

## Summary of Final Evaluation

1. Outline of the Project	
Country: Republic of Kenya	Project title: Blood Safety Project
Issue/Sector: Health and Medical Sector	Cooperation Scheme: Project-type technical cooperation
Division in charge: Infectious Disease Control Division, Health Human Resources and Infectious Disease Control Group, Human Development Department	Total Cost: 270 million yen
Period of cooperation	(R/D: 2 October, 2006) 20 October, 2006 – 19 October, 2009
	Partner country's implementing organization: National Blood Transfusion Service (NBTS) Model facilities: Regional Blood Transfusion Center (RBTC) Nakuru, Rift Valley Provincial General Hospital (PGH Nakuru), Naivasha District Hospital, Koibatek District Hospital Supporting organization in Japan: N/A
<p>1.1 Background of the Project</p> <p>Blood transfusion in Kenya had depended on a system whereby blood donors are recruited from patient's relatives and friends when a blood transfusion is needed. However the risk of blood-derived infections including HIV and the instability and inefficiency of the blood supply system were identified as issues in the blood transfusion services. In addition, there were managerial problems of the use of blood products in hospitals, particularly about the use of blood products for adults (450 ml) for transfusion of children. The blood products of an unnecessary amount of blood for children were used, and then unused blood was discarded. Responding to these issues the Government of Kenya formulated policy guidelines on blood transfusion services in Kenya in 2001 that promotes transition to the system in which blood is collected from voluntary donors, screened and processed at RBTCs, and quality controlled blood products were supplied to hospitals.</p> <p>Under these circumstances, the Government of Kenya requested JICA technical cooperation for safe, appropriate and efficient use of blood and blood products, and a three-year "Blood Safety Project" (hereinafter referred to as "the Project") started on 20 October 2006.</p>	
<p>1.2 Project overview</p> <p>(1) Overall Goal</p> <p>Approaches for safe, appropriate and efficient use of blood products demonstrated by the Project are to be applied to other Blood Transfusion Service (BTS) institutions in Kenya.</p> <p>(2) Project Purpose</p> <p>Approaches for safe, appropriate and efficient use of blood products are developed, demonstrated and applied as national standards.</p> <p>(3) Outputs</p>	

- 1) The linkage, communication and information sharing among BTS institutions/departments are strengthened.
  - 2) Small volume packed red cells (small PRCs) for children are safely\* prepared at RBTC Nakuru.  
(\*safe means that blood components are equally separated and prepared without contamination)
  - 3) Logistics management\*\* of blood products is improved in RBTC Nakuru, model hospitals and non-model hospitals in the Nakuru region and the system is introduced to other regions in Kenya.  
(\*\*covers stock control, arrangement in store, temperature monitoring, issuing, requisition placing, separation of condemned blood, stock record keeping, cross match record keeping, supervision of hospital and stock data analysis.)
  - 4) Blood products are safely and appropriately used in model hospitals.
- (4) Inputs (at the point of the final evaluation)
- 1) Japanese side:
    - Long-term expert: 2 persons
    - Short-term expert: 7persons
    - Trainees received in Japan: 19 persons
    - Machinery and equipment: KSh 19,533,949 (JFY 2006- 2008)
    - Local cost: KSh 17,461,013 (JFY 2006- 2008)
  - 2) Kenyan side:
    - Counterparts (C/Ps): 24 persons
    - Land and facilities: Provision of spaces for the Project offices in Nairobi and Nakuru
    - Local cost: KSh 240,562,000 (KFY 2006- 2008)

## 2. Evaluation Team

	Area	Name	Organization/Institution
Members of Evaluation Team	Team leader	Ms. Naoko Ueda	Director, Infectious Disease Control Division, Health Human Resources and Infectious Disease Control Group, Human Development Department, JICA
	Blood transfusion management	Dr. Akira Hashizume	President, College of Healthcare Management, Ariake International Academy, Japan
	Project management	Ms. Akiko Ito	Infectious Disease Control Division, Health Human Resources and Infectious Disease Control Group, Human Development Department, JICA
	Evaluation analysis	Ms. Masako Tanaka	TAC International Ltd.

Period of evaluation: 9 June – 8 July, 2009

Type of evaluation: Final evaluation

### 3. Results of Evaluation

#### 3.1 Summary of Performance

##### (1) Project Purpose

The Project Purpose is “Approaches for safe, appropriate and efficient use of blood products are developed, demonstrated and applied as national standards”. Since “approaches for safe, appropriate and efficient use” here generally covers a broad range of areas, taking the opportunity of the mid-term evaluation study, it was defined among the related parties as follows:

“Approaches for safe, appropriate and efficient use of blood products” are organized as (a) the improvement of the logistics management system (corresponds to Output 3), (b) introduction and use of small PRCs for children (corresponds to Output 2), and (c) improvement of the clinical practice of blood transfusion through recording/reporting and the investigation of adverse/unexpected reactions by a Hospital Transfusion Committee (HTC) (corresponds to Output 4).

The effectiveness of each approach has been demonstrated through the activities at the model sites, and most of these have been reflected to national level guidelines and manuals or are expected to be reflected. Part (a) has already been applied at national level and rolling out of approaches of (b) and (c) is being planned at present by the NBTS. In this regard the Project Purpose of the PDM has almost been achieved. (The Project Purpose of the PDM is expected to be almost achieved by the end of the Project period.)

From the standpoint of general “approaches for safe, appropriate and efficient use of blood products”, the remaining areas are (i) quality control of blood products which is still not perfect and (ii) recording/reporting and investigation of adverse/unexpected reactions has not been sufficiently reflected to the improvement of clinical practice of blood transfusion.

##### (2) Outputs

Almost all indicators set for Outputs 1 - 4 have been achieved or are expected to be achieved by the end of the Project despite several problems that were encountered during the implementation. After the Mid-term Evaluation, particularly in 2009, there was significant progress in the implementation of activities.

1) Output 1 : The linkage, communication and information sharing among BTS institutions/ departments are strengthened.

Output 1 is expected to be achieved by the end of the Project.

The linkage, communication and information sharing among NBTS, RBTC Nakuru and 3 model hospitals have been greatly strengthened through the Project Implementation Meeting (PIM) and RBTC Supervisory Visits to hospitals for logistics management. Communication and information sharing among the hospital laboratory and wards in each model hospital have also been strengthened through the Hospital Transfusion Committee (HTC) at each model hospital. It has been mentioned by some of the members that participants at PIM and HTC meetings have come to work as a team. The PIM functions also as a place of mutual learning on what the other

HTCs do, which leads to high motivation for all members.

Regarding dissemination of project experiences and outputs to other RBTCs and other BTS institutions, activities and outcomes of the Project have become popular among NBTS and all RBTCs through printed materials and workshops, among hospitals in the Nakuru region through Supervisory Visits, and among development partners through development partners meetings.

2) Output 2 : Small volume packed red cells (small PRCs) for children are safely\* prepared at RBTC Nakuru.

(\*safe means that blood components are equally separated and prepared without contamination)

Output 2 is expected to be achieved by the end of the Project.

In this Project, “safely” simply means that volumes and components of PRCs are subdivided equally as is mentioned in the PDM (“safe means that PRCs are equally separated and prepared without contamination”). In this context Output 2 is expected to be achieved. SOPs and tools for preparation of PRCs have been developed, these need to be adjusted as national SOPs and tools after consolidation with existing SOPs and tools.

At the same time, the terminology “safely” has a broad meaning and there still remain some challenges towards comprehensive blood safety including some other quality control measures, recording of weight of collected blood and screening tests.

RBTC Nakuru has strengthened technical capacity to safely prepare small PRCs; in other words each PRC is separated into 2 small PRCs with equal Hb levels and volumes without contamination. RBTC Nakuru routinely supplies small PRCs to all model hospitals and PRCs for adults to PGH Nakuru. It is worth noting that this is the first routine supply of PRCs to the hospital by RBTC in Kenya.

There was a color change noted in some of the small PRCs, which was solved by the introduction of several measures (quality control measures and introduction of monitoring). RBTC staff learnt a lot through investigation and finding the solution to the issue, which lead to capacity development of the C/Ps.

3) Output 3 : Logistics management\*\* of blood products is improved in RBTC Nakuru, model hospitals and non-model hospitals in the Nakuru region and the system is introduced to other regions in Kenya.

(\*\*covers stock control, arrangement in store, temperature monitoring, issuing, requisition placing, separation of condemned blood, stock record keeping, cross match record keeping, supervision of hospital and stock data analysis.)

Output 3 has been achieved beyond expectation.

The concept and theory of logistics management has been introduced for the first time in BTS facilities and hospital laboratories in Kenya. To put this theory into operation, various tools such as colored baskets (for arrangement of blood units by blood type), the ledger book, stocktaking sheet, and other recording forms, have been developed and introduced by the Project. Improvement of logistics management contributed to reduction of expiries and stock-out of blood products and atypical transfusions, and to the improvement of the blood cold chain.

The theory and tools were introduced and validated in model facilities (RBTC Nakuru and

model hospitals) first, then expanded to other hospitals (about 30 “non-model” hospitals) in the Nakuru region through Supervisory Visits by RBTC Nakuru staff. Based on these experiences, the national check list and manuals for supervisory visits of hospital laboratories which include not only logistics but also all activities related to hospital transfusion laboratories has been developed. These were already distributed to NBTS and all RBTCs and staff of RBTCs received training on the conduct of the Supervisory Visits. Besides these, development of the national guidelines for logistics management is in process, and expected to be approved by the end of the Project. Training on the guidelines is planned.

4) Output 4 : Blood products are safely and appropriately used in model hospitals.

Output 4 is expected to be achieved by the end of the Project.

It was confirmed that the systems for achieving Output 4, such as the establishment of HTC, a haemovigilance officer<sup>1</sup> going around the hospital departments, a patient observation recording form have been established, which is remarkable progress compared to the initial stage of the Project.

The HTC has become the most active committee in each model hospital and holds meetings every month at present, where members raise issues regarding blood transfusion services in their hospital, discuss them and find or try to find solutions.

Each HTC had developed several forms and SOPs for better management of blood transfusion services, some of which have been standardized or are in the process of standardization. One of the outstanding outcomes is the development of a haemovigilance manual, which is still in the process of approval by the Ministry of Medical Service (MoMS). In all model hospitals haemovigilance activities have been conducted by a haemovigilance officer\* and a checklist for haemovigilance officers has been developed. The recording forms (a blood transfusion register, an observation chart, a requisition form of blood, etc.) and SOPs for the process of blood transfusion (SOPs on blood sample collection, SOPs on blood collection from laboratory to the wards, etc.) have also been developed by each HTC. Most of these were incorporated in the draft haemovigilance manual.

The small PRCs have been used for children in all model hospitals in most necessary cases since July 2008 after the pilot study in PGH Nakuru and since March 2009 in the other two model district hospitals. The PRC for adults was also introduced in PGH Nakuru late February 2009, after which the use of PRC increased significantly in PGH Nakuru. It is worth noting that whole blood transfusion has rapidly shifted to blood component transfusion (PRCs) in Kenya.

The 3rd edition of the “Guidelines for the appropriate use of blood and blood products” will be issued, in which outcomes of the Project such as use of small PRC and PRC for adults and the experiences of HTCs are reflected.

### 3.2 Summary of Evaluation

#### (1) Relevance

For the following reasons, relevance of the Project is high:

<sup>1</sup> The HTC member who goes around the wards and other departments to check all aspects related to the blood transfusion service in the hospital. It is a rotation position covered by clinicians, nurses and laboratory technologists of HTC members.

- (a) The relevance evaluated by the ex-ante evaluation study is still correct. There is no great change in the policies on health development in Kenya. The Ministry of Medical Services (MoMS) regards safe blood supply as an important issue and one of the priorities to meet the health demand in Kenya.
- (b) The introduction and promotion of component blood transfusion is one of the key areas of NBTS policy and its plan.
- (c) It is consistent with the Japanese cooperation strategy. The health/medical sector is one of the five priority areas for cooperation of the JICA Kenya office. The Japanese Government committed provision of training for 100,000 health personnel from African countries at the 4th Tokyo International Conference on African Development IV (TICAD IV).
- (d) The PDM modification during the mid-term evaluation contributed to progress of the Project.
- (e) The 5th International Congress of the African Society of Blood Transfusion (AfSBT) held in Kenya in 2009 shows that blood transfusion services receive increasing attention in Kenya.

(2) Effectiveness

The Project is effective for the reasons described below.

Japanese experts, however, were ought to evacuate Nakuru, a model site, due to post-election violence. The activities in Nakuru were interrupted for about one and half month, and were remotely operationalised from Nairobi. The post-election violence brought confusion with the interruption of HTC functioning and mass turnover of hospital staff, for which it took few more months to resume the Project. Despite the important assumption caused, the Project was evaluated as effective because of the enthusiasm of Japanese experts conducting remote operation from Nairobi. The Japanese experts also focused on the activities which is specific to in Nairobi effectively trying to recognize the disadvantage of their evacuation from Nakuru as opportunity.

- (a) The Project Purpose will be almost achieved by the end of the project implementation period by achievement of the Outputs. Set targets in the PDM will be achieved and the Project has contributed significantly to safe, appropriate and efficient use of blood products in Kenya, however, there are still challenges for having safe blood and safe practice of blood transfusion in Kenya.
- (b) Capacity and ability of C/Ps have been greatly developed through the project implementation and training in Japan. Recording and documentation of blood transfusion services have become common practice and C/Ps have become capable of identifying problems and finding what factors are behind the problems, and to take action for practical solutions.

(3) Efficiency

Based on the achievement level of outputs produced and inputs conducted, the Project is efficient. However, delay in the dispatch of a chief advisor affected the smooth implementation of project activities. Serious disruption was avoided by dispatching JICA consultation missions and JICA short-term experts. The Project made significant progress in the latter half of the project period by dispatching a chief advisor and hiring a local consultant.

The Project experienced the reduction of availability of blood caused by delay in release of PEPFAR fund. The Project, which covers the lower stream of blood transfusion service, can be

seriously affected when the upper stream of service such as donor recruitment stops. In spite of the important assumption caused, the Project reached high level of its achievement due to remarkable progress in activities.

- (a) Most of outputs set in the PDM are being achieved with small inputs compared to the ones of the other development partners. Harmonization with the The US President's Emergency Plan for AIDS Relief (PEPFAR)/ Centers for Disease Control and Prevention (CDC) was also efficient to improve blood transfusion services.
- (b) The same JICA experts were repeatedly dispatched in the specific technical areas. This is an efficient manner to conduct technical transfer since continuity of technical transfers was secured and proper follow-up was provided to C/Ps.
- (c) Equipment was procured and is being well utilized.
- (d) Assigned C/Ps, particularly those who received training in Japan, learnt blood transfusion service system and skills of blood transfusion as well as fundamental ideas about blood transfusion services and they contribute to the implementation of the project activities by applying what they learnt in Japan.
- (e) By dispatching a medical doctor as a chief advisor and hiring a local consultant who was the former NBTS director, the Project made significant progress in its third year based on the groundwork in the first two years.

#### (4) Impact

It is expected to be achieved within 3-5 years with the Government's effort to provide adequate resources for rolling out of the activities nationwide.

The other positive impacts that were not planned are as follows: (There is no negative impact so far.)

- The Project encountered the color change problem, which was an unexpected issue. It delayed implementation of activities, however, C/Ps learnt a lot in the process of investigation and finding solutions.
- In the process of developing a draft national level checklist for Supervisory Visits (for logistics management) the counterpart gave his ideas on how to utilize it not only for logistic management but for management of other areas.
- One of the counterparts for HTC was transferred to another hospital. He set up HTC in a newly appointed hospital and started its activities.

#### (5) Sustainability

Organizational and technical sustainability is very high. However, financial sustainability is not high since the security for fund and budget for the activities after the Project and for blood transfusion services is not clear at present.

- (a) The MoMS regards safe blood supply to be an important issue and one of the priorities to meet the health demand. Safe blood supply is one of the national programs.
- (b) The NBTS policy of introduction and promotion of component blood transfusion including small PRCs for children is clear.
- (c) Technical transfer to C/Ps has been conducted smoothly.

(d) The manuals/checklists developed by the Project have been authorized or are expected to be authorized by the MoMS. The director of NBTS expressed that the NBTS has an intention to roll out approaches demonstrated by the Project nationwide.

(e) The SOPs, manuals and tools needed for the activities have already been developed by the Project.

(f) C/Ps both at model sites and national level already implement many aspects of project activities by themselves. Internal technical transfer by C/Ps has also been carried out.

However, financial sustainability is not high. There will be a second phase to the PEPFAR fund (2010-2015) that will focus more on sustainability, but the size of the fund is not clear. The Government of Kenya needs to start considering seriously a cost recovery system for blood transfusion services in Kenya, and an increased budgetary allocation to the NBTS.

### 3.3 Factors promoting the Project implementation

#### (1) Factors concerning planning

None

#### (2) Factors concerning the implementation process

- Information sharing and monitoring of project activities through holding PIM regularly
- Mutual learning in PIM and generation of C/Ps' motivation through PIM
- Appropriate guidance on the direction of the Project by JICA missions
- Leadership by C/Ps that trained in Japan and their application of things learnt in project activities
- Participatory approach for the implementation of activities such as development of guidelines, manuals, SOPs and so on
- Learning process of solving color change in some small PRCs
- Hiring an appropriate local consultant

### 3.4 Factors inhibiting the Project implementation

#### (1) Factors concerning planning

None

#### (2) Factors concerning the implementation process

- Post-election violence
- Delay in fund release (by PEPFAR) for donor recruitment
- Assignment of no medical doctors in RBTC Nakuru and NBTS (except for Director)
- The delay of inputs by the Japanese side (the dispatch of a JICA expert of Chief Adviser)

### 3.5 Conclusion

The Project has made a remarkable achievement. All five evaluation criteria were rated highly.

Although the Project faced serious difficulties; i.e., post-election violence at the end of 2007, delay of disbursement of the PEPFAR funds, the project purpose has almost been achieved and it contributed to the improvement of safety in blood transfusion services in Kenya. Particularly, it is a significant step forward for safe, appropriate and efficient use of blood products in Kenya that the introduction of component blood transfusion has been realized by the introduction of small PRC and



PRC for adults.

Regarding the five evaluation criteria all criteria, except financial sustainability, have been given a high mark. It is pointed out that technical transfer through direct and meticulous teaching on site by JICA experts and follow-up by the same experts contributed effectively to C/Ps' capacity development.

Regarding establishment of new approaches at institutions and their nationwide implementation, it is recommended that the Project makes its utmost effort till the end of the Project period. Several important recommendations about activities after the Project were also given to the Kenyan side. JICA will continue support for a part of those activities, such as reporting and analysis of unexpected/side effects of blood transfusion, improvement in the clinical use of blood products based on these reporting and analysis, enhancement of the haemovigilance system, and training for nationwide rolling out of good practices in the project model sites, as a follow-up cooperation for several months after the Project ends. However, it is concluded that the Project as a technical cooperation project is to be finished, as planned, in October 2009.

### 3.6 Recommendation

It has been recommended that the Project implements the following by the end of the Project implementation period:

- (1) To hold the Round-up Seminar of the Project at the end of the Project to disseminate its success and good practices. The participants of the seminar will be policy and decision makers, development partners and other important stakeholders related to blood transfusion services in Kenya.
- (2) To ensure the forms and tools (i.e. the blood requisition form, the blood transfusion observation chart, and the check list for Supervisory Visits) developed by the Project are utilized and are user-friendly, and revised where necessary.
- (3) Guidelines for logistics and inventory management should be approved and issued as the national guidelines, and printed for distribution. The training on its application should be conducted on time.
- (4) The haemovigilance manual should be approved and issued, and printed for distribution.
- (5) There is still wastage of blood in the process of preparation of small PRCs which uses triple-bags. Therefore, introduction of quadruple-bags for small PRCs should be considered for the next step.
- (6) The Project should start discussion to develop modalities of rolling out of blood component preparation.

It is recommended that the Government of Kenya implements the following after the Project:

- (7) NBTS needs to consider a mechanism of sharing information between RBTCs and hospitals to replace the PIM (for example, e-journal).
- (8) It is recommended that NBTS conducts workshops/study tours at Nakuru to support rolling out of the Project outputs. The target participants are staff of all RBTCs and HTC members of all PGH.

The followings are possible contents of workshops/study tours:

- Practice of preparation of small PRCs and PRCs for adults
- Case study in HTC

- Supervisory Visits to hospitals

- (9) There is a rising issue that some donations have Hb over the normal range, raising concerns regarding the quality and safety in blood transfusion. NBTS should find the solution to this issue.
- (10) NBTS should monitor implementation of the haemovigilance manual in order to avoid adverse/unexpected reactions.
- (11) Proper authorization and constitution of the HTC as “official hospital committee” should be fast-tracked.
- (12) Activities that use forms and tools developed by the Project should be carefully and continuously monitored, i.e., RBTC’s Supervisory Visits should be funded and monitored by NBTS.
- (13) Expansion of PRCs would need more human resources at NBTC/RBTCs. These facilities should be strengthened to produce the necessary amount of PRCs.
- (14) NBTS should secure the budget for printing of guidelines/manuals/forms developed by the Project.
- (15) To secure financial sustainability after the Project the MoMS of Kenya needs to consider creating a strategy of cost recovery system for blood transfusion service and budget allocation. The planned cost analysis study may help NBTS strategize on the scale up plan of the project activities. The necessary budget should therefore be seen in light of the cost analysis report that may come towards the end of the Project.

### 3.7 Lessons Learnt

- (1) The Project could conduct activities effectively in the focused technical areas since the areas of assistance were clearly demarcated with other development partners. On the other hand, when the precondition that each partner implement its activities as planned is not fulfilled, a project could face serious difficulties. Thus, the Project needs to pay attention to other partner’s activities all the time, and be ready to be flexible to react accordingly.
- (2) Capacity development through on-site technology transfer face to face was seen to be effective and unique. This raises the sense of ownership and spurs motivation for expansion of activities based on the knowledge and skills acquired. It is one of the most important approaches towards improvement of quality of life for people and achievement of MDGs.
- (3) Risk management (i.e. haemovigilance, bio-safety) is emerging as an area for JICA’s technical cooperation. As risk management is the ultimate goal to achieve safety, capacity development is still valuable and necessary, especially the process of establishment of these measures in a developing country. Further in-depth discussion on this topic is required.