

Blood Bank Donor Selection and Screening as a Significant Challenge to Donor Recruitment Officers: Fulfilling Requisites for Safer Use of Blood and Blood Products

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Abstract

Donor selection and screening are critical components of various medical practices, including blood donation. Challenges include a limited donor pool, inadequate resources and infrastructure, and ethical concerns. Strategies to address these problems include the use of living donors, the expansion of the donor pool through education and awareness campaigns, the provision of adequate resources and infrastructure, the development of standardized protocols and regulations, the use of innovative technologies and research methodologies, the development of ethical guidelines and standards, and the provision of informed consent and counseling.

Keywords: blood donation, donor recruitment, donor selection and screening, blood donation in pandemic, safe use of blood products

Introduction

According to the World Health Organization (WHO), the process of normal donor recruitment involves defining operating procedures, maintaining confidentiality, appointing donor recruitment officers, and developing donor motivational and marketing programs (WHO, 2014). The process involves creating awareness to inform people of the donation programs through exhibitions and digital and print media (Zito et al., 2012). Additionally, the process involves the identification of interests and needs by motivating potential donors to donate blood.

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Donor selection and screening are critical components of various medical practices, including blood donation. The safety and efficacy of these medical practices depend on carefully selecting and screening donors to minimize the risk of transmission of bloodborne infectious diseases, genetic disorders, and other health conditions (WHO, 2014). Donor recruitment officers play a significant role in identifying potential donors, conducting screenings, and ensuring compliance with regulatory requirements.

However, the entire donor selection and screening process presents several challenges. The limited donor pool is the first significant challenge in donor selection and screening. The availability of suitable donors is a significant constraint in many medical practices, such as blood donation. For example, the shortage of suitable blood donors is a significant barrier to blood donation. Donor recruitment officers face the challenge of identifying and recruiting potential donors and ensuring they meet the eligibility criteria.

The second significant challenge in donor selection and screening is inadequate resources and infrastructure. Donor recruitment officers require adequate resources and infrastructure to conduct effective screenings, maintain donor records, and comply with regulatory requirements (Marano et al., 2015). Inadequate resources and infrastructure can lead to errors, delays, and inconsistencies in donor selection and screening, compromising the safety and efficacy of medical practices.

Ethical concerns are another significant challenge in donor selection and screening. Donor recruitment officers must balance the need for suitable donors with ethical considerations, such as privacy, confidentiality, and informed consent. Ethical concerns can arise in several areas, such as using living donors, screening donors for infectious diseases, and sharing donor information.

Considering these, this review article explored the current knowledge on donor selection and screening, its challenges, potential strategies to overcome them, and the future outlook in modern blood banking. Strategies such as using living donors, expanding donor pools through awareness campaigns, developing ethical guidelines, and providing adequate resources and infrastructure could address these challenges.

Review and Discussion

The Donor Selection process

In selecting donors, the blood transfusion service (BTS) provider should have a clear guide for the donor recruitment officer assigned to donor selection. The purpose of donor selection is to check and assess whether the person is qualified as a blood donor and ensure safe blood for the recipient.

Several protocols are promulgated depending on the institution. In a regular donor selection process, the donor must first register. During registration, the potential donor provides all the personal information needed. Next, the donor is given the pre-donation information. In the course of providing the pre-donation information, the donor is made aware of the donation process to know how it can be of use and the risks associated with blood donation. After receiving the pre-donation information, the donor answers a blood donation questionnaire. While the donor is completing the questionnaire, the donor recruitment officer does the interview and the pre-donation counseling. During the pre-donation counseling, the BTS must ensure the donor's privacy and data confidentiality. This process will ensure that the donor understands and responds fully to the questionnaire. The donor health and risk assessment follows pre-donation counseling during which the donor's medical history is reviewed and evaluated. This step includes the physical examination and checking of the donor's vital signs. The donor then signs the informed consent. This informed consent is a voluntary agreement given by the prospective donor to the donation of blood, to the testing of a blood sample for transfusion-transmitted infections (TTIs), for the transfusion of the donated blood to patients, and if required, for the use of the blood for additional tests, quality assurance, or research purposes (WHO, 2012).

Donor selection and screening play a pivotal role in ensuring the safety and effectiveness of treatments relying on donated biological materials (Woodfield et al., 2017). One main challenge involves creating donor criteria that balance safety needs with the practical aspects of donor recruitment. For instance, donor eligibility criteria can significantly influence donor availability and recruitment (Marano et al., 2015). In blood transfusion, donor eligibility criteria implementation has led to donor shortages in some regions (Siromani, 2013).

This review also emphasizes the need for standardized screening processes to maintain consistency in donor selection. For instance, research related to blood donation highlights the importance of standardized screening processes to reduce disease transmission risks and ensure the quality of donated cells or organs (Stanworth et al., 2020). Furthermore, blood transfusion studies stress the significance of screening for emerging infectious diseases, such as Zika and Ebola viruses (Busch et al., 2019).

Although the reviewed articles offer valuable insights into donor selection and screening, knowledge gaps and future research opportunities exist. Some articles pinpoint the need for enhanced donor testing for emerging infectious diseases (Noubiap et al., 2013; Weimer et al., 2019), while others emphasize more effective interventions to boost donor recruitment and retention (Bower et al., 2014). Several articles also spotlight molecular typing and genotyping techniques' potential to improve donor matching and decrease alloimmunization risks (Williamson & Devine, 2013).

Problems encountered

Blood transfusion services are essential to modern healthcare, providing life-saving treatments to patients who require blood products. However, blood safety and availability are major challenges in many countries, particularly developing regions. The COVID-19 pandemic has further exacerbated these problems, creating additional hurdles for blood banks to provide safe and adequate blood supplies (Baig et al., 2013). There is a need for proactive planning and coordinated strategies to maintain an adequate blood supply (Valeria et al., 2018). Weimer et al., in their study in 2019, highlighted the challenges in donor selection, manufacturing, and quality control. They suggested increased government investment and improved regulation of the blood banking system as key steps to address the challenges faced in blood donation and transfusion (Weimer et al., 2019).

The COVID-19 pandemic has affected blood donation and transfusion practices in several ways. Findings on the study of the effects of the COVID-19 pandemic on the supply of blood and blood products by Stanworth et al. (2020) revealed the enormous influence that the pandemic had on the supply and use of blood for transfusion which includes a reduction in the number of donors matched by a reduction in demands for transfusion (Stanworth et al., 2020). Potential problems encountered include but are not limited to a blood product shortage, donor or blood bank staff safety, supply logistics, and catering to the demand for convalescent plasma (Arcot et al., 2020). These challenges could be mitigated by proactive preparation and coordinated tactics crucial to overcome these problems.

A study by Dubey et al. (2014) delved into the knowledge, attitudes, and beliefs of people in North India regarding blood donation. They emphasized the need for targeted campaigns to improve donor recruitment and eliminate misconceptions (Dubey et al., 2014). There is a need for better training and education for blood transfusion professionals, improved blood stocks management, and the integration of cross-disciplinary systems for patient blood management (Vrotsos et al., 2015). The gender gap in blood donors and irrational blood usage are issues that must be addressed to communicate better and manage the blood donation process (Bani & Guissani, 2010). Understanding these challenges and implementing the necessary steps can inform future policy-makers and stakeholders of the necessary practices to improve blood donation and management (Sharma, 2000). Novel approaches to recruiting blood donors are needed to increase blood supply in blood banks (Williamson & Devine, 2013). The main challenges the National Blood Service in Iran has faced are the inappropriate usage of blood and blood products and the need for a management system (Pourfathollah et al., 2015).

Another problem encountered during blood donor screening is blood-related infections causing deferral to donate blood. A study conducted in Northern Tanzania found a high frequency of donor deferrals in the region and identified infection as the primary cause (Valerian et al., 2018).

A study by Iqbal et al. in 2020 identified anemia and bloodborne infections as major reasons for the deferral of blood donors in Multan (Iqbal et al., 2020).

The high incidence of Hepatitis C infection in Egypt seriously challenged the blood donor recruitment process (Hussein, 2014). Page et al., in their study, reported a high prevalence of infectious illnesses among blood donors in Ethiopia, thus suggesting the need for stricter rules and regulations during the donor screening procedure (Page et al., 2014). Bloodborne infections compromising blood donation safety is a major problem in Cameroon, with a high incidence of infectious diseases among first-time blood donors (Noubiap et al., 2013). Several measures are undertaken to safely use blood and blood products (Zaajier, 2017). Preventing transfusion-transmitted infections demands continuous vigilance and the development of novel testing methods (Arcot et al., 2020). Knowledge gaps and future research opportunities also emerge in studies about red blood cell alloimmunization clinical trial recruitment, retention interventions, and organ banking's grand challenges (Bower et al., 2014).

There is a need to broaden the public's understanding of blood donation and transfusion's critical role in modern medicine. Dubey et al., in their study conducted in North India on the knowledge, attitude, and beliefs regarding blood donation, highlighted the need for widespread blood donation campaigns and the use of television as the most effective medium of communication for disseminating the importance of blood donation (Dubey et al., 2014). Further education, motivation, and information dissemination would help recruit potential blood donors (Daniel et al., 2014).

CONCLUSION

Donor selection and screening pose substantial challenges for donor recruitment officers in various fields, including blood transfusion and cell-based therapies. Emphasis on the necessity for standardizing and optimizing donor selection and screening processes is needed to enhance the quality of donated blood while reducing the risks of transfusion-transmitted infections, immune responses, and other adverse events. Collaborating with researchers, healthcare professionals, and policymakers is crucial for implementing and refining these strategies, ensuring that donor-based treatments continue to evolve and better serve those who rely on them.

While several knowledge gaps and future research directions were identified, the outlook for donor selection and screening is promising, with technological and therapeutic advances poised to enhance blood donation procedures. Implementing these advances requires collaboration and considering ethical, legal, and social aspects.

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