

Analyzing Blood Transfusion Practices for Pediatric and Neonatal Patients: A Tertiary Center Experience from Central India

Dr Romesh Jain, Dr Anubhav Gupta, Dr Vilasini Patil, Dr Pratul Sinha, Dr Snehashish Mishra, Dr Rut Naik

Department of Transfusion Medicine and Blood Bank, AIIMS, Bhopal

Introduction

- Blood transfusion is essential in managing pediatric patients with various medical and surgical conditions.
- Even with such a high burden (5 million units annually) of transfusions for this group, data needs to be published on the indication and category of neonatal and pediatric patients receiving blood in India.
- This study aims to identify the proportion of blood utilized for pediatric patients, determine the most common medical and surgical transfusion indications, and evaluate differences in indications based on age groups.

Material and Methods

Study design: This retrospective cross-sectional study was conducted in the Department of Transfusion Medicine at a premier tertiary care and research institute in Central India from April 2022 to March 2023. Study analyzed transfusion requisitions for patients aged ≤ 18 years.

The study included neonatal (≤ 1 month) and pediatric (> 1 month to ≤ 18 years) patients.

Indications for blood and component requisition were categorized as Medical, surgical, Trauma and emergency.

Blood components were categorized as PRBC, RDP, SDP, reconstituted whole blood, FFP, Cryoprecipitate, and PBSC.

All blood requisition forms were screened for laboratory parameters, indications and divided into appropriate and inappropriate episodes according to the British Committee for Standard in Hematology (BCSH) guidelines for transfusion in fetuses, neonates, and older children.

Results

Out of 15,949 blood requisitions, 3,207 (20.10%) were for neonatal and pediatric patients.

Medical reasons were the primary cause for transfusion requests, accounting for 2,290 (71.4%) cases, followed by surgical indications with 896 (27.93%) cases, and trauma and emergency cases comprising 21 (0.65%) of the total.

Among medical indications, anemia was the most common reason for transfusions, representing 985 (43.01%) cases, followed by thrombocytopenia (570, 24.89%) and coagulopathy (451, 19.69%).

For surgical indications, gastrointestinal surgery (121, 13.5%), orthopedics (83, 9.26%), and urology (54, 6.02%) were the most frequent reasons for transfusions.

Notably, proper indications were not mentioned for a significant portion of surgical requisitions (438, 48.88%).

Hematological Malignancies (leukemias and lymphomas) (291, 29.5%) were the most common reason for anemia and majority (229, 78.7%) of them were repeat transfusion recipients.

Among the 3,207 cases, 1,000 (31.18%) were receiving their first transfusion, while 1,712 (53.38%) were repeat transfusion recipients.

First-time transfusion requisitions were highest in trauma and emergency (85.7%), followed by surgical (50.4%) and medical (23.1%).

The mean pre-transfusion Hemoglobin was 7.9 ± 2.10 g/dl, while the mean pre-transfusion Platelet counts were $18,200 \pm 11,700$ /ul.

Packed red blood cells were the most requested component (61.89%), followed by platelets (21.85%) and fresh frozen plasma (11.16%).

In total component requisitions (3207), 64.1% were appropriate, and 35.9% requisitions were inappropriate according to BCSH guidelines.

Most of the inappropriate requisitions were received for FFP components.

Discussion

The study highlights the significant demand for pediatric transfusions, predominantly for medical indications.

The findings are consistent with global patterns, underscoring the importance of tailored transfusion protocols and comprehensive management strategies for pediatric patients.

This research offers important information on how blood transfusions are done in children in Central India, which helps establish evidence-based practice, encourage continuous quality improvement, and develop policies for pediatric transfusion medicine.

These results underline the need for personalized transfusion guidelines, targeted interventions for specific age groups and conditions, and a comprehensive approach to managing the procedure.

This study provides crucial insights into pediatric transfusion practices in Central India, emphasizing the need for region-specific guidelines and improved clinical practices to enhance patient outcomes.