Optimizing transfusion practices for hemoglobinopathies: Balancing quantity and quality for better patient outcomes. Results from a Tertiary Hospital Unit

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Introduction:

Sickle cell disease and homozygous β-thalassemia major are hereditary hemoglobinopathies with different clinical manifestations and pathophysiologies. These conditions require mindful red blood cell transfusions as an essential part of comprehensive multidisciplinary management to reduce complications and improve patient prognosis.

Scope-Material and Methods

The present study aims to evaluate good clinical practices regarding red blood cell (RBC) transfusions in patients with hemoglobinopathies at a dedicated Thalassemia and Sickle Cell Disease Unit within a tertiary general hospital setting.

Over a 6-month period from June 2023 to December 2023, data was collected on a total of 110 patients with thalassemia and sickle cell disease enrolled in a regular transfusion program.

For each prophylactic RBC transfusion administered during this period, the following parameters were recorded:

- ❑ the time elapsed between blood donation and transfusion,
- ❑ the volume of the transfused blood component,
- ❑ and the average pre-transfusion hemoglobin level.

Patients who received emergency transfusions were excluded from the data collection to focus solely on those undergoing routine transfusions as part of their clinical management.

Results:

- ✓ During the recording period, a total of 1759 units of red cells were transfused , the prestorage units transfused ranged from 3 to 30 days from blood donation to patient, with an average of 5.5 days for 76.6% (979 units).
- ✓ The washed transfused units ranged from 5 to 30 days from blood donation to transfusion , with an average of 8.9 days for 89.2% (433 units).

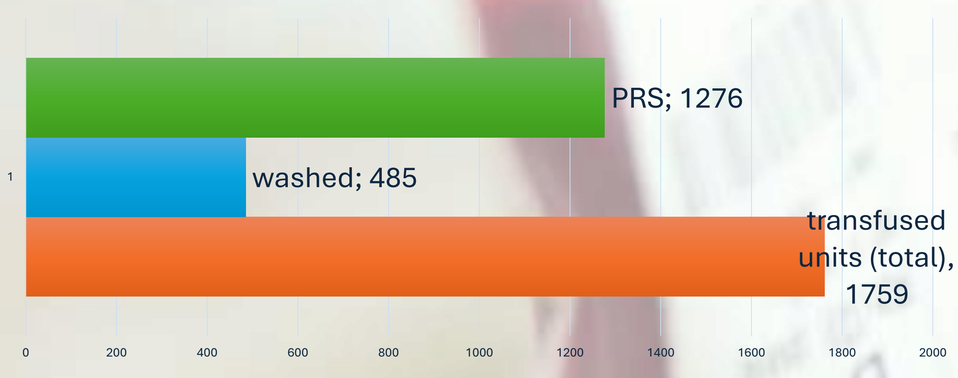


Diagram 1: total number of transfused units (including in separate bar Prestorage and Washed RBC Units

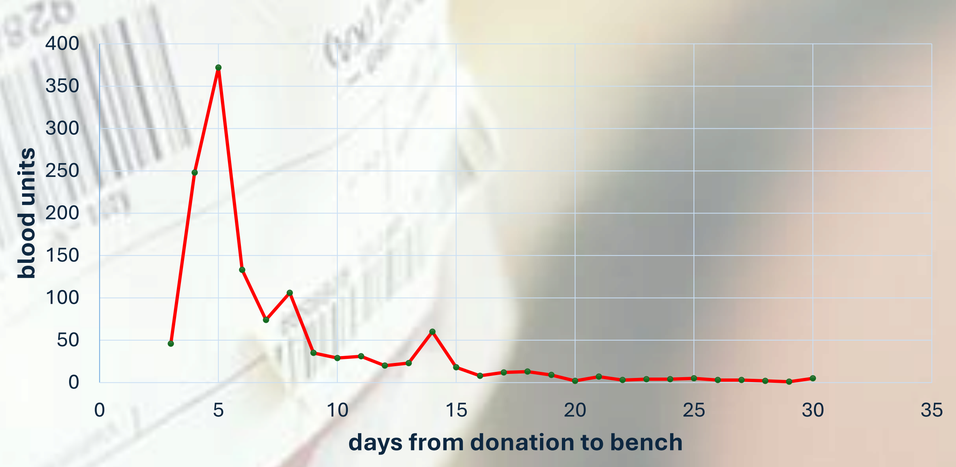
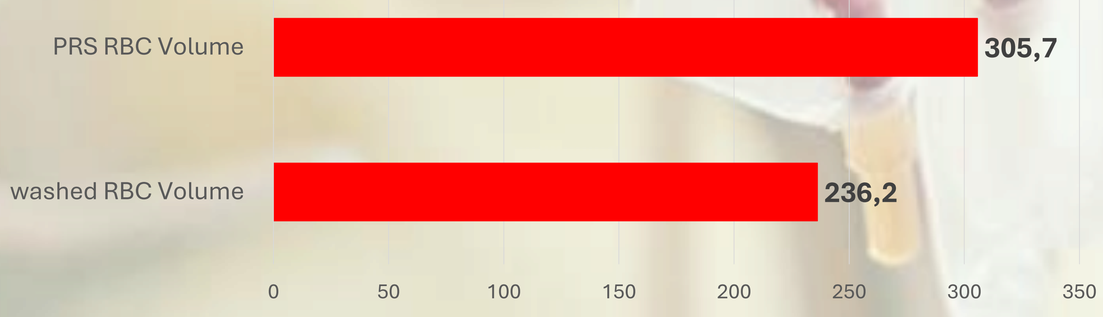


Diagram 2: total number of transfused units correlated with days from bench to bedside

Average transfused volume

✓1276 were prestorage units (14.3 units/patient) with an average volume of 305.7 ml per unit of blood.

✓483 units had undergone processing of washed red cells (20.1 units/patient) with an average volume of 236.2 ml per unit of blood.



average pre-transfusion hemoglobin level for patients was 10.2 g/dl for both categories of administered blood components.

conclusions

- ❑ Patients received fresh red blood cells in sufficient quantity (Good Clinical Practice according to International Guidelines)
- ❑ Patients maintained good pre-transfusion hemoglobin levels (Good Clinical Practice according to International Guidelines)
- ❑ Washed red cells required more units due to losses during washing process:
- Significant volume losses occur during the washing process of red cells
- Patients receiving washed red cells required higher number of units (20.1 units/patient) compared to prestorage units (14.3 units/patient) -this loss is a potential area for improvement to align with International Guidelines