

Blood transfusion in borderless South Asia

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One third of the world's population lives in South Asia which is more than 1.7 billion. This region has one of the most populated countries, India, with a population of about 1.2 billion as well as smaller countries like Bhutan where population is about 0.7 million. There is a strong diversity in terms of population, culture, religion, economy and social structures. If we go by segregation of countries made by the World Health Organization (WHO), majority of the countries in south Asia falls under South East Asian Regional Office (SEARO). This region has eleven countries i.e. Bangladesh, Bhutan, DPR Korea, India, Indonesia, Maldives, Myanmar, Nepal, Thailand, Timor-Leste, Sri Lanka. However, for this discussion, we will include Pakistan which is our immediate neighbor. As per WHO classification, it falls under Eastern Mediterranean region. In subsequent discussions, few figures may exclude data from Pakistan as it was compiled on SEARO data. The whole region is one of the most populous regions of the world but global disease burden is disproportionate to the population. There is very heavy disease burden of maternal and child mortality/ morbidity, infectious diseases like malaria, tuberculosis (including drug resistance strain), HIV, other neglected topic diseases and also newly emerging diseases like SARS and pandemic influenza. However, positive growth in the health sector in last two decades in these countries is very encouraging. One of the main reasons is emerging economy and external intervention in the health sector.

be rampant unauthorized blood collection (and transfusion) in non-regulated sectors like private hospitals and nursing homes.

There are few basic parameters about quality standard of BTS in a country. One of them is the National Blood Policy. It is the policy document for establishing and managing BTS in a particular country. It is available in seven countries including Bhutan, India, Maldives, Myanmar, Nepal, Sri Lanka and Thailand. Bangladesh is in an advanced stage of finalizing this document. Most of the countries have a nationally coordinated BTS. Though nationally coordinated, Bangladesh, India and Pakistan have a highly fragmented BTS. In these countries, blood banks from government, Red Cross/ Crescent, private and non-government organization (NGO) sectors are playing vital roles in blood supply. In most of the countries, majority of blood banks are managed by blood banks in government sectors. Nationally coordinated and centrally managed by government BTS are found in Bhutan, DPR Korea, Maldives, Sri Lanka and Thailand. Red Cross/ Crescent are the dominant players in this part of the world including Bangladesh, India, Nepal, Indonesia, Myanmar and Thailand. Another major player is the NGO sector (not for profit) blood banks which are mainly seen in Bangladesh, India and Pakistan. Some NGO blood banks are rendering yeomen service in respective countries but some of them are of dubious nature.

We will concentrate our discussion on blood transfusion services (BTS) in these countries and possibility of growing together for safe blood supply in this part of the world. About 10 million blood units are collected in SEARO and there are more than 3456 blood banks in eleven countries. However, total collection should have been more than 16 million units. There is a deficiency on paper of about 38% of total blood need in these countries which is very high. There is often reported shortage of blood supply in few countries or seasonal shortage may be understood. But there is no official explanation available for huge shortage. Lack of proper reporting system may be one of the reasons. Secondly, quite a few countries in this region have fragmented BTS without stringent regulatory control. There may

If we discuss about BTS of various countries in alphabetical order, the first comes Bhutan. This is a buffer country between India and China with a total population of about 709,000 and it extends to land mass of 38,394 sq. km area. Bhutan has a nationally coordinated BTS which is managed by the Central blood bank at the capital Thimphu. There are 27 blood banks in the country which collect about 8028 units out of which voluntary donation is 3686 (46%) and family relative donors are 4342 (54%). All blood banks are hospital based and managed by the Royal Bhutan Government. There are two qualified and dedicated transfusion medicine specialists in the country and there are other trained doctors to run the BTS. There are quite a few trained doctors/ technologists across the country who manages BTS efficiently. There are few challenges for BTS in

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Bhutan. One of them is the difficult geographical terrain, 50% blood donation from relative donors, inconsistent supplies of test reagents and consumables and awareness on rational use of blood/components by clinicians and nurses.

Bangladesh has a total 130,168 sq km land mass and total population of about 158,570,600. If we take the general principle of blood donation by 1% population, yearly blood collection should have been about 15,00,000. However, total collection is about 4,00,000 per year. Out of which, 60% donation comes from family relative donors, 31% comes from voluntary donors and 9% donation from paid donors. There are more than 131 blood banks under government sector which caters to more than 50% demand. About 37% demand for blood and components are fulfilled by 45 blood banks in private sector. Red Crescent blood banks are another prominent force in the BTS in Bangladesh. There are five blood banks in major cities which collect about 43,077 units and distribute about 50,979 blood and components per year. Bangladesh has started post graduate education in transfusion medicine for doctors and technicians for almost two decades. The country has done well in terms of regulation. 'Safe blood transfusion law' was enacted in 2002 and 'safe blood transfusion rules' had been implemented in 2008 by the government. To oversee regulation and development of BTS, a high power committee named 'National Safe Blood Transfusion Council' was formed in 2002. National blood policy is at the stage of finalization by the government.

DPR Korea has a land mass of 120,538 sq km and a population of about 23,906,000. There is not much information available on BTS on this country. The country was founded in 1946 and the Red Cross Society was involved in the blood services including donor recruitment. However, from mid 1950s, Red Cross stopped donor recruitment and Ministry of Public Health took over the responsibility. Apart from other activities, Red Cross volunteers are actively involved in blood donation and donor recruitment. It is a centrally coordinated and monitored blood transfusion service under the Ministry of Public Health.

Indian blood transfusion service is the largest in the region. India is the 7th largest country in the world with a second largest population in terms of more than 1,189,173,000 (July 2011 est). The land mass in India is about 2,973,193 sq km. About 8 million units of whole blood collected every year; however, as per norm of 1% blood donation by population, there is a gap of about 4 million unit collection. It is questionable how this huge gap is apparently not reflecting on routine operation of Indian BTS. The India BTS is highly fragmented and there are about 2750 blood banks in the country in an unofficial estimate. However, it is nationally coordinated by the National AIDS Control Organization (NACO) which is under government of India. As per the official website, there are about 940 (39.4%) blood banks managed by the central or provincial governments; 376 (14.4%) blood banks are voluntary in nature; 753 (28.8%) blood banks are private, hospital-based blood banks and 540 (20.7%) blood banks are designated as private charitable type. About 35% blood units are separated into components and all collected units are tested for five transfusion-associated infections as on record. BTS in India is in fairly advanced stage which is mainly concentrated in metros and major cities. BTS at sub-urban and rural areas need improvement. National blood policy was adopted in 2003 and firm regulatory mechanism is in place.

Indonesia is the largest archipelago in Asia with more than 17,000 islands with land mass of about 1,811,569 sq km. It is the home of more than 245,613,000 people. The country has about 211 blood banks under Indonesian Red Cross (IRC) and another 150 hospital-based blood banks under government control. Government-controlled blood banks are gradually becoming operational and IRC blood banks take care of major part of the blood supply. IRC blood banks collect more than 2 million units per year and 87% donation comes from voluntary source. About 70% of total collection is separated into components. IRC blood banks distribute blood and components directly to the hospitals after doing cross matching test or the hospital store and cross match as per their requirement. Indonesian BTS runs on cost recovery system; however, there is government subsidy on different sectors.

Maldives is a group of atolls to the south-south west of India with a land mass of 298 sq km and population of about 395,000. The capital city Male has specialty and super-specialty medical services for the people of Maldives. There are two multi-specialty hospitals, one in government sector i.e. Indira Gandhi Memorial Hospital (IGMH) and another one in private sector. IGMH has a basic level of modern blood bank with component preparation facility. Blood collection by IGMH is about 300 units per month. There is another blood bank attached to National Thalassaemia Center (NTC) which caters to only thalassaemia patients in the city as well as from other parts of the country. NTC collects about 500 units per months. Both the blood banks collect blood mainly from family replacement donors and directed donors for their own patients. About 80% blood units are collected by this mechanism. There are few blood banks in other islands of Maldives.

Myanmar has a landmass of 653,503 sq km and population is about 53,889,000. This is a nationally coordinated BTS managed by government. National Blood Center(NBC) at Yangon is the technical hub for development of the BTS in the country. Blood and blood product law was enacted in 2003 for implementing regulatory mechanism in the country. The Blood Policy is in the stage of finalization and subsequent implementation. Voluntary blood donation in the country is about 85%. National Blood Center coordinates with Red Cross and other organizations for voluntary blood donation. It distributes components only in the capital Yangon and more than 20,000 blood units are distributed per year. As per the report of 2007, 100% blood units are tested for HIV and syphilis infections. However, only 85 and 65% blood units are tested for HBsAg and anti HCV antibody, respectively.

Nepal is a land-locked country with a land mass of 1,43,251 sq km and a population of more than 29,392,000 million. About 2,10,215 units were collected during 2008-2009 and 85% donors were voluntary. Out of total collection, 35% blood units were separated into components. There are about 89 hospitals with secondary or tertiary facility and 180 primary health care centers in the country. There are about 70 blood centers in 50 districts. There is one Central Blood Transfusion service in the capital Kathmandu and four regional BTS (Pokhara, Nepalganj, Biratnagar, Citwan). There are 21 district blood transfusion services; 19 emergency BTS and 25 hospital-based blood transfusion services. The central blood transfusion service at Kathmandu collects more than 300 units per day and out of which about 200-250 units are collected from mobile blood collection units. National blood policy was enacted in 2006 and national guideline for BTS was published in 2008.

Thailand has a landmass of 510890 sq km and it is the home of about 66,721,000 people. Thailand has one of the best BTS in this region. It is nationally coordinated and BTS is managed by the Thai Red Cross Society. National Blood center is in the capital Bangkok and there are 12 other regional centers in provinces. National blood policy was enacted about 15 years back and it was revised in 2010 to incorporate necessary amendments. The National Center collected about 539,094 units in 2009. More than 93% of total collected blood in the country is separated into components. In 2008, the rate of syphilis, HBsAg, HIV and HCV seroreactive is approximately 0.28, 1.01, 0.15 and 0.19%, respectively. All blood collected by National Blood Center is screened by NAT test and 44.5% blood from rest of the country is also tested by the same test.

Pakistan has a landmass of 796,095 sq km and it is the home of about 187,343,000 people. Total blood collection is more than 1.6 million. The BTS is not nationally coordinated and proper regulatory mechanism is not available. As per unofficial sources, there are 450 hospital-based blood banks and 2357 private blood banks. Many private blood banks maintain questionable quality standard and ethics. About 90% blood is collected from family replacement donors and out of which 10% comes thorough 'unsafe' paid donors. Disease burden among blood donor is high and needs screening of all units with sensitive tests. 20-40% blood collected is not even screened for disease markers especially in non-regulated private sectors. There are 13 regional blood centers and under which 78 hospital-based blood banks are operating mainly in public sector. Two policies are designed, one at national and another in ground level. Proper degree or diploma courses in transfusion medicine for medical graduate and technologists are the need of the hour.

Timor-Leste is a newly born nation with a land mass of 14,874 sq km with a population of more than 1,178,000 population. The national blood bank is located in the capital Dili which collects about 1500 units per year. About 20% donations are coming from voluntary source and rest is collected form relative donors. There are regional blood banks available in places like Baucau, Maliana and Occusse where they collect and process blood units in miniscule amount. The national blood bank separates components and practices rational use of blood among clinicians. National blood policy was adopted about three years back.

Sri Lanka is an island nation with a land mass of 64,630 sq km and a population of more than 21,284,000. It has one of the best BTS in the South Asia which is nationally coordinated and managed by the government. It collects about 330,000 units per year. Voluntary blood donation is about 86% and there is no paid donation. There are 1042 government hospitals and 115 hospitals in the private sectors. The operational head quarter in the NBC is at Colombo. There are another 77 hospital-based blood banks in public sectors and 6 blood banks in private sector. There is no stand alone blood bank in NGO or private sector. There are a total of 83 blood banks across the country in 16 clusters. Sri Lankan BTS is the sole supplier of blood and components to all public sectors and majority of private sector hospitals. The NBC has established a system of functional hospital transfusion committee in all hospitals. It has also established hemovigilance system and irradiation facility in the center.

The idea of writing brief information about majority of countries

in this region is to give an idea to readers about diversity among all countries in terms of size of the country, population, blood collection, types of BTS, presence of national blood policy and existing regulations. It is evident that there is no similarity on above parameters on member countries. Even the size of the country does not influence the quality of BTS. Three relatively larger countries i.e. India, Bangladesh and Pakistan have highly fragmented BTS. On the other side, smaller countries like Sri Lanka have set an excellent example of a nationally coordinated effective BTS. If we analyze above data, we can see that voluntary blood donation is high in Sri Lanka (86%) and Thailand (> 95%). On the other hand, Pakistan (~90%) and Timor-Leste (80%) has high dependence of family relative donors. Paid blood donors are discouraged by all international agencies like WHO and International Red Cross Crescent Society (IRCS). However, paid donors exist officially in Pakistan and Bangladesh and about 10% blood is collected from this source. In the region, only 66% blood is collected from voluntary sources and repeat voluntary donors are still less in number. If we look into total yearly requirement, this region needs more than 17 million units and there is a deficit of 6.5 million units every year.

Testing for infectious markers is the basic necessity to make transfusion safe. As per country regulation, types of tests and minimum standard are defined by each country. Every country is supposed to do at least three viral markers like HIV, hepatitis B and C. Thailand is the only country which does NAT testing regularly on majority of blood units collected to reduce the possibility of viral diseases transmission. However, 20-40% of total blood units are not screened in Pakistan for any disease markers probably due to weak regulatory surveillance system. All other countries do these tests as on record. It is a well-known fact that carrying out tests in BTS is not sufficient unless proper quality system is implemented. Most of the countries need properly managed quality management system assisted by international agencies like WHO or by an intra governmental organization like SAARC or ASAIN. It would have been ideal if an accreditation or a grading program could have been planned for these countries for measuring continuous quality improvement.

Another weak area is the component preparation and rational use of blood. Only 37% blood is separated into component and remaining 63% is transfused as whole blood. Demand for component is limited due to lack of awareness among clinicians and non availability of sufficient components. Both are a vicious cycle. Component preparation may increase economical use of a scarce resource and reduce dependence on blood donors. It needs a commitment for all stake holders like government, blood bankers and clinicians.

Another area which needs improvement is hemovigilance. It is almost nonexistent in this region due to lack of proper coordinating agency at inter and intra country level. Therefore, we do not know long-term implications of blood transfusion on patients in this part of the world. Lack of governance and commitment from governments and regulatory bodies allows BTS to slip down from desired quality standard. Even many blood centers do not follow minimum quality standard for their financial gains, especially in private sectors. A good example is unscreened blood transfusion in Pakistan and continuance of paid donors in Bangladesh and Pakistan. Probably, the only way out is the community mobilization with multipronged approached involving, all stake holders including general public, government, blood bankers,

clinicians, NGOs, international agencies like WHO/ IFRC and various funding agencies. It is time to work together.

'Yes, we can'. It is doable. If we all work together at intra-country level, we can fulfill deficiencies as mentioned above. We can bring same quality standard among countries in this region. Though individual governments are responsible for their countries, we, transfusion medicine specialists, should take up the cause to bring equality in quality standard among countries. It may not be interesting today for us to think about BTS of a foreign country. But I strongly believe that it is going to influence us in future developments of respective BTS. We cannot predict future and do not have any say on the political system in the region. Intra country collaboration has increased significantly in the last two decades and transnational organizations like SAARC and ASIAN are strong institutions in this direction. We foresee the disappearance of country borders in years to come as it happened in Europe. It is said that 21st century is for Asian countries. Rather than taking a back seat, let us take lead in our respective countries to develop partnership, collaboration with mutual trust and respect. In this scenario, a member from small and economically weak country like Timor-Leste should get equal respect and partnership like

large and economically strong country like India.

In the field of transfusion medicine, there is progressive move by a group of transfusion medicine specialists from eight countries from this part of world under the umbrella South Asian Association of Transfusion Medicine. The recently concluded annual meeting in Dhaka at the end of May 2011 signifies similar resolve as described above. This group has been working for almost a decade and initiating steps for intra country Fellowship for doctors and technicians; starting EQAS program for member countries blood banks; starting accreditation/ grading system with affiliation to trans governmental agencies; involving more social initiatives; regular communication mode through news letters. Once these initiatives take shape, hopefully more organizations will join hands in a borderless South Asia for safe blood/ component transfusion to the right patient in right quantity and in right time! It will be one of the steps to achieve 'health for all' in this part of the world.

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