ISSN: 2279 - 0594

Journal of Biomedical and Pharmaceutical Research

Available Online at www.jbpr.in

CODEN: - JBPRAU (Source: - American Chemical Society)

Index Copernicus Value: 72.80

PubMed (National Library of Medicine): ID: (101671502)

Volume 7, Issue 1: January-February: 2018, 161-164

Research Article

Evaluating the Appropriateness of Blood Component Transfusions at a Tertiary Care Hospital: Adherence to Clinical Guidelines and Implications for Patient Safety

Dr. Pramod Patil

Assistant Professor, Department of Pathology, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences (Du), Sawangi (M), Wardha

Abstract

Background: Blood component transfusion is a critical component of medical treatment for various conditions, but adherence to clinical guidelines is essential to ensure appropriateness and safety. This study evaluates the appropriateness of blood component transfusions at a tertiary care hospital and examines adherence to established guidelines.

Objective: To assess the appropriateness of transfusions for red blood cells (RBCs), platelets, and plasma, and to identify areas for improvement in adherence to clinical guidelines.

Methods: A prospective study was conducted over six months involving 350 transfusions across RBCs, platelets, and plasma. Data on transfusion indications were collected and compared against clinical guidelines. Transfusion reactions and clinical outcomes were also documented.

Results: The study found that 85% of RBC transfusions, 78% of platelet transfusions, and 90% of plasma transfusions were appropriate according to guidelines, resulting in an overall appropriateness rate of 83%. Transfusion reactions occurred in 7 cases, with 5 linked to appropriate transfusions and 2 to inappropriate ones. Clinical improvement was noted in 175 cases, with 150 associated with appropriate transfusions.

Conclusion: The study demonstrates high adherence to transfusion guidelines for RBCs and plasma, but identifies a need for improved adherence in platelet transfusions. Enhanced compliance with guidelines is associated with better clinical outcomes and fewer adverse reactions. Targeted interventions are recommended to address the identified discrepancies and optimize transfusion practices.

Keywords: Blood Component Transfusion, Clinical Guidelines, Red Blood Cells, Platelets, Plasma, Appropriateness, Patient Safety

Introduction

Blood component transfusion is a critical therapeutic intervention in modern medicine, used to treat a variety of conditions including anemia, hemorrhagic shock, and clotting disorders. The appropriateness of blood transfusion practices is crucial for optimizing patient outcomes and minimizing risks associated with transfusion, such as transfusion-related reactions and transmission of infectious diseases (1, 2). Ensuring that transfusions are conducted in accordance with established guidelines can significantly impact patient

**Corresponding author: Dr. Pramod Patil,*

safety and resource utilization in healthcare settings.

In a tertiary care hospital setting, where complex and varied medical cases are managed, the adherence to transfusion guidelines and the appropriateness of blood component use are of particular importance. Evidence suggests that inappropriate transfusion practices, including overuse or misuse of blood components, can lead to adverse patient outcomes, increased healthcare costs, and unnecessary risks (3, 4). Therefore, continuous evaluation and improvement of transfusion practices are essential.

Previous studies have highlighted a range of issues related to the appropriateness of transfusions, including discrepancies between clinical practice and established guidelines. For instance, transfusion of red blood cells (RBCs) in cases where hemoglobin levels are not critically low, or the use of platelets in non-bleeding patients, may reflect a lack of adherence to guidelines (5, 6). Additionally, variations in transfusion practices among different healthcare settings suggest the need for localized audits and prospective studies to ensure that transfusion protocols are being followed appropriately (7, 8).

A prospective study of blood component transfusion appropriateness at a tertiary care hospital can provide valuable insights into current practices, identify areas for improvement, and enhance the overall quality of care. This type of study involves the systematic review of transfusion practices, assessment of adherence to clinical guidelines, and evaluation of patient outcomes associated with transfusion therapy (9). Such studies not only contribute to improving patient safety but also help in optimizing the use of blood products, thereby addressing both clinical and economic aspects of transfusion medicine.

Aim

To evaluate the appropriateness of blood component transfusions at a tertiary care hospital and assess adherence to established clinical guidelines.

Objectives

To assess the adherence to transfusion guidelines for various blood components, including red blood cells, platelets, and plasma.

To analyze the indications for transfusions and compare them with recommended clinical criteria.

Materials and Methods:

This prospective study was conducted at tertiary care hospital involving patients receiving blood component transfusions over a six-month period. **Inclusion criteria** included adults aged 18 and above who received red blood cells, platelets, or plasma as part of their treatment. **Exclusion criteria** were patients who received transfusions for experimental protocols, those with incomplete medical records, and individuals under 18 years old. Data collection involved reviewing patient charts to assess the indications for transfusions and comparing these with established clinical guidelines. The appropriateness of each transfusion was evaluated based on adherence to these guidelines. Additionally, patient outcomes, including any transfusion-related reactions and overall clinical improvements, were documented. Data were analyzed to identify trends, assess compliance, and propose recommendations for optimizing transfusion practices.

Results:

The following table summarizes the findings from the evaluation of blood component transfusions at the tertiary care hospital:

Parameter	Appropriate Transfusions (%)	Inappropriate Transfusions (%)	Total Transfusions (n)
Red Blood Cells (RBCs)	85%	15%	200

Platelets	78%	22%	100
Plasma	90%	10%	50
Overall Appropriateness	83%	17%	350
Transfusion Reactions (n)	5	2	7
Clinical Improvement (n)	150	25	175

The study found that 85% of red blood cell (RBC) transfusions, 78% of platelet transfusions, and 90% of plasma transfusions were appropriate according to clinical guidelines. Overall, 83% of all transfusions met the guidelines. Among the documented transfusion reactions, 5 occurred during appropriate transfusions and 2 during inappropriate ones. Clinical improvement was observed in 175 cases, with 150 linked to appropriate transfusions, indicating better outcomes when guidelines were followed. These results underscore the importance of adherence to transfusion guidelines to enhance patient safety and treatment effectiveness.

Discussion:

This study assessed the appropriateness of blood component transfusions at a tertiary care hospital and found varying levels of adherence to clinical guidelines. The high appropriateness rates for plasma transfusions (90%) and RBC transfusions (85%) suggest that the protocols for these components are generally well followed. However, the lower appropriateness rate for platelet transfusions (78%) highlights a need for improved adherence to guidelines.

The relatively high rates of appropriate RBC and plasma transfusions indicate effective compliance with clinical protocols, which are crucial for ensuring patient safety and optimizing therapeutic outcomes. These findings align with established practices, reflecting adherence to recommended transfusion thresholds and indications (10). Conversely, the lower appropriateness rate for platelet transfusions suggests that there may be inconsistencies in practice, such as transfusing platelets without sufficient clinical evidence of active bleeding or severe thrombocytopenia (7).

The study recorded a total of 7 transfusion reactions, with a higher incidence occurring during inappropriate transfusions. This underscores the potential risks associated with non-compliance with transfusion guidelines. The correlation between appropriate transfusions and positive clinical outcomes further supports the importance of adhering to guidelines, as 150 out of 175 cases showing clinical improvement were associated with appropriate transfusions (3). This association highlights the benefits of using blood components judiciously and according to established criteria.

The findings suggest several implications for transfusion practices. First, there is a need for targeted interventions to address the lower appropriateness rate for platelet transfusions, including enhanced education for clinicians on the indications and guidelines for platelet use. Regular audits and feedback mechanisms could help improve compliance and reduce inappropriate transfusions (3). Additionally, the observation of transfusion reactions in a small number of cases emphasizes the importance of rigorous monitoring and management of transfusion-related risks.

Further research could focus on identifying the specific factors contributing to inappropriate platelet transfusions and exploring strategies to mitigate these issues. Longitudinal studies assessing the impact of targeted interventions on transfusion practices and patient outcomes would be valuable in improving overall transfusion safety and effectiveness (8). Additionally, expanding the study to include a larger sample size and a diverse patient population could provide more generalizable

insights into transfusion practices across different healthcare settings.

In conclusion, while the study demonstrates generally good adherence to transfusion guidelines, particularly for plasma and RBCs, there is room for improvement in platelet transfusion practices. Addressing these issues can enhance patient safety and clinical outcomes by ensuring that transfusions are both necessary and appropriately administered.

Conclusion:

This study highlights the generally effective adherence to blood component transfusion guidelines at a tertiary care hospital, with high appropriateness rates for red blood cell (RBC) and plasma transfusions (85% and 90%, respectively). However, the lower appropriateness rate for platelet transfusions (78%) indicates a need for improved compliance with clinical guidelines. The correlation between appropriate transfusions and better clinical outcomes underscores the importance of following established protocols to enhance patient safety and therapeutic efficacy. The study also identified a small number of transfusion reactions, primarily associated with inappropriate transfusions, reinforcing the need for vigilance and adherence to guidelines. Targeted interventions, such as increased clinician education and regular audits, are recommended to address the discrepancies in platelet transfusion practices and improve overall transfusion quality. Future research should focus on refining transfusion practices and evaluating the impact of these improvements on patient outcomes and safety.

References

1. Brecher ME, Hay SN. Blood component therapy: a review. Transfus Apher Sci. 20 05;33(1):71-83.
2. Dzik WH. Transfusion-related acute lung injury: new insights and new treatments. Blood Rev. 2002;16(3):135-45.
3. Ferraris VA, Ferraris SP. Appropriateness of blood transfusions: a review. Curr Opin Hematol. 2014;21(6):482-9.
4. Krailadsiri P, Kim Y, Kuo A, et al. The impact of transfusion guidelines on clinical outcomes. J Clin Anesth. 2013;25(5):354-8.
5. Carson JL, Carless PA, Hebert PC. Transfusion thresholds and other strategies for guiding allogeneic red blood cell transfusion. Cochrane Database Syst Rev. 2016;10
6. Goodnough LT, Shander A. Transfusion practice: is it time for a change? N Engl J Med. 2013;368(11):1033-6.
7. Kherani S, Anson J, Smith J, et al. Patterns of blood component transfusion in a tertiary care hospital: a quality improvement study. Transfusion. 2011;51(4):678-87.
8. Roubinian NH, McFarland JG, Tormey CA, et al. A study of transfusion practice at a tertiary care hospital. JAMA. 2006;295(6): 736-41.
9. Gombotz H, Scharbert G, Gombotz L, et al. Quality assessment in blood transfusion practice: results from a prospective study. Transfus Med Hemother. 2015;42(4):237-43.
10. Carson JL, Carless PA, Hebert PC. Transfusion thresholds and other strategies for guiding allogeneic red blood cell transfusion. Cochrane Database Syst Rev. 2016;10