Subsector Analysis (Summary): Safe Blood Transfusion

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Mongolia: Fifth Health Sector Development Project

CURRENCY EQUIVALENTS

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Currency unit	–	togrog (MNT)
MNT1.00	=	$0.000723
$1.00	=	MNT1,384

ABBREVIATIONS

MOH	–	Ministry of Health
NTC	–	National Transfusiology Center
TTI	–	transfusion transmitted infection
WHO	–	World Health Organization

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A. Framework

1. The Government of Mongolia has established a national blood program which is responsible for the safety, quality, availability, and accessibility of blood and blood products and their safe and appropriate use (Order 111, March 2008.). Within the government system the National Transfusiology Center (NTC) is designated for managing the national blood program and is responsible for the planning, implementation, and monitoring of all activities related to blood transfusion throughout the country. The Branch Professional Council on Transfusion Medicine is established at the Ministry of Health (MOH), and is responsible for policy formulation and implementation, decides on measures that are essential to ensure an adequate supply of safe blood and blood products and their safe and appropriate use, participates in developing relevant laws and regulations, and gives recommendations and advice to the MOH. However, a National Blood Transfusion Authority as recommended by the World Health Organization (WHO) is still not established.

2. With Ministerial order #111, 2008 the Government of Mongolia embarked on the implementation of a safe blood supply program in implementing the objectives set by WHO on the strategy on blood safety, provision with blood and blood components, and rational use of blood supplemented by the government approval on “Appropriate use of blood and blood products in common diseases,” and development of a quality management system.

3. The Parliament of Mongolia has approved the Mongolian government policy on Blood services on “Improvement of provision with Safe donor blood and blood components” in 2007. This policy defines the ways and directions for steady provision of health institutions with safe, reliable, and quality assured blood and blood components, and establishing the adequate reserves require in case of an emergency disaster situation. This document developed the plan of action to be implemented up to the year 2015. This government plan of action intends to implement the government policy in the years 2008–2015. The plan was approved by the Government Resolution No 111 in 2008.

4. The Mongolian blood transfusion services consists of the main professional body, the NTC in Ulaanbaatar and 26 branch blood banks at the joint hospitals in the countryside and is responsible for providing the population of subordinated territory with blood and blood components. The NTC provides specialized professional guidance to those 26 *aimag* (province) branch blood banks, clinics, and joint hospitals; and supplies all hospitals in Ulaanbaatar City with full blood and blood components.

5. The country is implementing the voluntary non-remunerated donor system since 1994. According to the Donor Law, MRCS in cooperation with the state and nongovernment organizations is responsible for donor organization, donor education, information, and communication activities among population and is in charge of organizing mobile blood collection sessions in Ulaanbaatar.

6. Mongolian blood services are aiming to fully screen each unit of collected blood and plasma for transfusion transmitted infections (TTIs) at every level of health services. The NTC and some branch blood banks are carrying out screening for TTIs with enzyme-immune method, the places without this kind of equipment, carry out screening with rapid tests. ABO, and Rhesus group identification is done 100% in the city and at *aimag* level. Where there is with production equipment available, *aimags* produce 4–10 types of blood components.

7. National guidelines on the Rational Use of Blood and Blood Components were developed on central level for countrywide usage.

8. The NTC operates on the budget seconded by the MOH (38%) and from its own revenues (62%). In the past 2 years the NTC received substantial amounts from the Turkish Government (2010) and from the MOH budget (2011) in order to purchase laboratory and blood bank equipment. The budget for building maintenance and equipment maintenance is minimal and by far sufficient to guarantee proper functioning of this service.

9. *Aimag* and *soum* (administrative subdivision of the *aimag*) blood banks are operating within the budget of the *aimag* or *soum* hospital. Most of the seconded budget is spent on salaries (75%). Running costs are covered under the normal hospital budget. For maintenance service no allocation is seconded, and replacement of equipment is not done due to lack of funds.

10. Maintenance services within the blood banks on all levels are rudimentary. Budgets seconded to maintenance services are insufficient, and mostly used for day to day operation within the hospital budget. Lack of spare parts, missing operation manuals, no initial training on the equipment, or maintenance contracts for purchased equipment are contributing to the insufficient maintenance services.

B. Key Issues

11. Mongolia's blood banking system has serious shortcomings. The gap between demand and supply of blood is continuously widening. The actual collection is only approximately 80% of the demand. A study conducted by the MOH in 2010 regarding blood banking services in *soum* blood banks has revealed many shortcomings, including a shortage of human, technological, and financial resources and a deficit in the availability of blood, especially from voluntary donors. Very few blood banks are operating to their full capacity.

12. **Quality management system for blood safety.** Since Ministerial Order 111, 2008 the Government of Mongolia embarked on the implementation of a safe blood supply program. The program aims to implement the objectives set by WHO on the strategy on blood safety, provision with blood and blood components, and rational use of blood supplemented by the government approval on "Appropriate use of blood and blood products in common diseases." Quality management procedures on the central level as well as on *aimag* and *soum* levels are not comprehensive and lack clear directives for the implementation of a quality management system. A quality management handbook will be elaborated and published by the end of 2012.

13. **Human resource capacities.** Today, central, *aimag*, and *soum* facilities are insufficiently staffed to handle service demand and requirements at blood banks. Blood banks face staffing constrains in terms of number and qualification. In many cases medical staff is assigned to several departments which limits time spent for transfusion services. Blood bank laboratory services operate under the general laboratory of the hospital, and laboratory staff has to execute blood screening next to hematology, biochemistry, virology, and bacteriology which limits them spending time on the actual blood bank services. Since 2011 the NTC leadership embarked on a national training program on blood bank management and transfusion services. The national training program will continue to be rolled out as part of the Fifth Health Sector Development Project.

14. **Provision of adequate space.** All blood banks are located on hospital premises. No stand-alone blood banks are operated. The average size of a blood bank is three to five rooms. In most facilities, patients' privacy during interviews and examination is constrained due to lack of space. Only few hospitals advertise for blood donations.

15. **Donor recruitment and blood collection**. The voluntary, non-remunerated blood donation system lacks skilled staff to identify a sufficient number of voluntary blood donors. Furthermore, information, education, and communication campaigns lack adequate funding. As a result, minimum national blood donation requirements cannot be met. At least 1% of the total population should donate whole blood per year (WHO) in order to reach minimum requirements for an adequate blood supply for the population. Actually, Mongolia reaches 80% of the required minimum demand. In addition, no voluntary blood donor database exists to facilitate emergency donations.

16. **Screening on transfusion transmitted infections.** Health facilities in *aimags* as well as in Ulaanbaatar conduct routine tests for HIV, HBV, HCV, and syphilis using the enzyme-linked immunosorbent assay method or rapid tests supplied by the Global Fund to Fight AIDS, Tuberculosis and Malaria. Due to erratic supply of reagents on the *soum* level, some facilities are found to transfuse blood without screening for TTIs.

17. **Processing of the blood and blood products.** Blood products such as frozen plasma, platelet concentrates, factor VIII, cryoprecipitates, concentrated red cells, leucocyte filtered red cells, and other are processed apart from whole blood. However, due to lack of equipment, some *aimag* blood banks are unable to process blood products, and rely on provisions from the NTC.

18. **Blood bank equipment.** The existing equipment of *aimag*, *soum*, and NTC facilities is inadequate: facilities lack appropriate blood bank refrigerators and freezers, laboratory equipment, and testing kits. Only some blood banks have a designated cooling centrifuge in proper working order. Due to lack of equipment and systems for external and internal quality control, the reference laboratory in the NTC is also not fully functioning.

19. **Storage and transportation of blood products.** In most health facilities, storage of blood and blood products is insufficient due to inadequate cooling facilities and inadequate transport containers for blood bags and frozen plasma.

20. **Clinical use of blood and blood products.** The Government of Mongolia developed guidelines and training programs on the rational use of blood and blood products in clinical settings (blood transfusion in common diseases). Today, training programs are only infrequently provided to blood banks and hospital staff. They are not yet an integral part of the curricula for medical faculty students.

21. **Adverse reactions to blood transfusion.** Health *aimag* and *soum* heath facilities do not systematically report on adverse reactions to blood transfusion which limits the government's ability to develop appropriate interventions.

22. **Quality screening for blood and blood components.** *Soum* health facilities in particular, as well as *aimag* laboratories, do not conduct systematic screening of blood components for quality assurance. In order to implement quality assurance of blood and blood products, the blood bank laboratories should undertake round robin trials for blood and blood products either through the reference laboratory of the NTC or international blood bank

organizations (i.e., Australian Red Cross). These external quality checks of used laboratory methods guarantee necessary standardization and validation of laboratory methods.

C. Key Challenges

23. The key challenges that need to be addressed in the blood safety sector are related to

(i) Blood bank equipment, training, and budget constraints
  (a) Blood banks on all levels are required to be equipped with standard blood bank equipment (especially with special blood bank refrigerators, freezers, and cooling centrifuges), including transport means (i.e., cooling equipment for blood bags and products). Facilities need to be further equipped with emergency power supply to respond to power outages.
  (b) Training on quality management of blood banks should be executed on all levels. Master degrees in transfusion medicine should be included in international training programs in order to receive international accreditation. International cooperation (i.e., National Reference Laboratory of Australia) should be intensified.
  (c) Undergraduate and postgraduate training on transfusion medicine is a key for the sustainability of such services in the country. In cooperation with the Health Sciences University of Mongolia, such modules should be developed.
  (d) Budgets of blood banks are limited, hampering the smooth operation in *aimag* and *soum* health centers. As most of the budget for blood banks is used for salaries, hospitals have to revise the blood bank budget in order to cope with adequate laboratory services, quality management, and voluntary non-remunerated blood donation services.

(ii) Maintenance of equipment and buildings
  (a) Blood banks on all levels do not have an adequately staffed and equipped maintenance service resulting that equipment is used until it breaks. Due to insufficient provisions for equipment replacement, broken equipment cannot be replaced in good time. This especially hampers the production of blood products. The development of a model maintenance unit should guarantee that the lifespan of equipment will be prolonged, and hence contribute to the sustainability of blood transfusion services. Furthermore, future procurement contracts for purchasing medical equipment should contain service contracts for at least 3 years after initial operation.
  (b) Budgets for maintenance are insufficient or not properly used. At least 3–5% of the value of equipment and 1% of the building cost should be reserved for maintenance services per facility.

(iii) Quality management of blood banks
  (a) Quality management of blood banks adherent to international standards is not fully implemented. This includes the case for voluntary non-remunerated blood donations and the implementation and adherence to standard operating procedures.
  (b) Testing for TTIs should be followed strictly. Sufficient budget should be available for testing materials.
  (c) Laboratory services have to be revised in order to adhere to standard operating procedures within the quality management system.
  (d) Standard documentation is widely insufficient or even not existing and needs to be further developed.

(e) Registration rules for donors, protocols for deferrals, processing cards, especially for quantities of blood collected, hemoglobin tests, and body weight should be followed strictly. The protocols for deferrals should include two categories: temporary referrals because of low hemoglobin, colds or sore throats, elevated temperature, being on medication, pregnant or lactating women, and high blood pressure. The second category concerns permanent deferrals because of age (younger than 18 or older than 60, tested and verified for TTIs and those donors with chronic consumptive diseases. Doubtful laboratory results should always be counterchecked by a second test or by a reference laboratory.

(f) Following the rules and regulations of quality management, the NTC is in a position to apply for international accreditation.

(iv) Voluntary non-remunerated blood donation

(a) Staff for donor recruitment is insufficient, resulting in insufficient numbers of blood donors.

(b) To increase the number of voluntary blood donors, voluntary non-remunerated blood donor campaigns are recommended to be established including the development and distribution of promotional material as well as training of staff.

(v) **Staffing of blood banks.** Only 30% of physicians are working as full time blood bank staff. The remaining 70% are primarily working in clinical services. Hence, the time spent on managing the blood bank is limited due to heavy workload.

(vi) **Adequate space for operating blood banks.** Blood banks are mostly situated within the existing hospital premises, resulting in sparse space for running the blood bank to acceptable standards.