Voluntary non-remunerated blood donations to ensure blood safety in the WHO South-East Asia Region to support universal health coverage

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REGIONAL OFFICE FOR South-East Asia

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ISBN Number: 978-92-9021-044-3

Preface

Blood safety starts with the donor. This has been highlighted by WHO time and again starting from its resolution in 1975. This emphasized the need for voluntary non-remunerated donations (VNRDs), and subsequent slogans were coined such as “Safe Blood Starts with Me” and awareness created regarding the subject through various educational programmes and media campaigns in different parts of the world. This has led to more than 90% of the blood supply from voluntary blood donors, especially in high-income countries. However, middle- and low-income countries are still struggling to obtain safe sources of blood. The WHO Regional Office for South-East Asia organized regional meetings to create awareness and collect information from Member States to understand the gaps and challenges in reaching the 100% target of VNRDs. The present document highlights the success stories, current challenges, gaps and opportunities in reaching the goal of 100% voluntary blood donations in the South-East Asia Region. Due to geographical proximity and cultural similarity, the exchange of ideas in promotion of VNRDs within the Region through this report will go a long way. We hope that this document will help Member States to understand the current status of VNRDs in the Region and provide insights to overcome the challenges to achieving the goal of 100% VNRDs.

Foreword

Blood Transfusion Services are a fundamental component of any healthcare delivery system. They play a crucial role by delivering life-sustaining blood and blood components for a variety of clinical indications. The availability and safety of blood has always been a challenge due to its human origin and the absence of adequate testing infrastructure and resources, particularly in low-income countries. The provision of a secure, adequate, and sustainable supply of blood, blood components, and blood products is, however, one of the governments' most essential public health responsibilities in the pursuit of universal health coverage (UHC).

The World Health Assembly (WHA), the decision-making authority of the World Health Organisation (WHO), recognised and emphasised the need for secure blood as early as 1975; consequently, blood safety and availability were accorded a high priority. In the successive reports of the Global Database on Blood Safety, a disparity between high-income and middle- and low-income countries in terms of the availability and safety of blood has been consistently observed.

Voluntary non-remunerated blood donations are recognised as the cornerstone of the provision of secure, safe, and sustainable blood supplies; consequently, a more granular report on the scenario of the VNRDs was necessary in the context of the WHO's South-East Asia Region (SEAR). As a result, a gap analysis was conducted on VNRDs in order to comprehend the situation and take the necessary measures to strengthen blood safety in the WHO-SEAR in support of Universal Health Coverage. Regional specialists developed a survey instrument (questionnaire). Using the Delphi method, a group of subject matter experts validated the questionnaire, and every effort was made to streamline the items to gather consistent responses from the reporting experts. Additionally, efforts were made to validate the data using the WHO Global data base for blood safety (GDBS) and other published resources. This report is an outcome of that effort.

I believe that the report's findings will assist WHO-SEAR member countries better understand their challenges and facilitate the exchange of ideas to improve and make efforts towards the implementation of the action plan towards 100 percent VNRDs in order to provide safe and adequate blood components and products as an integral part of UHC.

Dr Poonam Khetrapal Singh
Regional Director
WHO South-East Asia Region

Abbreviations

AABB	Association for the Advancement of Blood & Biotherapies
AATM	Asian Association of Transfusion Medicine
BSc MLT	Bachelor of Science in Medical Laboratory Technology
BTS	Blood Transfusion Services
CUE	confidential unit exclusion
DMLT	Diploma in Medical Laboratory Technology
DOMAINE	European Project – Donor Management IN Europe
DTD	Dutch Transfusion Data warehouse
FDA	Food & Drug Control Authority
GDBS	Global Database on Blood Safety
Hb	haemoglobin
HvPI	Haemovigilance Programme of India
IEC	information, education and communication
IRC	Indonesian Red Cross
IFRC	International Federation of Red Cross and Red Crescent Societies
IHN	International Haemovigilance Network
IPC	Indian Pharmacopoeia Commission
ISBT	International Society of Blood Transfusion
LMICs	low- and middle-income countries
KRC	Korean Red Cross
MD	Doctor of Medicine
MLT	Medical Laboratory Technologist
MoHFW	Ministry of Health & Family Welfare
NACO	National AIDS Control Organisation
NAT	nucleic acid testing
NBDVP	National Blood Donor Vigilance Programme
NBP	National Blood Policy
NBTC	National Blood Transfusion Council
NBTS	National Blood Transfusion Services
NDRC	National Disaster Recovery Centre

NEQAS	national external quality assurance scheme
NGO	nongovernmental organization
NIB	National Institute of Biologicals
PGIMER	Postgraduate Institute of Medical Education and Research
PROTON	profiles of blood product transfusion recipients in the Netherlands
QMS	quality management system
REDS	Recipient Epidemiology and Donor Evaluation Study
SAR	serious adverse reaction
SBTC	State Blood Transfusion Council
SCANDAT Database	Scandinavian Donations and Transfusions Database
SHOT	serious hazards of transfusion
TACO	transfusion-associated circulatory overload
TRALI	transfusion-related acute lung injury
TTI	transfusion-transmissible infection
UHC	universal health coverage
VNRDLO	voluntary non-remunerated blood donations liaison officer
VNRD	voluntary non-remunerated blood donation
WHO	World Health Organization

Acknowledgements

The Blood, Blood Products, and Products of Human Origin Department of UHC/Health Systems of the WHO Regional Office for South-East Asia wishes to express its gratitude to the Department of Transfusion Medicine, Postgraduate Institute (PGI) of Medical Education and Research, Chandigarh, India, Professor Ratti Ram Sharma, and the team of Dr Suchet Sachdev, Dr Hari Krishan Dhawan, Dr Divjot Singh Lamba, and Dr. Sheetal Malhotra for helping to compile the information and draft this document. We acknowledge the support of colleagues from the Blood, Blood Products, and Products of Human Origin unit in WHO headquarters.

The development and publication of this document were conceptualized and coordinated by Dr. Aparna Singh Shah, Scientist, Department of UHC/Health Systems at the WHO Regional Office, under the leadership of Mr. Manoj Jhalani, Director, Department of UHC/Health Systems, Dr. Thaksaphon (Mek) Thamaragsi, Coordinator, Integrated Health Services- Department of UHC/Health Systems, reviewed this document. Dr. Shaheer Aboobacker, Dr. Adithyan Geetha Suresh, and Ms. Naina Sethi Department of UHC/Health Systems, also contributed to this document.

The questionnaire for data acquisition was prepared by PGI Chandigarh and other regional experts. The questionnaire was reviewed by Professor Rajendra Chaudhary, Head of the Department of Transfusion Medicine, Sanjay Gandhi Postgraduate Institute of Medical Sciences, India, Professor Shamee Shastry, Head of the Department of Immunohematology and Blood Transfusion, Kasturba Medical College, India, and Dr. Kamal Kishore, Department of Biostatistics, PGI Chandigarh, India.

This document was peer-reviewed by Dr. Neelam Marwaha, Former Professor and Head, Department of Transfusion Medicine, Postgraduate Institute of Medical Education and Research, India, Dr. Mindy Goldman, Medical Director, Donor and Clinical Services, Adjunct Professor, Department of Pathology and Laboratory Medicine, Faculty of Medicine, University of Ottawa, Ontario,Canada; Dr. Yoke Lin Fung, Associate Professor, School of Health and Behavioural Sciences, University of the Sunshine Coast, Australia; Professor Sitalakshmi Subramanian, Head, Transfusion Medicine & Immunohematology, St. John's Medical College Hospital, Bangalore, India; and Dr. Surinder Singh, Vice Chancellor, JSS Academy of Higher Education and Research, Mysuru, India.

WHO would also like to extend special thanks to the WHO collaborating centres on blood safety: Sri Lanka, Dr. Lakshman Edirisinghe, Director, Head of WHO Collaborating Centre, National Blood Transfusion Service, Ministry of Health, Colombo, Sri Lanka; Dr. Pawinee Kupatawintu, Deputy Director, National Blood Centre, Thai Red Cross Society, Bangkok, Thailand; and regional experts Ms. Pema Yangzom, Senior Programme Officer, Healthcare Diagnostic Centre, Department of Medical Services, Ministry of Health, Royal Government of Bhutan, Thimphu, Bhutan; Dr. Md. Ashadul Islam, Senior Vice-President, Blood Transfusion Society of Bangladesh (BTSB) and General Secretary, National Safe Blood Transfusion Expert Committee, Dhaka, Bangladesh; Dr. Supriya Sarkar, Programme Manager, Blood Safety and Patient Safety, Directorate General of Health Services, Ministry of Health and Family Welfare, Dhaka, Bangladesh; Dr. Rekha Manandhar, Senior Consultant Pathologist, National Public Health and Population, Kathmandu, Nepal; Dr. Teguh Triyono, Department of Clinical Pathology, Faculty of Medicine, Gadjah Mada University, Yogyakarta, Indonesia, who provided the data responses to the questionnaire used, for the preparation of the report.

We are thankful to all contributors, including all the experts from Southeast Asia member states, for their cooperation in conceiving, writing, and finalising this document. Mr. Gautam Basu, Reports Officer at the WHO Regional Office, edited this document.

Executive Summary

Access to safe blood and blood products is recognized as one of the key requirements for delivery of modern health care in the journey towards health for all. The foundation of safe and sustainable blood supplies depends on the collection of blood from voluntary non-remunerated and low-risk donors. Data from the WHO Global Database for Blood Safety (GDBS) brings out several inadequacies related to the supply and safety of blood and blood products. These inadequacies include a number of variations in safe blood practices across the world, including the quantity of blood donated (voluntary and replacement types), quality and adequate testing of the donated blood (immunohaematology [IH] and transfusion-transmitted infections [TTIs]), rational use of blood and blood components such as appropriate patient blood management protocols. These variations are very high in countries of the South-East Asian Region and most of them are either low- or middle-income countries (LMICs).

To address these issues, WHO drafted the "Action framework to advance universal access to safe, effective and quality-assured blood products (2020–2023)". An important challenge, common to all these countries, is their reliance primarily on replacement blood donation due to the lack of a structured voluntary blood donation programme. Hence, creation of a structured voluntary blood donation programme is the need of the hour, as has been previously stated in the "Expert consensus statement on achieving self-sufficiency in safe blood and blood products, based on voluntary non-remunerated blood donation (VNRDs)" made in Geneva by the WHO Expert Group on self-sufficiency in safe blood and blood products based on VNRBD, 2012 to strengthen voluntary blood donation and fulfil its objective of 100% blood supply through voluntary non-remunerated blood donors.

The information for this document was collected through published peer-reviewed journals, regional meeting reports, and with the help of a questionnaire completed by experts from Member States. The information collected was analysed and compiled in this report. The compiled information becomes the foundation for analysis and synthesis of key gaps, challenges and the way forward to improve blood safety in the South-East Asia Region.

The evidence clearly suggests that to realize the vision of access to safe blood products from a 100% VNRD system for universal health coverage (UHC), the Region needs high political commitment and multisectoral efforts to battle these major systemic challenges.

1. Blood safety governance

To ensure a safe and sufficient supply of blood components, the Region needs a well-coordinated structure for conducive policy and legislation, national guidelines and criteria on blood donor selection, public information and donor education, infrastructure and facilities, adequate financial and human resources, a quality system, including standard operating procedures, documentation and records, donor haemovigilance and monitoring and evaluation.

Member States have their national blood policy (NBP) in place where VNRDs is prioritized. Moreover, all countries have established a designated body for blood transfusion services (BTS), at least at the national level. There is a need, however, for the Region to review and strengthen policy and legal tools to promote uniformity in the standards of quality transfusion services.

These policies and legislations decrease the chances of malpractices like paid blood donors and profiteering from blood centres.

2. Human resources for blood safety

Despite advancements in technology, BTS and governance are highly labour intensive. Trained and dedicated human resources are crucial for improving blood transfusion practices around the world. This report shows that all countries have graduate/postgraduate /MD Transfusion Medicine/Immunohaematology training programmes for doctors. Meanwhile, only Sri Lanka and Thailand have dedicated voluntary blood donation liaison officers (VNRDLOs) for promoting VNRDs. While most Member States have decentralized BTSs, training capacity at local blood centres may be limited. Not all blood centres have adequate and appropriately trained human resources. System inefficiency is also reported in some settings where trained human resources are not appropriately employed, including due to underutilization of blood centres. Human resource planning and development (training/retraining) at the central level may be effective in addressing gaps in human resource availability, competency and utilization.

3. Social mobilization for VNRDs

To strengthen a sustainable blood donor base in Member States of the Region, the motivation for VNRDs must start at the community level. Schools and colleges can include the concept of VNRDs in their teaching curriculum. This inclusion is in place nationwide in Sri Lanka and Thailand, and at a subnational level in India. Another situation found is the disproportionately fewer number of female blood donors reported from India and Bangladesh. This discrepancy might be primarily due to inadequate motivation and higher rates of deferral due to low haemoglobin values. Thus, special attention is needed to motivate women and ensure sufficient iron, protein, vitamin B12 and folic acid in the diet to enable them to be selected based on haemoglobin levels above the optimal cut-off required.

Information technology and social media have helped in promoting VNRDs in some Member States; however, its optimum potential still needs to be exploited for recruitment and retention strategies in others. Similarly, incentives commensurate with the definition of VNRDs are not being given to voluntary donors in any of the Member States, hence that needs to be promoted. All Member States have used special national or international days, including World Blood Donors' Day, as a key opportunity to promote voluntary blood donation. Most countries run campaigns for days or weeks, while a few countries conduct month-long campaigns. In addition, all countries have exercised linkages with and support from international organizations such as the International Red Cross and Red Crescent Societies for promotion of VNRDs.

4. Donor recruitment and retention are essential for VNRDs

Safe blood starts with a safe donor. Thus, donor recruitment and retention strategies should be designed such that donors have a satisfying experience of blood donation and form a bond with BTS. For this, extensive information, education and communication campaigns must be organized at regular intervals to motivate people to come forward for this noble cause. The public needs to be made aware of the need for and requirement of blood and blood components in health-care institutions and its importance in saving the lives of many critically sick patients and others requiring transfusion on a regular basis, such as patients with thalassaemia and cancer.

5. Donor haemovigilance system

Haemovigilance involves surveillance of transfusion-related adverse events and adverse reactions comprising the entire transfusion chain from blood donor to the transfused patient. Most Member States have a haemovigilance system in place for reporting donor and recipient adverse events. The Region should establish mechanisms to share information and experiences related to the challenges and barriers in haemovigilance systems. This might be an effective approach to address the risk of donor adverse events, which is important for encouraging future blood donations.

6. Donor counselling and services

Blood donor counselling is crucial for lowering the prevalence of TTIs in donated blood. This helps to maintain a pool of healthy, dependable and safe voluntary blood donors. It is desirable to have a system in place for post-donation counselling, referral to care and treatment for TTI-positive blood donors. Member States require financial support for their treatment and regular health check-ups and follow up. The system for return of temporarily deferred donors to the blood donation pool in all Member countries of the Region needs to be strengthened to bring back this potentially motivated donor base.

7. Donor data management

Donor data management increases the efficiency and safety of donor-blood component–recipient relationship. The data on blood donors can be compiled and maintained through national surveys among blood centres and comprehensive research projects by analysis of data by individual hospitals and blood centres, and by creating a central donor database. The donor data management system can be centralized or decentralized at different regional levels. It contributes to improving donor recruitment and retention and donor and recipient safety, while also promoting comprehensive research in monitoring the entire transfusion chain. Bangladesh, Bhutan, India, Indonesia, Nepal, Sri Lanka and Thailand have an operational blood donor data management system in place.

8. Monitoring and evaluation system

The Region should focus on establishing and using quality indicators on the voluntary donation system as the foundation for quality monitoring and improvement.

9. Benefits of blood donation to community and blood donors

Apart from addressing the demand for blood products, BTS also contribute towards other public health goals. These significant by-products include being the surveillance mechanism for haemoglobin levels and other various communicable diseases, such as hepatitis B and C, HIV, malaria and syphilis. Information gathered through BTS helps in assessment of the magnitude and determinants of these health conditions in the community, thereby linking those who are identified with these illnesses to better prevention and treatment. The identification of donors with raised blood pressure serves a similar purpose of institution of an early diagnosis and proper management to reduce the disease burden in the society at large.

Subsequently, post-donation notifications can be sent to seroreactive blood donors with TTIs. This plays a significant role in the early detection of HIV, hepatitis B and C virus infections, especially among the asymptomatic population. The referral of such TTI-positive donors for treatment is akin to tertiary prevention. Therefore, the combined activities of the blood centres are comparable to the work of a miniature public health service. Finally, the provision of blood and blood components obtained through VNRDs is an essential requirement for strengthening primary health care and decreases infant and maternal mortality in situations arising due to the lack of a safe blood supply.

Contents

1

Introduction: Global scenario and scene in the South-East Asia Region from the current WHO report on voluntary blood donation

1.1. Introduction

The World Health Organization (WHO) has been putting in concerted efforts to improve the standards of transfusion services across the globe, especially in low- and middle-income countries (LMICs). The blood safety division has been providing logistic and technical support in setting up blood transfusion services (BTS) in these countries. This report is an initiative to provide an overview of the current status of voluntary blood donation and related promotional activities in different countries of the WHO South-East Asia Region, current best practices, and gaps and challenges in achieving 100% voluntary blood donation. The report is primarily based on data for the year 2018, which were reported by Member States to the WHO Global Database on Blood Safety (GDBS) and, subsequently, a questionnaire specifically designed to understand the best practices for voluntary blood donation in these countries. The main objective of the survey is to collect and analyse data on national blood systems from Member States and understand the various gaps and opportunities for improvement in voluntary blood donations [1].

1.2. Global overview of blood collection

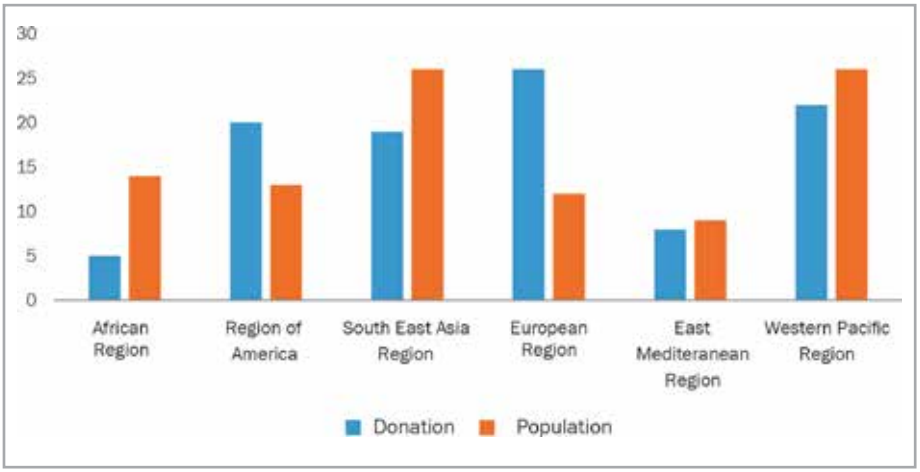
- As per a recent WHO blood safety report, a total of 118.5 million blood donations were made in different WHO regions in 2018 in 171 countries.
- Out of these 118.5 million donations, 106.1 million were whole blood donations and 12.4 million were apheresis donations. The blood donations were collected from voluntary non-remunerated, family or replacement and paid donors.

1.2.1. Blood donation rates in different parts of the world

- The analysis of donations and population data by WHO region and World Bank Income group showed that the availability of

blood for transfusion varied across WHO regions and World Bank Income groups, as depicted in Fig. 1. The highest blood collection recorded by WHO region in 2018 was in Europe (30.7 million; 24.8 million whole blood donation, 5.9 million apheresis donation), followed by the Western Pacific Region, which recorded a total donation of 26.3 million (23.2 million whole blood, 3.1 million apheresis), Region of the Americas (24.1 million; 21.6 million whole blood and 2.5 million apheresis) and South-East Asia Region, with a total donation of 22.3 million (21.6 million whole blood and 0.7 million apheresis).

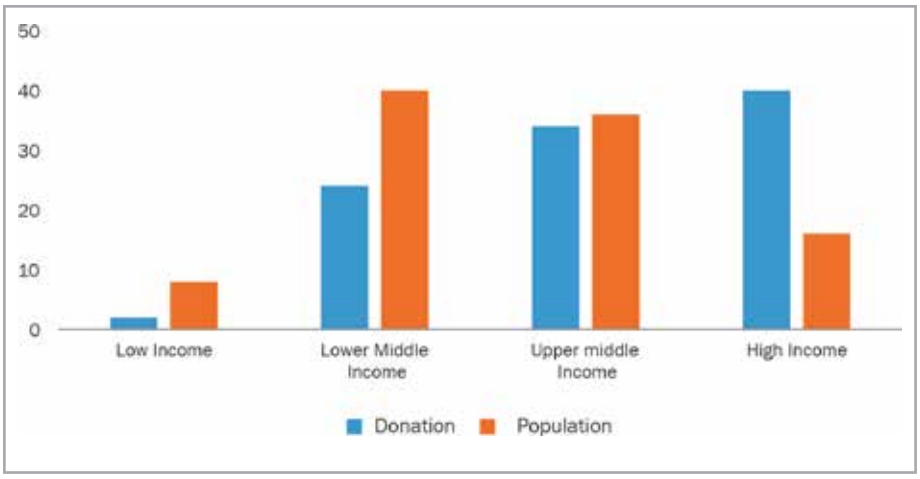
Fig. 1: Distribution (percentage) of population and blood donations by WHO region



1.2.2. Distribution of blood collection in different parts of the world (high development index countries vs middle- and low-income countries

- The whole blood donation rate was 31.5 donations per 1000 population per year in high-income countries, as depicted in Fig. 2. The distribution of whole blood donation in high-income countries was observed to be 40% and their population represents about 16% of the global population, whereas the distribution of blood donation in the lower-middle-income countries was seen to be 24%, representing 40% of the global population. The distribution of blood donations as well as the population in the upper-middle-income countries was almost comparable (34% and 36%, respectively).

Fig. 2: Distribution of population and blood donations by World Bank income group



- Comparing the distribution of blood donation in high-income countries with low-income countries, it was observed that the total distribution of blood donation in low-income countries was about 2%, and their population represented about 8% of the global population, whereas in high-income countries, the distribution of blood donations (40%) was more than their populations (16%).

1.2.3. Blood collection in the South-East Asia Region

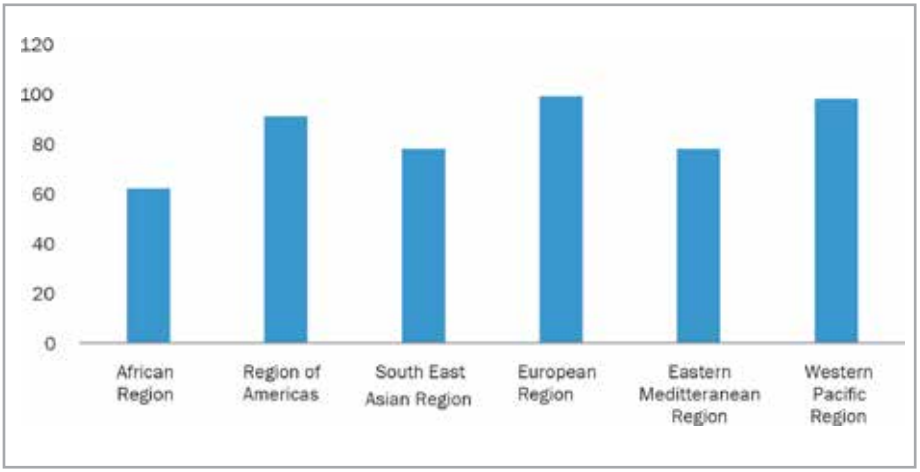
- In the South-East Asia Region, whole blood donations were estimated to be around 22.3 million, which accounts for around 26% of the global population.
- In the Region, out of 22.3 million, 21.6 million were whole blood donations while apheresis donations were estimated to be about 0.7 million.
- The distribution of population and blood donations by WHO region was also studied and it was observed that in the South-East Asia Region, the percentage of blood donations was found to be around 19% and their population represented 26% of the global population. Thus, the gap between total population and overall blood donation needs to be filled by creating awareness among the community regarding voluntary blood donation through a structured voluntary donation programme in this part of the world.

1.2.4. Blood component preparation across WHO regions and World Bank income groups

- The optimum use of blood takes place after its separation into various components as it can meet the needs of more than one patient (red cell concentrates, fresh frozen plasma, cryoprecipitate, and platelet concentrates).

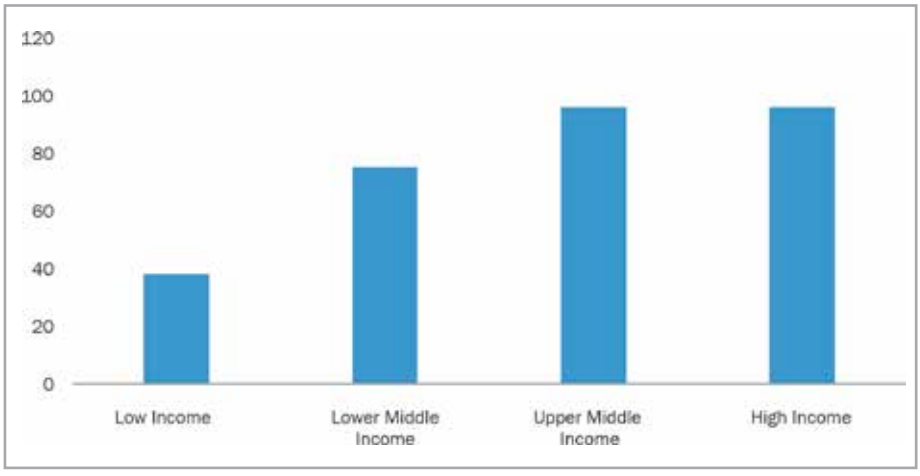
- According to the reported data, as depicted in Fig. 3, the WHO regions were compared based on the percentages of processing blood into components and it was seen that the maximum processing of whole blood was done in the European Region (99%), and Western Pacific Region (98%), followed by the Region of the Americas (91%), South-East Asia Region (78%), and Eastern Mediterranean Region (78%), and was the lowest in the African Region (62%).

Fig. 3: Whole blood donations processed into components by WHO region



- Similarly, data were also reported by the World Bank Income Group, which showed that high-income as well as upper-middle-income countries showed highest percentages of whole blood processing (96%), followed by lower-middle-income countries (75%). Low-income countries had the lowest percentage of processing of whole blood (Fig. 4).

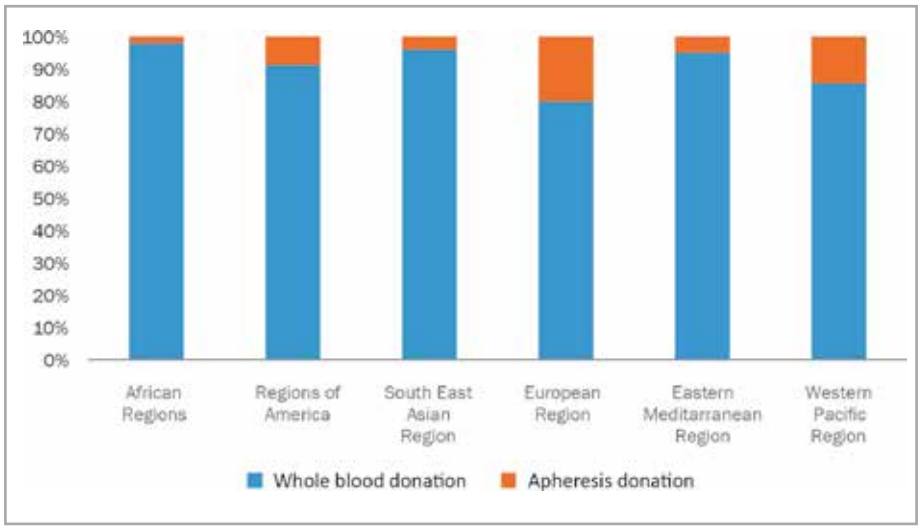
Fig. 4: Whole blood donations processed into components across the World Bank income groups



1.2.5. Blood collection in different parts of the world

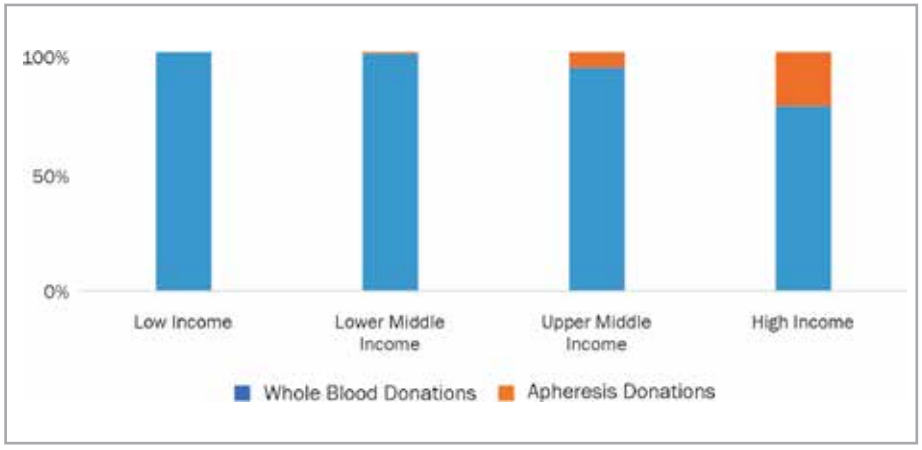
- Out of 171 responding countries, 90 reported collecting blood both as whole blood donations as well as through apheresis.
- Donations collected through the apheresis procedure, as depicted in Fig. 5, were majorly reported from the European Region (20%), the Western Pacific Region (14.4%) and the Region of the Americas (8.7%).

Fig. 5: Method of collection of blood donations by WHO Region



- In the high-income countries (Fig. 6), about 22.6% of all the donations were collected through the apheresis procedure, which was the highest, as compared to upper-middle-income (6.5%) or lower-middle-income (0.5%) countries.

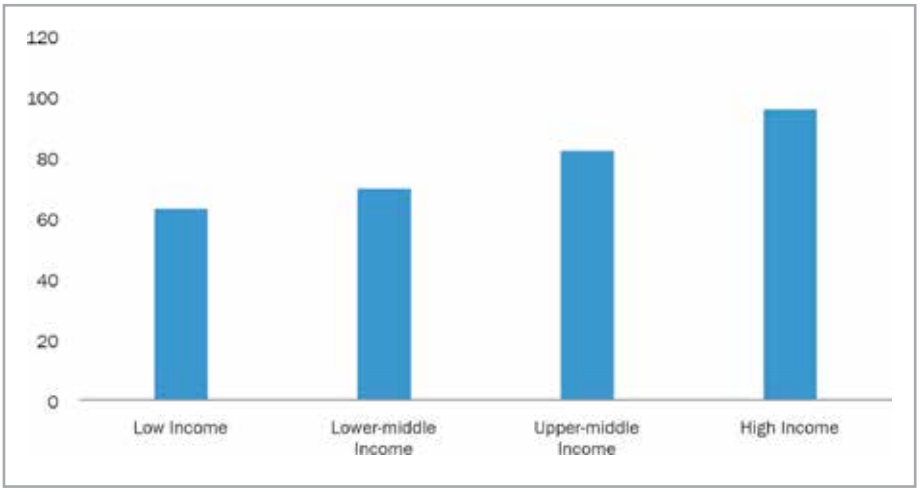
Fig. 6: Method of collection of blood donations by World Bank income group



1.2.6. Types of blood donation

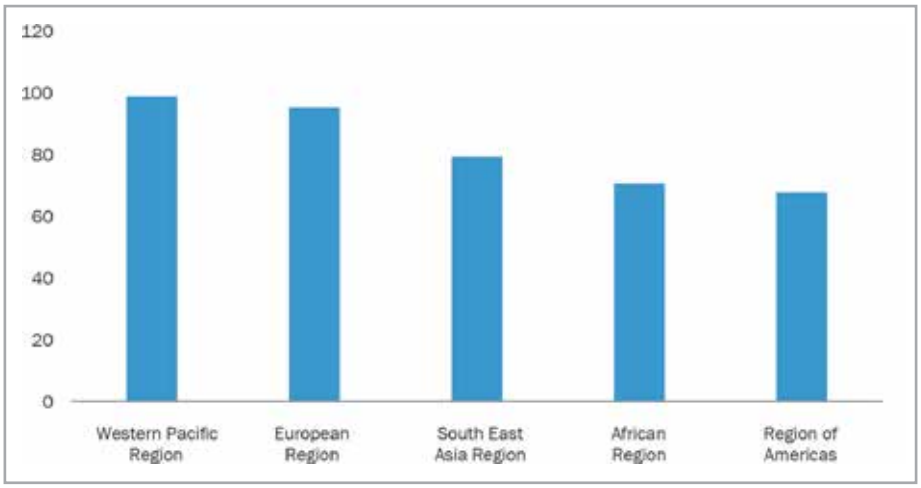
- Whole blood donation
  Blood donations were classified as:
  i. voluntary non-remunerated,
  ii. family or replacement donations.
- Out of 95.2 million whole blood donations, 82.8% were VNRDs, 15.9% were family or replacement donations.
- The proportion of VNRDs were studied in different income groups of the world (Fig. 7), where high-income countries had a higher proportion (95.6%) of blood collected from voluntary non-remunerated donors (VNRDs) as compared to upper-middle income (81.9%), lower-middle income (69.5%) and low-income countries (62.8%).

Fig. 7: Proportion of voluntary non-remunerated whole blood donations by the World Bank income group



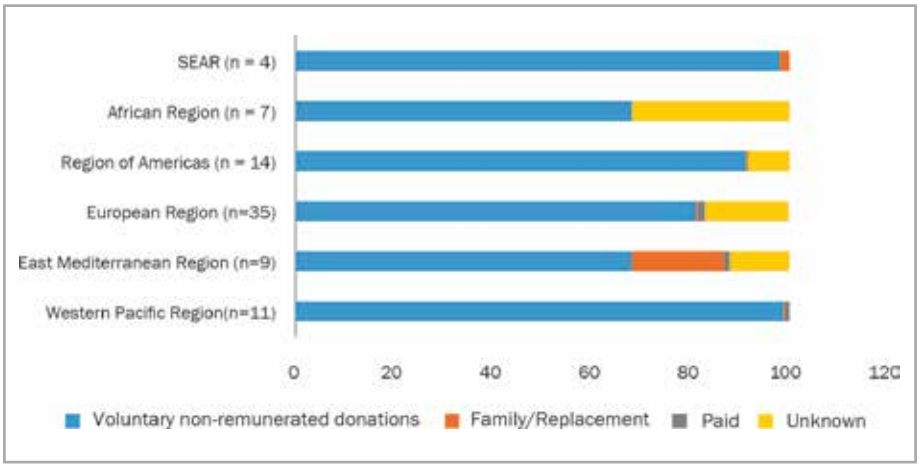
- Similarly, the proportion of VNRDs were studied in WHO regions (Fig. 8), where whole blood donations were the maximum in the Western Pacific Region (98.7%) followed by the European Region (95.2%), South-East Asia Region (79.1%), African Region (70.5%) and Region of the Americas (67.6%).

Fig. 8: Proportion of voluntary non-remunerated whole blood donations by WHO region



- Apheresis donations (Fig. 9)
- Out of 11.9 million apheresis donations globally, 88.7% were given by VNRDs and 10.6% were replacement donors.
- In the European Region, 81.1% of the apheresis donations were VNRDs, 0.3% were replacement donations and 1.5% were paid donations.
- About 98.7% of the donations were VNRDs in the Western Pacific Region and about 91.2% of the donations from the Region of Americas was from VNRDs.

Fig. 9: Proportion of voluntary non-remunerated, family/replacement and other type of donations amongst total apheresis donations



Ninety per cent of the blood supply in 79 countries were from VNRDs (31 the in European Region, 17 in the African Region, 13 in the Western Pacific Region, 8 in the Region of the Americas, 6 in the Eastern Mediterranean Region and 4 in the South-East Asia Region).

About 64 countries collect 100% or over 99% of their blood from VNRD and 54 countries collected blood by replacement donations or paid donations, accounting for more than 50% of their blood supply in 2018.

1.2.7. Current status in the WHO South-East Asia Region

- The current status of blood collection and the proportion of VNRDs in the 11 Member countries of the Region is depicted in Table 1, which is based on the WHO South-East Asia Region regional meeting – Blood safety country presentations 2022.

  Three countries – the Democratic People's Republic of Korea, Sri Lanka and Thailand – have 100% VNRDs. Indonesia and Myanmar have more than 90% VNRDs. Bhutan, India and Nepal have more than 75% VNRDs. However, Maldives, Bangladesh and Timor-Leste have less than 50% VNRDs.

Table 1: Blood collection and proportion of VNRDs with respect to the population in 11 countries of the WHO South-East Asia Region

Blood collection and proportion of VNRDs in the 11 Member countries of the Region				
Country	**Population**	**Donations**	**VNRDs**	**VNRDs (%)**
Bangladesh	166.3	703 424	154 753	22
Bhutan	0.8	9 997	7 997.6	80
Democratic People›s Republic of Korea	25.9	160 000	160 000	100
India	1393.4	12 400 000	9 424 000	76
Indonesia	276.4	3 821 715	3 477 760.65	91
Maldives	0.5	6 466	2 327.76	36
Myanmar	54.8	96 939	95 969.6	99
Nepal	29.7	271 922	225 695	83
Sri Lanka	21.5	450 640	450 640	100
Thailand	70	1 112 497	1 112 497	100
Timor-Leste	1.3	3 938	787.6	20
Total	2 040.6	19 0 37 538	15 112 428	79.4

93 donations per 1000 population or 9.3 per 100 population or 0.93% of the Population in millions as in 2021

Donations – total blood collection

VNRDs – voluntary non-remunerated blood donations

Source: Virtual Regional meeting of National Blood Transfusion Services (NBTS) focal points to review the implementation of "WHO action framework to advance universal access to safe blood and blood products 2020 (Global Public Health Good) from 26 to 27 July 2022

In a nutshell, there are 93 donations per 1000 population (9.3 per 100 population); 0.93% of population donates, which is encouraging for Member countries despite the recent COVID-19 challenge.

1.3. Clinical use of blood

1.3.1. Assessment of the need and demand for blood

- Difference between need for, demand for and use of blood according to WHO

  Need: an estimation of the amount of blood needed to meet the transfusion requirement of the patient population according to current policies, clinical guidelines and best practices.

  Demand: the amount of blood that would be transfused if all prescriptions of blood were met.

  Use: the actual amount of blood currently transfused.

- Various factors influence the blood requirements to meet the healthcare needs of a population, which includes:

  i. income levels,

  ii. current status and rate of development of the health-care system,

  iii. accessibility of the health-care facility to public.

1.4. Pattern of blood usage in different parts of the world

- Significant differences were observed in the pattern of usage of blood between high-, middle- and low-income countries.
- Transfusions were mostly used for supportive care in cardiovascular and transplant surgery, massive trauma and therapy for solid and haematological malignancies in high-income countries.
- In low- and middle-income countries, transfusions were most used for treating pregnancy-related complications and severe childhood anaemia.
- Moreover, in high-income countries, patients who were most frequently transfused were over 60 years of age, accounting for up to 76% of all transfusions, whereas in low-income countries, up to 54% of the transfusions were for children under 5 years of age followed by women aged between 15 and 45 years.
- Data for the year 2018 on distribution of units of blood in different clinical departments in hospitals or other transfusions in health facilities from low-income countries indicated that children and women were transfused most frequently.

1.4.1. Gaps and scope to improve transfusion practices and monitor safe and appropriate blood transfusion

- Various factors operate to explain the considerable variations in transfusion practice. However, one key factor is the implementation of best practices as obtained by high-quality research.
- An expanding body of literature, informed by high-quality randomized trials, can help in providing recommendations on which the patients can benefit from transfusion. For example, many randomized trials have evaluated the timing of transfusion administration and transfusion volume in children in Africa with severe anaemia.
- Evidence-based studies suggest avoiding unnecessary transfusions with allogenic red cells in most patients at haemoglobin thresholds between 7 and 8 g/dL; this can help in minimizing the risk of exposure to unnecessary transfusion.
- Use of evidence-based guidelines can be useful for those ordering blood components and are considered as prerequisites for establishing systems for appropriate clinical use of blood.

2

Governance and legislation

2.1. Voluntary non-remunerated blood donor

Definition: “A person who gives blood, plasma, or other blood components of his/her own free will and receives no payment for it, either in the form of cash or in-kind, which could be considered a substitute for money. This includes time off work, other than reasonably needed for the donation and travel. Small tokens, refreshments, and reimbursement of direct travel costs are compatible with voluntary non-remunerated blood donations. In short, it should be an altruistic donor who gives blood freely and willingly.”

The recent WHO report, *Global status report on blood safety and availability 2021*, shows that VNRDs in the South-East Asia Region account for 79.1% of all donations and the Region is moving towards the goal of 100% VNRDs.

These donors are the safest source of blood as they are not under any kind of pressure/compulsion to donate blood, so they respond to the donor questionnaire more truthfully. On the contrary, on some occasions, replacement/family blood donors hide the history relevant to blood donation because of social pressure/compulsion. This is confirmed by many studies in the literature, including a recent study from New Delhi for the period 2010–2019 on 168 570 blood donors. This showed that the overall risk of transfusion-transmitted infections (TTIs) such as HBV, HCV, HIV, syphilis and malaria was 0.8% in voluntary donors and 1.95% in replacement donors [1]. Another recent study from north India shows that the combined nucleic acid testing (NAT)yield (for HBV, HCV, and HIV-1) was high in replacement donors (1 in 498 donors) as compared to 1 in 1320 voluntary donors [2].

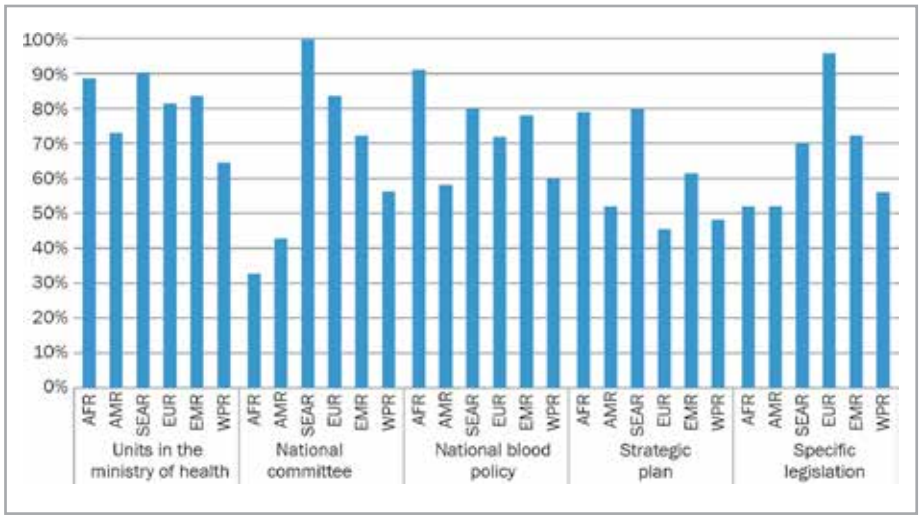
Governance and legislation: the policies and legislations, such as having a national blood policy, specific legislation for blood safety, Ministry of Health having a special cell responsible for blood safety, have a definite positive impact on blood safety and VNRDs in the Region. These policies and legislations decrease the chances of malpractices such as paid blood donors, profiteering from blood centres and unstandardized practices in the blood centres.

2.2. Current status of governance, policy and legislation

As per the latest *Global status report of blood safety and availability 2021* published by WHO in which the response from 10 out of the 11 Member countries of the Region were compiled, 100% of Member countries of the South-East Asia Region reported having a national legislation for blood transfusion services, 80% reported having a national blood policy and a multi-year strategic plan for blood safety in 2018. (Fig. 10) [3].

As per the 2018 report on *Blood transfusion services in the South-East Asia Region* – a 5-year review by the WHO Regional Office for South-East Asia, a national blood policy had been formulated in 10 (90.9%) out of 11 countries. A unit within the Ministry of Health (or other government department) that is responsible for governing all activities related to the provision of blood and blood products is there in nine (81.8%) out of 11 countries. A specific legislation covering the safety and quality of blood for transfusion was reported in seven (63.6%) out of 11 countries. A multi-year national strategic plan for blood safety was there in six (54.5%) out of 11 countries. Six countries (54.5%) out of the 11 reported that they had constituted a national blood committee to assist the Ministry of Health in formulating policy and plans, setting standards and offering advice on key issues. Ten countries (90.9%) out of 11 have a national blood transfusion service (Fig. 11) [4].

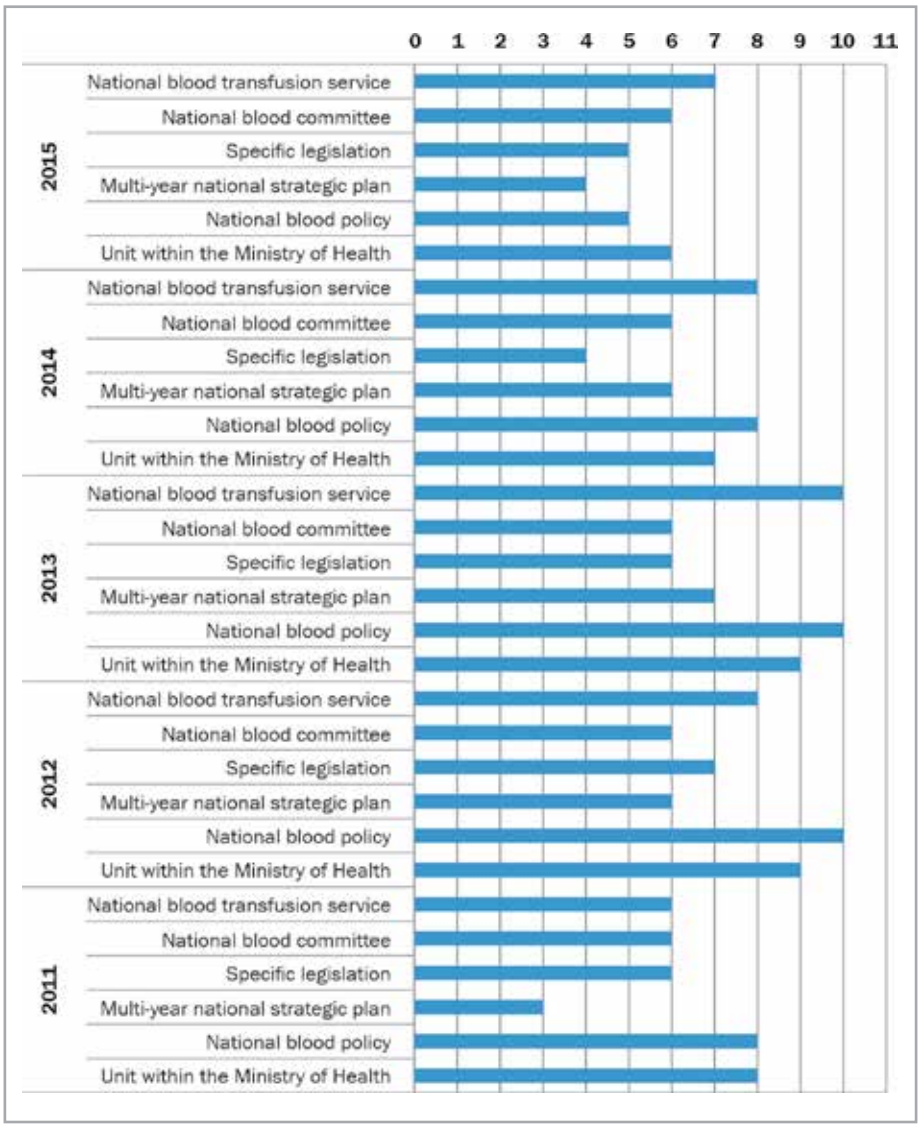
Fig. 10: Governance mechanisms for blood transfusion by WHO region, 2018



AFR: African Region; AMR: Region of the Americas; EMR: Eastern Mediterranean Region; EUR: European Region; SEAR: South-East Asia Region; WPR: Western Pacific Region

Source: Global status report on blood safety and availability 2021. Geneva: World Health Organization; 2022.

Fig. 11: National governance for blood transfusion services in the 11 countries of the Region



Source: Blood transfusion services in South-East Asia Region. A 5-year review. New Delhi: World Health Organization, Regional Office for South-East Asia; 2018.

Out of the 11 Member countries, seven (Bangladesh, Bhutan, India, Indonesia, Nepal, Sri Lanka and Thailand) participated in the present survey conducted by WHO and the Post Graduate Institute of Medical Education and Research (PGI) Chandigarh.

All seven reporting countries have a dedicated cell for blood transfusion services (BTS) in the country. Six reporting countries have an organogram for regulation of blood services. All seven reporting countries have a blood policy. The national blood policy (NBP) of all the reporting countries emphasizes on VNRDs. BTS in all the reporting countries are practising the strategies given in the NBP to implement VNRDs and all countries have shown improvement in VNRDs. Responses from participating countries are given in Table 2.

Table 2: Governance and regulations

Member State	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Does the country have a dedicated cell for blood transfusion services (BTS)?	Y	Y	Y	Y	Y	Y	Y
Under Ministry of Health & Family Welfare	Y	Y	Y	Y	Y	Y	N (Thai Red Cross Society)
Does the country have an organogram for blood services regulation?	Y	Y	Y	N	Y	Y	Y
Does the country have a national blood policy?	Y	Y	Y	Y	Y	Y	Y
Year of adoption	2013	NR	2002	Y	1993[@1]	2006	1989[@2]
Does the blood policy emphasize voluntary blood donation?	Y	Y	Y	Y	Y	Y	Y
Are there strategies in the NBP to implement VNRDs in practice?	Y	Y[$1]	Y	Y	Y	Y	Y
Any observed improvement since adoption of the policy?	Y[#6–12]	Y	Y[#1]	NR	Y[#13]	Y[#2–5]	Y[#14]

Y: yes; N: no; NR: no response
@1 Developed in 1993, revised twice in 2006 and 2014, respectively
@2 The latest version of National Blood Policy is in 2022. The first version was in 1989.
$1 In drafts
#1 Percentage of VNRDs has increased from a modest 50% in 2006-2007 to 70% in 2016
#2 Regularization and monitoring of government and private sector blood banks
#3 For continuation of 100% voluntary blood donation
#4 Preparation of guidelines for safe blood transfusion practices in the whole country
#5 Improving and maintaining quality control methods
#6 Instituted dedicated unit under the Ministry of Health to govern blood safety activities
#7 Drug Regulatory Authority has been identified as the regulatory body for blood safety
#8 Three regional blood centres participating in external quality assessment scheme and other peripheral blood banks are taking part in the national external quality assessment scheme coordinated by the National Blood Bank and Royal Centre for Disease Control
#9 Instituted haemovigilance programme from 2017
#10 Developed and initiated stand-alone blood transfusion information system, including haemovigilance system (https://bloodsafety.gov.bt/)
#11 Developed guidelines on blood screening, TTIs, blood donor assessment, clinical use of blood, national external quality assessment scheme (NEQAS), blood bank standards, haemovigilance
#12 Improved VNRDs from 54% to 90% since 2010
#13 Percentage of VNRDs has increased
#14 Currently, we have 100% voluntary non-remunerated blood donors

The mechanism of blood collection and types of blood centres in reporting countries are shown in Table 3 (A).

Table 3 (B) shows the financial resources for VNRDs in Member countries.

Table 3 (A): Mechanism of blood collection

Member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Who organizes the blood collection drives to collect blood?	-	-	-	-	-	-	-
Centralized blood collection and testing agencies	N	Y	N	N	N	Y	Y
Hospital-based blood banks	Y	Y	Y	Y	Y	Y	Y*
Red Cross blood banks	Y	Y	Y	Y	Y	Y	Y**
Stand-alone blood banks	Y	NR	Y	N	N	N#	Y##
Private blood banks	Y	NR	Y	N	Y	Y	N
Charitable blood banks	Y	NR	Y	N	N	N	N

Y: yes; N: no; NR: no response
* All qualified governmental hospital-based blood banks were designated as National Blood Centre (NBC) blood service branches. They largely only collect donor blood and process it, then send all blood samples to be tested for blood group and TTI screening at our regional blood centres (RBCs) and NBC.
** Under the NBC Thai Red Cross Society, there are 13 RBCs around the country. Also, blood services branches at hospital-based blood bank are also members of the Red Cross blood bank.
# The NBTS is under the Ministry of Health. It includes all hospitals/blood banks and a majority of private sector hospitals/blood banks. But private sector hospitals are mainly regulated by the private health services regulatory council.
Only one site at the university hospital

Table 3 (B): Financial resources for voluntary blood donations

Member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Is there any financial resource earmarked for VNRDs?	Y	NR*	Y	N	Y	Y	Y
If yes, then is it supported by the							
government?	Y	N	Y	NR	Y	Y	N
Nongovernment organizations (NGOs)	N	N	Y	NR	Y	Y	Y
Red Cross	Y	N	Y	NR	Y	N	Y
Any other mechanism	NR	NR	NR	NR	NR	Y**	NR

Y: yes; N: no; NR: no response
* The activities are carried out as and when there is a budget available. There is no dedicated earmarked fund for VNRDs.
**Private companies and well-wishers

3

Human resources and HR development

The most important resource for the development of any specialty is human resources. Trained and dedicated human resources have improved blood transfusion practices around the world. The rise of professional societies such as the International Society of Blood Transfusion (ISBT) and the Association for the Advancement of Blood and Biotherapies (AABB) led to knowledge-sharing and evidence-based practices in the field of transfusion medicine since the 1960s. Transfusion medicine in the West is considered a post-specialization fellowship after specialization in Clinical Pathology, Haematology, Internal Medicine, Paediatrics, Surgery, or Anaesthesiology. These programmes provide training in blood banking, immunohaematology, apheresis, cell therapy, coagulation and haematology, and trainees are qualified and ready to take on responsibilities of the medical director of a transfusion service.

In India, transfusion medicine was recognized as an independent specialty and the MD programme was started in two institutes of national importance by the year 2000. Currently, 60 medical institutes in India are providing MD (Immunohaematology & Blood Transfusion) or MD (Transfusion Medicine) and trainees from these courses are heading many blood centres in the country. This has given a boost to quality practices and widened the spectrum of services being provided by blood centres in the country.

Developing technically trained human resources that work on the bench side also requires quality training in the procedures and processes of the blood centre. Medical laboratory technologists (MLTs) with diplomas or bachelor's degrees (DMLT or BSc MLT), trained in various laboratory procedures are usually trained in immunohaematology and component preparation as part of their internship. After six months of this training, they are eligible to work in a blood centre. Six institutions in India have started dedicated bachelor's and master's courses (BSc and MSc in Blood Transfusion Technology) to provide well-trained human resources to blood centres in the country. For nursing students, training in a blood centre has been included in the bachelor's degree of nursing (BSc Nursing). Dedicated training programmes in transfusion medicine for nursing professionals are under development.

All the reporting countries in the current survey (Bangladesh, Bhutan, India, Indonesia, Nepal, Sri Lanka and Thailand) have graduate/ postgraduate /MD Transfusion Medicine/ Immunohaematology training programmes.

Dedicated VNRDs liaison officers (VNRDLOs) are vital for promoting VNRDs in the Region. Out of reporting countries, only Thailand and Sri Lanka have VNRDLOs and regular training for them is being conducted by the national blood transfusion agencies of these countries. Table 4 details the human resources in the Region.

Table 4: Dedicated human resource and human resource development mechanisms

SEAR member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Are there dedicated VNRD liaison officers (VNRDLOs)?	N	N	N	N	N	Y	Y
Are there standards for recruiting VNRDLOs?	N	N	N	N	N	Y	Y
Are there special training/educational programmes for VNRDLOs?	N	N	N	N	Y	Y*	Y**
Are there supervisors for VNRDLOs such as medical officers?	NR	Y#	N	N	N	Y	Y
If yes, kindly specify designation and qualification							
Graduates/postgraduates social or behavioural sciences/MD Transfusion Medicine/ Immunohaematology	Y	Y	Y	Y	NR	Y##	Y###
Non-medical doctors	NR	NR	NR	N	NR	N	NR
Are there trained, blood donor counsellors?	NR	NR	Y	NR	NR	NR	NR
If yes: duration of training…… qualification…….	NR	NR	NR	NR	NR	N	NR

Y: yes; N: no; NR: no response
* Training programmes are conducted by National Blood Centre under the direct supervision of specialized medical officers, consultant transfusion physician and Director
**NBC routinely organizes annual education and conference programmes for VNRDLOs
Transfusion Specialist, Head of the Department, Chief Medical Officer
MBBS/DTM/CTP
We have working groups to supervise the VNRDLO team, which are composed of a medical doctor, nurse, TTI colleagues, and blood donor recruitment subcommittee (a group of volunteers from the private sector working under NBC supervision).

Many universities in India are starting diploma or certificate courses on blood donor motivation. This training will give skills to the students for spreading awareness regarding voluntary blood donation and increasing VNRDs in the Region.

3.1. Gaps and challenges

Although there are a lot of initiatives for human resource development, the availability of trained human resources in all blood centres is the biggest challenge in the Region. Most Member countries have decentralized blood transfusion services, so all blood centres do not have appropriately trained human resources, or the available human resources are not appropriately used because of low workload.

Specialized degrees (BSc and MSc in Blood Transfusion Technology) are not yet recognized/preferred uniformly at the time of recruitment to blood centres, so these courses are not preferred by the students. Dedicated VNRDLOs are very useful for promoting VNRDs. Out of seven reporting countries, only Thailand and Sri Lanka have this dedicated trained cadre. Dedicated VNRDLOs should be there in all countries to achieve the goal of 100% VNRDs.

3.2. Opportunities

As the world is nowadays considered a global village so training and education are shared between countries. In this era of online training and webinars, sharing education has become even easier for those who require it. There are many professional societies such as the Asian Association of Transfusion Medicine (AATM), which can sponsor candidates for hands-on training in developed countries.

Centralization of BTS can resolve the gaps in human resource availability and will be of great help for the appropriate utilization of available trained human resources. Sri Lanka is one of the countries that has demonstrated this in the recent past.

Professionals with specialized knowledge and skills in the field of Transfusion Medicine (especially therapeutic apheresis and cellular therapies) have great job opportunities to work in different parts of the world.

4

Donor recruitment and retention strategies

4.1. Definition

A voluntary non-remunerated blood donor gives blood, plasma or cellular components of his or her own free will and receives no payment, either in the form of cash or in kind, which could be considered a substitute for money. This would include time off work other than that reasonably needed for the donation and travel. Small tokens, refreshments and reimbursements of direct travel costs are compatible with voluntary, non-remunerated donation [1].

4.2. Types of donors

WHO, the International Federation of Red Cross and Red Crescent Societies (IFRC), the Council of Europe (CoE), the International Society of Blood Transfusion (ISBT), the American Association for Advancement of Blood and Biotherapies (formerly American Association of Blood Banks – AABB), the International Federation of Blood Donor Organizations and a number of other international and national organizations have defined VNRDs as a founding and guiding principle for the provision of safe and sustainable blood supplies. They recommend that all blood donations should be voluntary and non-remunerated and that no coercion should be brought to bear upon the donor to donate [1].

There are three types of blood donors:

1. Voluntary blood donors
2. Family/replacement donor
3. Paid donors.

A **voluntary blood donor** would donate blood, plasma or cellular components of his or her own free will and receives no payment, either in the form of cash or in kind, which could be considered a substitute for money [1].

Family/replacement donors would donate blood when it is required by a member of their own family or community. In most cases, the patient's

relatives are requested by hospital staff to donate blood, but in some settings, it is compulsory for every patient who requires transfusion to provide a specified number of replacement donors on emergency admission to hospital or before planned surgery. Although donors are not paid by the blood transfusion service or hospital, there may be a hidden paid donation system in which money or other forms of payment are provided by patients' families. In some countries, patients may prefer direct donation by family members or friends rather than "strangers" because they believe this will eliminate the risk of TTI. However, prevalence rates of TTIs are generally found to be higher among family/replacement donors than voluntary donors.

Paid or commercial donors would donate blood in return for payment or other benefits that satisfy a basic need or can be sold, converted into cash or transferred to another person. They often give blood regularly and may even have a contract with a blood bank to supply blood for an agreed fee. Alternatively, they may sell their blood to more than one blood bank or approach patients' families and try to sell their services by posing as family/replacement donors [1].

4.3. Regular repeat donors – why are they safest: experience from developed/developing countries

The concept of a safe blood donor is present ever since the "mobile donor service" was envisaged by Mr Percy Lane Oliver at the British Red Cross Blood Transfusion Service in 1921. They performed blood grouping and syphilis testing for the panel of donors included in the mobile donor service [2].

Regular repeat donors are considered as the safest blood donors, since they are screened for the presence of markers of TTIs repeatedly over time at each blood donation and, therefore, are less likely to be in the window period of TTIs. This has been observed in the lower prevalence of markers of TTIs such as antibodies to the human immunodeficiency virus (HIV) 1 and/or 2 (anti-HIV 1 and 2 antibodies), antibodies to hepatitis C virus (anti-HCV antibodies) and surface antigen of hepatitis B virus (HBsAg) in voluntary repeat donors than replacement first time donors [3–15]. Regular blood donors are aware of the practice of blood centres testing for TTIs and are also more aware of the risk factors that predispose to such TTIs, by virtue of being subject to pre-donation counselling repeatedly over the donor cycle.

4.4. Conversion of first-time donor to regular repeat donor – strategies

There is a constant demand for recruiting blood donors fuelled by the increase in human life expectancy and improvement in the delivery of modern health care. However, the increasing age of blood donors and

associated morbidity in developed countries, infectious diseases and low awareness and motivation towards blood donation in developing countries and stringent donor selection criteria are challenges for blood donation. The strategies to retain first-time donors broadly focus on the connect with first-time blood donors and engaging them in the mission of regular repeat blood donation.

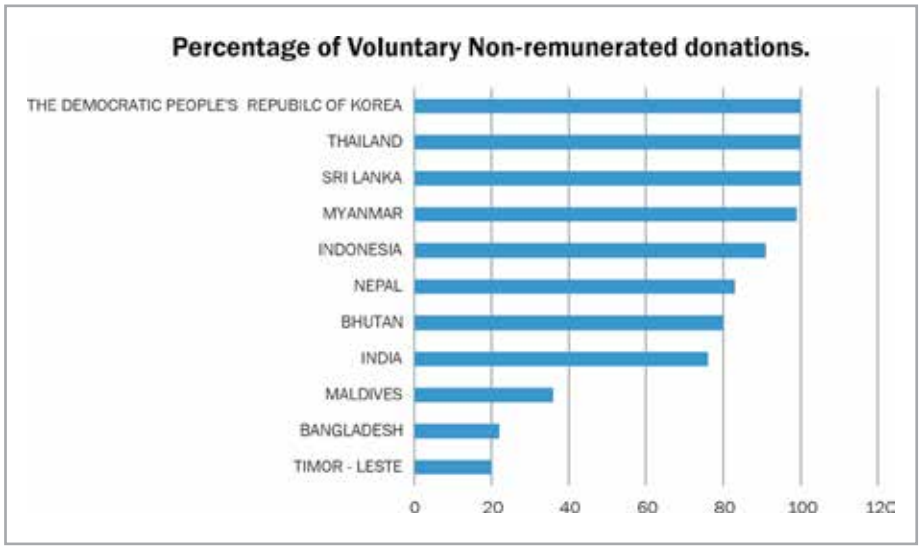
- Let the blood donor know to whom the blood and blood components are transfused in the first place.
- Appeal to the blood donor about the need to donate again and again; ignite the passion.
- Tell the blood donor about the impact of their donation; the success story of regular blood transfusion in thalassaemic children.
- Communicate the appreciation to the blood donor; thank the donor at least three times during the process of blood donation, follow up the thanks message using communications channels like short messaging system (SMS), WhatsApp, emails and/or social media such as Twitter, Facebook, Instagram.
- Simply ask for the next blood donation using the above-mentioned communication channels.
- Make it convenient for the donor to donate; reach out to the workplace of the donor – outdoor blood donation drives and/or reach out to the home of the donor – outdoor blood donation drives with resident welfare associations, market welfare associations and religious associations; where the donor is likely to participate during her/his free time.
- **Minimize**
  - Donor waiting time
  - Donor adverse reactions
  - Donor anxiety – provide audio-visual engagement
  - Donor attrition due to deferral – explain the deferral and encourage re-induction of temporarily deferred donors after the due waiting period is over.
  - Donor dissatisfaction – enhance the personal connect between the donor and the service staff.

4.5. Current status of donor types in the WHO South-East Asia Region

The current status of blood collection and proportion of VNRDs in the 11 Member countries is depicted in Fig.12, which is based on the WHO South-East Asia regional meeting – blood safety country presentations 2022. Eight out of the 11 Member States have more than 75% voluntary blood donation. The Democratic People's Republic of Korea, Sri Lanka

and Thailand have 100% blood supply from VNRDs. However, three countries including Maldives, Bangladesh and Timor-Leste have less than 50% VNRDs.

Fig. 12: Proportion of voluntary non-remunerated blood donations in the 11 Member countries



Source: Virtual Regional meeting of NBTS focal points to review the implementation of "WHO action framework to advance universal access to safe blood and blood products 2020 (Global Public Health Good), from 26 to 27 July 2022.

The current status of donor types in the Region as per the present survey is tabulated in the Tables 5 (A) and (B); it is clear that the paid donor system is not in practice in any of the countries and is an important measure towards blood safety. Sri Lanka is the only country that has total reliance on voluntary blood donation, aside from the practice of autologous donations. Bangladesh, Bhutan, Nepal, India, Indonesia and Thailand report the practice of replacement, family and directed blood donor systems. The gender of blood donors demonstrates a wide variation across Member States. There is male blood donor predominance to the tune of 95% versus 5% in Bangladesh and India, which reduces to 70% versus 30% in Indonesia, Nepal and Sri Lanka, and near 60% versus 40% in Bhutan.

There is a female preponderance of donors in Thailand and the female-to-male blood donor proportion is 56% versus 46%. Bangladesh, Bhutan, Sri Lanka and Thailand allow blood donation between 18 years and 60 years only; however, in Thailand those aged 17 years are allowed to donate with parental consent. India and Nepal allow blood donation between 18 and 65 years; however, in India a first-time blood donor can donate only up to the age of 60 years. In Indonesia, blood donation is allowed between 17 years and 65 years. In terms of the age distribution of blood donors, all the seven participant countries have maximum donors in the age group of 21 to 59 years. Bhutan, India and Sri Lanka have more than 20% blood donors under the age of 20 years, whereas Bangladesh and Nepal have more than 10% of blood donors under the

age of 20 years. It is interesting to note that Nepal has 5% of blood donors above the age of 60 years and there are publications on the underrepresentation of older donors in blood donation [16].

Data with respect to gender and age from India is sourced from publications [17–19].

Table 5 (A): Type of donors

Member State & donor type	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Voluntary donors	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Family donors	Yes	Yes	Yes	Yes	Yes	No	Yes
Replacement donors	Yes	Yes	Yes	Yes	Yes	No	Yes
Directed donors	Yes	No	Yes	Yes	No	No	Yes *
Autologous donation	Yes	Yes	Yes	Yes	Yes	Yes	Yes *
Paid blood donors	No	No	No	No	No	No	No

Y: Yes, N: No and NR: No response
*Only hospital-based blood banks

Table 5 (B): Demography of donors

Member State & donor type	Bangladesh	Bhutan	India*#	Indonesia	Nepal	Sri Lanka#	Thailand
Gender							
Male donors	93 %	57 %	95 %	74 %	75 %	74 %	44 %
Female donors	07 %	43 %	05 %	26 %	25 %	26 %	56 %
Age							
Age limit (years)	18–60	18–60	18–65 (60 for FTD)	17–65	18–65	18–60	18–60 (17 PC)
≤20 years	13 %	23.4 %	46.5 % (18–30 years)	06 %	15 %	21.5 % (<25 years)	8.4 %
21–39 years	66 %	69 %	35.5 % (30–40 years)	52.5 %	40 %	64.8 % (26–45 years)	58.2 %
40–59 years	21 %	08 %	17.2 % (40–50 years)	40.2 %	40 %	13.8 % (46–59 years)	32.5 %
≥ 60 years	Nil	0.1 %	<1%	1.3 %	05 %	Nil	0.9 %

FTD: first-time donor; PC: parental consent
* Sourced from publications. Age range overlap needs to be taken into account.
# Age range overlap needs to be taken into account.

4.6. Strategies for promotion of voluntary non-remunerated blood donations

The WHO global framework for action to address the main constraints and challenges in achieving 100% VNRDs proposes four broad goals and 20 well-defined strategies [1].

Goal A: Create an enabling environment for 100% voluntary non-remunerated blood donation

Strategy 1: Advocate for 100% voluntary blood donations

Strategy 2: Establish a national voluntary blood donor programme

- 2.1. Incorporate 100% voluntary blood donation in the national blood policy and legislative and ethical framework
- 2.2. Secure sustainable financing
- 2.3. Provide a suitable infrastructure, facilities and equipment
- 2.4. Appoint and train an adequate number of staff and volunteers
- 2.5. Implement quality systems
- 2.6. Establish a national donor database and information management system.
- 2.7. Develop an emergency preparedness and response plan

Strategy 3: Strengthen collaboration and partnerships

Goal B: Foster a culture of voluntary blood donation

Strategy 4: Understand your blood donors

Strategy 5: Identify target blood donor populations

Strategy 6: Develop communication strategies for donor education

Strategy 7: Build partnerships with the media

Strategy 8: Mobilize community partners and create networks

Strategy 9: Maximize the impact of World Blood Donor Day and National Blood Donor events

Goal C: Build and maintain a safe, sustainable voluntary donor base

Strategy 10: Educate, motivate and recruit new blood donors

Strategy 11: Mobilize youth as a new generation of voluntary blood donors

Strategy 12: Convert eligible replacement donors to voluntary blood donors

Strategy 13: Recall infrequent, inactive and temporarily deferred blood donors

Strategy 14: Retain suitable voluntary blood donors

Strategy 15: Recognize blood donors' contribution to society

Goal D: Provide quality donor service and care

Strategy 16: Make it convenient for donors to give blood

Strategy 17: Reach out to donors through mobile sessions

Strategy 18: Assess donors' suitability to donate blood

Strategy 19: Provide blood donor counselling

Strategy 20: Make blood donation a safe and pleasant experience

4.7. Current status in the WHO South-East Asia Region

4.7.1. Promotion of voluntary non-remunerated blood donations by the government and use of various modalities by the seven Member States

The promotion of VNRDs by the government and the use of various modalities from the seven Member States are depicted in Table 6 (A). The commitment of the government to promote VNRDs is reiterated from the responses obtained.

Promotion of VNRDs through the media

The promotion of VNRDs through involvement of print media in the form of newspapers, magazines and brochures is in practice in six countries – Bhutan, India, Indonesia, Nepal, Sri Lanka and Thailand. Electronic (national and local TV channels, news and radio) media is in use for the promotion of VNRDs in six countries, except Indonesia.

Promotion of VNRDs through information technology and social media

Promotion of VNRDs using information technology and social media is in practice in all the countries; however, the usage may vary across different parts of the countries. There is involvement of channels such as Facebook, WhatsApp, Twitter, emails, blogs and websites for the promotion of VNRDs in Bhutan. Sri Lanka and Bangladesh have reported the use of Facebook and websites for the purpose. Nepal reports the use of channels such as Facebook, WhatsApp, Twitter, email and websites. Indonesia and Thailand report the use of WhatsApp (WeChat), Twitter, websites; Facebook is used in Thailand. India reports the use of Facebook, Twitter, emails, and websites for the promotion of VNRDs.

Facebook is involved in the promotion of VNRDs in Bangladesh, Bhutan, India, Nepal, Sri Lanka and Thailand, whereas its use is in progress

in Indonesia. WhatsApp is involved in promotion of VNRDs in Bhutan, Indonesia, Nepal and Thailand. Twitter is involved in promotion of VNRDs in Bhutan, India, Indonesia, Nepal and Thailand. Email is involved in promotion of VNRDs in Bhutan, India and Nepal. Blogs are used to promote VNRDs only in Bhutan. Websites are in use in all the seven countries for the promotion of VNRDs.

Promotion of VNRDs through IEC material

Information, education and communication (IEC) materials in form of banners, posters and leaflets are in use in all the countries for the promotion of VNRDs.

Promotion of VNRDs on important days and involvement of the community in promotion

Motivation to promote VNRDs on important days is in place in all the seven participant countries. However, efforts to involve the community at large using community participation activities such as street plays, puppetry shows, and flash mob dance are in practice in Bhutan, India, Nepal, and Indonesia.

Table 6 (A): Promotion of voluntary non-remunerated blood donations by the government and use of various modalities for promotion

SEAR member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Does the national government promote VNRDs?	Y	Y	Y	Y	Y	Y	Y *
Print media							
Newspaper	NR	Y	Y	Y	Y	Y	Y
Magazines	NR	NR	Y	Y	Y	Y	Y
Brochures	NR	Y	Y	Y	Y	Y	Y
Electronic (audio-visual) media							
National TV channels	Y	Y	Y	N	Y	Y	Y
Local TV channels	Y	NR	Y	N	Y	Y	Y
News channels	Y	Y	Y	N	Y	Y	Y
Radio channels (FM: frequency modulation)	Y	Y	Y	N	Y	Y	Y
Information technology/social media							
Facebook	Y	Y	Y	N (in progress)	Y	Y	Y
WhatsApp	NR	Y	N	Y	Y	N	Y^
Twitter	NR	Y	Y	Y	Y	N	Y
Emails	NR	Y	Y	NR	Y	N	N
Blogs	NR	Y	N	N	N	N	N
Websites	Y	Y	Y	Y	Y	Y	Y

SEAR member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Information, education and communication materials							
Banners	Y	Y	Y	Y	Y	Y	Y
Posters	Y	Y	Y	Y	Y	Y	Y
Leaflets	Y	Y	Y	Y	Y	Y	Y
Motivation on important days	Y	Y	Y	Y	Y	Y	Y
Community involvement, street plays, puppetry show, flash mob dance	NR	Y	Y	Y	Y	N	N

Y: yes; N: No and NR: no response
* National Blood Centre, Thai Red Cross Society is responsible for VNRD promotion at the national and regional levels. The Thai Red Cross Society in each province are responsible for VNRD promotion at the local level.
^ WeChat, Messenger, Telegram

4.7.2. Promotion of voluntary non-remunerated blood donations by institutions such as educational, religious and uniformed forces and judiciary

VNRDs may be promoted by institutions such as educational, religious and uniformed forces and the judiciary (Table 6 (B)).

Promotion of VNRDs through educational boards

VNRDs are promoted by educational boards in India, Nepal, Sri Lanka, and Thailand. A chapter on VNRDs is incorporated in the teaching curriculum in Bangladesh, Bhutan, India, Sri Lanka and Thailand.

Promotion of VNRDs by religious teachers

Religious teachers promote VNRDs in all the seven countries in the Region. VNRDs are promoted during religious and other festivities at both national and regional levels in all the seven countries.

Promotion of VNRDs by the uniformed services

The uniformed services such as the military and the other paramilitary organizations promote VNRDs in six of the seven participant countries, including, Bangladesh, Bhutan, India, Nepal, Sri Lanka and Thailand.

Promotion of VNRDs by the judiciary

The judiciary is reported to be involved in the promotion of VNRDs in India.

Table 6 (B): Promotion of voluntary non-remunerated blood donations by institutions such as educational, religious and uniformed forces and judiciary

SEAR member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Promotion by education boards	NR	N	Y	N	Y	Y	Y
Is there a chapter on VNRDs incorporated in the teaching curriculum?	Y	Y	Y	N	N	Y	Y
Schools	NR	NR	Y	N	NR	Y	Y
Colleges	NR	Y	N	N	NR	Y	Y
Universities	NR	Y	N	N	NR	Y	Y
Promotion by religious leaders	Y	Y	Y	Y	Y	Y	Y
Promotion at national/ state religious and/or festival committees	Y	Y	Y	Y	Y	Y	Y
Promotion by uniformed forces	Y	Y	Y	N	Y	Y	Y
Promotion by the judiciary	NR	N	Y	NR	NR	NR	N
Y: yes; N: no; NR: no response							

4.7.3. Promotion of voluntary non-remunerated blood donations by special campaigns

The promotion of VNRDs by special campaigns is depicted in Table 6 (C).

Promotion of VNRDs during World Blood Donor Day celebrations

All seven participant countries have special day drives such as on World Blood Donor Day (14 June every year). However, the celebration of a month-long campaign on such occasions is reported from Bangladesh, India and Thailand.

Promotion of VNRDs during National Voluntary Blood Donation Day celebrations

National Voluntary Blood Donation Day and the month-long celebration of such occasions is reported from India (1 October every year) and Bangladesh (2 November every year). Weeklong drives to promote VNRDs are conducted in Bangladesh, Bhutan, India, Nepal, Sri Lanka and Thailand.

Promotion of VNRDs with the help of linkages with international and/or national organizations

Linkage with the Red Cross and Red Crescent Societies for the promotion VNRDs is reported from Bangladesh, Bhutan, India, Indonesia and Nepal. Linkage with the ISBT for the promotion of VNRDs is reported from Bangladesh, Bhutan, India and Nepal. Linkage with the AABB for the promotion of VNRDs is reported from Bangladesh, Bhutan and India. Promotion of VNRDs with support from some of the national organizations such as the National AIDS Control Organization, National Hepatitis Control Programme, Non-Communicable Disease Programme and Anti-Malaria Programme is reported from Bangladesh, Bhutan, India and Sri Lanka.

Table 6 (C): Special campaigns to promote voluntary non-remunerated blood donations

Member State	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
"Special campaigns" for promotion of VNRDs							
World Blood Donor Day drive	Y	Y	Y	Y	Y	Y	Y
Month-long campaign for World Blood Donor Day	Y	N	Y	NR	NR	NR	Y
Month-long campaign for National Voluntary Blood Donation Day	Y	N	Y	NR	NR	NR	N
Week-long drives	Y@	Y	Y	N	Y *	Y	Y
Linkage to any international/national organization for support for VNRDs							
Red Cross & Red Crescent Societies	Y	Y	Y	Y	Y	N	N
International Society of Blood Transfusion	Y	Y	Y	N	Y	N	N
American Association for Advancement of Blood & Biotherapies	Y	Y	Y	N	N	N	N
National organizations like the National AIDS Control Organization	Y%	Y%	Y	N	N	Y $	N

Y: yes; N: no and NR: no response
* On some occasion and before Dusshera, before cultivation season
# Special day or special week of holidays
@ Month-long Book Fair in February every year in Bangladesh
& King's Birthday, Buddhism auspicious days
$ Non-communicable Disease Programme, Anti-Malaria Campaign and HIV/AIDS Control Programme
% Asian Association of Transfusion Medicine

4.7.4. Blood donor recruitment mechanisms

The blood donor recruitment mechanisms have been detailed in Table 6 (D).

Organization of VNRD drives/camps by schools

VNRD drives/camps are organized on the parent–teacher meetings (PTMs) in schools in Bhutan, India, Sri Lanka and Thailand.

Organization of VNRD drives/camps by colleges

Students' organizations, such as the Red Cross, Red Ribbon Club, Club 25, National Service Scheme (NSS), National Cadet Corps (NCC) organize VNRD drives/camps in all the seven countries, though all organizations may not be functional in all the countries.

Organization of VNRD drives/camps by the administration

The civil administration and health departments organize VNRD drives/camps in six of the seven countries – Bangladesh, Bhutan, India, Nepal, Sri Lanka and Thailand.

Organization of VNRD drives/camps by NGOs

NGOs such as Rotary and Lions International organize VNRD drives/camps in six of the seven countries – Bangladesh, India, Indonesia, Nepal, Sri Lanka and Thailand.

Organization of VNRD drives/camps by religious organizations

Religious organizations organize VNRD drives/camps in six of the seven countries – Bhutan, India, Indonesia, Nepal, Sri Lanka and Thailand.

Organization of VNRD drives/camps by the uniformed services

The uniformed services such as the military and the paramilitary organize VNRD drives/camps in all the seven countries.

Organization of VNRD drives/camps by the judiciary

The judiciary organizes VNRD drives/camps in Bangladesh, India and Thailand.

Organization of VNRD drives/camps by companies under CSR

Companies (such as corporates, information technology companies, banks, insurance companies, pharma and other industries) organize VNRD drives/camps as part of their corporate social responsibility (CSR) activities in all the seven countries, though all the companies may not be involved in all the countries together/individually.

Organization of VNRD drives/camps by the Red Cross Societies

The Red Cross Societies organize VNRD drives/camps in all the seven countries.

Organization of VNRD drives/camps by public organizations/donor clubs

Public organizations such as blood donor clubs, sports clubs, yoga clubs, gymnasiums, cyclists' clubs, bikers' clubs, youth clubs and the resident/market welfare associations organize VNRD drives/camps in most of the countries, though all the above organizations may not be involved in all the countries together/individually.

Table 6 (D): Voluntary non-remunerated blood donations recruitment mechanisms

SEAR Member State	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Do the students/teachers/staff in educational institutions organize VNRD drives/camps?							
Schools on PTMs	N	Y	Y	N	N	Y	Y
Red Cross	Y	Y	Y	N	Y	Y	Y
Red Ribbon Clubs	Y	N	Y	N	Y	N	Y
Club 25 or equivalent	Y	N	N	N	Y	N	Y
National Service Scheme	Y	NR	Y	N	Y	Y	Y
National Cadet Corps	Y	NR	Y	N	NR	Y	Y
Schoolteachers/staff	NR	Y	Y	N	Y	Y	Y
College teachers/staff	Y	Y	Y	N	Y	Y	Y
University teachers/staff	Y	Y	Y	N	Y	Y	Y
Do the government and other institutions organize VNRD drives/camps?							
Civil administration	Y	Y	Y	N	Y	Y	Y
Health Department	Y	Y	Y	N	Y	Y	Y
Do religious institutions organize VNRD drives/camps?	NR	Y	Y	Y	Y	Y	Y
Do the military and paramilitary organize VNRD drives/camps?	Y	Y	Y	Y	Y	Y	Y
Does the judiciary organize VNRD drives/camps?	Y	N	Y	NR	NR	NR	Y
Do Red Cross Societies organize VNRD drives/camps?	Y	Y	Y	Y	Y	Y	Y
Do nongovernment organizations (NGOs) organize VNRD drives/camps?	Y	NR	Y	Y	Y	Y	Y

SEAR Member State	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Does CSR include organization of VNRD drives/camps?	Y	Y	Y	Y	Y	Y	Y
Multinational Corporates	Y	NR	Y	N	Y	Y	Y
National Corporates	Y	Y	Y	N	Y	Y	Y
Information technology companies	NR	NR	Y	N	Y	Y	Y
Banks	Y	Y	Y	Y	Y	Y	Y
Insurance companies	NR	NR	Y	NR	Y	Y	Y
Pharmaceutical companies	Y	N	Y	NR	NR	NR	Y
Other industry	Y	N	Y	NR	NR	NR	Y
Do public organizations organize VNRD drives/camps?							
Donor clubs	Y	NR	Y	Y	Y	Y	Y
Sports clubs	NR	NR	Y	Y	Y	Y	Y
Yoga clubs	NR	NR	Y	N	Y	N	Y
Gymnasium and Wrestling clubs	NR	NR	Y	N	Y	N	Y
Cyclists' clubs	NR	NR	N	N	Y	N	Y
Bikers' clubs	NR	NR	N	N	Y	N	Y
Youth clubs	NR	Y	Y	N	Y	Y	Y
Resident welfare organization	Y	NR	Y	NR	NR	NR	Y
Market welfare organization	NR	NR	Y	NR	NR	NR	Y

Y: yes; N: no and NR: no response

4.7.5. Policies and processes to retain donors and convert first-time donors to regular repeat donors

Data with respect to the policies and processes to retain donors and convert first-time donors to regular repeat donors is depicted in Table 6 (E). Such policies and processes are present in all the seven countries.

Regular contact with blood donors to remind them of their next blood donation

Regular contact is maintained with blood donors to remind them of their next blood donation using emails, WhatsApp, SMS, Facebook and twitter in all the seven countries. However, all the above modalities are not used consistently.

Regular contact with blood donors to thank them

Blood donors are regularly thanked for donating blood using emails, WhatsApp, SMS, Facebook and Twitter in six of the seven countries –

Bangladesh, Bhutan, India, Indonesia, Nepal and Thailand; however, all the above modalities are not in use consistently even in these six countries.

Regular contact with blood donors to wish them on special days

Blood donors are contacted regularly to wish them on their birthdays, marriage anniversaries and on important days in five of the seven countries – Bangladesh, India, Indonesia, Nepal and Thailand; however, contact may not be established on all occasions.

Inform the donor on the usage of their donation

Bangladesh and Thailand report that they inform blood donors about the usage (transfusion) of their donated blood.

Request to donate during shortages

Requests to donate may be made during shortages, for rare groups and in case of disasters. Six of the seven countries do this – Bangladesh, Bhutan, India, Nepal, Sri Lanka and Thailand.

Table 6 (E): Policies and processes to retain donors and convert first-time donors to regular repeat donors

Member State	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Policies and processes to retain and convert first-time donors to regular repeat donors	Y	Y	Y*	Y	Y**	Y	Y
Regular contact to remind donors of next donation date							
Emails	NR	NR	Y	Y	N	N	Y
WhatsApp	Y	Y	N	Y	N	N	N
Short messaging system	Y	Y	Y	Y	Y	Y	Y
Facebook	Y	NR	N	N	N	Y	Y
Twitter	NR	NR	N	N	N	N	Y
Regular contact to thank donors for the donation							
Emails	NR	NR	Y	Y	Y	N	Y
WhatsApp	Y	NR	N	Y	N	N	N
Short messaging system	Y	Y	Y	Y	Y	N	Y
Facebook	Y	NR	N	N	N	N	Y
Twitter	NR	NR	N	N	N	N	Y
Regular contact with donors to wish them							
Birthday	Y	N	Y	Y	Y	N	Y
Marriage anniversary	Y	N	N	N	N	N	N
Important days	Y	N	Y	N	Y	N	Y

Member State	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Inform donors of the usage of their donated blood	Y	N	N	N	N	N	Y
Request to donate blood in case of group-wise shortages/rare groups/in wake of disasters)	Y	Y	Y	N	Y	Y	Y

Y: yes; N: no and NR: no response
** May not be uniformly followed across the nation*
*** Software development is in process*

4.7.6. Incentives for promotion of voluntary non-remunerated blood donations

Data with respect to the incentives for promotion of VNRDs is depicted in Table 6 (F). There are incentives for promotion of VNRDs in all the seven countries; however, not all such incentives may not exist uniformly. There are mechanisms for special recognition of blood donors in all the seven countries.

Special leave for donating blood

The provision for a special leave for blood donation is reported from only two of the seven countries – India and Thailand.

Reimbursement of donor travel cost

The provision to reimburse travel costs for blood donation is reported from Bangladesh.

Special recognition/priority in public utilities

Special recognition/priority for use of public utilities for blood donors is reported from Nepal.

Special recognition/priority in medical utilities

Special recognition/priority for medical utilities for blood donors is reported from Bangladesh, Nepal and Thailand.

Special recognition/priority in medical/general insurance

Special recognition/priority for general/medical insurance for blood donors is not reported from any of the seven countries.

Table 6 (F): Incentives for promotion of voluntary non-remunerated blood donations

Member State	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Special recognition for donating blood?	Y	Y	Y	Y	Y	Y	Y
Special leave for donating blood?	NR	N	Y	N	N	N	Y
Reimbursement of donor travel costs?	Y	N	N	N	N	N	N
Special recognition/ priority for public utilities?	NR	N	N	N	Y	N	N
Special recognition/ priority for medical utilities?	Y	N	N	N	Y	N	Y *
Special recognition/relief in general insurance?	NR	N	N	N	N	N	N
Special recognition/relief in medical insurance?	NR	N	N	N	N	N	N

Y: yes; N: no and NR: no response
** Only medical check-up of general blood chemistry test annually if requested by donor*

4.8. Common gaps and opportunities

There is an opportunity to promote VNRDs, recruit and retain donors and convert first-time donors to regular repeat donors by strengthening the common gaps identified in the present survey. These are given country-wise below.

Bangladesh

1. Promote awareness on VNRDs
    a. Use the media, both print and electronic (audio-visual).
    b. Use information technology/social media tools.
    c. Conduct community activities such as street plays, puppetry shows and flash mob dances, among others.
    d. Conduct awareness campaigns through educational boards and the judiciary.
    e. Link up with the ISBT, AABB and the Red Cross and Red Crescent Societies.
    f. Provide incentives such as special leave for blood donation and consideration of special recognition/priority in public utilities, general insurance and health insurance if these are to be considered as not being commensurate with remuneration.

2. Organize VNRDs drives/camps
    a. This can be done during parent–teachers' meetings (PTMs) in schools, and encouraging participation by teachers and staff, in addition to the usual blood donation by the parents of the students.
    b. Join with IT and insurance companies as part of corporate social responsibility (CSR).
    c. Conduct such drives with religious institutions/organizations.
3. Retain blood donors by the establishment of regular contact with them for constant engagement
    a. Thank donors for the present blood donation using emails and Twitter and reinforce existing contacts with donors using SMS, WhatsApp and Facebook.
    b. Remind them of the next blood donation using emails and Twitter and reinforce existing contacts with donors using SMS, WhatsApp and Facebook.

Bhutan

1. Promote awareness on VNRDs
    a. Educational boards and the judiciary can be requested for promotion of VNRDs.
    b. Incorporate a chapter on VNRDs in the teaching curriculum of schools.
    c. Hold a month-long celebration of World Blood Donor Day and declare a National Voluntary Blood Donation Day and celebrate it as a month-long campaign to promote VNRDs.
    d. Provide incentives such as special leave for blood donation, reimbursement of travel costs to the donor and consideration of special recognition/priority in public utilities, medical facilities, general insurance and health insurance if these are to be considered as not being commensurate with remuneration.
2. Organize VNRDs drives/camps
    a. This can be done in conjunction with NGOs such as Rotary and Lions International.
    b. Create Red Ribbon and Club 25 donors' clubs, NSS and NCC cadres in colleges and universities.
    c. Drives can also be organized with multinational companies (MNCs), national corporates, IT and insurance companies and other industry as part of CSR.

3. Retain blood donors by establishing regular contact with them for constant engagement

    a. Thank donors for the present blood donation using emails and Twitter and reinforce existing contacts with donors using SMS, WhatsApp and Facebook.

    b. Remind donors of the next blood donation using emails, Facebook and Twitter and reinforce existing contacts with donors suing SMS and WhatsApp.

    c. Wish donors on their birthdays, marriage anniversaries and important days using all communication channels such as WhatsApp, Facebook, Twitter, SMS and emails.

India

1. Promote awareness of VNRDs

    a. Use information technology/social media tools such as Facebook, WhatsApp and blogs and reinforce existing contacts using Twitter, emails and websites.

    b. Incorporate a chapter on VNRDs in the teaching curriculum in colleges and universities.

    c. Create Club 25 donors' clubs in colleges and universities.

    d. Create a post of District Voluntary Blood Donation Officer in civil administration and/or health department.

    e. Involve public organizations such as cyclists and bikers' clubs.

    f. Provide incentives such as reimbursement of travel costs to the donor and consideration of special recognition/priority in public utilities, medical facilities, general insurance and health insurance if the same are to be considered as not being commensurate with remuneration.

2. Retain blood donors by the establishment of regular contact with them for constant engagement

    a. Thank donors for the present blood donation using WhatsApp, Facebook, Twitter and reinforce existing contacts with donors using SMS and emails.

    b. Remind donors of the next blood donation using WhatsApp, Facebook, Twitter and reinforce existing contacts with donors using SMS and emails.

    c. Wish donors on their marriage anniversary and reinforce such wishes on birthdays and important days using all communication channels such as WhatsApp, Facebook, Twitter, SMS and emails.

Indonesia

1. Promote awareness on VNRDs
    a. Use the electronic media (audio-visual) such as news channels and radio channels (FM).
    b. Use national and local TV channels.
    c. Promote awareness through information technology and social media such as Facebook, emails and blogs.
    d. Educational boards, uniformed services and judiciary can be requested to promote awareness.
    e. Incorporate a chapter on VNRDs in the teaching curriculum of schools, colleges and universities.
    f. Link up with the ISBT, AABB and national organizations such as NACO.
    g. Hold a month-long celebration of World Blood Donor Day and declare a National Voluntary Blood Donation Day and celebrate it as a month-long campaign to promote VNRDs.
2. Organize VNRD drives/camps
    a. This can be done during PTMs in schools, encouraging participation by the parents of the students.
    b. The Red Cross, Red Ribbon Clubs, Club 25, NSS, NCC and the teachers/staff of schools, colleges and universities can be used to organize such drives.
    c. Partner with MNCs, national corporates, IT and insurance companies, pharmaceutical and other industry as part of CSR.
3. Retain blood donors by the establishment of regular contact with them for constant engagement
    a. Thank donors for the present blood donation using Facebook, Twitter and reinforce existing contacts with donors using SMS, Emails and WhatsApp.
    b. Remind donors of the next blood donation using Facebook, Twitter and reinforce existing contacts with donors suing SMS, emails and WhatsApp.
    c. Wish donors on their marriage anniversaries, birthdays and important days and reinforce exiting contacts using all communication channels such as WhatsApp, Facebook, Twitter, SMS and emails.
    d. Request donations during shortages and disasters.
4. Provide incentives such as special leave for blood donation, reimbursement of travel costs to the donor and consideration of special recognition/priority in public utilities, medical facilities, general insurance and health insurance if these are to be considered as not being commensurate with remuneration.

Nepal

1. Promote awareness on VNRDs
    a. Incorporate a chapter on VNRDs in the teaching curriculum of schools, colleges and universities.
    b. The judiciary can be requested to create awareness.
    c. Hold a month-long celebration of World Blood Donor Day and declare a National Voluntary Blood Donation Day and celebrate it as a month-long campaign to promote VNRDs.
    d. Link up with the AABB and the national organizations such as the National AIDS Control Organisation (NACO).
    e. Provide incentives such as special leave for blood donation, reimbursement of travel costs to the donor and consideration of special recognition/priority in general insurance and health insurance if these are to be considered as not being commensurate with remuneration.
2. Organize VNRDs drives/camps
    a. This can be done during PTMs in schools, encouraging participation by the parents of the students.
    b. Partner with the NCC.
    c. Partner with the pharmaceutical and other industry as part of CSR.
3. Retain blood donors by the establishment of regular contact with them for constant engagement
    a. Thank donors for the present blood donation using WhatsApp, Facebook, Twitter and reinforce existing contacts with donors using SMS and emails.
    b. Remind donors of the next blood donation using emails, WhatsApp, Facebook, Twitter and reinforce existing contacts with donors using SMS.
    c. Wish donors on their marriage anniversaries and on birthdays and important days using all communication channels such as WhatsApp, Facebook, Twitter, SMS and emails.

Sri Lanka

1. Promote awareness on VNRDs
    a. Use information technology/social media tools such as WhatsApp, Twitter, emails and blogs to reinforce existing contacts using Facebook and websites.
    b. Create Red Ribbon and Club 25 donors' clubs in colleges and universities.
    c. Conduct community activities such as street plays, puppetry shows and flash mob dances, among others.

d. Involve public organizations such as yoga, gymnasium and wrestling, cyclists' and bikers' clubs.

e. Link up with the ISBT, AABB and the Red Cross and Red Crescent Societies.

f. Provide incentives such as special leave for blood donation, reimbursement of travel costs to the donors and consideration of special recognition/priority in public utilities, medical facilities, general insurance and health insurance if these are to be considered as not being commensurate with remuneration.

2. Retain blood donors by the establishment of regular contact with them for constant engagement

a. Thank donors for the present blood donation using WhatsApp, Facebook, Twitter, SMS and emails.

b. Remind donors of the next blood donation using emails, WhatsApp, Twitter and reinforce existing contacts with donors using SMS and Facebook.

c. Wish donors on their birthdays, marriage anniversaries and important days using all communication channels such as WhatsApp, Facebook, Twitter, SMS and emails.

Thailand

1. Promote awareness on VNRDs

a. Conduct community activities such as street plays, puppetry shows and flash mob dances, among others.

b. Use information technology/social media tools such as emails and blogs and reinforce existing contacts using Facebook, WhatsApp, Twitter and websites.

c. Request the judiciary to promote awareness.

d. Declare a National Voluntary Blood Donation Day and celebrate it as a month-long campaign to promote VNRDs.

e. Link up with the Red Cross and Red Crescent Societies, ISBT, AABB and national organizations such as NACO.

f. Provide incentives such as reimbursement of travel costs to the donor and consideration of special recognition/priority in public utilities, general insurance and health insurance if these are to be considered as not being commensurate with remuneration.

2. Retain blood donors by the establishment of regular contact with them for constant engagement

a. Thank donors for the present blood donation using WhatsApp and reinforce existing contacts with donors using SMS, emails, Facebook and Twitter.

b. Remind donors of the next blood donation using WhatsApp and reinforce existing contacts with donors suing SMS, emails, Facebook and Twitter.

c. Wish them on their marriage anniversaries, birthdays and important days using all communication channels such as WhatsApp, Facebook, Twitter, SMS and emails.

A closely coordinated programme to promote VNRDs across countries with WHO stewardship after identification of the strengths and scope of improvements would help in the promotion of VNRDs. Identification of such experts and the formation of a team of experts would provide the much-needed impetus for the long-term improvement of VNRDs in Member States of the Region.

5

Donor safety and ethics

5.1. Define donor safety and donor ethics

The International Society of Blood Transfusion (ISBT) code of ethics provides an overview of the responsibility of the blood transfusion professional towards the blood donor [1]. The principles include autonomy, dignity, non-maleficence, beneficence and justice [1,2].

5.1.1. Autonomy.

The donor must provide an expressive informed consent for the donation of blood. Any information provided by the donor, and/or generated in the form of test results must be treated confidentially.

5.1.2. Dignity and non-maleficence.

The donor must be made aware of the responsibility of not causing harm to the recipient and donor selection criteria must be applied to protect the health of both the donor and the recipient.

5.1.3. Dignity and beneficence.

Blood donation should be voluntary and without any remuneration (non-remunerated) in line with the objective that it is an act of kindness with a strong connotation of doing good for others. A donation is construed as a civic act and there is no right to donate. Blood that is donated is viewed as a "community good" and must not be seen as a "commodity" to meet others' needs to assure the dignity of the donor.

5.1.4. Non-maleficence.

All matters related to donation of blood should follow internationally accepted standards in line with the objective of "to do no harm to the donor".

5.1.5. Justice.

Blood should be considered as a public resource. Wastage should be avoided to safeguard the interest of the donor.

5.2. Why are they important?

Blood is accepted as a medicinal product of human origin, the availability of which is dependent on the donation of the source material from a donor, who donates blood for the benefit of others with the expectation of no physical benefit to her/himself and, on a similar note, without any undue physical harm to her/himself. Thus, the donor must be exposed to as little harm as possible, in line with the principle of non-maleficence [1,2].

5.3. Mechanisms in place to ensure donor safety

The motto of the BTS is to make provision of safe blood and blood components for the patient. The BTS has a moral and ethical responsibility to safeguard the health of the blood donor in the first instance. This has traditionally been translated to practise utilizing a structured process of pre-donation information, pre-donation counselling, pre-donation questioning of the prospective donor on pertinent health matters. A mini physical examination, which includes taking the pulse, BP and temperature screening, measurement of body weight and testing the haemoglobin (Hb) level is undertaken to decide the donor's fitness for donation.

5.4. Current status in the WHO South-East Asia Region

All the seven countries have mechanisms in place to ensure donor ethics and safety, such as informed consent, pre-donation counselling, Hb testing, an Hb cut-off level and post-donation care as depicted in Table 7.

Table 7: Mechanisms to address donor safety and ethics

SEAR member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Informed consent	Y	Y	Y	Y	Y	Y	Y
Pre-donation counselling	Y	Y	Y	Y	Y	Y	Y
Haemoglobin testing	Y	Y	Y	Y	Y	Y	Y
Haemoglobin cut-off	Y	Y	Y	Y	Y	Y	Y
Post-donation care	Y	Y	Y	Y	Y	Y	Y

6

Donor Haemovigilance

Definition: Haemovigilance involves surveillance of transfusion-related adverse events and adverse reactions comprising the entire transfusion chain from blood donor to the transfused patient. Haemovigilance integrates the quality management principles related to the BTS, which is essential for improving the safety, efficiency and quality of the blood products being transfused.

The transfusion of blood and blood products is a life-saving procedure but may involve risk and adverse events related to its donation as well as its transfusion to patients. This may vary from incidents, errors, near-miss cases, deviations from standard procedures as well as adverse reactions either to donors or patients. Their identification, reporting, assessment and monitoring helps to improve the efficacy, quality and safety of blood products.

6.1. Importance of haemovigilance

An effective haemovigilance system requires bidirectional tracking and traceability of blood products. It comprises monitoring, reporting, investigating, and analysing adverse events related to donation, processing and transfusion of blood and blood products. The main aim is for continuous quality improvement by way of corrective and preventive actions.To build and sustain a successful haemovigilance system, strong leadership, sound governance and sufficient resources are required. All stakeholders, including the Ministry of Health, BTS, hospitals, professional organizations, public health institutions, regulatory authorities, patient and donor groups, must coordinate and collaborate to develop an effective haemovigilance system. To establish and sustain the system, sufficient human and financial resources are required and it should be confidential and non-punitive in nature.

Donor haemovigilance will help to identify and record errors and deviations in donor-related processes, any abnormalities in blood products during preparation and help in epidemiological monitoring of donors, including donor look-back and post-donation information.

Activity related to patient haemovigilance will help to identify, monitor and report adverse events related to transfusions, followed by appropriate investigation of the same, thus strengthening the reporting system of

clinical services. This can be made further possible by active participation in hospital transfusion committees. These eventually help to establish evidence-based guidelines and policies related to safe blood transfusion.

6.1.1. How haemovigilance has improved donor and recipient safety in different parts of theworld (the US, Europe, the UK, France)

The European blood directives were published by European Commission between 2003 and 2005. These gave mandatory rules for haemovigilance with the requirement for full traceability of blood products from donor to recipient as well as serious adverse reactions (SARs) attributable to or related to the quality and safety of the blood and blood components transfused. This directive helped to develop haemovigilance systems in countries where it had not existed earlier, as in Ireland. In other countries such as the United Kingdom and the Netherlands, voluntary systems that existed changed to partly or completely mandatory and compulsory. In France, since its inception in 1990, haemovigilance system reporting is mandatory and covers all reactions involving donors and patients. The first report of the European Commission on haemovigilance covered 20 million blood components issued in 23 countries in which a total of 2200 SARs were reported (i.e., 1/10 000 blood components transfused), out of which only 1% (i.e., 1/1million components) were attributable to the quality and safety of blood components. Later, the European Haemovigilance Network came to be known as the International Haemovigilance Network (IHN) after it broadened its scope in 2010 and included about 33 countries, including one third of non-European countries. The main aim was to form a common structure with regard to haemovigilance and safety of blood and blood components [1].

The IHN, in collaboration with the ISBT working party on haemovigilance, has helped in standardization of definitions related to adverse reactions and adverse events in patients and donors. These standardized definitions are being used for documentation of adverse event reporting and for developing a haemovigilance database across countries for reporting adverse events related to patients and donors. Thus, it would help to compare data across countries to improve blood safety but there are issues related to compliance with these international definitions, which are not being followed across all countries as desired and due to differences in grading the adverse reactions and variation in transfusion practises across countries [1].

6.2. SHOT: report summary

Serious hazards of transfusion (SHOT) data from the UK haemovigilance system publishes its annual report every year. It brought out an important finding that 50% of adverse reactions that occur are in the hospital set-up and linked to administrative errors of transfusion. Such reports have improved our understanding of the root cause of adverse reactions and helped to increase the safety of blood and component transfusion

in a hospital setting. It has highlighted most failures occurring in the ward or at the interface of the ward and hospital blood bank, which are related either to the wrong label on patient samples resulting in wrong blood in tube (WBIT) or incorrect blood component transfusion (IBCT). It has advocated the importance of education programmes for blood bank and bedside staff to prevent these errors. This also includes better patient identification with the help of wrist bands and verification by two different personnel at the bedside as well as visual inspection of the blood and blood components before issue from the blood bank. The use of electronic systems for ordering and issue of blood components to decrease or prevent clerical errors at the blood bank interface is another way to increase safety [1].

Data from established haemovigilance systems such as the French system, SHOT in the UK, transfusion reactions in patients (TRIP) in the Netherlands have shown that regular analysis of adverse reactions related to both patients and donors have led to improvements in transfusion practices to improve donor and recipient safety, e.g. introduction of a diversion pouch in the blood collection system to decrease the risk of bacterial contamination of blood components and use of male-only donor plasma have resulted in decreased incidence of transfusion-related acute lung injury (TRALI).

6.3. Current status of the donor haemovigilance programme in the WHO South-East Asia Region

According to the WHO Global Data on Blood Safety report (GDBS) of 2018, only five out of 10 Member countries have a haemovigilance system in place to capture data on donor and recipient adverse events. These countries are India, Indonesia, Nepal, Sri Lanka and Thailand. It was observed that reporting was not as per international definitions for reporting these adverse events, as advised by WHO [2].

The incidence of SARs per 100 000 transfusions in Member countries was 51.2 as compared to 9.7/100 000 transfusions in European countries following mandatory reporting of SARs to regulatory agencies. The report concluded that countries should develop haemovigilance programmes to standardize reporting of adverse events and come out with national haemovigilance guidelines for reporting patient and donor adverse events, which can match international definitions. Also, the comparison with international standards developed by WHO can help to improve transfusion safety of the donor and patient [2].

Donor haemovigilance mechanisms are present in all seven of the reporting Member countries – Bangladesh, Bhutan, India, Indonesia, Nepal, Sri Lanka and Thailand as depicted in Table 8.

Table 8: Donor haemovigilance mechanisms

Member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Is there a donor haemovigilance programme?	Y*	Y	Y*	Y	Y	Y	Y
Donor adverse event mitigation strategies/ interventions	Y	Y	Y	Y	Y	Y	Y
Pre-donation							
Pre-donation instruction sheets	Y	Y	N	Y	Y	Y	Y
Water intake	Y	Y	Y	N	Y	Y	Y
Isotonic drinks	NR	NR	N	Y	Y	Y	Y
Isometric exercise	NR	NR	N	N	Y	N	N
During donation							
Audio engagement (music)	NR	Y	Y	Y	Y	N	Y
Video engagement (movie)	NR	NR	Y	Y	Y	N**	Y#
Both audio and visual engagement	NR	NR	Y	Y	Y	N	Y
Post-donation							
Post donation instruction sheet	Y	Y	Y	Y	Y	Y*	Y
Telecon contact details of blood centre	Y	Y	Y	N	Y	Y	Y##
Landline (routine working hours)	NR	NR	Y	N	Y	Y	N
Mobile (24 X 7 X 365)	Y	NR	Y	N	Y	Y	Y

Y: yes; N: no and NR: no response
* May not be uniformly followed across the nation
**In-house – apheresis donation
Only in apheresis donation
Only in person with adverse reaction
Donor adverse event mitigation strategies/interventions

Pre-donation

Pre-donation interventions to mitigate donor adverse events such as a pre-donation instruction sheet, water/isotonic drinks and isometric exercises are reported from all seven countries, However, these strategies may not be in place consistently either individually or collectively in all the countries.

During donation

Interventions to mitigate donor adverse reactions during blood donation such as audio and/or video engagement are reported from five of the

seven reporting countries –Bhutan, India, Indonesia, Nepal and Thailand. However, these strategies may not be in place either individually or collectively consistently in all the countries.

Post-donation

Post-donation interventions to mitigate donor adverse events such as a post-donation instruction sheet, telecon/landline contact details of the blood centre are reported from all the seven countries. However, these strategies may not be in place consistently either individually or collectively in all the countries.

In India, the initiative to develop a haemovigilance programme started in 2012 on a voluntary basis, initially for reporting of recipient adverse reactions and later extending to reporting of donor adverse reactions as well. In India, there are around 4000 licensed blood centres operating both in public sector as well as private sector hospitals, and some are managed by voluntary charitable organizations. So, establishing a haemovigilance programme in India was a complex task due to the highly decentralized nature of operations of the BTS and because of the diverse management of these blood banks. The programme was launched by the collaborative efforts of the National Institute of Biologicals (NIB) and Indian Pharmacopoeia Commission (IPC) as a voluntary and non-punitive reporting mode, with NIB as the national coordination centre for the haemovigilance programme of India (HvPI) with the main aim of reporting all transfusion-related adverse events, creating awareness for health-care professionals about haemovigilance, generating evidence-based recommendations, advising the Central Drug Standards Control Organization (CDSCO) on the safety and regulatory aspects, communicating the findings to all stakeholders and finally aiming to link the data at the national and international levels [3].

6.4. Gaps

Education and training of staff reporting to the haemovigilance network is required. Standardized definitions need to be adopted and reported. There is a need to createawareness regarding the reporting of recipient adverse events among bedside staff through a non-punitive approach. Data-sharing is needed among international organizations, i.e. IHN, WHO and ISBT to develop a standardized approach for reporting of adverse events and setting up of guidelines for haemovigilance systems in different parts of the world, including some countries of the WHO South-East Asia Region. Standardization can be achieved by standardizing the definitions, classification after validations as well as additional tools, i.e. the minimum investigations required as well as flowcharts to help in classifying adverse event reporting as well as identifying near-miss cases should be available in the public domain and in as many languages as possible. This would help in having a uniform method for investigating an adverse event and subsequently formulating appropriate strategies for their occurrence and recurrence.

There is an emergent need to implement various clinical guidelines as per national standards, i.e., positive patient identification, transfusion triggers being followed, appropriate documentation of the transfusion process, and bidirectional traceability of blood and blood components. Policies and procedures should be established for developing haemovigilance that is non-punitive. Quality indicators are necessary to measure clinical practice and analyse all the data collected on a regular basis for further quality improvement [4].

6.5. Donor vigilance, underreporting, punitive action

There is concern about the underreporting of adverse events to blood and blood components. Efforts have been made by IHN and haemovigilance programmes in several countries to increase haemovigilance reporting by providing training to blood bank and bedside staff for reporting donor- and transfusion-related adverse events on a regular basis. Another important aspect is to make it non-punitive so that reporting serves as positive feedback to improve transfusion safety. At the hospital level, hospital transfusion committees can play an important role in implementing haemovigilance systems.

There is an urgent need to use the latest technology to capture and analyse donor adverse events and to increase the focus on donor haemovigilance so that appropriate mitigation strategies can be formulated for donor adverse events. This would certainly go a long way in donor recruitment and retention and improve overall donor safety.

Though most reported donor reactions are mild in nature, i.e., haematoma formation and localized phlebotomy site bruising, systemic reactions like vasovagal syncope can be associated with post-donation injury as well as disability. Such adverse reactions can decrease the donor return rate and probability of future donations; hence, they need to be managed promptly with due care of the donor to their satisfaction. Thus, haemovigilance plays a vital role in studying adverse donor reactions and formulating risk-reduction strategies so that these adverse reactions can be mitigated to help in encouraging future blood donations and thus increase donor return rates to maintain an adequate blood supply [5].

6.6. Opportunities

The scope of haemovigilance in each country depends upon the financial resources, technical expertise, level of blood safety practised, level of education and training of staff as well as the level of technology available. This can be further expanded to special transfusion requirements (irradiated and antigen-matched blood components); salvaged blood preparations (platelet-rich plasma for topical and local use, autologous eye drops); complications related to venous access in therapeutic plasma exchange; material vigilance (related to the equipment/instruments used for transfusion); adverse events related to

coagulation factors, antifibrinolytic agents, etc.; surveillance related to failure to achieve the expected benefits, inappropriate clinical decision-making, under transfusion and product wastage. Member countries of the Region can have some common knowledge-sharing platforms and exchange programmes to discuss and develop mechanisms to address donor adverse events and formulate appropriate strategies to improve donor care practices in their countries. These exchange programmes can help in developing trained human resources to provide better donor care and counselling. They can be medical doctors, nursing officers, technical staff and medical social workers involved in donor recruitment, retention and care.

6.6.1. Enhancing blood safety by improving infrastructure, data integration and reporting in haemovigilance programmes

There is a need to establish mechanisms to share haemovigilance data and information as well as the practical experiences of the staff involved in donor care so that gaps in donor care can be identified and addressed. The challenges to and barriers in establishing haemovigilance systems, particularly in developing countries, need to be addressed on priority due to the large population size and fragmented transfusion services. This can only be achieved through a strong political will, a supportive legal framework and national blood policy to increase the quality and safety of the entire blood transfusion chain. All these require adequate resources and funding for the haemovigilance programme from the government. Global mechanisms need to be developed for countries to share data and information related to haemovigilance with participation from more developed as well as developing countries. This would comprise strategies for implementation of haemovigilance programmes, data management, data mining, technical support from the IT industry, sharing of norms and standards for benchmarking as per international standards without any duplication as well as sharing of good practices and useful lessons.

Thus, these global efforts will further improve the safety of transfusion services and safety of the patients and donors involved [6,7].

7

Post-donation counselling, notification and referral

7.1. Definition

Blood donor counselling is described by WHO as “a private discussion between a blood donor and a qualified counsellor regarding matters relating to the donor’s health and the donation process”.

High levels of care and assurance of their well-being should be given to blood donors. Counselling is a crucial component of the BTS, and it is a duty to provide care for every person who is involved in blood collection from blood donors [1–3].

Blood donor counselling is a private discussion about matters pertaining to the donor’s health and donation process between the donor and a qualified counsellor; it could be offered before, during and after blood donation. By integrating blood donor counselling, the BTS and the larger health system can both benefit. It lessens the needless loss of potential donors, while allowing maximization of donor retention, especially of temporarily deferred donors.

By providing counselling, the BTS can postpone donation by unfit donors and assist donors in providing their informed consent for blood donation. It is also helpful for donors to self-defer if they are aware of any risk of a TTI, have a known medical condition, or have undergone a therapy that would impair their eligibility to donate blood [4].

It will also reduce the amount of blood donated by ineligible donors, which must be discarded later. This would prevent wastage of resources invested in blood collection and processing [5].

Blood safety is improved by blood donor counselling since it lowers the prevalence of TTIs in donated blood. This helps to maintain a pool of healthy, dependable and safe voluntary blood donors [6].

7.2. Why is it required?

Donor notification and counselling accomplish several important goals, including protecting the blood supply by informing the donor if they

should refrain from giving blood in future, protecting the donor's health, the health of theirfamily and the community by preventing secondary transmission of infectious diseases to sexual partners and offspring, and providing feedback on the effectiveness of donor selection procedures such as pre-donation education, medical screening and testing [6].

Voluntary blood donors are seen as a reliable and safe source of blood, as they provide blood out of compassion, and are often believed to be disease-free since they have already donated blood. However, they may not be aware of the silent nature of some of the TTIs that they may be harbouring [2]. Keeping this in mind, blood transfusion services have a legal and ethical obligation to inform blood donors of reactive test findings [3]. One of the most important mechanisms for informing asymptomatic people of abnormal test findings such as infectious organisms that they may be silently harbouring is post-donation notification, counselling, and referral for further medical diagnosis and care (Table 9) [7].

Doctors, nurses, and counsellors who work at hospitals and blood banks are knowledgeable about blood donation and transfusion procedures. This information is not available to the person visiting the blood bank. Therefore, the counsellor must provide the necessary information regarding TTIs to prospective donors and the opportunity to take an informed decision.

A counsellor should explain the test results, necessity for confirmation of the present test findings, potential effects on the donor's health and their suitability for future blood donations. Advice should also be given on how to take steps to prevent the spread of infection to others. Donors should be further referred for additional diagnostic tests to confirm the underlying infectious agent, and for further management and care.

Post-donation need-based counselling should be offered. Blood donors receive brief instructions for self-care within 48 hours of blood donation as well as information on what to do in case of unfavourable side-effects, including vasovagal syncope, dizziness, or any bruising at the site of venepuncture.

In the present survey, all seven Member countries who had responded, i.e., Bangladesh, Bhutan, India, Indonesia, Nepal, Sri Lanka and Thailand, havea system of post-donation notification, counselling and referral. Provision of financial support for diagnosis and treatment of hepatitis and the further investigations required for the long-term consequences of such infections and their treatment thereof is reported from Bangladesh, India, Sri Lanka and Thailand. India has a dedicated National AIDS Control Programme and National Viral Hepatitis Control Programme. Long-term blood safety improvements are expected because of these focused projects which are initiated under the guidelines of the WHO [8, 9].

Table 9: Post-donation notification, counselling and referral

Member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Are there mechanisms for post-donation notification, counselling and referral?	Y	Y	Y	Y	Y *	Y	Y
Is there financial support for diagnosis?	Y	N	Y	NR	NR	Y	Y #
Is there financial support for treatment?	Y	N	Y	NR	NR	Y	Y #
Is there financial support for further diagnosis and treatment?	Y	N	Y	N	N	Y	Y #

Y: yes; N: no and NR: no response
*Only for counselling and referral
It is covered by the national health insurance system

7.2.1. How has it improved post-donation care and community health in different parts of the world?

Experience from the developed world

- All developed nations have a system in place for post-donation counselling, appropriate referral for further diagnostic work-up and treatment for blood donors who test positive for TTIs. In addition, these donors are also regularly followed up so that treatment can begin early and there is no default for this referral.
- The technical working groups advised that updated standards should cover pre-donation and post-donation counselling on significant TTIs, such as HBV, HCV, and syphilis, as well as medical issues requiring deferral and donor care, in addition to HIV counselling.
- Current status in the South-East Asia Region

As per the Global Database on Blood safety (GDBS) survey conducted by WHO in 2018 for countries of the Region, nine out of the 10 Member countries that had responded (i.e., Bangladesh, Bhutan, India, Indonesia, Maldives, Myanmar, Sri Lanka, Thailand, Timor-Leste) have a system for blood donors who test positive for TTIs. Post-donation counselling and referral to care and treatment are being provided to blood donors who test positive for TTIs. All the 10 countries that responded had a donor notification system for HIV, hepatitis B, hepatitis C and syphilis. India and Sri Lanka also notify donors who test positive for malaria [11].

Detecting an underlying infection through screening of asymptomatic blood donors is a method of secondary prevention. Subsequent referrals for additional testing for confirmation of disease and management are used as a method of tertiary prevention and as an intervention to decrease the burden of the disease. Thus, to motivate, recruit, and retain

blood donors on a large scale, extensive information and education campaigns are required to create awareness regarding the ways in which these TTIs are acquired. This acts as a primary prevention strategy and lowers the chances of donors with such risk factors coming forward for blood donation [6].

7.2.2. Are these programmes linked to any national health-care programmes or other institutions to improve donor health?

In the present survey, five out of seven responding countries, i.e., Bangladesh, India, Nepal, Sri Lanka and Thailand, have a system for monitoring the health of donors (Table 10).

Table 10: Monitoring of blood donor's health

Member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Are there mechanisms to monitor the health of the donor?	Y	NR	Y	N	Y	Y	Y
Iron-deficient donors	Y	N	N	N	N	Y	Y
Transfusion-transmissible infectious disease marker-reactive donor	Y	Y	Y	Y	Y	Y	Y
Temporarily deferred donors	NR	NR	N	N	N	N	Y
Regular repeat blood donors	Y	Y	N	N	N	Y	Y
Rare blood donors	NR	Y	N	N	N	Y	Y
Y: yes; N: no and NR: no response							

7.3. Financial assistance for donor health

In the present survey, four outof seven Member countries that had responded, i.e., Bangladesh, India, Sri Lanka and Thailand, have a system for financial assistance for diagnosis and treatment of donors in their countries. Thailand also stated that this financial compensation is given through their national health insurance system only.This is an added advantage for those who donate blood and could be an important motivation to start donating and continue to become a regular repeat voluntary blood donor in future, thus augmenting the country's blood supply system, as depicted in Table 9.

7.4. Iron supplementation

In the present survey, three out the seven Member countries that had responded, i.e., Bangladesh, Sri Lanka and Thailand, have a system for monitoring iron deficiency in donors, as depicted in Table 10.

Anaemia was commonly observed in women between the reproductive age group of 18 and 40 years, which can be attributed to a combination of nutritional deficiencies and monthly physiological blood loss [12]. Although the National Nutritional Policy of India includes a national anaemia control campaign, low haemoglobin level remains the main cause for deferral in females [13]. In order to explain deferral owing to low haemoglobin (Hb) levels and address the issue of iron depletion and anaemia in regular repeat voluntary blood donors, larger-scale prospective research on donor Hb levels, serum iron and ferritin assays are therefore required in India. These studies, which were carried out in other nations, showed that iron levels in repeat blood donors were depleted and recommended increasing donation intervals to replenish them [14,15].

Additionally, the Central Government's national nutritional programmes, such as India's Poshan Abhiyaan, a project of the National Institution for Transforming India (NITI) Aayog in collaboration with the ministries of Women and Child Development and Health and Family Welfare, can address underweight. To enhance the nutritional status of children, pregnant women and breastfeeding mothers, the Government of India has launched a nationwide nutrition programme. To increase the number of female donors in the donor pool, it would also be necessary to launch a focused national campaign with the aid of IEC resources. National initiatives like this will thus support the provision of safe and sustainable blood supplies as well as the attainment of better health for all [16].

Regular health check-ups are not place in any of the Member countries

Regular health check-ups of blood donors can help to pick up asymptomatic infections and illness early on so that these can be treated and help in improving donor health. This can help in maintaining a safe and healthy blood donor pool.

Reinduction of donors after temporary deferral

In the present survey, five out the seven Member countries that had responded, i.e., Bangladesh, Bhutan, Indonesia, Sri Lanka and Thailand, have a system for reinduction of donors after temporary deferrals. These are shown in Table 11.

Table 11: Key performance indicators

Member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Specific key performance indicators							
Donor deferral percentage	Y	Y	Y	Y	Y	Y	Y
Percentage of voluntary donors	Y	Y	Y	Y	Y	Y	Y
Percentage of repeat donors	Y	Y	Y	Y	Y	Y	Y
Percentage of female donors	Y	Y	Y	Y	Y	Y	Y
Percentage of transfusion-transmissible infections	Y	Y	Y	Y	Y	Y	Y
Percentage of temporarily deferred donors reinducted	Y	Y	N	Y	N	Y	Y
Y: yes; N: no and NR: no response							

Communication of the temporary deferral period to the donors and the reason for initial deferral can help to reinduct donors to the donor pool. Communication by way of a telephone call or SMS is helpful in recruiting these donors [17].

7.5. Gaps

Donor health should be given priority. There should be special health check-up camps for regular as well as first-time donors and this can also act as a motivational factor for regular repeat donors. The testing and health check-ups should be covered under national health insurance systems in countries, although this is not the case at present in any of the Member countries responding to our survey.

There should be a system for reinduction of temporarily deferred donors to return to the blood donation pool in all Member countries where it is non-existent and strengthened in countries where it is practised.

7.5.1. Need for strengthening pre- and post-donation counselling

Blood safety includes pre-donation screening of blood donors using the NBTC's blood donor's questionnaire format, by highly qualified and competent medical officers with clear and understandable communication skills. Most importantly, privacy and confidentiality should be always maintained during the screening and counselling process.

Post-donation counselling, notification and referral is in place in almost all the responding countries. Once donors are referred for treatment of TTIs, there should be a mechanism to follow them up either through a social worker or telephonically so that they start the treatment as soon as possible. This follow-up call or traceability can also make sure that they do not default in taking treatment.

Lack of trained counsellors with expert counselling skills is an issue in many developing counties.

7.6. Opportunities

In view of the close geographical proximity and cultural similarity in Member countries, successful knowledge-sharing and training programmes can be developed to address these challenges.

An important aspect is to have a donor follow-up clinic or system to follow temporarily deferred donors to tackle the cause of temporary deferral and provide them with the necessary treatment, e.g., taking care of donors with low hemoglobin by following up with iron profile testing and providing treatment if iron deficiency is diagnosed so that they can be returned to health and to the donor pool. Similar follow up and treatment may also be provided for noncommunicable diseases such as hypertension, endocrine disorders and common causes of deferral such as underweight.

This can be done if there is a central registry of local regional donation data, which includes temporarily deferred donors and a system to call and motivate donors to come back after the reason for temporary deferral has been resolved.

Regular training and certification courses for training of blood bank staff and counsellors need to be strengthened to improve and sustain their counselling skills at regional and national levels.

Early detection of these illnesses helps in early initiation of therapy and prevention of substantial morbidity and mortality. This can also prevent the expense of unnecessary medical treatment and improve the quality of life of the donors.

8

Donor data management system

8.1. What is donor data management and what are the different types?

Donor data management incorporates maintaining a regional and national shared donor database, which promotes transparency of the entire blood donation system. It increases the efficiency and safety of donor–blood component-recipient relationship [1].

The main applications and advantages of donor data management are as follows:

- maintains complete blood donor profiles, thus better donor follow up and secures trust among the blood donors' population.
- better understanding of the epidemiology of donors and recipients, provides evidence on the effect of donation and of transfusion, as well as the link between the donor and recipient [2].
- better coordination between various blood centres nationally and internationally.
- encourages adherence to uniform testing standards.
- helps in meeting the demands for rare blood group units and availability of phenotype-matched units, thus better matching of donor–recipient characteristics.
- addresses the problems of current and imminent blood shortage.
- provides the opportunity to study donor and product risk factors for recipient outcomes and examine efficiency over the complete transfusion chain.
- facilitates research, based on which donor guidelines (donor selection and deferral criteria) can be formulated and updated.
- quality indicators of blood donation are designed.

Types

Blood donor data can be compiled and maintained through the following methods:

- national surveys among blood centres.
- through comprehensive research data.
- by analysis of data by individual hospitals and blood centres.
- by creating a donor database warehouse.

8.2. How donor data are stored and retrieved

Donor data are retrieved by various methods as detailed above.

In European countries, projects such as a "donor database warehouse" have been established, linking comprehensive data of donors and recipients. Individual hospitals and blood banks collect and update data on donors and transfusion recipients regularly, which is then analysed at a central level [2].

The data are retrieved and maintained through various database forums and research projects. Some examples from the western countries are the Dutch Transfusion Data warehouse (DTD) project, Scandinavian Donations and Transfusions Database (SCANDAT) database from Sweden and Denmark, profiles of blood product transfusion recipients in the Netherlands (PROTON); Recipient Epidemiology and Donor Evaluation Study (REDS-III) programme in the USA, Canadian donor–recipient study, a European Project – Donor Management IN Europe (DOMAINE) [3].

The data are stored and managed by a team of experts and experienced researchers from the field of transfusion medicine, data modelling and information technology professionals. To avoid disparities and inconsistencies in data collection, uniform formats are designed and shared with the participating centres. Data are collected under different subheadings for easy compilation. Validation of data is done to minimize discrepancies and errors.

8.3. Centralized national level, local/regional level or individual blood centres – advantages and disadvantages

The donor data management system can be centralized at the national level or localized at different regional levels.

A national-level data collection system involves centralized collection and compilation of data. Regional blood centres and hospitals enrol and submit their data to a centralized authority. There is continuous

collection, management and evaluation of data, which can be utilized to formulate policies at the national level. These have been initialized as donor vigilance and haemovigilance programmes at the national level.

The problems/drawbacks are inconsistency in data collection. It requires capacity-building in terms of dedicated and trained staff, establishment of data collection software, data privacy and security and adequate internet facilities at every centre. There may be a problem in linking data from participating blood centres to the central collection agency. Other challenges are changes in registration systems, the project financing structure, and changes in legislation with respect to data usage [2]. Another problem can be that the conclusions drawn, and the policies framed may not be applicable or hold true for all the regional blood centres, especially in vast countries with diverse epidemiology and demography.

Data management at the local/regional level or individual blood centres requires staff motivation, awareness and adequate funds. The advantage is that data are collected at regional level, which is easier to compile than that received at individual level. The drawback is that the results may not be applicable for extrapolation at the central level.

8.4. How has donor data management helped in improving donor recruitment and retention, donor and recipient safety – look-back in case of TTI?

Donor data management contributes to improving donor recruitment and retention and donor and recipient safety. It creates awareness regarding voluntary blood donation by highlighting the gap between the need for blood needs blood supply of the nation. This helps in actively motivating voluntary blood donors to surpass the number of replacement donations enrolled by passive donor recruitment activities. Blood donor data management strengthens the approaches to increase and maintain VNRDs, such as disseminating information on blood donation and conducting blood donor recruiter's training. It helps in recognizing and initiating the VNRDs appreciation programme [4]. The donor database helps to define the epidemiology of the donor population, thus providing tools that facilitate donor management and can be used for donor recruitment and retention.

Donor data management help in monitoring the entire transfusion chain and the results could also help develop research data for comprehensive research across the transfusion chain. A centralized donor management system also plays a role in sensitizing the government on all blood donor-related issues, which can further help in increasing governmental investment in blood management.

Analysis of donor data can help to recognize the challenges faced in donor recruitment and retention and develop strategies to overcome

them. A small number of female donors, high percentage of first-time donors and replacement donors are some of the problems faced by the BTS. Donor deferral data can bring to light the barriers in recruiting female donors, such as low body weight, low Hb level and fear. A high percentage of first-time donors and replacement donors are the outcome of ineffective and inefficient donor retention programmes due to limited donor recruiters and finances. The conclusions drawn from donor data can help in formulating policies to combat fear among prospective blood donors, such as introducing them to a blood donation programme at a young age with special emphasis on women and initiating haematinics for maintaining optimal Hb levels [4].

For example, the Korean Red Cross (KRC) operates programmes such as the Blood Information Management System (BIMS) and Blood Information Sharing System (BISS) for the data management of blood donation and blood supply. The BISS programme, regulated by the National Disaster Recovery Centre (NDRC), has been storing records of all blood donors since 1981 with the objective of enabling real-time verification of donor eligibility. This also helps in disseminating information on urgent blood requirements and rare blood groups [5].

The objectives and applications of donor data management include both donor and recipient safety and minimizing the risk of TTIs. Donor data management projects at blood centres aim to link data from donors and transfusion recipients to get comprehensive evidence on the effects of donation and transfusion. It helps to determine the risk factors for donor deferral, predict blood utilization, benchmark blood use, ultimately optimizing the efficiency of the entire transfusion chain. A robust donor data management system can improve transfusion safety by measures such as reducing errors in TTI testing through efficient training of staff, consolidating laboratory centres and introducing automated highly sensitive techniques for screening tests. It enables look-back studies for TTIs and help in efficient laboratory practices by tracing donor records. In Korean blood transfusion services, aliquots of all donated blood samples are stored for 10 years to enable review in the event of adverse transfusion reactions [5].

DOMAINE (Donor Management IN Europe) is a European-based project on blood donor management, involving blood establishments from 18 European countries, the Thalassaemia International Federation and a representative from the South-Eastern Europe Health Network. DOMAINE is organized into an elaborate chain process composed of the five following steps: (1) recruitment, (2) donor invitation, (3) donor selection, (4) donation procedures, and (5) donor retention.

Hence, donor data give an insight into the magnitude and nature of the challenges involved in donor recruitment and retention. The data also give a proficient understanding of the gaps in attaining our goals.

8.5. Current status in the WHO South-East Asia Region

There is still a long way to go in realizing the goal of 100% voluntary blood donation in the Region. It requires proficient understanding of the quality management of BTS for donor recruitment and donor care. In an article published in 2005, it was reported that replacement donations from relatives and friends primarily contributed a major proportion of the blood demands in almost all countries in the South-East Asia Region except Thailand [6]. The article also mentioned that most of these countries except Bangladesh had banned the professional paid-donor system; however, it still exists in the form of replacement donation, which can be addressed by stringent donor screening. There has been a significant improvement in the proportion of VNRDs after the adoption of a national blood policy in Member countries and Thailand has attained 100% VNRDs. The recent *Global status report on blood safety and availability 2021* states that four countries in the South-East Asia Region collected more than 90% of their blood supply from VNRDs [7].

The Korean blood management system addresses some issues related to blood donor quality assurance. The National Blood Safety Improvement Project (2004–2009) focused on the prevention of TTIs through improving national monitoring systems for transfusion and introducing highly sensitive screening tests to prevent TTIs [5].

India has a more robust donor management system aided by national and regional health authorities. The National Blood Policy (NBP) was adopted by the Government of India in 2002 and an "Action Plan for Blood Safety" was introduced in 2003. The NBP defines the strategies for blood donor recruitment, selection, deferral, blood screening for TTIs, confirmatory testing, donor notification, confidentiality, counselling and referral [8]. It reiterates government commitment to safe blood and blood components and has well-documented strategies for making available adequate resources, technology and training for improving transfusion services. The Drug Controller is the regulatory authority under the Drugs and Cosmetics Act, 1940 and Drugs and Cosmetics Rules, 1945.

Licensing is only the first step towards quality. According to the Supreme Court directive in 1993, licensing of blood banks in the country was made mandatory. In January 1998, the Drug Controller General of India declared a ban on professional blood donations in compliance with the directives of the Honourable Supreme Court. The honourable court also directed that the National Blood Transfusion Council (NBTC) along with state blood transfusion councils (SBTCs) be set up for monitoring the activity of blood banks in India.

NACO/NBTC has been the main technical body to frame guidelines for the practice of transfusion medicine. NACO together with NBTC has played a pivotal role in improving blood safety by infrastructure development, setting up component separation units, promoting voluntary blood donation, training staff and has also laid down standards for blood banks in India.

The haemovigilance programme was initiated in December 2012 as a collaborative venture between the National Institute of Biologicals (NIB) and Indian Pharmacopoeia Commission (IPC) with the coordinating centre at NIB. The National Blood Donor Vigilance Programme (NBDVP) was launched on 14 June 2015[9].

In Indonesia, the blood service is run by the Indonesian Red Cross (IRC) as a government assignment. To regulate blood services, the government has issued decrees and policies such as the government decree No.18/1980, Ministry of Health Regulation No.478/1990 and the Health Law No.23/1992, which stated that blood should be collected only from VNRDs, and the blood cannot be commercialized. The Indonesian Blood Donors Association (IBDA) was established around 25 years ago. Blood donation awareness programmes are introduced at a very early stage such as in kindergartens to strengthen donor recruitment and retention [4].

Blood donor data management systems are operational in Member countries such as Bangladesh, Bhutan, India, Indonesia, Nepal, Sri Lanka and Thailand. There is coordination between blood centre data and the regional/national donor database in Bhutan, Indonesia, Nepal, Sri Lanka and Thailand. Table 12 shows the donor data management in Member countries.

Table 12: Donor data management

Member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Is there any mechanism for donor data management?	Y	Y	Y	Y	Y*	Y	Y
If yes, then is it coordinated							
Nationally	NR	Y	N	NR	Y	Y	Y
Regionally	NR	Y	N	Y	N	Y	Y
Individual blood centre level?	Y	NR	Y	Y	Y	Y	Y

Y: yes; N: no and NR: no response
*Donor data management software development is in process.

In a survey conducted in 2015, the greatest disparities between the population and blood collection were observed in the African Region and the South-East Asia Region. As per the report published in the "Action framework to advance universal access to safe, effective and quality-assured blood products 2020–2023", the proportion of whole blood collected from voluntary non-remunerated donors was 82% in the South-East Asia Region and 79% of Member countries had hospital transfusion committees (HTCs). Processing of whole blood into components was done in 62% of countries in the South-East Asia Region and 36% had a national haemovigilance system [10].

The Global status report on blood safety and availability 2021 observed in the South-East Asia Region, 80% of countries had a national blood policy and 70% reported the existence of specific legislation covering the safety and quality of blood transfusion. Seventy per cent of Member countries in the South-East Asia Region had a system for regular inspections in blood centres. Licensing and accreditation of blood transfusion services was reported by 40% and 30% of Member countries, respectively [7].

The Region still awaits a well-organized framework and accountability for blood donor management. Myanmar lacks a unit under the Ministry of Health for governing all activities related to BTS. It does not have a national strategic plan for blood safety. Bhutan and Indonesia lack a legislation for safety and quality of blood and blood products for transfusion and a specific budget allocation for NBTS under the Ministry of Health. Maldives does not have national guidelines for the clinical use of blood. There is no national haemovigilance programme existing in Indonesia, Maldives, Myanmar and Timor-Leste.

8.6. Gaps and opportunities

The major barriers to 100% quality management in the donor area among Member countries are lack of government policies and planning; lack of resources, professional management, awareness; myths and misconceptions arising from cultural and social differences and false beliefs related to blood donation. Some countries such as Myanmar and Timor-Leste still do not have a national blood policy or a well-planned blood programme or an action plan to achieve quality management of blood donations. Besides recruitment, donor screening, retention and donor management are also not well addressed.

The national system for blood donor management should include the following:

- a national policy and legislative framework.
- national guidelines and criteria on blood donor selection.
- public information and donor education.
- suitable infrastructure and facilities.
- adequate financial and human resources.
- a quality system, including standard operating procedures, documentation and records.
- donor haemovigilance; and
- monitoring and evaluation.

While the legal aspects pertaining to infrastructure, equipment, spacing and staff are monitored effectively by the Drug Controller, the medical and quality aspects of transfusion medicine are often neglected. WHO recommends centralized/regionalized testing as one of the policies to

be adopted to improve the safety of blood and blood components. BTS in many countries are highly fragmented and pose unique challenges.

There is a need for reforms and reorganization of the blood donor management programme focusing on uniform policies and centralized training of staff and volunteers involved in the programme for efficient donor recruitment and retention.

9

Monitoring mechanisms of voluntary blood donation

9.1. What are the different quality indicators of voluntary blood donation?

Quality indicators are tools to measure the efficiency of any procedure. They form the foundation of quality monitoring and improvement in health care.

Vuk et al. described the tripartite quality model, in which quality indicators are classified as

structural indicators, process indicators and outcome indicators [1]. Structural quality indicators of voluntary blood donation include blood donor profile such as gender ratio (male: female donors), age distribution of donors, first-time/repeat donors, voluntary/ replacement and family donors, blood stocks, total voluntary blood donation camps, voluntary blood donor registry and rare blood donor registry. Repeat VNRDs are recommended as a very powerful quality indicator as it represents the ideal way to achieve self-sufficiency in meeting transfusion requirements. Process indicators include the donor deferral rate among voluntary and replacement donors, TTI prevalence rate, donor adverse events, percentage of temporarily deferred donors who are reinducted, product recall/ withdrawal (confidential unit exclusion – CUE), donor notification and donor recall. Data from various studies indicate that the frequency of donor deferral, TTI prevalence and CUE is more in first-time as compared to repeat regular donors [2–4]. As per the observations in these studies, regular repeat non-remunerated blood donors are the safest donors as altruism forms the basis of their donation and the TTI prevalence is least among them. Outcome indicators include donor feedback and complaints, donor satisfaction and whether corrective measures implemented were completed on time or not.

9.2. How do they help in monitoring blood donation activities?

Quality indicators provide an insight into the quality of a process as they possess certain attributes such as objectivity (measurability), reliability and validity. Quality indicators are formulated based on scientific

concepts, expert opinion and the research literature. The numerator and denominator for each parameter is fixed. The trends are monitored continuously, and any deviation is studied, and appropriate corrective actions are undertaken. The indicators may be internal or external [1]. Internal quality indicators are defined by the parent institution to upgrade quality systems and mostly address the specific problems of local interest. External indicators identify global problems.

The data from the relevant quality indicators, if correctly interpreted, enable identification of the gaps and priorities. If the donor gender ratio is highly disproportionate and there are fewer female donors, it calls for analysis. It requires awareness campaigns regarding voluntary blood donation targeting potential female donors. If the donor deferral rate is high, it again points towards a deficiency in donor education and awareness. The reasons for donor deferral should be analysed, and policies need to be adopted to minimize preventable deferrals. Low hemoglobin (<12.5 g/dL) has been recognized as the most common cause of temporary deferral in blood donors [5]. This quality indicator necessitates the implementation of programmes by blood collecting agencies to prevent anaemia in blood donors. If the reasons for deferral are not properly explained to donors, it can have a negative impact on the donor's psychology, which can lead to the loss of donors. The process requires well-qualified, proficient and empathetic staff on the blood donation premises.

Similar measures to improve blood donation drives are needed if voluntary donors are fewer than replacement/family donors. In addition, donor appreciation, such as honouring the donors, issuing certificates and medals and acknowledgement instil positive motivation in blood donors and help in recruitment and retention of voluntary regular non-remunerated donors.

Other indicators such as high TTI prevalence rate, donor adverse events, CUE suggest that more stringent donor screening tools are required to recognize high-risk and unfit donors. Observations based on such indicators as donor feedback and complaints identify weak areas in the system, which demand appropriate efforts in key segments of the system to ensure a safe and sufficient supply of blood components.

Quality indicators enable comparison of parameters both nationally and internationally. They help to identify the local and regional variations pertaining to different aspects of voluntary blood donation that aid in benchmarking and development of blood donor policies. They also facilitate the process of accreditation and certification.

Hence, quality indicators are essential tools of the quality management system (QMS) to monitor and control blood donation activities.

9.3. Experience from different parts of the world, how they have improved voluntary blood donation

Blood transfusion constitutes an essential part of medical science. To sustain a safe and adequate supply of blood components, regular non-remunerated voluntary blood donors are the safest. In an analysis by WHO, the proportion of voluntary non-remunerated whole blood donations varied from 49.4% in the Eastern Mediterranean Region to as high as 95.2% in the European Region and 98.7% in the Western Pacific Region. The proportion of voluntary non-remunerated whole blood donations in the African Region, Region of the Americas, and South-East Asia Region was 70.5%, 67.6%, and 79.1%, respectively [6].

To improve voluntary blood donation, many studies have been conducted worldwide to decipher the factors impeding blood donation. Based on the research on donors' knowledge, attitude and beliefs towards blood donation, and psychological and social factors, blood centres in various countries have initiated motivational activities to improve voluntary blood donation. The conclusions drawn from these studies help to identify gaps that can be addressed [4,7]. In Nigeria, blood donation drives were initiated in schools and medical colleges as educational institutions are ideal platforms for educating the masses and creating awareness among the youth.

Blood donation organizations worldwide are exploring the potential of incentives to enhance the effectiveness of recruitment and retention campaigns for VNRD. Various studies from the United States and European countries have concluded that certain incentives (discounts, tickets, gifts, and paid time off work) have the strongest evidence to support VNRDs [8]. These, countries have upgraded their voluntary blood donor pool by augmenting health checks and donor appreciation incentives. But at the same time, incentives as cash payments may demotivate voluntary blood donors. Other aspects such as accountability and donor convenience have also played a major role in conversion to VNRDs.

In developing countries, blood donation drives among students have contributed significantly to establishing voluntary blood donor pools [9,10]. In developed nations, appropriate legislation and directives from the responsible health authorities have helped to roadmap the steps for voluntary blood donation programmes. Developed countries have succeeded in establishing such donor systems, administered by National Transfusion Services, as in the United Kingdom or by the Red Cross as in the United States and some European countries. This voluntary donor system has not only facilitated the recruitment and retention of blood donors but also ensured the adequacy of plasma for plasma fractionation to process plasma derivatives.

Among the WHO regions, 58% of countries in the Americas, 60% in the Western Pacific, 71% in Europe, 78% in the Eastern Mediterranean have an established national blood policy [6]. These countries have a robust financial model for blood services supported by the government or other organizations. Regulatory mechanisms such as regular inspections, licensing and accreditation have supplemented VNRDs as they enforce strict blood quality standards and monitor product safety.

9.4. Current status in the WHO South-East Asia Region

Developing countries in the Region are still lagging behind in establishing 100% VNRDs. Among the several challenges are limited financial resources, which further leads to lack of suitable premises, infrastructure such as equipment, and consumables and shortage of trained staff. The low socioeconomic status of the population contributes to their poor general health. Lack of awareness and poor education of the population add to the misconceptions and myths about blood donation.

A strong legislation under the central ministry for guidelines and supervision of blood centres is the need of the hour. Countries such as Bangladesh, Bhutan, Indonesia and Nepal need to develop centralized blood collection and testing agencies. Member countries do not have a dedicated human resource development (HRD) wing to strengthen trained human resources for upgrading to VNRDs (Table13). India is the only country in the Region to have trained blood donor counsellors for promotion of VNRDs at national, regional and local levels. A next step would be to recruit VNRD liaison officers (VNRDLOs) and organize special training and educational programmes for them. Sri Lanka and Thailand are moving forward in this initiative. Nepal does not have structured academic courses for post-graduation in the social or behavioral sciences or MD courses in Transfusion Medicine/Immunohaematology. Bangladesh, Bhutan, India, Indonesia, Thailand and Sri Lanka have them in place. Such courses are essential for promoting adequate knowledge and facts about blood donation so that they can educate the general public and mobilize them for VNRDs.

In addition to the above, there are some areas that need attention. In a study from Bangladesh, it was observed that 85% of the total blood supply is from replacement donors [11]; 93% of the donors are males, and females comprise only 7% of the total donor pool. Other countries have relatively better statistics such as 57% male and 43% female donors in Bhutan, 74% male and 26% female donors in Indonesia, 75% male and 25% female donors in Nepal and 74% male and 26% female donors in Sri Lanka. Among Member countries, Thailand is the only country to have a better proportion of female donors; 44% male and 56% female donors. Table 5 (B) shows the demographic details of donors in Member countries.

Among Member countries, only India has specific monitoring mechanisms and performance indicators for VNRDs. Table 11 shows the status of key performance indicators in the Region. The major quality indicators such as percentages of donor deferrals, voluntary donors, repeat donors, female donors, TTIs are included for monitoring the efficacy of VNRD programmes in these countries. The area that needs attention is the reinduction of temporarily deferred donors. Apart from Bangladesh, Bhutan, Indonesia and Thailand, this needs to be incorporated in the systems in India, Nepal and Sri Lanka.

Rare donor programme/registry

Another component of quality indicators in VNRD is the development of rare blood donor registries to have a better representation and acknowledgement of blood donors and, at the same time, augment clinical transfusion practices. A rare donor registry is reported to be in place or in the process of formulation in all seven Member countries as depicted in Table 13. Bangladesh, India, Indonesia and Thailand have a dedicated donor registry for patients with thalassaemia. Bangladesh, Bhutan and Thailand have a dedicated donor panel for other multi-transfused patients.

Table 13: Rare donor programme/registry

Member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Is there a rare donor programme/registry?	Y	Y*	Y (in process)	Y	Y	Y	Y
Dedicated donors for thalassaemia patients	Y	NR	Y	Y	N	N	Y
For other multi-transfused patients	Y	Y	N	N	N	N	Y

Y: yes; N: no and NR: no response
*Apheresis donors in addition

Most of these countries organize special campaigns for promotion of VNRDs such as celebrating World Blood Donor Day on 14th June and National Blood Donation Day for honouring and acknowledging the efforts of voluntary blood donors. Subtle incentives such as a small token of appreciation (certificates, medals, badges), time off from work are also provided to boost VNRDs. Other incentives such as reimbursement of donor travel, medical insurance, special recognition for use of public or medical utilities are not in place. Most of these countries use electronic and print media to stimulate VNRDs.

9.5. Gaps and opportunities

Developing countries face many challenges to attaining the goal of 100% self-sufficiency in transfusion requirements based on VNRD. To ensure a safe and sufficient supply of blood components, the most important

step is to have a legislative framework in the form of a national blood policy under a central ministry. Strict reform is needed to identify VNRDs as the sole source of blood and blood products. A very important step in this direction is to totally ban paid and professional blood donors.

The major hurdle faced by these countries is the limited funding for the development of transfusion facilities. Moreover, in the presence of other health emergencies such as pandemics and endemic diseases, transfusion services fall much below in the list of priorities. These can be overcome by having a nationally coordinated fixed annual budget allocated for blood centers to promote appropriate and sufficient financial, technical and human resources. In addition, well-developed mechanisms for the fractionation of surplus recovered plasma from VNRDs can contribute to a great extent for achieving national and regional self-sufficiency in blood supply, at the same time avoiding wastage of excess plasma [12].

Raising the education standards of the people can reform public perception for VNRDs. A study concluded that women's education can bring a vast change in the outlook of the entire population [11].

Member countries of the Region lack well-established quality assurance programmes such as an external quality assurance scheme (EQAS), and accreditation, which promotes appropriate quality systems and standardized procedures for the collection and testing of blood.

To achieve the goal of self-sufficiency in VNRDs, it is important to evaluate hospital and patient needs, based on which recommendations on priorities in the supply of blood components can be given at the national level. With this information, we can estimate the number of donations required on an annual basis and formulate donor recruitment strategies and assess the progress towards self-sufficiency based on VNRDs.

Another drawback in the Region is the decentralized and fragmented blood supply. Uniform standard operating procedures and quality standards are not followed in the blood centers. All the functional blood centers in the country need to be brought under one central authority for monitoring. A centralized national blood service may not be feasible in large countries, but national coordination is indispensable. Nongovernmental organizations (NGOs) play an important role in maintaining a safe and sustainable blood supply. Societies such as the Red Cross, Rotary, Lions Club raise national awareness on VNRDs, particularly among the youth by organizing blood donation drives. Social media, and both electronic and print-based blood donation campaigns can have a positive impact on VNRDs [11]. Various centres should explore the role of social media-based incentives such as publishing names or news items in the newspapers [4]. Other incentives that can be adopted in the system are a day off, reimbursement of transportation costs, and a fee to cover meal expenses. There should be mechanisms for monitoring the health of donors, especially regular repeat donors for

iron deficiency, temporarily deferred donors, rare blood group donors and donors reactive to markers of TTIs.

Mechanisms for monitoring blood donor health

Mechanisms to monitor the health of the donor such as iron-deficient donors, TTI-reactive donors, temporarily deferred donors, regular repeat and rare blood donors are present in all the seven countries, However, each mechanism may not be present in every country as depicted in Table 14. A mechanism to monitor iron-deficient donors is reported from Bangladesh, Sri Lanka and Thailand. A mechanism to monitor TTI-reactive donors is reported from all seven countries. Monitoring of temporarily deferred donors is reported from Thailand. Monitoring of regular repeat blood donors is reported from Bangladesh, Bhutan, Sri Lanka and Thailand. Monitoring of rare blood donors is reported from Bhutan, Sri Lanka and Thailand.

Table 14: Monitoring of blood donors' health

Member state	Bangladesh	Bhutan	India	Indonesia	Nepal	Sri Lanka	Thailand
Mechanisms to monitor the health of the donor							
Iron-deficient donors	Y	N	N	N	N	Y	Y
Donor reactive to markers for transfusion-transmissible infectious diseases	Y	Y	Y	Y	Y	Y	Y
Temporarily deferred donors	NR	NR	N	N	N	N	Y
Regular repeat blood donors	Y	Y	N	N	N	Y	Y
Rare blood donors	NR	Y	N	N	N	Y	Y
Y: yes; N: no and NR: no response							

Voluntary blood donors can be role models for others and are the best motivators for the potential blood donors. Social, religious and educational organizations should take the initiative to promote VNRDs as they can influence public behaviour in a positive direction. Military and paramilitary forces, besides imbibing a strong patriotic feeling among the general public, influence their psychology towards blood donation. Blood donors are motivated to donate voluntarily thereby showing their gratitude to the nation's soldiers [13].

Adequate funds, political will, education of the masses and regulation of blood services will pave the way for the VNRDs system. A national database of donors and blood components will also facilitate VNRDs by overcoming logistic roadblocks. A strong commitment at the national, regional and local levels is required to achieve this goal [14].

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Annexure

Questionnaire to obtain information for preparation of report on Voluntary blood donation in WHO SEARO

1	Governance & Regulations		
1.1	Does the country have a dedicated cell for Blood Transfusion Services (BTS)?	YES	NO
1.2	If yes, then is it		
1.2.1	Under Ministry of Health & Family Welfare	YES	NO
1.2.2	Under Food &Drug Control Authority (FDA)	YES	NO
1.2.3	Separate Independent Agency (please specify the name of such agency)		
1.3	Does the country have an organogram for blood services regulation?	YES	NO
	If, yes, please attach the organogram hierarchy		
1.4	Who organizes the Blood collection drives to collect blood?		
1.4.1	Centralized Blood collection and testing agencies	YES	NO
1.4.2	Hospital based blood banks	YES	NO
1.4.3	Red cross blood banks	YES	NO
1.4.4	Standalone blood banks	YES	NO
1.4.5	Private blood banks	YES	NO
1.4.6	Charitable blood banks	YES	NO
1.4.7	Any other mechanism…… (Please mention in detail in text)		
2	**Does the country have a national Blood Policy?**	**YES**	**NO**
2.1	If yes, then		
2.1.2	Year of adoption	YES	NO
2.1.3	Does Blood policy emphasize voluntary blood donation (VNRDs)	YES	NO

2.1.4	Are there strategies in NBP to implement VNRDs in practice?	YES	NO
2.1.5	Any observed improvement since adoption of the policy- Kindly add few lines on the above———	YES	NO
3	**Human Resource & Human Resource development**		
3.1	Are there dedicated VNRDs Liaison officers (VNRDLOs)	YES	NO
3.2	Are there standards for recruiting VNRDLOs?	YES	NO
3.3	Are there special training/educational programmes for VNRDLOs? Kindly add details here if, any ———	YES	NO
3.4	Are there supervisors for VNRDLOs such as Medical Officers?	YES	NO
3.5	If yes, kindly specify designation and qualification		
3.5.1	Graduates /Postgraduates social or behavioural sciences/ MD Transfusion Medicine/Immunohematology	YES	NO
3.6	Non-medical doctors	YES	NO
3.6.1	If yes: duration of training…… qualification…….	YES	NO
4	**Promotion of VNRDs (National level/ Regional level/Local level)**		
4.1	Does National Government Promote VNRDs?	YES	NO
4.2	Does State/provincial Government Promote VNRDs?	YES	NO
	If, yes, please check the below boxes		
4.2.1	Media	YES	NO
4.2.2	Print	YES	NO
4.2.2.1	Newspaper	YES	NO
4.2.2.2	Magazines	YES	NO
4.2.2.3	Brochures	YES	NO
4.2.2.4	Or any other mechanism	YES	NO
4.2.3	Electronic (Audio-visual)	YES	NO
4.2.3.1	News channels	YES	NO
4.2.3.2	Radio channels (FM: Frequency Modulation)	YES	NO
4.2.3.3	Community Involvement, Street Plays, Puppetry Show, Flash Mob Dance	YES	NO
4.2.3.4	Motivation on important days	YES	NO
4.2.3.5	Any other mechanism…….. (Please mention in detail in text)		
4.2.3.6	National/local TV channels	YES	NO

4.2.3.7	Any other mechanism…… (Please mention in detail in text)		
4.2.4	Information Technology	YES	NO
4.2.4.1	Facebook	YES	NO
4.2.4.2	WhatsApp	YES	NO
4.2.4.3	Twitter	YES	NO
4.2.4.4	Emails	YES	NO
4.2.4.5	Blogs	YES	NO
4.2.4.6	Websites	YES	NO
4.2.5	Promotion of VNRDs using Information, Education and Communication (IEC) materials	YES	NO
4.2.5.1	Banners	YES	NO
4.2.5.2	Posters	YES	NO
4.2.5.3	Leaflets	YES	NO
4.2.5.4	Any other mechanism…… (Please mention in detail in text)		
4.3	Promotion of VNRDs by Education boards?	YES	NO
4.3.1	Do State Boards or equivalent promote VNRDs	YES	NO
4.3.2	Is there a Chapter or section on VNRDs incorporated in teaching curriculum?	YES	NO
4.3.2.1	Schools	YES	NO
4.3.2.2	Colleges	YES	NO
4.3.2.3	Universities	YES	NO
4.4	Promotion of VNRDS by Uniformed forces?	YES	NO
4.4.1	Does any of the following uniformed forces promote VNRDs	YES	NO
4.4.1.1	Military and Paramilitary forces	YES	NO
4.4.1.2	Any other mechanism…… (Please mention in detail in text)		
4.5	Is Voluntary blood donation mandated by law in your country?	YES	NO
4.5.1	Any other mechanism…… (Please mention in detail in text)		
4.6	Promotion of VNRDs by Religious leaders?	YES	NO
4.6.1	Do the religious leaders of any religion/sect/faith promote VNRDs?	YES	NO
4.6.1.1	Church	YES	NO
4.6.1.2	Mosque	YES	NO
4.6.1.3	Temples	YES	NO
4.6.1.4	Gurudwara	YES	NO

4.6.2	National or State level religious festival committees	YES	NO
4.6.3	Any other mechanism…….. (Please mention in detail in text)		
4.7	A dedicated wing or cadre for promotion of VNRDs?	YES	NO
4.7.1	Civil Administration (Such as a District Sports Officer)	YES	NO
4.7.1.1	State administration	YES	NO
4.7.1.2	District administration	YES	NO
4.7.2	Health Department (Such as District Immunization Officer)	YES	NO
4.7.2.1	State Health Department	YES	NO
4.7.2.2	District Health Department	YES	NO
4.7.2.3	Medical colleges	YES	NO
4.7.2.4	District Hospitals	YES	NO
4.7.3	General Teaching cadre	YES	NO
4.7.3.1	School Teachers	YES	NO
4.7.3.2	College Teachers	YES	NO
4.7.3.3	University Teachers	YES	NO
4.7.3.4	Extra-curricular activity	YES	NO
4.7.4	Blood centre level (Dedicated Donor Recruitment Cell)	YES	NO
4.7.5	Any other mechanism…….. (Please mention in detail in text)		
4.8	“Incentives” for promotion of VNRDs?	YES	NO
4.8.1	Is there a provision of “Special leave” for donating blood?	YES	NO
4.8.2	Is there a provision for “Reimbursement of donor travel” costs?	YES	NO
4.8.3	Is there provision of “special recognition” for donating blood? Small tokens of appreciation pens/ Coffee mugs/badges/ certificates etc…	YES	NO
4.8.4	Special recognition/priority for public utilities?	YES	NO
4.8.5	Special recognition/priority for medical utilities?	YES	NO
4.8.6	Special recognition/relief in general insurance?	YES	NO
4.8.7	Special recognition/relief in medical insurance?	YES	NO
4.8.8	Any other mechanism…….. (Please mention in detail in text)		

5	"Special campaigns" for promotion VNRDs?	YES	NO
5.1	Are there any National days observed to promote VNRDs?	YES	NO
5.2	Are there any Special Week Drives? Please mention the details if any—	YES	NO
5.3	Linkage to any international/national organization for support to VNRDs	YES	NO
5.3.1	Red Cross & Red Crescent Societies	YES	NO
5.3.2	International Society of Blood Transfusion	YES	NO
5.3.3	AABB (American Association for Advancement of Blood &Biotherapies)	YES	NO
5.3.4	Is VNRDs linked to any National healthcare programme, if yes, Please give details ….....	YES	NO
5.3.5	Any other mechanism…..... (Please mention in detail in text)		
6	**Is there any Financial Resource earmarked for VNRDs**	**YES**	**NO**
6.1	If yes, then is it	YES	NO
6.1.1	Government support	YES	NO
6.1.2	Non-government organizations' (NGOs) support	YES	NO
6.1.3	Red Cross	YES	NO
6.1.4	Any other mechanism…..... (Please mention in detail in text)		
7	**Is there any mechanism for Donor Data Management**	**YES**	**NO**
7.1	If yes, then is it	YES	NO
7.1.1	Nationally co-ordinated	YES	NO
7.1.2	Regionally co-ordinated	YES	NO
7.1.3	Individual Blood Centre level	YES	NO
7.1.4	Any other mechanism…..... (Please mention in detail in text)		
8	**Primary donor base &donor types**		
8.1	Type of donors	YES	NO
8.1.1	Voluntary blood donors	YES	NO
8.1.2	Family blood donors	YES	NO
8.1.3	Replacement blood donors	YES	NO
8.1.4	Directed donors	YES	NO
8.1.5	Paid blood donors	YES	NO
8.1.6	Autologous donation	YES	NO
8.1.7	Any other mechanism…..... (Please mention in detail in text)		

8.2	Gender (please specify in %)		
8.2.1	Male		
8.2.2	Female		
8.3	Age of donors (please specify in %)		
8.3.1	Adolescent donors & teenage donors (≤20 years)		
8.3.2	Youth (20 to 39 years)		
8.3.3	Middle age (40 to 59 years)		
8.3.4	Senior citizens (≥ 60 years)		
8.4	Legal age for donation (please specify)		
8.4.1	Minimum age		
8.4.2	Maximum age		
9	**Donor recruitment mechanisms being followed in your country.**	**YES**	**NO**
9.1.1	Do schools organize VNRDs drives/ camps (such as on occasion of Parent Teacher Meetings)?	YES	NO
9.1.2	Do the students in colleges/ universities organize VNRDs drives/ camps (such as Red Ribbon Club/Red Cross/National Service Scheme)?	YES	NO
9.1.2.1	Red Cross or equivalent	YES	NO
9.1.2.2	Red Ribbon Clubs or equivalent	YES	NO
9.1.2.3	Club 25 or equivalent	YES	NO
9.1.2.4	National Service Scheme (NSS) or equivalent	YES	NO
9.1.2.5	National cadet corps (NCC) or equivalent	YES	NO
9.1.2.6	Any other mechanism…… (Please mention in detail in text)		
9.1.3	Do Teachers/staff in educational institutions organize VNRDs drives/ camps?	YES	NO
9.1.3.1	School Teachers/staff	YES	NO
9.1.3.2	College Teachers/staff	YES	NO
9.1.3.3	University Teachers/staff	YES	NO
9.1.4	Do the Government institutions organize VNRDs drives/camps?	YES	NO
9.1.4.1	Civil Administration (Such as a District Sports Officer)	YES	NO
9.1.4.1.1	State administration	YES	NO
9.1.4.1.2	District administration	YES	NO
9.1.4.1.3	Any other mechanism…… (Please mention in detail in text)		
9.1.4.2	Health Department (Such as District Immunization Officer)	YES	NO

9.1.4.2.1	State Health Department	YES	NO
9.1.4.2.2	District Health Department	YES	NO
9.1.4.2.3	Medical colleges	YES	NO
9.1.4.2.4	District Hospitals	YES	NO
9.1.4.2.5	Any other mechanism…… (Please mention in detail in text)		
9.1.5	Do the Non-Government Organisations (NGOs)organize VNRDs drives/camps?	YES	NO
9.1.5.1	Red Cross Societies	YES	NO
9.1.5.2	Rotary international or equivalent	YES	NO
9.1.5.3	Lions international or equivalent	YES	NO
9.1.5.4	Any other NGOs ……		
9.1.6	Does Corporate Social Responsibility include organization of VNRDs drives/ camps?	YES	NO
9.1.6.1	Multinational Corporations (MNCs) or equivalent	YES	NO
9.1.6.2	National Corporate Companies	YES	NO
9.1.6.3	Information Technology Companies or equivalent	YES	NO
9.1.6.2	Government Banks	YES	NO
9.1.6.2.1	Private Banks	YES	NO
9.1.6.2.2	Insurance companies	YES	NO
9.1.6.2.3	Industrial houses	YES	NO
9.1.6.2.4	Any other mechanism…… (Please mention in detail in text)		
9.1.7	Do the religious institutions organize of VNRDs drives/camps?	YES	NO
9.1.7.1	Church	YES	NO
9.1.7.2	Mosque	YES	NO
9.1.7.3	Temples	YES	NO
9.1.7.4	Gurudwara	YES	NO
9.1.7.5	Any other mechanism…… (Please mention in detail in text)		
9.1.8	Do the public organizations organize of VNRDs drives/camps?	YES	NO
9.1.8.1	Donor clubs	YES	NO
9.1.8.2	Sports clubs	YES	NO
9.1.8.3	Yoga clubs	YES	NO
9.1.8.4	Gymnasium &Wrestling clubs	YES	NO
9.1.8.5	Cyclers clubs	YES	NO
9.1.8.6	Bikers' clubs	YES	NO
9.1.8.7	Youth clubs	YES	NO
9.1.8.8	Any other mechanism…… (Please mention in detail in text)		

9.1.9	Do the military and paramilitary organize VNRDs drives/camps?	YES	NO
9.1.9.1	Military or equivalent	YES	NO
9.1.9.2	Any other mechanism…….. (Please mention in detail in text)		
10	**Are there mechanism to address donor safety &ethics**	**YES**	**NO**
10.1	Informed consent	YES	NO
10.2	Pre-donation counselling	YES	NO
10.3	Haemoglobin testing	YES	NO
10.4	Haemoglobin cut-off	YES	NO
10.5	Post-donation care	YES	NO
10.6	Any other mechanism…….. (Please mention in detail in text)		
11	**Are there policies and processes to retain donors and convert first time donors to regular repeat donors**	**YES**	**NO**
11.1	Regular contact with donors to remind the next donation date	YES	NO
11.1.1	Emails	YES	NO
11.1.2	WhatsApp	YES	NO
11.1.3	Short messaging system	YES	NO
11.1.4	Facebook	YES	NO
11.1.5	Twitter	YES	NO
11.2	Regular contact with donors to thank them of the donation done	YES	NO
11.2.1	Emails	YES	NO
11.2.2	WhatsApp	YES	NO
11.2.3	Short messaging system	YES	NO
11.2.4	Facebook	YES	NO
11.2.5	Twitter	YES	NO
11.3	Regular contact with donors to wish them on	YES	NO
11.3.1	Birthday	YES	NO
11.3.2	Marriage anniversary	YES	NO
11.3.3	Important festivals or special occasion greetings to Donors	YES	NO
11.4	Inform donors of the usage of their donated blood	YES	NO
11.5	Request to donate blood in groups wise shortages/rare groups/in wake of disasters/pandemics)	YES	NO
11.6	Any other mechanism…….. (Please mention in detail in text)		
12	**Is there a donor hemovigilance program**	**YES**	**NO**
12.1	If yes, Structure/organogram		

12.2	Donor adverse event mitigation strategies/interventions	YES	NO
	Please mention in details------		
12.2.1	Pre-donation	YES	NO
12.2.1.1	Pre-donations instructions sheets	YES	NO
12.2.1.2	Water intake	YES	NO
12.2.1.3	Isotonic drinks	YES	NO
12.2.1.4	Isometric exercise	YES	NO
12.2.2	During donation	YES	NO
12.2.2.1	Audio engagement (music)	YES	NO
12.2.2.2	Video engagement (movie)	YES	NO
12.2.2.3	Both Audio-visual engagement	YES	NO
12.2.3	Post-donation	YES	NO
12.2.3.1	Post donation instructions sheet	YES	NO
12.2.3.2	Telecom contact details of blood centre	YES	NO
12.2.3.3	Landline (Routine working hours)	YES	NO
12.2.3.4	Mobile (24X7X365)	YES	NO
12.2.4	Any other mechanism…… (Please mention in detail in text)		
13	**Is there a rare donor program/ registry**	**YES**	**NO**
13.1	Dedicated donors for thalassemia patients	YES	NO
13.2	For other multi-transfused patients	YES	NO
13.3	Any other mechanism…… (Please mention in detail in text)		
14	**Are there specific monitoring mechanisms for key performance indicators**		
14.1	Donor deferrals percentage	YES	NO
14.2	Voluntary donors' percentage	YES	NO
14.3	Repeat donors' percentage	YES	NO
14.4	Female donors' percentage	YES	NO
14.5	Transfusion transmissible infections percentage	YES	NO
14.6	Re-induction of temporarily deferred donors' percentage	YES	NO
14.7	Any other mechanism…… (Please mention in detail in text)		
15	**Are there mechanisms to monitor the health of the donor**	**YES**	**NO**
15.1	Iron deficient donors	YES	NO
15.2	Transfusion transmissible infectious disease marker reactive donor	YES	NO
15.3	Temporarily deferred donors	YES	NO

15.4	Regular repeat blood donors	YES	NO
15.5	Rare blood donors	YES	NO
15.6	Any other mechanism…….. (Please mention in detail in text)		
16	**Are there mechanisms for post donation notification, counselling and referral**	**YES**	**NO**
16.1	Financial support for further diagnosis and treatment?	YES	NO
16.4	Any other mechanism…….. (Please mention in detail in text)		
17	**What are the "key objective recommendations" to achieve the goal of 100% VNRDs in your country?**		
17.1	……. (Please mention in detail in text writing)		
17.2	……. (Please mention in detail in text writing)		
17.3	……. (Please mention in detail in text writing)		
17.4	……. (Please mention in detail in text writing)		

ISBN: 978-92-9021-044-3

World Health Organization

REGIONAL OFFICE FOR South-East Asia