support community blood drives.
- Encourage patients’ families to donate or provide information on where to donate.
- Enlist media support by routinely including the impact of blood shortages on patient care when briefing the community.

**Conclusion:** Hospitals and blood centers are partners in optimizing and managing blood product availability. Hospitals have a critical role in promoting evidence-based best transfusion practices and optimizing blood bank inventory. The need to implement more restrictive transfusion practice during shortages should be supported and communicated from upper management to clinicians and hospital staff. With best practices in place for good stewardship and effective strategies to adjust transfusion practice and inventory management during shortages, hospitals ensure blood is available to support patients’ transfusion needs.

### **References:**

1. Mowla S, Sapiano MRP, Jones JM, *et al.* Supplemental findings of the 2019 national blood collection and utilization survey, *Transfusion*. 2021; 61: S11-S35.
2. Carson JL, Guyatt G, Heddle NM *et al.* Clinical Practice Guidelines from AABB. *JAMA* 2016; 316(19): 2025-2035.
3. Schiffer CA, Bohlke K, Delaney M *et al.* Platelet Transfusion for Patients with Cancer: American Society of Clinical Oncology Clinical Practice Guideline Update. *J Clin Oncol* 2018; 36(3): 283-299
4. Hess AS, Ramamoorthy J, Hess JR. Perioperative Platelet Transfusions. *Anesthesiology* 2021; 134:471-479.
5. Tibi P, McClure S, Huang J *et al.* STS/SCA/AmSECT/SABM Update to the Clinical Practice Guidelines on Patient Blood Management. *Ann Thorac Surg* 2021; 112(3): 981-1004.
6. Dunbar, NM *et al.* O-Product Transfusion, inventory management and utilization during shortage: The OPTIMUS Study. *Transfusion* 2018; 58(6): 1348-1355.
7. Callum JL, Yeh CH, Petrosoniak A *et al.* A Regional Massive Hemorrhage Protocol Developed Through a Model Delphi Technique. *CMAJ Open* 2019; 7(3):546-561.
8. Zielinski MD, Johnson PM, Jenkins D. Emergency Use of Prethawed Group A Plasma in Trauma Patients. *J Trauma Acute Care Surg* 2013; 74(1): 69-74.
9. Hadjesfandiari N, Levin E, Serrano K *et al.* Risk Analysis of Transfusion of Cryoprecipitate without Consideration of ABO Group. *Transfusion* 2021; 61 (1): 29-34.

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