Platelet-Rich Plasma (PRP): Standard Operating Procedure (SOP)

Document Control

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Approval

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1. Purpose

To ensure proper preparation, storage, handling, and appropriate laboratory use of Platelet-Rich Plasma (PRP) for transfusion.

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2. Scope

This SOP applies to all laboratory personnel involved in:

- Preparation of PRP from whole blood
- Storage and monitoring
- Issue and documentation

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3. Responsibility

- **Pathologist / Transfusion Specialist:** Overall supervision and approval
- **Medical Laboratory Technologist:** Preparation, validation, and release
- **Laboratory Technician:** Processing, storage, labeling, and documentation

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4. Definitions

- **Platelet-Rich Plasma (PRP):** A whole-blood-derived platelet component prepared by the PRP method (light centrifugation of whole blood), used as the available platelet product in this laboratory

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5. Procedure

5.1 Preparation of PRP

- PRP is prepared from fresh whole blood **within 6–8 hours of collection**
- Use **light (soft) centrifugation** [light spin using 2000 × g for 3 minutes (plus deceleration time) with a temperature setting of 20° C] to separate PRP from red cells
    - To calculate RPM for the centrifuge, the following formula is used:
    - **$RCF = 28.38 \times R \times (RPM/1000)^2$** or **$RPM = \sqrt{[RCF/(28.38 \times R)]} \times 1000$**

    - [RCF=relative centrifugal force (× g); R=radius in inches; RPM=revolutions per minute]
- Transfer the supernatant plasma (PRP) into a satellite bag using sterile technique
- Avoid contamination and excessive agitation during preparation

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5.2 Storage of PRP

- Store PRP at **20–24°C**
- Maintain continuous **gentle agitation** to preserve platelet function
- **Do NOT refrigerate** (cold temperature reduces platelet viability)
- Shelf life:
    - Up to **72 hours** for PRP prepared by the whole-blood PRP method, unless a validated and approved system allows extended storage
- Monitor storage temperature regularly
- Units must be properly labeled (donor ID, date/time, expiry)

5.3 Inspection Before Issue

Each PRP unit must be checked for:

- Swirling (indicator of viable platelets)
- Absence of clots
- No discoloration or contamination
- Intact bag and labeling

Units failing inspection must be discarded.

5.4 Clinical Indications

PRP transfusion is indicated for:

- Thrombocytopenia with bleeding
- Platelet count <10 × 10^9/L (prophylactic transfusion, except in ITP/TTP/HUS)
- Platelet count <50 × 10^9/L with active bleeding or invasive procedures
- Platelet count <70 × 10^9/L for surgery with anticipated major blood loss
- Platelet count <100 × 10^9/L for critical-site surgery (e.g., brain, eye)
- Platelet dysfunction with bleeding

5.5 Not Indicated For

- Stable patients without bleeding and adequate platelet count
- As a volume expander
- Thrombocytopenia due to platelet destruction (unless clinically justified)

5.6 Issue and Handling

Before issue:

- Verify:
    - Patient identity (**two identifiers**)
    - ABO compatibility is preferable but not mandatory; **crossmatching is not routinely required for PRP/platelet products**

- Record:
    - Unit number
    - Date/time of issue
    - Patient details

After issue:

- Transfuse as soon as possible after issue and **complete transfusion within 30–60 minutes** (not exceeding **6 hours from issue** as per local policy)

5.7 Post-Issue Handling

- PRP should not normally be returned to inventory once issued.
- A PRP unit may only be returned to stock if ALL of the following conditions are met:
    - The unit has not been transfused, entered, or compromised
    - The unit has been maintained at 20–24°C with continuous gentle agitation
    - The unit has been handled within validated institutional procedures
    - The unit is visually acceptable (no clots, contamination, discoloration, or damage)
    - The unit identity and labeling are intact and traceable
    - Return is reviewed and approved by authorized laboratory personnel
- Discard the PRP unit if any of the following occur:
    - Storage temperature or agitation conditions are not maintained within acceptable limits
    - Unit is expired
    - Evidence of contamination, clots, leakage, or abnormal appearance
    - Unit identity or traceability is compromised

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6. Quality Control and Assurance

- Monitor:
    - Storage temperature (20–24°C)
    - Agitation system function
- Maintain:
    - Traceability of each unit
    - Complete documentation
- Perform:
    - Equipment calibration
- Participate in:
    - Quality assurance programs

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7. Safety Precautions

- Use PPE at all times
- Treat all blood products as infectious
- Follow biosafety and waste disposal protocols

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8. Documentation

Maintain records of:

- Donor information
- Preparation details
- Storage logs
- Issue records
- Discard records

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9. References

- AABB Standards for Blood Banks and Transfusion Services
- AABB Technical Manual
- Guidelines for Blood Transfusion Service, MOHS, Myanmar, 2018

Audit Statement

This SOP is based on AABB standards and aligned with MOHS guidelines where applicable.