

Developing a blood donor programme: Malawi blood transfusion service (MBTS)

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Background

World Health Assembly Resolution (WHA) 28.72 of 1975, set the bench mark for the development of national blood programmes, whether nationally organized, or nationally coordinated, that has led to the rapid increase in the quality, safety and adequacy of blood in both developed and developing countries.

This Resolution, adopted by the Ministers of Health from all Member States of the largest of all United Nations Agencies, has been augmented and improved over the years by additional and reinforced Resolutions at World Health Assemblies and Resolutions of World Health Organization (WHO) Executive Boards (EB).

The key strategies have been further succinctly redefined by WHO in the now universally accepted 'Aide Memoire' on blood safety. The 'cornerstone' for a safe, adequate and accessible supply of blood and blood products is the development of a blood donor base comprised of voluntary non-remunerated blood donors from low risk populations who donate on a regular basis.

The key strategies defined in WHO's Aide Memoire form the basis of the large number of internally funded programmes' main strategic interventions. The Aide Memoire addresses the following four key strategies; a well-organized and managed national (or coordinated) blood programme; an effective blood donor programme; ensuring that all donated blood is tested for infectious agents, including the recognized immuno-haematological procedures; that clinical use of blood is used appropriately and finally that there is an over-riding quality system, including blood cold chain, in all areas.

In developing a national blood programme, whether centrally managed or nationally coordinated, the principles of good business practice apply, even though the 'Services' provided by the blood programme are not for profit. This is a critical, although infrequently stated, essential component. Having accepted this principle, the organization and management of an effective blood programme ('Service') will incorporate a detailed cost analysis of the main departmental components of the programme. Identifying costs in a clear and transparent

manner will not only ensure that the programme is developed effectively, but that it will be sustainable beyond the funding period.

Malawi has a population of 11 308 000 and is one of the world's least developed countries, being the third poorest country in the world. The economy is predominantly agricultural and about 90% of the people live in rural areas. Malawi has an HIV prevalence rate of 14.2% (2003) and is a high-risk country for malaria and various other tropical diseases. Life expectancy at birth m/f [years] is 37.1/37.8; child mortality m/f [per 1000] is 229.0/211.0.

Development of Malawi blood transfusion service

In February 2000, a Financing Agreement, with funding from the European Development Fund (EDF8) was signed between the Commission of the European Communities (EC) and the Government of the Republic of Malawi, in accordance with WHO recommendations and guidelines, to establish an independent and autonomous Malawi Blood Transfusion Service (MBTS) with three Blood Transfusion Centres. Funding was initially provided for 5 years, until 31 March 2006, but was extended with an increase of 20% so that it will run until 31 March 2007 for technical assistance and activities and for the construction of three buildings to house the blood transfusion centres, until 2009. Annual work programmes, within the framework of the project plan, are developed and approved for activities and funding. An international and independent team of experts has carried out a Mid-term Review of the project. The report produced was very favourable and has led to the EC agreeing to an extension to the project. However, from July 2006 the MBTS will receive greatly reduced annual fund for activities from the EC until June 2007, but there is an increasing annual financial contribution from the Ministry of Health through an agreed fiscal budget line. Additional funding will also be provided from the National AIDS Commission (NAC), with funding for training and rehabilitation of hospital blood banks from Centers for Disease Control and Prevention, USA (PEPFAR). Other possible funding sources

are being considered for equipment. These additional sources of funding are part of the planned cost-sharing and cost-recovery strategy to ensure that the Service is sustainable in the long term, especially as regards to recurrent expenditure requirements.

An independent and autonomous Board of Trustees (MBTS Trust) was established and appointed to effectively control the funding and administration of a well organized and managed Service. The MBTS Trust has been appointed with an approved legal framework in place, an 'Act', which is in passage through the Parliament of Malawi, and an approved Constitution providing the regulatory framework. MBTS Trust is also registered with the Registrar General's Office as a non-profit organization, which permits it to carry out the roles and responsibilities required in order to execute its functions as the appointed National Blood Authority. Representation on the Board of Trustees includes all the major stakeholders, in particular the Ministry of Health.

The overall objective in establishing the Malawi Blood Transfusion Service is to reduce the incidence of HIV/AIDS and other diseases transmissible by blood transfusion in the Malawi population; to establish a safe blood donor base; to ensure a safe, adequate and accessible supply of blood products to all hospitals and promote the appropriate clinical use of blood through the establishment of a centralized and sustainable blood transfusion service.

The project only started development in the second quarter of 2003. Prior to this there was no organized blood transfusion service available. All services were hospital-based and reliant on relatives [guardians] and replacement/paid blood donors, supplies of blood were unsafe and inadequate.

Blood donor programme

Prior to the formation of MBTS each hospital blood bank was responsible for the collection, testing and distribution of whole blood for patients on request from the clinicians. Occasional blood collection drives were organized by expatriate volunteer groups at two of the four central hospitals in Malawi. Blood donor education and recruitment was, at best, rudimentary, and was always uncoordinated and fragmented. Blood collection was inadequate and procedures did not meet minimal standards for donor and staff care and protection. A large number of groups were formed throughout the country to try and meet the requirements of blood in hospitals. Those who were encouraged to donate blood on a voluntary basis often found that, on a future occasion, when they, or their relatives, required blood there was none available. On some occasions blood could be provided for a 'fee' from a willing 'impromptu' relative. This fee was provided to the procurers of the blood. Invariably time was insufficient for a full screening profile prior to the urgent need for transfusion. Often there was no blood available. All this contributed to a mystic culture and one of misinformation on blood being

provided voluntarily and sold for profit. People collecting blood were labelled 'vampires and blood suckers' and on occasions endured being stoned. Public education could not be effectively promoted. Motivation and care of blood donors was in a very poor state.

The MBTS Trust facilitated the formation of the Blood Donor Association of Malawi (BDAM) to bring together all the disparate blood donor interests under one body and improve and unite the national blood donation campaign and help diffuse any misconceived myths and misunderstandings that had been prevalent in the past and led to serious problems in blood donor recruitment.

Staffing and capacity of MBTS

In April 2003 there were no trained staff available for the Malawi Blood Transfusion Service (MBTS). Staff post descriptions were developed and advertised in the local newspapers. Interview and recruitment procedures were established and staff appointed with terms and conditions of service agreed using a benchmark standard developed in Malawi for employment benefits by Deloitte and the Amani Trust. Medical insurance, pensions and conditions of service were developed to ensure a long-term career structure aimed at retention of staff after the intensive training programme had been completed. Key senior staff were recruited first and subjected to intensive training in the period between June and December 2003. Courses in management, computer skills and dedicated training in specific areas of work were conducted by internationally recognized experts in each area through 2- to 3-week intensive courses, which were repeated at least every 2 months.

Blood donor and public relations department

All the senior and experienced staff in the donor department is fully trained. Nurses have been trained either at Malawi College of Health Sciences and Malamulo College of Health Sciences or at Kamuzu College of Nursing. Training at MBTS has included face-to-face didactic teaching, use of WHO distance learning materials and practical work, overseen by the short-term Technical Assistant and fixed term Project Manager for the project. A process of continuing monitoring and evaluation of the processes and procedures was undertaken by the technical assistants, leading to the appointment of a Blood Donor Manager and Team Leaders for the two static blood donor sites and the eight mobile blood collection teams. Extensive use was made of a specially procured artificial arm, for simulating phlebotomy procedures, to ensure the correct techniques were developed and implemented.

MBTS collects blood only from voluntary non-remunerated donors from low risk populations. Vigorous campaigns are

carried out through a joint blood donor and Public Relations Department strategy for public education, donor motivation, recruitment and retention. Counselling, at the time of donation, post donation and referral, when appropriate, are practiced. Pre- and post-donation counselling, with appropriate information pamphlets, was developed to ensure culturally accepted messages and to overcome the well-established myths and misconceptions around blood donation. These messages were promoted countrywide focusing the message in areas where there were large population groups for easier access for education, motivation, recruitment and retention of voluntary non-remunerated blood donors from low risk populations. This was not only a more cost-effective intervention, but ensured that blood donor education, collection and follow-up could be implemented and sustained.

Retention of safe donors and promoting blood donation from young blood donors in Malawi (16–25 years) make an important contribution to blood requirements. Nearly 80% of all donated blood is collected through donor clubs such as 'Club 25'. It was apparent very early in the project that the promotion of blood donation amongst the youth, 16–25 years, in Malawi was the key to the provision of a safe, adequate and accessible blood supply. The youth are not only motivated and in an educational environment, but they also provide a conduit for spreading educational messages to their peers and to their parents, and providing the longer-term basis of the blood donors for Malawi. Following the development of the Pledge 25 in Zimbabwe and the further promotion of this concept by many other countries, as well as by WHO and the International Federation of Red Cross and Red Crescent Societies (IFRCRCS) as Club 25, the blood donor department, in conjunction with the Public Relations Department of the MBTS, launched a key strategy to attract and retain the youth as members of a Malawi Club 25. The goal of Club 25 is to provide up to 80% of all the present and future blood requirements in Malawi.

It is estimated that by the end of 2006 MBTS will provide 100% of all present blood requirements, from voluntary non-remunerated donors, to private and public sector hospitals. Current estimates suggest that much less than 20 000 units of whole blood were utilized annually before 2004. By the beginning of 2005 MBTS was providing 100% of blood requirements for all four central hospitals and more than 90% of the needs of private and district hospitals. In addition, blood is collected in multiple blood bag configurations so the MBTS is routinely producing five blood components, including paediatric packs. All blood products are fully tested and are stored and provided through a blood cold chain system. The process of donor recruitment is carried out by staff, which has been trained in all areas. Identification of donors and blood donations are carried out following approved SOPs. During donation, donors are counselled and monitored for adverse reactions.

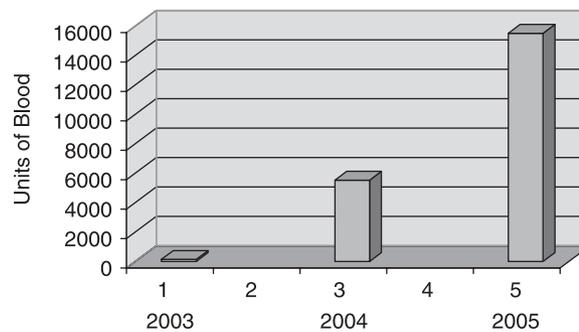


Fig. 1 Blood Collection 2003 to 2005

Club 25 members, especially those still at secondary and tertiary places of learning provide up to 80% of blood required. However, for many months of the calendar year they are on school breaks, in particular during the months of December through March. This period is marked by the onset of the summer rains and increase in malaria and the festive season during which time there is an increase in trauma due to road traffic accidents. The donor department also targets religious communities, workers in factories and in commerce and new recruits inducted into police and armed forces. The latter are provided with intensive educational material to try and ensure safe behaviour patterns once they pass through their training academies.

Figure 1 represents progress made from the inception of the project in April 2003 to December 2005.

Organization and management of Malawi blood programme

The Blood Donor Programme could not be effective or sustainable outside the environment of a well organized and managed Service. As in all successful organizations, management, accountability, good governance and good financing systems are key for an effective and sustainable blood programme. Essential ingredients of an effective Service are financial and administrative direction and leadership, which must be provided by a well-qualified, experienced and skilled person. A strong team providing medical leadership and direction as well as strong and experienced technical and nursing management skills supports these. Evidence exists to illustrate that these are essential components in an effectively organized and managed Service. There are 106 Malawian nationals as members of staff in the Service. This number comprises professional, administrative, medical, technical, nursing and other support staff at all levels. All senior staff members are required to be currently registered with the relevant national bodies, such as the Society of Chartered Accounts of Malawi [SOCAM], Medical, Technical and Nursing Councils.

Structure of MBTS Trust

The National Blood Programme has as its Executive Board (National Blood Authority) prominent and independent board members representing key stakeholders, including the National Health Authority (Ministry of Health). The Chairperson and Vice Chair are persons with a high level national reputation, able to address policy makers at the highest level when presenting matters relating to the National Blood Programme and the Service. The Board members are independent and non-remunerated trustees, responsible for ensuring the effective organization and management of the Service (MBTS), which is comprised of the following:

1 Finance and Administration Department headed by the Finance and Administration Director, a fully qualified and internationally registered Chartered Accountant [CPA Malawi] trained at Deloitte –who has extensive experience in management and cost accounting; an Administrator/Human Resource Officer [Accountant]; 5 Administration Assistants; 8 Secretaries and all support staff such as drivers, motorcycle riders, donor attendants, laboratory attendants, cleaners, laundry and others reporting through this structure.

2 Medical Officer/Director MBBS, is locally qualified at the University of Malawi College of Medicine – Medical Baccalaureate, which is recognized for further training in the United Kingdom, Australia, South Africa and many other well-recognized national universities. Presently undergoing in-country training by international experts and has attended a training course in India at Vellore Medical College, he is responsible for coordinating all medical, technical, public relation and blood donor department activities.

3 Blood Donor Department is lead by a Blood Donor Manager and has 2 Static Teams and 8 Mobile Teams; each team comprising of 5 persons: a State-Registered Nurse (team leader), Enrolled Nurse, Donor Assistant, Donor Attendant and vehicle driver. The department has cleaners, laundry staff and other support staff. Senior Nurses are trained in Counselling together with HIV/AIDS Counselling Service Staff in order to provide pre-donation information and post-donation counselling and referral to HIV Voluntary Counselling and Testing (VCT) Services.

4 Public Relations Officer (PRO) and 2 Public Relations Assistants; trained in Malawi at Shere World Institute of Management, Open University/Malawi College of Accountancy; University of Malawi and Malawi Institute of Management. Staff are registered with Cyprus Institute of Marketing with training by International Technical Assistant in Blood Donor Education Motivation Recruitment and Retention Strategies as well as attending Regional Training Workshops. PR Department provides a vital and integral link with the Blood Donor Department.

5 Laboratory Staff comprising Laboratory Manager [1], Chief Technologists [2], Senior Laboratory Technologists [5],

Laboratory Technicians [4], and Laboratory Assistants [7], who work in Immuno-haematology, Serology and Blood Component Production and are responsible for training, particularly staff in hospital blood banks throughout Malawi.

6 IT Department is staffed with a highly qualified IT Specialist trained locally and with experience in many other regional countries through working assignments with British Council and other international organizations. He has been responsible for overseeing the development of a Blood Donor Management System (BDMS) software programme with a local IT company. This programme is an important component of the donor management and recall system as well as the laboratory 'look-back' system for tracking serological markers and statistical analysis. The computer program is now operational and can be made available to other Services in the Region as it both user-friendly and an appropriate programme for regional Services. The IT Officer and his assistants are responsible for training secretarial staff, laboratory and nursing staff on data capture and retrieval systems.

7 Quality Management Department. A fully trained Medical laboratory Technologist heads the Quality Management Department with specialized training locally and internationally in India at Vellore Medical College. An External Quality Assessment Scheme (EQAS) is being implemented with the assistance of the National Reference Laboratories (NRL) in Melbourne Australia. This will lead to a national quality assessment scheme being introduced by MBTS in all the hospital blood banks.

Infrastructure (buildings as well as capital equipment)

At present MBTS is housed in two temporary premises one in Blantyre, and the other in Lilongwe. Blantyre is the administrative headquarters, which includes all training, centralized testing and quality management. Plans have been approved for the construction of three blood transfusion centres in the three largest cities. The award of contract for construction of the buildings has been made and construction is estimated to start in the last quarter of 2006. The cost of the three buildings [excluding furnishings and fittings] will be funded through the European Development Fund (EDF8) Financing Agreement. The land has been identified by the government and transferred on 99-year leasehold to the MBTS Trust. Most of the equipment, vehicles and office and IT requirements have been purchased through local tender processes by the MBTS. The three buildings are scheduled for completion at the end of 2007.

All blood is handled, packaged, stored and transported in an appropriate manner and at the correct storage temperature. Equipment used for the storage of blood and blood products has been selected utilizing WHO Blood Cold Chain specifications and is maintained under a service contract. Time

temperature records are maintained on all blood cold chain equipment.

Ministry of Health

The Government of Malawi, through the Ministry of Health (MoH), has made a commitment for the provision of a safe, adequate and accessible supply of blood and blood products and has followed World Health Resolution 28.72 to ensure that Malawi has a modern and effective National Blood Service that complies with all recognized quality standards. This Service will be able to ensure a safe, adequate and accessible supply of blood and blood products to all patients in need in all public sector hospitals and at an affordable service fee through medical insurance schemes to all private hospital patients. The commitment made by the National Health Authorities was reaffirmed with the signing of the Financing Agreement (FA) with the European Commission in 2000, the approval of a Constitution for the MBTS Trust and the enactment of a legal framework (Act) to ensure a sustainable Service for the long-term.

Conclusions

Technical and financial assistance for Malawi from the European Commission has resulted in the establishment of an effectively organized and managed Service under the leadership of a well-qualified, skilled, experienced and competent Finance and Administration Director and a qualified Medical Officer, who is currently undergoing training to develop the leadership and medical skills required to ensure the medical and technical direction of the Service. Training and capacity-building exercises for all staff has been conducted in many areas including basic orientation training, donor recruitment skills, basic donor handling, management systems quality management, donor counselling, customer care, technical skills in testing and processing blood components, quality management systems and in the promotion of the appropriate clinical use of blood.

Lessons learned:

1 The commitment and support of Government, through the National Health Authority (Ministry of Health) and as recommended by WHO, has been crucial both by appointing an independent National Blood Authority (MBTS Trust), with the establishment of a national Service (MBTS) and in identifying funding to establish a sustainable Service, in the form of initial capital funding, and for future recurrent expenditure.

2 Annual budget allocation, for the provision of services of blood and blood products, will be included into those of the Ministry of Health on an incremental basis year by year

to ensure that the provision of these Services to all public sector hospitals are sustainable in the future as external funding sources decrease and come to an end. Co-funding through national partnership programmes, and through international bilateral agreements for specific areas of the programme, will assist in ensuring recurrent and particularly capital replacement costs are met.

3 An experienced full-time Project Manager has proved essential in assisting the establishment of the Service, providing administrative and technical training, assisting in project administration and guidance and advocating at decision-making level for the Service. Progress without full-time project assistance, in any country project, would prove very difficult for local staff. This would also apply to any project where a high level of administrative and technical capability is required by the project framework or funding agency.

4 Compliance in following 'Guidelines' for procedures and practices expected by funding agencies are often very difficult and time consuming to implement. Funding agencies and organizations should re-examine areas where urgent needs for reagents, consumables and equipment need a more flexible and understanding approach to the procedures that are generically developed to encompass a wide range of projects, many of which are not nearly as complex, nor have the same degree of urgency as that of developing a national blood programme. Delays in processing payments, strict adherence to guidelines and a lack of flexibility, and of experience of country programme staff, can lead to serious delays in supply of essential materials, shortages, frustrations and problems in the development of a blood programme.

5 Experienced and skilled leadership and direction in the financial organizational and managerial areas of the Service are required by the Executive Board (National Blood Authority) to ensure the establishment successful and effective sustainable Service. This together with good medical direction and coordination of technical and donor departments will provide the basis for success in achieving a safe, adequate and accessible blood supply.

6 The blood donor department is an essential part of the organization. The perceived costs for funding requirements for reagents, consumables and equipment is more easily understood by policy-makers and funding agencies than are the costs for establishing and maintaining a blood donor department. Table 1 demonstrates, from actual budgetary estimates, that these costs are conservatively estimated at nearly 50% of the total annual service costs. This fact must be taken into account to ensure that the department has an adequate budget.

7 The work of the blood donor department is one of resolving one problem, only to be confronted with a new challenge. Staff need to be well trained, skilled and, especially, motivated in their work.

8 Most developing countries are faced with high prevalence of infectious markers in the potential blood donor population in

Table 1 Malawi blood transfusion service annual program estimates

Budget Line	Item	Blood Donor Department % Allocation
1000	FINANCE AND ADMINISTRATION	
1100	Management Unit – Staff	
	<i>SUB TOTAL</i>	44%
1200	Management Unit – Trust Meetings	
	<i>SUB TOTAL</i>	0%
1300	Administration/Running Costs	
	<i>SUB TOTAL</i>	58%
1400	Capital Expenditure	
	<i>SUB TOTAL</i>	59%
2000	BLOOD DONOR DEPARTMENT	
	<i>SUB TOTAL</i>	100%
3000	LABORATORY DEPARTMENT	
	<i>SUB TOTAL</i>	0%
4000	INFORMATION TECHNOLOGY	
	<i>SUB TOTAL</i>	44%
5000	BLOOD COLD CHAIN SYSTEM	
	<i>SUB TOTAL</i>	10%
6000	TRAINING, RESEARCH & CAPACITY BUILDING	
6030	Research	
	<i>SUB TOTAL</i>	50%
7000	MONITORING & EVALUATION	
7010	Monitoring and Evaluation costs	
	<i>SUB TOTAL</i>	50%
	OVERALL GRAND TOTAL PERCENTAGE OF BUDGET	48%

Notes

- 44% % Based on the salaries of staff directly involved in blood donor duties, i.e. nurses/support staff.
- 50% This rate has been applied where the only users are the blood donor and the laboratory.
- 100% The sole user is the blood donor department.
- 0% No involvement of the blood donor department.

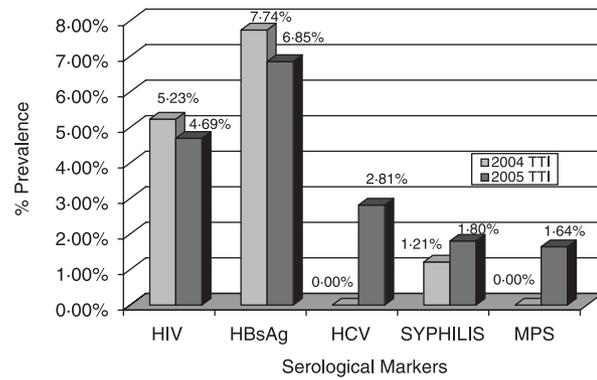


Fig. 2 Serological Testing in 2004 and 2005 (HCV and Malaria Testing started in 2005)

spite of public education and specific donor information and counselling strategies. HIV, Hepatitis B and C, and in some regions Chagas, reinforces the need to identify low risk populations and, more importantly, to develop effective strategies to retain safe blood donors as regular donors. The challenges facing developing countries are compounded by the high prevalence of infectious markers and the economic burden imposed by the need to dispose of a large proportion of the donated blood and the ethical responsibility to carry out post-donation counselling and follow up of seropositive blood donors. The prevalence of serological markers over a 1-year period is demonstrated in Fig. 2. These statistics will be used in the future to assess the effectiveness of the increasing proportion of repeat donors in reducing the prevalence of all transfusion transmitted infectious markers.

9 Finally, effective teamwork between all departments of a National Blood Programme is essential to ensure a successful Service.