HEALTH HOLDING

HAFER ALBATIN HEALTH CLUSTER MATERNITY AND CHILDREN HOSPITAL

Department:	Laboratory and Blood Bank		
Document:	Internal Policy and Procedure		
Title:	Cell Recovery after Leukoreduction		
Applies To:	All Blood Bank Staff		
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1. PURPOSE:

1.1 To establish a standardized method for estimation of leuckoreduction filters efficiency while preserving the quality of the desired blood component.

2. DEFINITONS:

2.1 **Percent recovery** (of the original component) = Ratio of the post-filtration to the pre-filtration content of the component expressed as a percent.

3. POLICY:

3.1 Leukoreduced RBCs (LR-RBC) units are prepared by a method known to retain 85% of the RBC in the original product and a residual WBC count of less than $5X10^6$ WBC/ unit.
3.2 Leukocyte-Reduced Platelet concentrates (LR-PC) units are prepared by a method known to retain 85% of the platelets in the original product and a residual WBC count of less than $8.3X10^5$ WBC/ unit
3.3 For Leukocyte-reduced units (but not apheresis units), 1% of the quarterly production, but not less than 12 units every three months, are subjected to quality control testing.
3.4 All tested (LR-RBC) units have a RBC recovery rate of more than 85% and a residual WBC count of less than $5X10^6$ WBC/unit in all subjected units.
3.5 All tested LR-PC units have a platelets recovery rate of more than 85% and a residual WBC count of less than $8.3X10^5$ WBC/unit.

4. PROCEDURE:

4.1 **Principle:** Percent recovery (of the original component) = Ratio of the post-filtration to the pre-filtration content of the component expressed as a percent.
  4.1.1 For Red Blood Cells/Whole Blood: Red Blood Cell percent recovery of the original component can be determined by comparing the pre-filtration content to the post-filtration content by using any of the following methods:
    4.1.1.1 Volume x hematocrit;
    4.1.1.2 Weight x hematocrit;
    4.1.1.3 As described by the manufacturer in the package insert.
  4.1.2 For Platelets: Because of selective removal of platelets by leukocyte reduction filters, the percent recovery is to be determined by comparing the platelet yield pre-filtration to the platelet yield post-filtration (i.e., not by weight).
4.2 Weigh the units before filtration and record the result, obtain pre-filtration sample, filter the unit, weigh again and record the result and then get the post-filtration sample.
4.3 **Pre-filtration and post-filtration Sampling:**
  4.3.1 Strip the attached tubing at least four times, mixing the contents of the tubing with the contents of the bag, to ensure that the contents of the tubing accurately represent the entire contents of the bag.

4.3.2 Seal a 5- to 8-cm (2- to 3-inch) segment distal to the collection bag. There should be approximately 2 mL of fluid in the segment. Double-seal the end of the tubing next to the component bag and detach the segment.

4.3.3 Empty the contents of the segment into a suitably labeled tube.

4.4 Send the samples to hematology unit to be tested for hematocrit for RBCs and Platelet count for platelet units.

4.5 **Get the results and calculate the recovery rate as follows:**

4.5.1 For Red Blood Cells/Whole Blood:

4.5.1.1 Volume = Weight/ 1.053

4.5.1.2 Multiply volume (ml) x hematocrit

4.5.1.3 Recovery rate= Post-filtration result/ pre-filtration result X 100

4.5.2 For Platelets:

4.5.2.1 Volume = Weight/ 1.03

4.5.2.2 Multiply volume (ml) x platelet count (/ul) X 1000

4.5.2.3 Recovery rate= Post-filtration result/ pre-filtration result X 100

4.6 **Accepted value:**

4.6.1 All tested LR units (RBCs and Platelet) have a recovery rate of more than 85%.

4.7 **Corrective action:**

4.7.1 Report to the supplier if the recovery rate is low.

4.8 **Notes:**

4.8.1 MCH blood bank may use blood collection bags in which platelet rich plasma is filtered directly and individually from whole blood, so, percent recovery calculation is not easy. Using welding machine, PRP may be expressed into a satellite bag to get a pre-filtration sample (after mixing) then, filtered and a post-filtration sample is got.

4.8.2 Estimation of cell recovery after leukoreduction is only applied with inline filters. If not present, the whole process can't be applied.

5. MATERIALS AND EQUIPMENT:

5.1 **Forms and Records:**

5.1.1 LR-blood component QC form

6. RESPONSIBILITIES:

6.1 Blood bank technician / specialist to follow the detailed procedure and to send the samples to the hematology unit to be tested.

6.2 Hematology unit staff to test for Hematocrit and platelet count.

7. APPENDICES:

N/A

8. REFERENCES:

8.1 The Unified Practical Procedure Manual For Blood Banks In The Arab Countries, 1434-2013.

8.2 The Standard Policy For Blood Banks In The Kingdom Of Saudi Arabia, 1st edition, 1435-2014

8.3 National Standards For Clinical laboratories and Blood Banks, 1st edition, 2015.

8.4 AABB Technical manual, 18th edition, 2014.

8.5 AABB Standards for Blood Banks and Transfusion Services, 30th edition, 2016.

8.6 Mollison's Blood Transfusion in Clinical Medicine; 12th edition, 2014.

8.7 Modern Blood Banking & Transfusion Practices, 6th edition, 2012.

8.8 U.S. Department of Health and Human Services; Food and Drug Administration (FDA), September 2012: Guidance for Industry; Pre-Storage Leukocyte Reduction of Whole Blood and Blood Components Intended for Transfusion.

8.9 Good Manufacturing Practice for Blood Establishments, Version 2.0, May 2019, Saudi FDA

9. APPROVALS:

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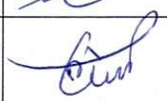
Prepared by:	Dr. Mohammed Amer	Blood Bank Physician		January 06, 2025
Reviewed by:	Dr. Kawther M. Abdou	Consultant & Lab. Medical Director		January 08, 2025
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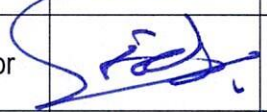
Reviewed by:	Mr. Abdulelah Ayed Al Mutairi	QM&PS Director		January 12, 2025
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