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ORIGINAL ARTICLE

18 years outlook of transfusion center through the perspective of hospital transfusion committee decisions

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Abstract

The Hospital Transfusion Committee (HTC) establishes policies and guidelines to ensure the efficient, safe, and cost-effective use of transfusion services. The effectiveness of these policies can be assessed through transfusion statistics. This research aimed to evaluate our transfusion center's performance using statistical data and provide insights into the HTC's decision-making process. Archive records of the hospital transfusion committee at Afyonkarahisar Health Sciences University Medical Faculty Hospital from 2005-2023 were reviewed. A total of 263 decisions were classified by content into general categories. The committee's effectiveness was evaluated using hospital transfusion statistics. The committee prioritized the following three agenda items: completion of training, certification, and job descriptions for transfusion center staff, per national guidelines (n=49, 18.6%); haemovigilance, including personnel effectiveness, adverse event notification, and transfusion reaction management (n=27, 10.3%); and improving patient blood management definition and applicability, and increasing preoperative anemia outpatient clinic utilization (n=21, 8%). Blood destruction rates were reduced from 13 % to 0.21 %. It was determined that the habit of requesting two units increased the number of blood utilisation. Despite recommendations, requests for preoperative Hgb levels above 10 g/dl persisted for various

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surgeries and patients with pre-existing cardiovascular disease. Requesting two units increased blood utilization. Minimizing these incidents is achievable through the implementation and use of electronic patient identification systems The crossmatch-to-transfusion (CM/T) ratio of 1.92 was below the optimal value of <2.5. Implementing evidence-based blood utilization strategies can enhance transfusion management, demonstrate efficient blood use, minimize labor wastage, and decrease discarded units.

Keywords: Hospital transfusion committee, haemovigilance, blood products

Introduction

The hospital transfusion committee (HTC) meets quarterly, except during emergencies, to evaluate and enhance the efficiency of the transfusion process at all stages: before, during, and after blood transfusions. In 2009, the World Health Organization (WHO) recommended that hospitals establish transfusion committees to enforce national blood use policies and oversee their implementation [1]. HTC meetings focus on addressing critical issues, proposing solutions for safe and effective blood management, and setting implementation standards. The effectiveness of these decisions is assessed using transfusion statistics, which inform planning and improvement strategies. During each meeting, hospital transfusion data are reviewed to identify risks and develop actionable plans to optimize transfusion risk management.

The HTC's primary goals are to reduce transfusion rates, ensure the effective, safe, and cost-efficient use of blood products, promptly meet transfusion needs, alleviate the workload on blood centers, and enhance operational efficiency. These efforts are supported by personnel training and certification, as well as consistent monitoring and timely implementation of decisions [3].

Achieving these objectives requires support from hospital management and alignment with national and local policies. Regular evaluation of hospital statistics—such as the crossmatch-to-transfusion (CM/T) ratio, the number of clinically used blood products, adverse event reports, and bloodstock disposal rates—provides a reliable measure of the HTC's effectiveness.

Mandatory attendees of HTC meetings include the blood bank's responsible physician, representatives, nurses, and haemovigilance personnel from high-transfusion clinics. Additionally, the hospital's chief physician or deputy chief physician participates to provide guidance and support for implementing committee decisions.

Materials and Methods

The written decisions of the blood transfusion committee at Afyonkarahisar Health Sciences University Hospital for the period between

Table 1. Main topics of transfusion committee. [2]

1. Adhere to national guidelines and execute transfusion responsibilities efficiently and promptly as specified.
2. Ensure proper blood component use, monitor consumption, determine statistics of transfused and non-transfused components, and develop policies to reduce disposal rates.
3. Calculate the cross-comparison/transfusion rate, supervise reserved product use, and issue necessary warnings.
4. Monitor and report transfusion-related adverse events, initiate research, and develop strategies for improvement.
5. Ensure effective patient blood management maintenance and supervision.
6. Ensure an adequate supply of blood components.
7. Provide adequate training for all personnel involved in blood transfusion/management.
8. Offer transfusion alternatives and minimize transfusion frequency.
9. Organize an action plan for urgent or very urgent blood demands.
10. Organize activities to raise awareness about blood donation and increase donations.
11. Provide logistical and personnel support to the transplantation center.

2005 and 2023 were examined, resulting in the identification of a total of 263 decisions. These decisions were categorized according to their content, and the frequency of each agenda item was determined. Additionally, an assessment of the transfusion center's statistics was carried out. The study was approved by the decision numbered 2024/2 at Afyonkarahisar Health Sciences University Non-intervention Scientific Research Ethics Committee.

Results

Between 2005 and 2023, a total of 263 decisions taken by the HTC, which met on average three times per year, were evaluated. The decisions were categorised under main headings, with the most frequently raised topic being the completion of the training and certification requirements of personnel and physicians working in the transfusion centre by the national guidelines and the creation of job descriptions (n:49, 18.6%).

Additionally, the frequency order of the decisions was as follows:

- Haemovigilance (the effectiveness of responsible personnel, notification of adverse events according to the procedure, transfusion reaction management by regulations, etc.) (n:27, 10.3%),
- Increasing the definition and applicability of patient blood management and increasing activities for the active use of the preoperative anemia outpatient clinic in this field (n:21, 8%),
- Action plan to reduce blood disposal rates based on the activity report (n:21, 8%),
- Completion of transfusion order forms and labeling follow-up (n:18, 6.8%),
- Development of policies (advertising and encouragement) to increase donor recruitment (n:17, 6.5%),

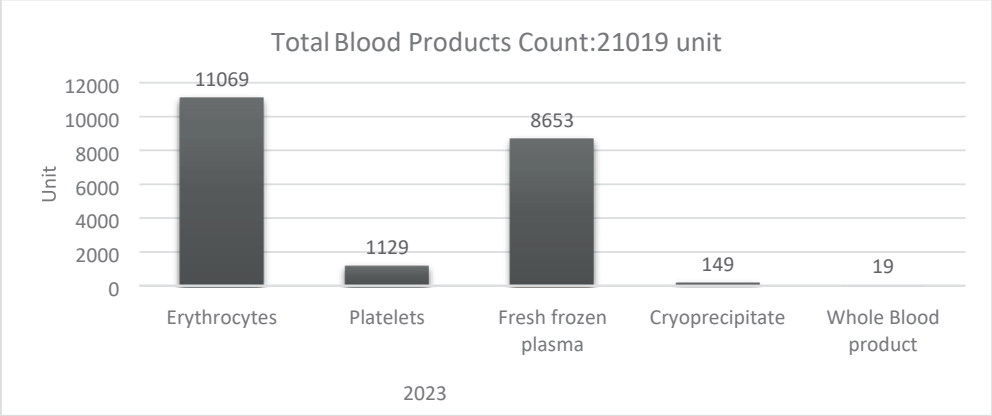

Figure 1. Number of blood products used in 2023.

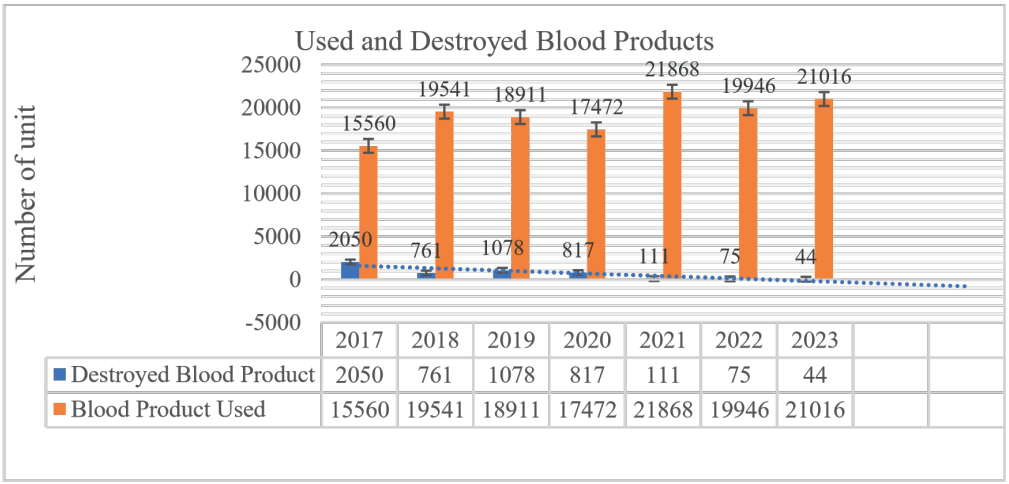

Figure 2. Total number of products used and destroyed by year.

• Planning the organization of blood product use according to the need (n:16, 6.1%),

• Elimination of problems in logistics and product transport (n:18, 6.8%),

• Systematic implementation of basic tests and requests to be performed in the preparation process before blood transfusion (n:14, 5.3%),

• Reserve blood products not below the critical level (n:16, 6.1%),

• Organisation of emergency and massive blood transfusion action plan and determination of the procedure to be followed, 0 Rh (-) blood supply (n:9, 3.4%),

• Follow-up of post-transfusion product bags and return follow-up and observation forms (n:9, 3.4%),

• Other (warning, penalty notice, etc.), statistical information (Figure 1, Figure 2, Figure 3, Figure 4 Table 2) (n:44, 16.7%).

According to 2017 data, hospital blood products were determined as 21016 with an increase of 35%. The most consumed product was erythrocyte suspension with 11069, followed by fresh frozen plasma. While the percentage of blood destruction was 13.1 in 2017, it was determined as 0.21 in 2023.

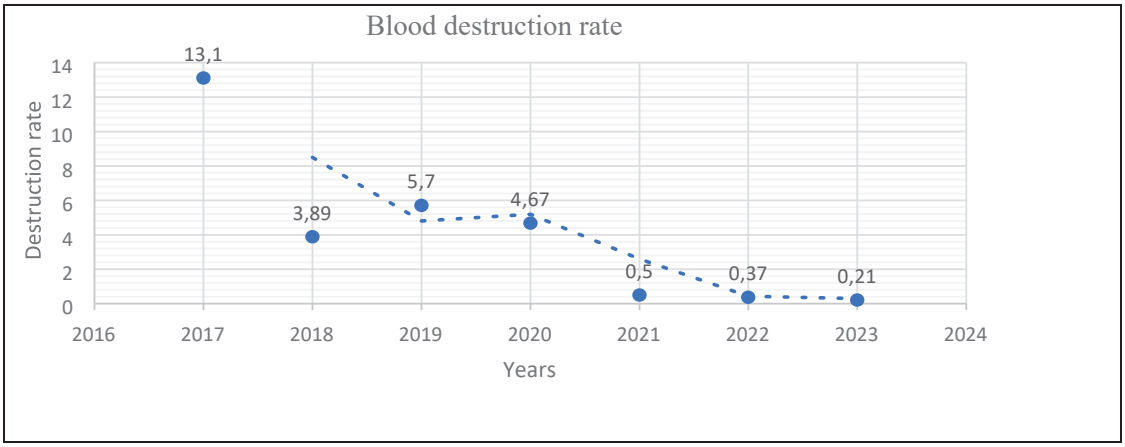

Figure 3. Blood destruction rates by year.

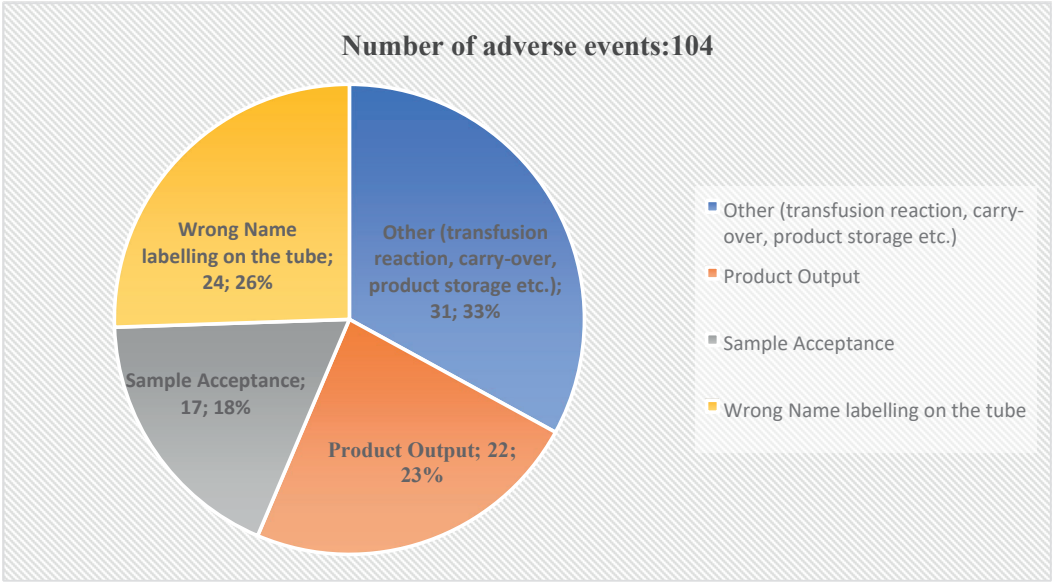

Figure 4. Adverse event types for 2023.

Table 2.Transfusion rates in 2023 according to departments.

Department Name	Total blood collection	CM count	Blood product supplied	CM/T
Orthopaedics and Traumatology	10.840	4.223	1.942	2,17
General Surgery	2.966	2.285	997	2,29
Gynaecology and Obstetrics	2.329	2.034	548	3,71
Emergency Medicine	2.257	1.855	903	2,05
Urology	1.644	811	253	3,2
Neurosurgery and Neurological Surgery	1.494	1.281	564	2,27
Cardiovascular Surgery	1.280	1.169	599	1,95
Haematology	1.451	1.453	1.221	1,19
Medical Oncology	1.140	1.122	1.035	1,8
Anaesthesiology and Reanimation	1.209	993	490	2,02
Nephrology	720	671	564	1,18
Internal Medicine	671	585	465	1,2
Thoracic Surgery	591	471	192	2,43
Paediatric Haematology and Oncology	599	723	522	1,38
Other	1129	1018	797	1.72

Discussion

Blood transfusions should be approached through a multidisciplinary and multidimensional process, considering the patient's benefit-risk ratio. Additionally, doctors and hospitals must factor in the operational aspects of the transfusion procedure. The responsibility of the transfusion committee is to oversee the hospital's organizational structure, ensuring that it is optimized, which underscores the importance of the committee's decisions. The establishment of a transfusion committee is mandatory according to both national and international guidelines. In addition to creating transfusion practice policies, the committee's responsibilities include training, auditing, and optimizing blood usage. The decisions made by an effective transfusion committee can result in transfusion statistics meeting the target figures, with these statistics serving as a quantitative indicator of quality assessment. These joint decisions can reduce the cost of transfusions, minimize labor force demands, and lower the risk of adverse effects for patients.

The provision of efficient, effective, and safe transfusion services depends on the proper training of personnel and their adherence to national and international guidelines. Prevention of potential complications during the transfusion process is closely related to the comprehensive training process. All personnel working in the blood service unit must receive training appropriate for their duties, covering the essential principles and practices of transfusion medicine. Our personnel, who receive continuous training for an average of 45 days in certain periods of the year, as stipulated by national guidelines and legislation, are subjected to an exam at the end of the training and must achieve a minimum score of 70 out of 100 for certification. The training is conducted locally in the crucial transfusion centers of the country using the assignment method. Previous research has demonstrated that printed educational materials alone are insufficient for enhancing medical decision-making [4]. Thus, it is deemed necessary to provide in-service training to personnel working in blood centers on a continuous and regular basis, according to their responsibilities [5]. Personnel holding training certificates are regularly subjected to in-hospital training, and participation in refresher training every five years is mandatory for certificate renewal. This ensures that our staff's knowledge and skills remain up to date.

Hemovigilance refers to the organization of monitoring, recording, and taking precautions to prevent the occurrence or recurrence of adverse events related to blood donation and clinical transfusion. This includes everything from the collection of blood and its components to the follow-up of the recipients. By analysing hemovigilance data, changes can be made to transfusion policy, blood products, and transfusion practices. Improving blood donor and recipient safety, optimizing product use, and achieving better clinical outcomes after transfusion are important goals. The hemovigilance systems in different countries can vary, and in our country, we follow the hemovigilance guidelines which include filling out forms during the reporting of adverse events, communicating with the transfusion centre, and keeping complete records after transfusion [6-7]. The transfusion committee has also been effective in preventing incidents and keeping records by developing necessary warnings and action plans through the follow-up of hemovigilance data.

The most common adverse events during blood transfusions are ABO incompatibility and incorrect transfusions due to blood product labeling errors. These incidents can be minimized by implementing electronic patient identification systems (*e.g.*, barcode scanning of wristbands before transfusion). Studies show that manual patient identification has a mislabeling rate of 1:10,110, while electronic identification reduces this to 1:35,806, a fivefold decrease in errors ($p<0.0001$). At our hospital, the implementation of electronic labeling has led to even further improvements. Of the 21,016 transfusions performed, only 0.09% were affected by mislabeling, and 0.2% were due to sample acceptance or product dispensing errors (Figure 4). Such preventable events are mitigated through strict adherence to procedures and effective technical solutions.

Patient blood management is a crucial issue that the committee should prioritize to safeguard patient health and minimize hospital transfusion costs. Adherence to transfusion thresholds and the prevention of unnecessary transfusions are frequently discussed as the main focus of the committee's agenda. While the recommended threshold value for orthopedic, general, and cardiovascular surgery patients, as well as those with preexisting cardiovascular disease, is Hgb 8 g/dl, it is unfortunately challenging to prevent the desire and demand of clinicians to maintain Hgb levels of 10 g/dl during the preoperative period [9]. Specifically, for non-urgent elective surgeries, patients with correctable anemia (such as iron, vitamin B12, or folic acid deficiency anemia) are evaluated in the preoperative anemia outpatient clinic. Transfusion rates are reduced through medical treatment without the need for transfusion. The committee's consistent and disciplined stance on avoiding unnecessary transfusions has led to significant improvements in transfusion outcomes [10]. The need to address the reasons for the request of two units instead of one unit due to manual habits and lack of calculation during blood transfusion is undeniable, as it will result in a reduction in the number of transfusions [11]. It was determined that another reason for requesting two units of transfusion was that intern doctors ordered blood transfusions. It is essential to develop a cautionary warning for our operating systems regarding this traditional blood request behavior and to ensure that it is reconsidered when making a second transfusion request. Haemoglobin only measures oxygen-carrying capacity and does not reflect the full transfusion requirement. Guidelines do not recommend using hemoglobin as the sole transfusion trigger [12]. In particular, the ratio of the number of products requested to the number of products supplied in orthopedics and traumatology, gynecology and obstetrics, urology, and general surgery was 5.5-4.2-6.4-2.9, respectively. High rates are considered to be an indicator of unnecessary requests in clinics.

The primary reasons for the destruction of blood products were found to be related to the organization and patients, including death, clinical deterioration, and side effects, as well as excessive demand for blood and the custom of requesting two units. Considering these factors, 36% of the destroyed blood products were preventable. The success of the implemented measures and penalties preventablesolutionsresulted in a significant reduction in the destruction rate from 13% to

0.21%. (Table 3) In general, it was found that 40-70% of the blood units prepared for transfusion in the hospital were actually transfused. In this regard, the attitude of surgical units leads to an increase in workload and costs, and other disciplines may have to wait for the blood products they require in the transfusion bank [13]. The transfusion center can be evaluated using the CM/T ratio as an indicator of the department's unnecessary sense of insecurity. A CM/T ratio lower than 2 and closer to 1 may reflect the success of timely, necessary, and economical transfusion. Enhancing this ratio optimizes resource use by reducing waste from unused blood units, decreases hospital costs by minimizing laboratory workload and material use, and improves patient safety by reducing delays in urgent transfusions. Additionally, it aligns blood requests with actual patient needs, easing the workload on transfusion services. Implementing evidence-based guidelines to improve the CM/T ratio encourages adherence to national and international standards, fostering better clinical outcomes. A lower CM/T ratio results in reduced costs, enhanced patient safety, and optimized resource use, positively impacting healthcare delivery. The decisions made by our center resulted in an average CM/T ratio of 1.92, which is lower than the optimal value of 2.5 and can be considered as a quality indicator of the hospital blood center's efficiency [14]. The CM/T ratio has been achieved in the main surgical departments, such as general surgery, orthopedics, cardiovascular surgery, and most internal departments, except for gynecology and obstetrics clinics.

To maintain an adequate blood stock level, the National Blood Transfusion Guide employs a workflow chart and stock calculation formula tailored to the needs of hospital units beyond the emergency and mass transfusion requirements. When determining the average stock level, the number of transfusions from the previous 26-week period was subtracted and a weekly distribution chart of these figures was prepared for each group. For each group, the number of weeks with the highest utilization was subtracted from the overall total, and the remaining number was divided by 25 to calculate the weekly critical stock level. This ensures that the center is prepared to supply the product. It is important to note that according to the National Blood Centre regulations, blood cannot be collected unless authorized to do so in emergency situations. Regional blood centers provided our blood requests, and we were unable to assess our blood donor supply due to a lack of authorization

A multidisciplinary approach is essential to enhance the effectiveness of hospital blood transfusion committees. Including hematologists, anesthesiologists, surgeons, critical care specialists, pharmacists, nurses, and laboratory staff offers diverse perspectives that improve transfusion management. The committee must establish and regularly update blood usage policies that align with national and international guidelines. Collecting, analyzing, and reporting data on blood usage and inappropriate transfusion practices ensures resource efficiency and patient safety. Educational activities and awareness initiatives for healthcare personnel further reduce transfusion-related complications. Combining these efforts significantly boosts the effectiveness of blood transfusion committees.

Conclusion

It is crucial to put into practice the resolutions made by the transfusion committee to guarantee the effective, secure, and legal operation of a transfusion center. This can be achieved if the healthcare professionals working at the center and the patient management cooperate and follow a common policy. Recently, the idea of patient blood management has been frequently emphasized, and the transfusion management policy applied in this field is guided, decisions are discussed, and an action plan is created for its implementation. Hence, it is evident that the transfusion committee is a serious and important activity. The decisions made by the committee have a significant impact on transfusion statistics such as CM/T ratio, blood product disposal, blood utilization rates, and hemovigilance rate. A functional HTC can also be considered as the center of patient blood management activity. The implementation of the committee's decisions will undoubtedly have a favorable impact on both hospital transfusion management and

statistics. Conducting committee meetings at a regular frequency and fully implementing their decisions form the basis of effective transfusion management.

In recent years, hospital blood management has become more active in our country, and hospital management support is also increasing. The reason for this increasing importance can be explained by its contribution to the hospital economy as well as patient health. In transfusion centers without adequate support, resources, and real authority, HTC will not be fully functional or have a strong enough impact on transfusion practices. To make the HTC more effective, solution-oriented, functional, and applicable, solutions such as increasing the participation in the committee, managing it only by experts interested in transfusion, introducing an additional performance system to make participation in the committee more attractive, creating new transfusion performance indicators, and introducing a penalty system for those who do not apply rewards to clinical units that implement the committee decision can be produced.

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Conflict of interest

No conflict of interest was declared by the authors.

Data availability statement

The data of this study are available from the corresponding author upon reasonable request. The data are not publicly available due to privacy or ethical restrictions.

References

1. World Health Organization. The Clinical Use of Blood: Aide-Memoire for National Health Programmes. 2nd ed. Geneva: World Health Organization;2009.Retrievedfrom:https://iris.who.int/bitstream/handle/10665/42396/9241545399.pdf. (Accessed on Dec 11, 2024)
2. Bhatnagar N, Shah M, Shah S, Mathew AM. The role of hospital transfusion committee in ensuring rational use of blood. BJKines-NJBAS. 2023;15(1):61-6. doi: 10.56018/2023061.
3. Ikebe E, Matsuoka S, Tanaka A, Yonemura Y, Fujii Y, Ohsaka A, et al. Reduction in adverse transfusion reactions with increased use of washed platelet concentrates in Japan—A retrospective multicenter study. Transfus Apher Sci. 2019;58(2):209–14. doi: 10.1016/j.transci.2018.12.021.
4. Damais-Cepitelli A, Leo-Kodeli S, Lovi V, Gouëzec H, Lassale B, Augey L, et al. Analysis of causes of destruction of labile blood products in health institutions: A multicentric study. Transfus Clin Biol. 2018;25(4):242-8. doi: 10.1016/j.tracli.2018.07.009.
5. Ministry of Health, Republic of Turkey. National Blood and Blood Components Preparation, Use and Quality Assurance Guide. Ankara: Ministry of Health Publications; 2016. Retrieved from: https://www.kizilay.org.tr/Upload/Dokuman/Dosya/ulusal_kan_rehberi.pdf. (Accessed on Dec 14, 2024).
6. Wood EM, Ang AL, Bisht A, Bolton-Maggs PH, Bokhorst AG, Flesland O, et al. International haemovigilance: What have we learned and what do we need to do next? Transfus Med. 2019;29(4):221-30. doi: 10.1111/tme.12582.
7. Ministry of Health, Republic of Turkey. National Hemovigilance Guide. Ankara: Ministry of Health; 2020. Retrieved from: https://ekutuphane.saglik.gov.tr. (Accessed on Dec 11, 2024).
8. Kaufman RM, Dinh A, Cohn CS, Fung MK, Gorlin J, Melanson S, et al. Electronic patient identification for sample labeling reduces wrong blood in tube errors. Transfusion. 2019;59(3):972-9. doi: 10.1111/trf.15102.
9. Sadana D, Pratzer A, Scher LJ, Saag HS, Adler N, Volpicelli FM, et al. Promoting high-value practice by reducing unnecessary transfusions with a patient blood management program. JAMA Intern Med. 2018;178(1):116-22. doi: 10.1001/jamainternmed.2017.6369.
10. Carson JL, Guyatt G, Heddle NM, Grossman BJ, Cohn CS, Fung MK, et al. Clinical practice guidelines from the AABB: Red blood cell

transfusion thresholds and storage. JAMA. 2016;316(19):2025-35. doi: 10.1001/jama.2016.9185.

11. Podlasek SJ, Thakkar RN, Rotello LC, Fleury TA, Demski RJ, Ness PM, et al. Implementing a "Why give 2 when 1 will do?" choosing Wisely campaign. Transfusion. 2016;56(9):2164-70. doi: 10.1111/trf.13664.
12. Frietsch T, Shander A, Faraoni D, Hardy JF. Patient blood management is not about blood transfusion: It is about patients' outcomes. Blood Transfus. 2019;17(5):331-3. doi: 10.2450/2019.0126-19.
13. Bashir F, Khalid A, Iqbal S, Ghafoor T, Ahmed M. Exploring the causes of wastage of lood and its components in a tertiary care hospital blood bank. Cureus. 2021;13(12):20500. doi: 10.7759/cureus.20500.
14. Waheed S, Borhany M, Abid M, Naseer I, Shamsi T. Blood ordering and transfusion practices: An insight toward better utility of blood products. Cureus. 2022;14(2):22075. doi: 10.7759/cureus.22075.