

THE IMPORTANCE OF COLD STORAGE FOR PLATELETS

What Physicians Need to Know



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Proper storage of platelet products used for blood transfusion is important to prevent bacterial contamination that can lead to patient illness or death. While common practice was to store platelets at “room temperature” (20-24 degrees Celsius) to increase the lifespan in circulation after transfusion, recent regulatory changes as well as significant clinical research now support the shift to cold storage (1-6 C).

Disadvantages of “room temperature” storage for platelets are:

- Increased risk of bacterial growth;
- Regulatory requirement for either bacterial testing or pathogen reduction of the platelet component;
- The need for agitation of the product during storage;
- A short component shelf life (five to seven days); and
- Delayed activation of platelet function after transfusion.

Advantages of cold-stored platelets (CSPs) are:

- Improved inventory flexibility – Supply can be transferred more easily between facilities. CSPs can help increase the availability of platelets in smaller or rural hospitals that typically do not maintain platelet inventory.
- Increased shelf life and reduced waste during times of scarcity, such as [during the COVID-19 pandemic](#) – CSPs have been shown to have improved hemostatic efficacy up to 21 days post- collection.
- Reduced bacterial contamination risk – CSPs do not require bacterial testing if placed in 1-6 C conditions within four hours of collection (or 24 hours if pathogen-reduced).
- Improved platelet function – In vitro data show superior aggregation, viscoelastic properties, clot retraction, and occlusion time compared with room-temp platelets. CSPs have also been shown to form stronger clots through fibrin cross-linking from cold-induced plasma factor XIII binding to platelet surfaces.

What TMA Members Can Do

Although CSPs have greater hemostatic efficacy, they have shorter circulating lifespan once transfused into the patient. The below should be considered when deciding on the appropriate use of CSPs:

- For nonbleeding patients being transfused prophylactically, the TMA Subcommittee on Transfusion and Transplantation recommends continuing using room-temp platelets, prioritizing longer circulating half-life in this scenario.
- In any clinical scenario with significant hemorrhage (complex surgery, MTP, OB bleed), cold storage platelets may be preferable because of the increase in hemostatic efficacy.
- By integrating CSP into blood bank inventories, hospitals can increase platelet inventory, allowing for more flexibility in times of critical platelet shortages.

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