



# **Blood Transfusion Services**

## **in South-East Asia**

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*A Status Report*



World Health Organization  
Regional Office for South-East Asia  
New Delhi



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## 1. INTRODUCTION

Blood is the most precious and unique gift that a human being can give to a fellow person. This life saving fluid cannot be created artificially. Safety of the blood is the most essential feature of any blood transfusion service (BTS). Safe blood indicates freedom of blood from any virus, bacteria, parasite, drug, alcohol, chemical substance, or other extraneous factor that might cause harm, danger or disease to the recipient. Blood is considered safe when it is:

- donated by a healthy voluntary non-remunerated donor enrolled after careful selection;
- free from infective agents that could be life threatening;
- processed by reliable methods of testing, and
- transfused only when needed.

People who donate blood should be in good health and should not suffer or have suffered from any serious illness. Receiving blood should not harm the recipient: giving blood should not harm the donor.

Safe blood is life saving in innumerable instances of blood loss due to variety of reasons especially trauma, blood disorders, surgery and pregnancy related causes. Worldwide, about 500 000 women die of pregnancy related causes every year. Approximately 25% of these maternal deaths are associated with the loss of blood. Many of these lives could

be saved if adequate safe blood is available. Children with severe anaemia constitute another large group that needs safe blood transfusions. Most of these conditions are being overlooked in the developing countries because of limited resources, inappropriate clinical use of blood as well as nonavailability of safe blood donors.

World Health Organization accords high priority to availability of adequate safe blood throughout the world. Realizing its universal importance the theme of World Health Day for the year 2000 was dedicated to safe blood with thought provoking slogan of "Safe blood starts with me. Blood saves life".

## 2. SITUATION ANALYSIS

The South-East Asia (SEA) Region of WHO comprises ten countries, with an estimated population of 1.9 billion during 2000. This burgeoning population is considered an important factor that hindered the economic progress of the people in this part of the world apart from exerting strain on health delivery services.

75 million units of blood are collected annually from a global population of six billion. Estimates suggest that in the developing world, inhabited by more than 80% of the global population, people have access to only 20 % of the world's safe blood. In the member countries of SEA Region, with almost one-third of the world population, blood collection is only 7 million units (9% of global collection). This represents a shortfall of 8 million units in the estimated annual blood requirement for the SEA Region.

Blood Safety and Clinical Technology (BCT) unit of the World Health Organization maintains and regularly updates a database on the status of blood transfusion services (BTS). This gives a clearer picture on areas of need and monitors progress in blood safety. Based on WHO strategies a global database questionnaire on blood safety has been framed. This is being used to gather basic information from Member Countries. Responses have been received from all Member Countries, which include indicators that could be used in monitoring and evaluating the status of blood transfusion services in the countries.



Salient features of blood transfusion services in the SEA Region, based upon data obtained from all the Member Countries, have been analyzed after categorizing these into following strategies of safe blood:

- Organization and management
- Recruitment of blood donors
- Screening and processing of blood
- Appropriate clinical use of blood
- Quality assurance, and
- Training

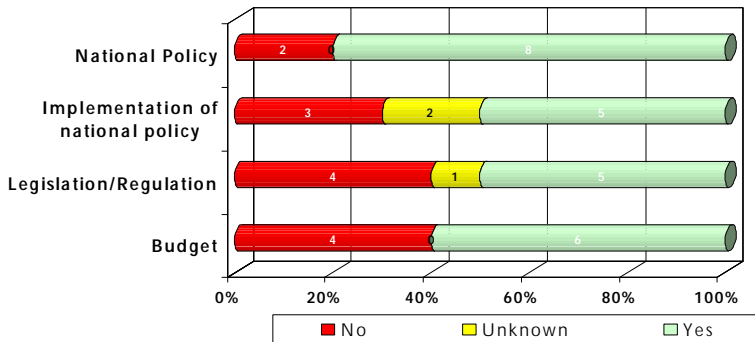
## 2.1. Organization and Management

Efficient BTS can be initiated by formulating and implementing National Blood Policy with absolute commitment and support of the national health authorities and establishment of National Blood Transfusion Services. WHO guidelines and recommendations are available for achieving this objective.

Eight countries reported the formulation of a national blood policy, but only five of them have implemented the same. A separate allocation of budget for BTS is available in six countries.

Most Member Countries have an established National Blood Transfusion Service in accordance with WHO guidelines and recommendations (Figure 1). Six countries identified a specific organization as responsible for blood transfusion services. In most countries this organization is government-controlled, but NGOs and Red Cross/Red Crescent Society also play a significant role. Commercial blood banks are still operating in two countries.

Figure 1. SEARO – Organization and Management



Regulation of blood products and blood services is currently an issue of concern. Even though many countries are proposing their own regulatory mechanisms, only five have defined a regulatory framework to control the manufacturing practices and monitor the performance of uniform and standard procedures.

## 2.2 Recruitment of Blood Donors

Awareness and advancements in the health care sector have increased the demand for transfusion therapy, which has far exceeded the limited resource available. The number of blood units donated in the SEA Region during 1998-99 was about 7 million. This shows an increase of nearly 2.2 million since 1992. However, this accounts for only 50% of the total requirement and results in a shortfall of nearly 8 million units.

Efforts have been made by various countries to promote voluntary non-remunerative blood donation. Data show that

the overall percentage of voluntary donations in the Region has gone up marginally from 54% in 1988 to 61% in 1999.

Seven countries reported figures ranging from 60% to 100%. The overall percentage of paid professional donors in the same period decreased from 14% to 7%. However reports from one country show that 70% of its supply is from paid professional donors. The number of family/replacement donors has more or less remained static, but two countries reported that their blood supply depended primarily on replacement or family donations. Even as all countries report donor selection procedures, reporting of 'self deferral' is low in most countries (Figures 2, 3).

Figure 2. Donor Details (Country wise), South-East Asia Region

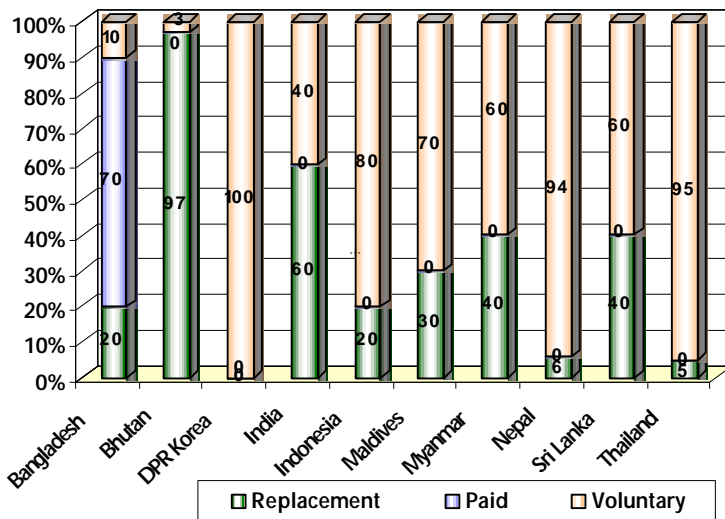
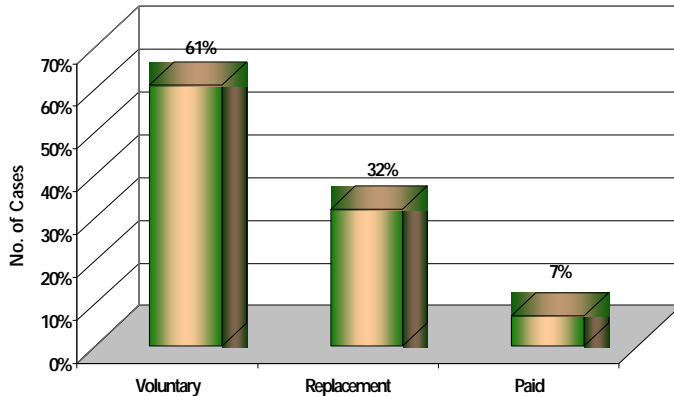


Figure 3. Donor Details in the South-East Asia Region



## 2.3 Screening and Processing of Blood

The HIV/AIDS pandemic has focused particular attention on the importance of preventing transfusion-transmissible infections (TTI). WHO estimates that even today, up to 13 million (20%) blood donations globally are not tested for HIV, hepatitis B virus (HBV) and hepatitis C virus (HCV). This occurs mainly in developing countries with higher prevalence of TTI in population, and where nearly 40% of the blood supply comes from replacement or paid donors. WHO estimates show that in the SEA Region approximately 110 million people are infected with three blood borne pathogens – five million with HIV, 25 million with HCV and 80 million with HBV.

Sero-prevalence in blood donors for HIV antibody in SEAR varies from 0 to 1.6%, for HBV from 0.06 to 8.5%, for HCV (limited data) from 1.2 to 3%, and for syphilis from 0.5 to

16%. It is also estimated that 5-10% of HIV infections occur as a result of transfusion of blood.

Most of the Member Countries have made considerable progress in drawing up long-term plans for blood safety. However in a few, the situation is far from satisfactory. All ten countries reported testing for HIV (I & II), HBV and syphilis. There is 100% screening for these pathogens in nine of these countries, while in one, only 5 % of all donor units are screened for HIV, and 70 % for HBV (Figures 4). Screening for HCV has not yet been made mandatory in many countries of SEAR mainly because of the high cost of available screening kits. Despite this, figures available show considerable improvement between 1988 and 1999 (Figures 5). HCV screening ranges from 2 % to 30 % in six countries, while one reported screening in 77% of donors. Two countries had not yet started screening for HCV, while information was not available from one country.

Figure 4. Percentage of Donor Units tested HIV, HBsAg and HCV

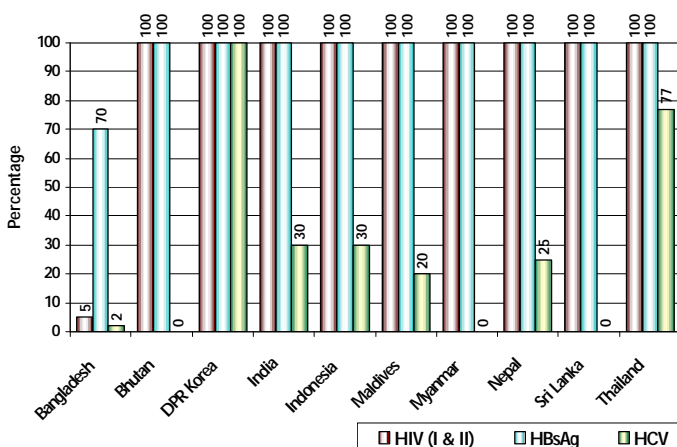
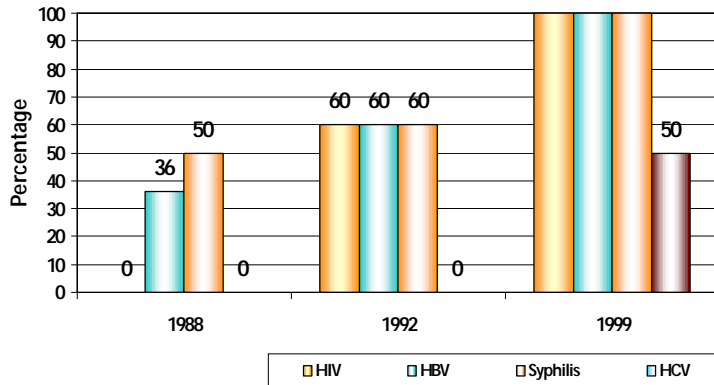


Figure 5. Screening for Transfusion Transmissible Infections



Data regarding testing of recipients of blood transfusions are less comprehensive and practically not available. Though the need to introduce monitoring TTI among recipients has been recognized, introduction of a system of haemovigilance for prospective monitoring of blood recipients is yet to commence.

## 2.4 Clinical Use of Blood

Blood transfusion is an essential part of modern health care. Used appropriately, transfusion can save life and improve health. However, it always carries potential risks for the recipient and should be prescribed only for conditions with significant potential for morbidity or mortality that cannot be prevented or managed effectively by other means.

Optimal use of blood includes use of specifically required components instead of whole blood and resorting to



Table : Clinical use of blood in SEAR countries

Clinical condition/ group	Percent blood transfused
General surgery	10
Obstetric cases	30
Paediatric cases	14
Trauma	7
Miscellaneous	32

A wide variation in the clinical use of blood has been seen in SEAR countries. 10% of transfusions were used for replacing blood loss during surgery, 30% for obstetric cases, 14% for pediatric cases, 7% for traumatic blood loss and 32% for miscellaneous reasons. Difficulties in categorizing usage in the last group highlights inappropriate use of blood (see Table).

Only two countries have the facility to produce fractionated plasma products. This situation has not changed since 1992. In the other countries, fractionated products are being imported and available in only their central or larger blood banks. All countries reported adequate supplies of crystalloid solutions (saline) and colloid solutions (dextran).

## 2.5 Quality Assurance

Most countries in the Region did not have an organized quality management system in BTS. However, some of these followed minimum Internal Quality Control (IQC) checks. Three countries reported participation in External Quality

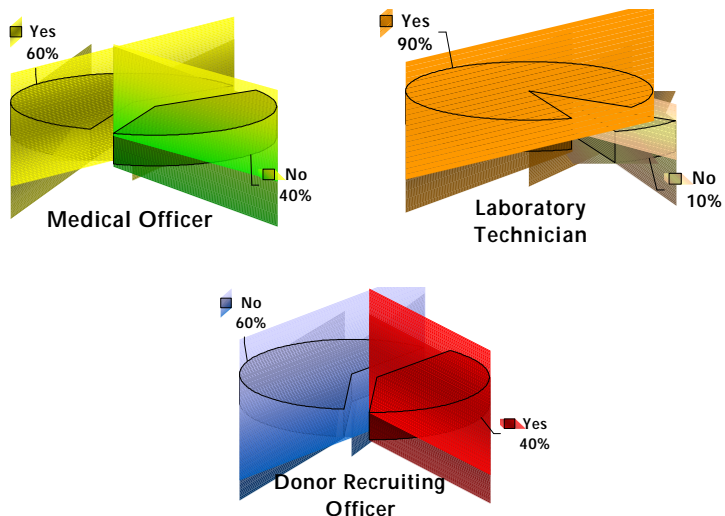


Assessment Schemes (EQAS), two of them in collaboration with the Australian and Dutch centres. Nonparticipation by others was mainly because of lack of awareness and shortage of trained personnel.

## 2.6 Training

Training is fundamental for improving the capacity of all blood bank personnel in securing safe blood supply; however, it had been far from satisfactory. Although 90 per cent of the laboratory technicians received training, only 60 per cent and 40 per cent of medical officers and donor recruitment officers, respectively received training (Figure 8).

*Figure 8. Training of Blood Bank Personnel*



### 3. CONCLUSIONS

The continuous availability of adequate safe blood requires concerted efforts and sustained support in SEAR countries. This would entail capacity-building in this field, availability of technology and support or creating infrastructure for which government commitment is of paramount importance.

There had clearly been some improvement in blood safety in the Region, particularly in donor recruitment and testing for transfusion-transmissible infections. However, concerted efforts are needed to improve the status of voluntary non-remunerated blood donations, phasing out the replacement donors and banning the professional donors. Quality assurance programme in SEAR countries is far from satisfactory and there is urgent need to address it in almost all the countries of the region to improve blood safety. Another area of concern that needs attention is clinical use of blood in the Member Countries. This entails educating health care workers in optimizing the use of blood and monitoring its implementation. Therefore, lot needs to be done in terms of key strategies and its implementation with ultimate objective of assuring availability of adequate safe blood. Following are the key components of the different strategies that may be useful as a check-list for countries to consider it for implementation.

### 3.1 Organization and Management

Objective: To promote the development of nationally coordinated and well-regulated national blood programmes. The element of organization and management include:

- Formulation, implementation, monitoring and updating of national policies and plans, allocation of appropriate resources and suitable back up with enforceable legislation;
- Organizational structure;
- Establishment of standards;
- Staff training and career development;
- Augmentation of training activities;
- Assurance of safe blood in emergency situations, and
- Establishment of quality management system.

### 3.2 Recruitment of Blood Donors

Objective: To ensure voluntary, non-remunerated, low-risk blood donors, including:

- Development of a national plan and programme for blood donation;
- Promotion of voluntary, non-remunerated, low-risk donation and a plan for conversion of replacement donors by regular voluntary donors;
- Training of staff in the recruitment and retention of blood donors
- Development of educational material;

- Assurance of safe blood collection procedures, including selection and referral of donors, donor care and confidentiality;
- Establishment of a national donor record system, and
- Acknowledgement of blood donor contributions
- IEC for communities

### 3.3 Screening and Processing of Blood

Objective: To ensure systematic, effective and quality screening and processing of blood. This would include the following aspects:

- Development of protocols for testing, selection and evaluation of the most appropriate and effective methodology;
- Strengthening of good manufacturing practices for blood and blood products and development of quality systems for screening, blood grouping, compatibility testing and component preparation;
- Establishment of blood component laboratories at the national level
- Establishment of a quality assurance programme;
- Development of regional and national capacity for local production of reagents;
- Maintenance of an effective cold chain for storage and transportation of blood and blood products, and
- Development of cost-effective strategies.

### 3.4 Clinical Use of Blood

Objective: To promote appropriate and cost-effective use of blood and blood products. It would include the following aspects:

- Development of national guidelines for blood transfusions;
- Training of prescribers for avoiding unnecessary or inappropriate transfusion;
- Ensuring accessibility and availability of volume replacement fluids such as crystalloid and colloids, for use when appropriate, and
- Monitoring and evaluation of clinical use of blood.

### 3.5 Quality Assurance and Training

Objective: To promote and ensure adequate and appropriate training and stringent quality assurance in all levels of the blood chain. It would include the following:

- Quality assurance programs to be an integral part of the vein-to-vein blood chain;
- Training of medical officers, technical staff and clinicians, and
- Training of drug regulatory authorities and administrators in the quality management of blood transfusion services.