

Country Name	Blood Safety Project
Republic of Kenya	

I. Project Outline

Background	<p>Kenya had hospital based blood transfusion service relying on family donors, and there had been increasing anxiety on the weak capacity for proper blood product preparation and supply. The Government of Kenya issued Policy Guidelines on Blood Transfusion in Kenya in 2001, and the National Blood Transfusion Service (NBTS) made the transition from conventional system to the system where blood is collected from voluntary donors, screened and processed at Regional Blood Transfusion Centers (RBTCs) and supplied from RBTCs to hospitals. In addition, blood transfusion for children constituted about 40% of all transfusion cases. There was only one-size blood bag (450ml) available and this implies that in transfusion for children, the unused blood was discarded, and therefore a considerably large part of the blood was wasted.</p>										
Objectives of the Project	<ol style="list-style-type: none"> Overall Goal: Approaches¹ for safe, appropriate and efficient use of blood products demonstrated by the project are applied to other Blood Transfusion Service (BTS) institutions in Kenya. Project Purpose: Approaches for safe, appropriate and efficient use of blood products are developed, demonstrated and applied as national standards. Assumed steps for achieving the project goals²: (1) The project transfers the technologies of (i) preparation of small volume packed red cells (PRCs) for children, (ii) logistics management of blood and blood products, and (iii) clinical practice of blood transfusion at model facilities, and documentation of those activities (development of guidelines, Standard Operation Procedure (SOP), manuals and tools³), (2) The small PRCs are routinely used and the number of unnecessary discarded blood units decreases at the model facilities, and (3) The SOPs, manuals and tools for clinical use of blood products are widely available at model facilities. 										
Activities and inputs of the project	<ol style="list-style-type: none"> Project site (Model facilities): RBTC Nakuru, Rift Valley Provincial General Hospital (PGH Nakuru), Naivasha District Hospital, Koibatek District Hospital Main activities: (1) establishing Hospital Transfusion Committee (HTC) in each model hospital to function as an information sharing place for RBTC and hospital departments, (2) revising SOPs for preparation of small PRCs for children, and implementing a pilot study for PRCs preparation, (3) revising SOPs and introducing the concept and theory, and tools for logistics management of blood products, and (4) revising SOPs for safe and appropriate use of blood products and training on safe and appropriate blood transfusion management. Inputs (to carry out the project activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side</td> <td style="width: 50%;">Kenya Side</td> </tr> <tr> <td>1. Experts: 9 persons (Long-term: 2, Short-term: 7)</td> <td>1. Staff allocated: 24 persons</td> </tr> <tr> <td>2. Trainees received : 19 persons (CP training in Japan)</td> <td>2. Land and facilities: project offices</td> </tr> <tr> <td>3. Equipment: Cold chain equipment, blood bags, photocopy machine, vehicles, computers for data analysis and others</td> <td>3. Local costs: 240 million Kenya Shilling</td> </tr> </table> 			Japanese Side	Kenya Side	1. Experts: 9 persons (Long-term: 2, Short-term: 7)	1. Staff allocated: 24 persons	2. Trainees received : 19 persons (CP training in Japan)	2. Land and facilities: project offices	3. Equipment: Cold chain equipment, blood bags, photocopy machine, vehicles, computers for data analysis and others	3. Local costs: 240 million Kenya Shilling
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Project Period	October 2006 – October 2009	Project Cost	253 million yen								
Implementing Agency	National Blood Transfusion Service (NBTS)										
Cooperation Agency in Japan	Japanese Red Cross Society and Hokkaido Red Cross Blood Centre										
Related Projects (if any)	<p>Japan's cooperation: Development study on safe blood supply (2000), Follow-up cooperation (Nov 2009 - Oct 2010)</p> <p>Other donors' cooperation: (1) The US President's Emergency Plan for AIDS Relief (PEPFAR), (2) USAID: promoting blood donation, and construction blood center, (3) CDC for promoting blood screening, (4) American Association of Blood Banks (AABB) for capacity development</p>										

II. Result of the Evaluation**1 Relevance**

This project has been highly relevant with Kenya's development policy "blood safety as an intervention area in the

¹ At the mid-term review, "approaches for safe, appropriate and efficient use of blood products" were defined as (a) the improvement of the logistics management system, (b) introduction and use of small PRCs for children, 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)

² Reviewed at the time of the ex-post evaluation.

³ Tools are, such as visual aids reporting format, monitoring checklist, seminar module etc.

implementation of the Kenya Essential Package for Health” as set in Second National Health Sector Strategic Plan for the period 2005-2010 (extended to cover the period 2011-2012), development needs, “increasing number of blood transfusions and further PRC utilization”, as well as Japan’s ODA policy: Country Assistance Program to Kenya (year 2000) at the time of both ex-ante evaluation and project completion.. Therefore, relevance of this project is high.

2 Effectiveness/Impact

(1) Attainment of Project Purpose and continuity of project effects

At the project completion, the SOPs and various tools were developed and actually used at the model facilities. In accordance with the SOPs and tools, cumulatively 413 small PRCs for children were prepared at RBTC Nakuru by the time of project completion. In addition, 1,556 PRCs for adults were prepared which used the SOP developed by NBTS with a little modification in preparation of the small PRCs for children. At the time of ex-post evaluation, at least 8 items including major products such as SOPs for PRCs, PRCs reference, SOPs for cross match related tests in the laboratory were mentioned as being applied nationally in Kenya, according to NBTS. In addition, the Regional Society for Blood Transfusion has adopted the Hemovigilance Manual introduced by the project and with funding from PEPFAR, they provide technical assistance to 28 HTCs. the improved logistics management led to that the number of unnecessary discarded blood units has reduced. The model facilities have continued activities for PRCs preparation, logistics management, and appropriate use of PRCs. RBTC Nakuru has continued preparing PRCs following the SOPs and tools from the project. With the support of the AABB, NBTS developed national SOPs and forms in 2009, which were supposed to be incorporated to the guidelines developed by the project. However, the incorporation has not been made yet.

Overall, there is improvement in the management of blood transfusion services at model sites. Whenever the RBTC Nakuru has the appropriate inputs to prepare small PRCs for children, quality assurance is done and the quality of the packs is monitored at both the RBTC Nakuru and model hospitals blood banks. The reference charts are well displayed at both RBTC and hospital facilities. Almost all transfusions at the model hospitals are carried out by using PRCs. According to records available in the transfusion registers at model facilities and reports by Hemovigilance Officers, there are almost no adverse / unexpected reactions from transfusions.

(2) Overall Goal

The NBTS has gradually increased processing of blood products including PRCs for transfusion for children and adults respectively. PRCs have been gradually increased from 40% (2010) to 60% (2012) of all blood collected and screened. All the RBTCs are now preparing and supplying PRCs to NBTS satellite centers and transfusing facilities around the country. The RBTCs are also using most of the manuals and tools developed for logistics management of blood products. They are all conducting supervisory visits to facilities within their areas of jurisdiction using the guideline and checklist. In addition, the number of hospitals with HTCs has increased from 11 (2009) to 28 (in 2012).

In this way, this project achieved the project purpose, and positive outcomes were observed in the model facilities after project completion. The overall goal has been achieved as application of the project approaches are observed nationally. Therefore, effectiveness/ impact of the project is high.

Achievement of project purpose and overall goal

Aim	Indicators	Results
(Project Purpose) Approaches for safe, appropriate and efficient use of blood products are developed, demonstrated and applied as national standards.	Availability of SOPs and supporting tools that reflect the successes and lessons of activities of the project.	(Project Completion) 24 SOPs, guidelines and tools were developed. (Ex-post Evaluation) 24 SOPs, guidelines and tools were available.
	Improvement in management of BTS at model sites.	(Project completion) logistics management, PRC preparation management including quality control, HTC management, and transfusion service management including adverse reaction monitoring have improved. (Ex-post evaluation) Improved managements are maintained.
	Commencement of procedures to apply approaches in order to improve management of BTS as national standards.	(Project completion) The manuals and tools applied nationally: The guideline for and checklist (manual) for supervision of hospital transfusion laboratories, hemovigilance manual for hospital transfusion services, and blood request/issue/receipt voucher. (Ex-post Evaluation) In addition to the above listed items, SOPs for PRCs, PRCs reference, SOPs for cross match related tests in the laboratory, blood stock ledgers, and temperature monitoring chart are applied nationally.
(Overall goal) Approaches for safe, appropriate and efficient use of blood products demonstrated by the project are applied to other BTS institutions in Kenya	Number of BTS institutions applying the approaches demonstrated by the project	(Ex-post Evaluation) All 6 RBTCs as well as other BTS institutions such as hospitals and nursing homes have applied the approaches (360 facilities in total) at least one or several approaches ⁴ .

Source : Project Completion Report, Terminal Evaluation Report, Interviews with counterparts

3 Efficiency

⁴ The follow up activities were implemented by local consultant after the project ; rolling out experiences and knowledge gained from the Project in the Nakuru model region to national level by developing training module with NBTS, RBTC and model hospitals and conducting training at model sites.

While the inputs were mostly appropriate for producing the outputs of the project, and the project period was within the plan (ratio against the plan: 100%), the project cost was slightly higher than the plan (ratio against the plan: 115%) because at the time of ex-ante evaluation, no specific budget for counterpart training was included. Therefore, efficiency of the project is fair.

4 Sustainability

The project is still given importance in the current development policy. NBTS targets to convert 80% of collected and screened blood into PRCs. In fact, one third of the blood will be converted into small volume packs for transfusion in children in accordance with the NBTS's internal policy. Institutionally, with on-going devolution of health services, there is uncertain aspect, such as the future re-organization of the operations of NBTS and model health facilities. Although the functions related to blood safety policy formulation, setting standards and capacity building of county health service providers will be retained at the National Government level, the County Government health structures will gradually take over functions related to blood collection, donor education, recruitment and hospital level utilization of blood products. Staff deployment and distribution will be further considered to optimize service delivery at NBTS, RBTCs and model hospitals.

In technical aspect, there is mostly sufficient technical capacity of the related parties for continuation of PRCs preparation, supply and proper use, excluding issues that NBTS sometimes experiences difficulties in dealing with erratic supply of triple and quadruple blood bags for preparation of small PRCs for children. The project counterparts are still in post at RBTC Nakuru and model hospitals. RBTC Nakuru continues to train and mentor other RBTCs and hospital staff on PRCs preparation, supply and appropriate use in the clinical setting. The project counterparts actively participate in and facilitate sessions in regular Continuing Medical Educations at both RBTC and model hospitals. Financially, there is a chronic problem of budget shortage and NBTS including RBTCs is heavily financed from external sources, primarily PEPFAR. Although PEPFAR's support continues to 2015, the prospect for succeeding support in the future is not clear. Devolution of health services to the county levels will require further examination of budget sources and to secure necessary budget for blood transfusion activities. Thus, as there are uncertainties in institutional and financial aspects, sustainability of the effects of this project is fair.

5 Summary of the Evaluation

This project has achieved project purpose of "approaches for safe, appropriate and efficient use of blood products are developed, demonstrated and applied as national standards". Overall goal has been also achieved as the SOPs and tools developed by the project are being widely applied, and the number and percentage of PRC preparation and use have increased nationally. As for sustainability, there are uncertainties in terms of institutional and financial aspects due to the ongoing devolution of health services. For efficiency, the project cost slightly exceeded the plan.

In the light of above, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned.

Recommendations to implementing agency:

1. NBTS is recommended to finalize and issue the guidelines for logistics and inventory management as national standard. In doing so, efforts should be made to harmonize the guidelines with other tools that have so far been developed by other development partners.
2. In order to sustain the preparation and supply of small PRCs for transfusion in children, NBTS is recommended to review its procurement practice with a view to continuously avail to the RBTCs' adequate quantities of triple and quadruple blood bags. Where resources allow, hospitals are also encouraged to contribute to the budget for the procurement of these supplies. This will help in further minimizing wastage that may accrue from sustained utilization of adult PRCs for transfusion in children.
3. In order to address the chronic problem of budget shortage, NBTS is recommended to develop and implement a strategy for cost recovery. In line with the on-going devolution of health services in Kenya, the County Governments and County Hospitals may be potential partners in cost sharing (for procurement of supplies, printing of tools and support to blood donation campaigns) aiming to sustain quality services.

Lessons learned for JICA:

1. A model-development approach (which verifies the effectiveness of the project at the early stage and then disseminates it to other areas) was incorporated in the project design and it greatly enhanced the standardization of project approaches by scaling it up to the national level. Nakuru region model sites had a profound positive impact on NBTS in the adoption of the approaches and were eventually applied as national standards.



Recording of PRCs at Nakuru RBTC



Stand for Preparation of PRCs at Nakuru RBTC