

Compliance of Documentation by Health-Care Professionals: Evaluation of Transfusion Practices at Bedside

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ABSTRACT

Background and Objectives: In transfusion practices, noncompliance with standard guidelines may lead to cause adverse events. Bedside assessment during and posttransfusion is equally important as overall transfusion-related precautions. The current study was conducted to observe the practices of health-care professionals related to transfusion documentation through a structured questionnaire. **Methods:** A cross-sectional study was conducted from 2018 to 2019 after ethical approval. A questionnaire structured for the documentation of transfusion process at bedside was filled having information of the name of the product receiver, date, time, name of patient with a medical identification number, ABO group match with the product, name of two health-care staff who started transfusion, and start and stop timings of transfusion. Initials of staff and patient vital record at onset, 15 min, and the end of transfusion were also recorded. Analysis was performed by using SPSS 23.0. **Results:** A total of 500 transfusion episodes were analyzed, out of which 115 (23%) forms were available in the patient files and 88 (76%) forms were filled. The overall compliance rate was 18%. The highest compliance was observed in the documentation of the name of nursing staff at the start of transfusion 79 (90%) and noncompliance was observed in the documentation of duty doctor initials at the completion 85 (96%). **Conclusions:** We observed scarce practice regarding transfusion-related documentation by health-care staff at the bedside. Stringent steps should be taken to avoid morbidities and mortalities. Training and education in this context is the need of time.

KEYWORDS: Attitudes and practice, bedside testing, blood transfusion, hemovigilance, knowledge

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INTRODUCTION

The blood transfusion process, starting from the donation till the transfusion to the patients, is conducted under hemovigilance policies and protocols. The hemovigilance system significantly monitors, reports, and analyzes the adverse events resulting from the transfusion process and also prevents the occurrence and recurrence of the events.^[1] In 220 million population, Pakistan's blood transfusion system is fragmented with services supplied by government, private hospital-based blood banks, or stand-alone institutions, and over 2.7 million blood donations are collected throughout the country annually.^[2,3] Thus, an efficient hemovigilance

system is required to monitor, assess, and improve the transfusion practice.^[4]

Hemovigilance programs around the globe document human error as one of the most significant risks to blood transfusion resulting from transfusion of incorrect blood component, and according to serious hazards of transfusion reports, human errors make 78% of all the transfusion errors.^[5-9] In addition to that, a pretransfusion check of patient identification (ID) and matching of blood products,

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conducted by the health-care professionals, retains the risk of error and eventually leads to morbidity and mortality.

Dzik^[10] identified three aspects that may initiate transfusion-related adverse events including the collection and blood transportation from the blood bank to the medical institute, the rationale decision to transfuse, and the practices at the patient bedside during transfusion.^[11,12]

Over the past two decades, the transfusion policies related to screening of donors, decision to transfuse, ABO compatibility, and crossmatch have expanded and have greatly reduced the risk of transmission of viral infections. However, implementation of transfusion-related documentation on bedside is scanty practiced and underreported, especially in the developing world.^[13] Negligence of medical staff and inappropriate supervision at bedside enhances the occurrence of adverse events which are the most common error in transfusion practices. Such events can be fatal and may result in unpardonable outcomes.^[13,14]

Studies done in India, Australia,^[15] and Uganda^[16] have also reported the inadequate documentation. Miller *et al.* and Novis *et al.*^[17,18] in their audits assessed the compliance of bedside check and also revealed underreporting resulting in malpractices. This might be due to lack of infrastructure of hemovigilance programs. The bedside check symbolizes the final significant possibility to disrupt a transfusion error. It is also essential to document the completion of the transfused unit with remarks along with transfusion related adverse event (transfusion associated reaction) reporting if occurs.^[19]

Various countries have developed and implemented hemovigilance programs. Standard guidelines for blood screening and ABO compatibility are followed and monitored stringently. The data on near-miss events and adverse events reporting are largely available and immense work has also been done in this regard in Pakistan as in other regional and international studies.^[20-25] However, bedside practices during transfusion have not been evaluated thoroughly which are also equally important and are underreported.

To minimize the transfusion errors by evaluating the shortcomings in practices during transfusion, and observe the transfusion practices at bedside by the health-care professionals through a structured transfusion form. Moreover, we observed the compliance of reporting of transfusion-related adverse events.

MATERIALS AND METHODS

This cross-sectional was conducted from February 2018 to January 2019.

Ethical approval

Ethical approval was obtained from the National Institute of Blood Diseases and Bone Marrow Transplantation Research Ethics Committee. A total of 500 blood transfusions were observed from daycare and wards that were conducted during 1 year of study period. A structured transfusion questionnaire was developed by hospital transfusion team comprising transfusion consultant, head of department of blood bank, nursing manager, and senior technologist blood bank. The form was filled by on duty health-care staff including nurses and doctors, and after the completion of transfusion, blood bags were sent back to the blood bank.

In case of adverse reaction, adverse reaction form was filled and submitted to blood bank as per the policy of hospital. The form provided information on documentation of information filled by blood bank department including patient ID number, blood bag ID, date and location of transfusion, ABO and Rh typing, product expiry, issue date and time of product, verification by visual inspection, employee ID number, and product issuer and receiver name. The variables filled by ward staff were blood product receiver name, employee ID number, date and time of receiving product, patient ID, medical record number on units, ABO compatibility on the unit and on form, name and employee ID number of health-care staff who started transfusion, transfusion start and completion time, and record of vitals at every 15 min and at the completion of transfusion.

Statistical analysis

Data were entered and analyzed by IBM statistical package for social sciences (SPSS) Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp and frequency and percentages were calculated for qualitative variables.

RESULTS

A total of 500 transfusion events were analyzed. Out of 500 transfusion events, 115 (23%) forms were available in patient files whereas 385 (77%) forms were not available. Eighty-eight (76%) forms out of 115 were completely or partially filled and 27 (24%) were not filled. On the basis of number of transfusion forms that were placed in the patient's record files and the frequency of filled transfusion forms, the overall compliance rate was found to be 18%. The compliance rate of transfusion forms variables related to receiving of blood product

Table 1: Frequency of compliance and noncompliance in documentation

Variables	Compliance, n (%)	Noncompliance, n (%)
Documentation of blood product receiver name	57 (65)	31 (35)
Documentation of employee identification number of receiver	47 (53)	41 (47)
Documentation of date and time when blood product received	56 (64)	32 (36)
Documentation of cross-checking of patient's name and medical record number on the blood product bag, bedside, and transfusion form	51 (58)	37 (42)
Documentation of cross-checking of patient's ABO/Rh and donor ABO/Rh compatibility on the blood product bag and transfusion form and blood product expiry	51 (58)	37 (42)
Documentation of cross-checking of medical record number of patient	39 (44)	49 (56)
Documentation of name of nursing staff who initiated transfusion (first)	79 (90)	9 (10)
Documentation of employee identification number of staff who initiated transfusion (first)	68 (77)	20 (23)
Documentation of name of staff (doctor), verified the nursing staff	59 (67)	29 (33)
Documentation of employee identification number of staff (doctor) who verified	38 (43)	50 (57)
Documentation of transfusion start time	64 (73)	24 (27)
Documentation of transfusion time after 15 min of initiation of transfusion	66 (75)	22 (25)
Documentation of transfusion completion time	26 (30)	62 (70)
Documentation of temperature at onset of transfusion	74 (84)	14 (16)
Documentation of temperature after 15 min of initiation of transfusion	64 (73)	24 (27)
Documentation of temperature at completion of transfusion	52 (59)	36 (41)
Documentation of blood pressure at onset of transfusion	69 (78)	19 (22)
Documentation of blood pressure after 15 min of initiation of transfusion	61 (69)	27 (31)
Documentation of blood pressure at completion of transfusion	49 (56)	39 (44)
Documentation of pulse at onset of transfusion	74 (84)	14 (16)
Documentation of pulse after 15 min of initiation of transfusion	63 (72)	25 (28)
Documentation of pulse at completion of transfusion	51 (58)	37 (42)
Rh: Rhesus blood system		

and documentation of vital signs is presented in Table 1 in which nursing staff was found compliant to document their names at the start of transfusion 79 (90%). Table 2 presents the documentation compliance in vital signs recorded by the nurses and doctors, and it was observed that 85 (96%) duty doctors were noncompliant.

In total, two (0.4%) adverse events were reported, managed, and documented timely. As the symptoms appeared, transfusion was stopped and managed accordingly. The time of appearance of symptoms and the time medications started were also documented. The red cells and platelets were sent back to the blood bank and discarded within 6 h as per the policy of hospital.

DISCUSSION

Human errors by health-care professionals may lead to grave consequences. Providentially, such errors may not cause life-threatening circumstances all the times yet occasionally might lead to serious or even fatal implications. Moreover, the lack of knowledge among clinical staff may also impose clinical threat to patient's safety. International studies over the past decade have established the fact that patients are regularly placed at risk during transfusion and mostly are due to inadequate monitoring practices.^[26] Majority of the previously

done researches have emphasized on the screening, stringent crossmatching, and adverse events reporting of transfusion.

Limited studies have been done and scarce literature is available, particularly in our country on the compliance of documentation at bedside. In our study, the overall compliance rate was 18%. The rate was not satisfactory and reflected the negligence of staff on duty. A study in Australia reported the contrary findings and in which 98% transfusion forms were placed in the patient's files reflecting the adequate practices.

One of the significant ways to prevent transfusion errors is the monitoring of transfusion at bedside. In this study, more than 50% compliance at bedside was observed in documentation of name of staff who received the product bag, employee ID number, receiving date and time, cross-check of patient name and medical record number on product bag and bedside, patient's ABO/Rh and donor ABO/Rh compatibility ID check on the unit and form, name of staff who started the transfusion, employee ID, second verifier name, and transfusion start time. Similar findings were reported in an Indian study. In another study conducted in Uganda, transfusion start time was not documented in 21.5% of the transfusions. Contrary results were found in documentation of transfusion completion time in our study and the study conducted

Table 2: Vital sign documentation compliance by health-care staff

	Initials of nurses on vital sign record		Initials of doctors on vital sign record	
	Compliance, n (%)	Noncompliance, n (%)	Compliance, n (%)	Noncompliance, n (%)
Onset of transfusion	56 (64)	32 (36)	5 (6)	83 (94)
15 min after initiation of transfusion	50 (57)	38 (43)	4 (5)	84 (95)
Completion of transfusion	42 (48)	46 (52)	3 (4)	85 (96)

in India where end time was not mentioned in 14% transfusion forms, however, in the current study, it was 70%. ABO-incompatible transfusion is one of the primary causes of morbidity and mortality. Although the compliance rate in our study was low, out of 88 filled transfusion forms, documentation of ABO/RH compatibility ID was properly filled in 58%.

Miller *et al.* and Novis *et al.* in their studies assessed the documentation compliance, and the audit of over 4000 transfusions revealed a failure to match wristband ID with the compatibility label in 25% of the transfusions. Another study conducted by Ohsaka reported wristband error in 23 (2.4%) cases. In this study, we did not include the wristband error as it is not given to the patients at our institute and this is also mentioned in the limitations of the study.

The monitoring and documentation of vitals during the transfusion needs to be impeccably done in order to avoid adverse events. In our study, the temperature, blood pressure, and pulse at onset, 15 min, and completion of transfusion were documented properly. However, the documentation of initials of attending health-care professional, in particular the initials of duty doctor, was highly noncompliant as compared to the nurses. In a study from the UK, 47% of the patients had no vital signs monitored within the first 30 min of the transfusion, and in an Indian study, pretransfusion vitals were not mentioned in 8% of the transfusion episodes monitored. Extremely less compliance was observed in a study in which there was no record of vital signs in 97.6% of the recipients. Shulman *et al.*^[28] in their analysis of 85 transfusion episodes reported failure in documentation of vital signs during the first 15 min of transfusion.

Patients should be observed periodically for signs and symptoms of transfusion-related reactions. The patient's vital signs should be checked and recorded before transfusion and 15 min after the initiation of the transfusion process and then every hour. Upon completion of the transfusion, vital signs should be checked and compared with previous values.

In our study, 0.4% transfusion reactions were reported. Somewhat comparable findings were observed in two Indian studies reporting the incidence rate of 0.27 and

0.2%,^[29] respectively. However, a study conducted in Ghana reported an incidence of 21.3%.^[30] A lower incidence rate was observed in a study previously done in Pakistan, which could be due to underreporting of transfusion reactions. They postulated two main reasons for this underreporting such as limited knowledge regarding the transfusion reactions and the fear of negative consequences in case of inattention during transfusion.

In order to prevent and minimize transfusions errors that may be caused by inadequate implementation of transfusion policies,^[31] health-care personnel must be trained and assessed for competency. Blood product should be checked for patient's ID and recipient of transfusion should be monitored.^[32] At every 15 min of transfusion of each unit, vitals should be monitored and recorded and flow rate should be adjusted according to the condition of patient and hospital policy. It is advised to document the starting and completion time, along with the total volume transfused the bag ID, type of component, and date of transfusion in the patient's files.

Compliance of documentation and reporting of events related to transfusion is not well established in Pakistan as well as other Asian countries. In an Australian study, the improvement in transfusion practices was seen and eventually their compliance rate was increased. This visibly illustrated that Pakistan would get benefit from hemovigilance system. In this regard, to provide the assistance in manufacturing of blood and blood components, guidelines on quality control in transfusion medicine and blood safety guidelines are established that are found to have significant contribution in strengthen the framework of transfusion practices.^[33,34] In addition, the guidelines for the documentation compliance at bedside should also be incorporated to further development of strong hemovigilance system. The current study resulted in implication of few positive steps that were taken by the management by giving an additional responsibility to unit receptionist in this regard.

CONCLUSION

Transfusion practices of health-care staff during transfusion at bedside in our hospital were found to be unsatisfactory. The health-care staff involved in

transfusion services have a pivotal role, and through this study, we observed the ignorance at bedside by health-care staff, particularly physicians. Transfusion errors may not always be harmful but may lead to fatal events with continuous malpractices. Few limitations appeared through this study that was addressed to be corrected in future. With regular education, trainings, awareness sessions, and audit, transfusion practices can be improved and safer transfusion can be provided at our health-care system. Scarce data are available in Pakistan in this aspect, and future studies are needed for adequate transfusion services.

Limitations

There are few limitations of our study that are needed to be rectified and implemented in daily practices such as posttransfusion remarks which were not available in our designed transfusion form and hence were not evaluated. Only initials were mentioned on vital sign record form, name and initials with signatures should be included for enhanced traceability. Transfusion form must be redesigned with clear instructions, and there must be separate sections for nurses and doctors. The rate of component's flow was not mentioned on transfusion form and should be added according to physician's orders. Error regarding wrist band ID could not be postulated in our study due to nonavailability of wrist band at our center which is now planned to be commenced to minimize the adversity.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Organization WHO. A guide to establishing a national haemovigilance system [Internet]. WHO.INT. [Accessed on 2021 Sep 03]. Available from: <https://www.who.int/publications/item/9789241549844>.
2. Waheed U, Ahmed S, Saba N, Wazeer A. Haemovigilance as a quality indicator in transfusion medicine: Pakistan's perspective. *Ann PIMS* 2020;16:46-51.
3. Zaheer HA, Waheed U, Tahir S, Nasir K. National Blood Banks Data Collection Report. Safe Blood Transfusion Programme, Government of Pakistan; 2018. Available from: <https://www.sbt.gov.pk/wpcontent/uploads/2019/10/National-Data-CollectionReport-2018.pdf>. [Last accessed on 2021 Sep 03].
4. Safe Blood Transfusion Programme, Government of Pakistan. National Blood Policy and Strategic Framework (2014-20). Available from: <http://sbt.gov.pk/wpcontent/uploads/2019/06/nbp-nsf-2014-20-final-2-1.pdf>. [Last accessed on 2021 Sep 03].
5. Dzik WH. New technology for transfusion safety. *Br J Hematol* 2007;136:181-90.
6. Stainsby D, Jones H, Asher D, Atterbury C, Boncinelli A, Brant L, *et al.* Serious hazards of transfusion: A decade of hemovigilance in the UK. *Transfus Med Rev* 2006;20:273-82.
7. Bolton-Maggs P. SHOT conference report 2016: Serious hazards of transfusion-human factors continue to cause most transfusion-related incidents. *Transf Med* 2016;26:401-5.
8. Gray A, Hart M, Dalrymple K, Davies T. Promoting safe transfusion practice: Right blood, right patient, right time. *Br J Nurs* 2008;17:812, 814-7.
9. Gray A, Illingworth J. Right blood, right patient, right time RCN guidance for improving transfusion practice [Internet]. London, W1G 0RN: Royal College of Nursing; 2004. Available from: http://anaesthesiaconference.kiev.ua/downloads/Right%20blood,%20right%20patient,%20right%20time_2004.pdf.
10. Dzik WH. Emily cooley lecture 2002: Transfusion safety in the hospital. *Transfusion* 2003;43:1190-9.
11. Sapkota A, Poudel S, Sedhain A, Khatiwada N. Blood transfusion practice among healthcare personnel in Nepal: An observational study. *J Blood Transfus* 2018;2018:6190859.
12. Khetan D, Katharia R, Pandey HC, Chaudhary R, Harsvardhan R, Pandey H, *et al.* Assessment of bedside transfusion practices at a tertiary care center: A step closer to controlling the chaos. *Asian J Transfus Sci* 2018;12:27-33.
13. Vasiliki K, Hematologist M. Enhancing transfusion safety: Nurse's role. *Int J Caring Sci* 2011;4:114.
14. Hensley NB, Koch CG, Pronovost PJ, Mershon BH, Boyd J, Franklin S, *et al.* Wrong-patient blood transfusion error: leveraging technology to overcome human error in intraoperative blood component administration. *Jt Comm J Qual Patient Saf* 2019;45:190-8.
15. Gallagher-Swann M, Ingleby B, Cole C, Barr A. Improving transfusion practice: Ongoing education and audit at two tertiary specialty hospitals in Western Australia. *Transfus Med* 2011;21:51-6.
16. Natukunda B, Schonewille H, Smit Sibinga CT. Assessment of the clinical transfusion practice at a regional referral hospital in Uganda. *Transfus Med* 2010;20:134-9.
17. Miller KATEPQ-PCoAP, Northfield, IL. Transfusion Errors. Q Probe09. Q-Probes. Northfield, IL: College of American Pathologists; 2000.
18. Novis DA, Miller KA, Howanitz PJ, Renner SW, Walsh MK. Audit of transfusion procedures in 660 hospitals: A College of American Pathologists Q-Probes study of patient identification and vital sign monitoring frequencies in 16 494 transfusions. *Arch Pathol Lab Med* 2003;127:541-8.
19. Zaheer HA, Ahmed S, Waheed U, Wazeer A. National Guidelines for Quality Control in Transfusion Medicine. 2nd ed. Islamabad: Pakistan: SBTP, Ministry of National Health Services; 2020. p. 49-56.
20. Khalid S, Usman M, Khurshid M. Acute transfusion reactions encountered in patients at a tertiary care center. *J Pak Med Assoc* 2010;60:832-6.
21. Sidhu M, Meenia R, Yasmeen I, Akhtar N. A study of transfusion related adverse events at a tertiary care centre in North India: An initiative towards hemovigilance. *Int J Adv Med* 2015;2:206-10.
22. Borhany M, Anwar N, Tariq H, Fatima N, Arshad A, Naseer I, *et al.* Acute blood transfusion reactions in a tertiary care hospital in Pakistan - An initiative towards haemovigilance. *Transf Med* 2019;29:275-8.
23. Akhter N, Samad A, Nudrat F, Umme H, Maliha A, Sabeen F. Acute blood transfusion reaction in a tertiary care hospital in Southern Punjab, Pakistan. *Int J Comm Med Pub Health* 2019;6:1416-21.

24. Hasan M, Siddiqui IA, Qamar Z, Hayat A. An audit of transfusion reaction monitoring and reporting at a cancer hospital in Pakistan—A step towards haemovigilance. *J Pak Med Assoc* 2020;71:1-3.
25. Tayyab M. Blood transfusion associated diseases and complications in thalassaemia patients. *Europasian J Med Sci* 2020;2:104-13.
26. Najafpour Z, Hasoumi M, Behzadi F, Mohamadi E, Jafary M, Saeedi M. Preventing blood transfusion failures: FMEA, an effective assessment method. *BMC Health Serv Res* 2017;17:453.
27. Ohsaka A. Electronic pre-transfusion check at the bedside: Experience at Juntendo University Hospital. *Juntendo Med J* 2019;65:351-7.
28. Shulman IA, Saxena S, Ramer L. Assessing blood administering practices. *Arch Pathol Lab Med* 1999;123:595-8.
29. Negi G, Gaur DS, Kaur R. Blood transfusion safety: A study of adverse reactions at the blood bank of a tertiary care center. *Adv Biomed Res* 2015;4:237.
30. Owusu-Ofori AK, Owusu-Ofori SP, Bates I. Detection of adverse events of transfusion in a teaching hospital in Ghana. *Transfus Med* 2017;27:175-80.
31. Serious Hazards of Transfusion. Annual Report 2001–2002. Manchester: SHOT; 2003.
32. British Committee for Standards in Haematology Blood Transfusion Task Force (1999) Guidelines on the administration of blood and blood components and the management of transfused patients. *Transf Med* 1999;9:227-38.
33. Waheed U, Hasan SI, Wazeer A, Zaheer HA. The status of blood safety in Islamabad, Pakistan. *Ann Pak Inst Med Sci* 2016;12:209-14.
34. Zaheer HA, Waheed U. Blood safety system reforms in Pakistan. *Blood Transfus* 2014;12:452-7.