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Platelet Storage - Blood Bank

Document Type: Procedure

I. PURPOSE AND OBJECTIVE:

This document will provide policies relating to the storage and handling of platelets.

II. CLINICAL SIGNIFICANCE:

A. Platelets must be stored between 20^{o}C - 24^{o}C. Storage of platelets above 24°C may result in undesirable metabolic changes. Platelet storage below 20°C, even for brief periods, may cause irreversible declines in platelet function. In addition, agitation during storage is necessary to ensure optimal gas exchange and maintenance of pH. Plastics currently approved and commonly used for platelet unit storage permit adequate gas exchange to maintain pH of at least 6.2 at the end of the platelet's shelf life.

B. Platelets are stored in an incubator that maintains a temperature of 20^{o}C - 24^{o}C and continuously agitates the platelets and/or on an agitator that continuously agitates the product with manual temperature monitoring every four hours.

C. The policies in this document help ensure that platelets are maintained at these required conditions to maximize platelet function.

III. DEFINITIONS:

A. Open system: a system, the contents of which are exposed to air and outside elements during preparation and separation of components.

B. Closed system: a system, the contents of which are not exposed to air or outside elements during preparation and separation of components.

IV. POLICY:

A. Platelet Receipt

1. Platelets are processed into inventory as soon as possible after they are received.
2. The platelets are stored in the platelet incubator or agitator, preferably with the label facing down on the rack to expose as much of the surface area as possible to allow for proper air exchange.
3. Platelets are not stacked on top of each other.
4. All platelet products other than Psoralen treated platelets are irradiated at Beaumont Health (Dearborn or Royal Oak locations), if not already irradiated by the blood supplier.

B. Platelet Count

1. All platelet products provided by Versiti Blood will have a label to indicate the actual platelet yield. Platelet products determined to be low yield with counts between 2.6 x 10^{11} to 2.9 x 10^{11} will be marked as such and be eligible for transfusion.
2. Any platelet pheresis component from which an aliquot has been removed at Beaumont Health should have a remaining platelet count of at least 3 x 10^{11} in order to release the remainder of the component to inventory or to transfuse to another patient. Refer to Transfusion Medicine Policy, *Disposition of Components from which an Aliquot has been Removed* if applicable.

C. Platelet Bags / Expiration Dates

1. All platelets at Beaumont Health have a maximum 7-day expiration date.
2. When preparing a syringe or aliquot of platelets and when pooling double-bagged platelets, the expiration date is changed considering whether an open or closed system was used for preparation, as described throughout the Transfusion Medicine Policies.

D. Consultation with the Blood Bank Medical Director (MD) / Variances
In all cases where the technologist questions whether a platelet is suitable for transfusion a variance should be submitted and the Medical Director must be consulted before the platelets may be transfused. The technologist does not need to consult the MD if he or she determines that the platelets should be discarded, but a variance should be submitted. Refer to attachment; *Job Aid: Evaluation of Platelet Suitability for Transfusion based on Swirling, Temperature, and Time.*

E. Platelet Swirling
In some cases, the Blood Bank may have concerns that storage or transport conditions could result in irreversible declines in platelet function. The observation that a platelet is swirling is an indicator that an irreversible decline in platelet function has not occurred. Examination for swirling is accomplished by gently rotating or tapping a platelet bag in front of a light source. Functioning platelets have a discoid morphology, which allows them to align with flow and give the appearance of a wave or swirl.

Platelets shall be examined for swirling in the following situations:

1. Prior to issuing a platelet for transfusion.
2. If a platelet has been returned from issue status.
3. Prior to transferring a platelet to another facility.
4. Upon receipt of a platelet from an outside facility.
   Note: It may be necessary to let the platelets agitate on the platelet rotator for approximately 60 minutes for swirling to become evident; for example in situations where platelets that have not been agitating after they were issued or during extended transport. If it is necessary, let the platelets agitate for up to 60 minutes on the shelf of the platelet rotator that is labeled for this purpose.
5. Any platelet that is found not swirling should be placed into quarantine for secondary review and discarded after review if applicable.

F. Platelets Returned From Issue

1. All issued platelets are infused within 4 hours or returned immediately to the Blood Bank.
2. The temperature of all blood products shall be taken upon return from issue and documented on the *Record of Transfusion F-1565*. The temperature of platelets should be between 20^{o}C - 24^{o}C.
3. Any platelet that is returned more than 30 hours after it was issued shall be discarded.
4. Any platelet that is returned from issue with a temperature of 4°C or less shall be discarded.
5. A platelet must be checked for swirling upon return from issue, or if the technologist questions whether it is suitable for transfusion. Refer to the attachment; *Job Aid: Evaluation of Platelet Suitability for Transfusion based on Swirling, Temperature, and Time*.
    a. If the technologist determines that the platelet is suitable for transfusion:
        i. The canned message ASWRL can be added to the unit in the blood bank computer and the associated fields are completed. Refer to *Blood Bank CDM Adding a Unit Comment*
    b. If a platelet is not swirling (even after 60 minutes of agitation on the platelet rotator), then the platelet should be placed into quarantine for secondary review and discarded after review if applicable.
    c. If the Medical Director was consulted and determines that the platelet is suitable for transfusion:
        i. The canned message AMDOK can be added to the unit in the blood bank computer and the associated fields are completed. Refer to *Blood Bank CDM Adding a Unit Comment*.
    d. If the technologist or Medical Director determines that the platelet is NOT suitable for transfusion:

i. Discard the platelet (physically and in the Blood Bank computer).

ii. Document an internal variance.

V. REFERENCES:

1. AABB *Standards for Blood Banks and Transfusion Services*, Current Edition
2. Brecher, M. E. and Hay, S. N. (2004), Platelet swirling. Transfusion, 44: 627. doi: 10.1111/j.1537-2995.2004.03428.x
3. Holme, S., Sawyer, S., Heaton, A. and Sweeney, J. D. (1997), Studies on platelets exposed to or stored at temperatures below 20°C or above 24°C. Transfusion, 37: 5–11. doi: 10.1046/j.1537-2995.1997.37197176944.x
4. College of American Pathologists Transfusion Medicine , Current Edition

Attachments

Blood Bank - PltSwirlJobAid 01082024

Approval Signatures

Step Description	Approver	Date
	Ann Marie Blenc: System Med Dir, Hematopath	2/16/2024
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	Jeremy Powers: Chief, Pathology	1/26/2024
	Vaishali Pansare: Chief, Pathology	1/25/2024
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Applicability

Dearborn, Farmington Hills, Grosse Pointe, Royal Oak, Taylor, Trenton, Troy, Wayne