



Blood, donors and dollars: Rethinking financial sustainability of safe blood services in Tanzania

Kahabi Ganka Isangula ^{*1,2}, Sharon Brownie ^{3,4}, Abela Mahimbo ², Solomon Kibona ⁵, Abdu Juma ⁶, Deus Mogela ⁶

ABSTRACT

Introduction

Collection, processing and distribution of safe blood in Tanzania occurs within a free-for-service context, that is, a collection from non-remunerated blood donors and distributing freely to the needy people through health facilities. The safe blood services in the country appear to be crippled with many challenges and cannot meet the demand for blood and its products. As such, a need for rethinking collection methods, financial models and possible mechanisms for donor remuneration is evident.

Methods

In this paper, we venture on multi-stakeholder meetings and ongoing discussions regarding the internal mechanisms of safe blood transfusion financing. The intent is to offer a perspective on the considerations for self-sustaining safe blood services in the country and the extent to which they may be implemented or not.

Results

We suggest that despite huge demand, the external donor dependent financing mechanisms for safe blood services in the country are ineffective. Therefore, we discuss two potential 'internal' financing mechanisms that have been identified in recent shareholders forums 1) introducing a blood processing fee accompanied by policy change to allow direct charging of either recipients or hospitals or 2) influencing the introduction of 'blood services' within the current insurance schemes.

Conclusion

We conclude that there is a need for constructing alternative financial mechanisms to sustain the demand of safe blood in the country. We discuss two cost recovery mechanisms, blood processing fee and insurance schemes; however, warning is noted that their implementation warrants structural adjustments, massive community sensitization and optimum stakeholder engagement to maximize acceptability within the country.

Keywords: Safe Blood, Donors, Transfusion, Health, Tanzania, Financing

GJMEDPH 2016; Vol. 5, issue 4

¹Triangle Solutions, Dar Es Salaam, Tanzania

²The University of New South Wales, Sydney, Australia

³Aga Khan University, Nairobi, Kenya

⁴Griffith University, Queensland University, Australia

⁵Management Sciences for Health, Dar Es Salaam, Tanzania

⁶The National Blood Transfusion Services, Dar Es Salaam, Tanzania

*Corresponding Author:

Kahabi Ganka Isangula
Triangle Solutions, Dar Es Salaam,
Tanzania

P.O. Box: 77959, Dar Es Salaam, Tanzania

kaisao79@yahoo.com

Conflict of Interest—none

Funding—none



INTRODUCTION

Safe blood supply is an important facet of health care services in any country. The benefits of safe blood services extend beyond saving lives of millions of mothers and others in need of blood products to the reduction in transfusion-transmissible infections such as HIV, Hepatitis B and C Viruses and syphilis among blood recipients.¹⁻⁶ For example, between 2004 and 2012, safe blood services was considered to contribute in reducing prevalence of transfusion related HIV from 7-percent to 1-percent, syphilis and Hepatitis C stands at less than 1-percent in Tanzania.⁶ It is for these reasons that a need for sustainable blood supply is indispensable.

Safe blood supply in Tanzania envisages three steps which are; collection of blood from voluntary non-enumerated donors, processing and distribution to hospitals who then transfuse all patients in need.⁶⁻⁸ The National Blood Transfusion Services (NBTS), an entity which deals with regulating, collection, processing and distribution of safe blood in the country⁷ has continued to embrace donor and public funding of services “to ensure easily accessible and adequate supply of safe and high quality blood...to all who need it irrespective of their economic or social status.” The entity, therefore handles the training of staff, blood collection, storage and transportation activities within the country. Furthermore, the agency is expected to provide guidance to all actors for the betterment of blood transfusion practices and ensure harmony and the use of standardized guidelines across institutions.⁷ While the agency has continued to achieve its administrative roles; challenges in financing safe blood in the country persist.

There is unmatched funding in comparison to the persistently increasing demand for safe blood in the country. NBTS reports indicate that donor funds decreased from 72-percent of total funds in 2006 to 49-percent in 2011.^{6,9} Interestingly, the annual demand for blood in 2013 was estimated to exceed 450,000 units per year, which required \$10,752,000, with NBTS only able to meet 30-percent of the need.^{6, 8, 9} This unfavorable trend has sparked off a discussion among stakeholders for diversifying financial resources. The decrease in ‘external’ funds

has propelled the stakeholders to eye on financial mechanisms from the ‘internal’ sources. As such, there have been efforts to advocate for diversified cost recovery mechanisms, particularly from the direct beneficiaries of blood transfusion.⁸ In this article, we present the potential internal sources that have been a hallmark of stakeholder discussions and key issues to consider in their implementation within the country.

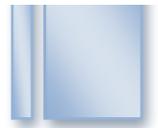
METHODS

This paper is descriptive in nature, venturing on the proceedings of the multi-stakeholders’ task force in Tanzania between 2014 and 2015 and the ongoing discussions afterwards. The goal of this task force was to review the current blood financing mechanisms in Tanzania and to guide the agency in discerning a way forward. The group, comprising of NBTS staffs, stakeholders and experts met three times within a year and brainstormed about potential internal financial mechanisms for blood services. Since then, the discussion on the topic is ongoing.

RESULTS

The group acknowledged that there is a huge demand for blood products within the country, however, the external donor dependent financing mechanisms for safe blood services are inadequate and unsustainable. The NBTS was established through an agreement between donor government and the Tanzania Government in 2004 in line with the World Health Assembly Resolution WHA 28.72 (1972); which urges all member states to develop comprehensive and well-coordinated blood transfusion services based on voluntary, non-remunerated blood donors.⁷ Since its establishment, the agency has mainly depended on external donors which has been greatly inconsistent with donors ‘tapering’ their funds (Table 1). As such, there is a need to consider internal sources for financing safe blood transfusion services to ensure sustainability.

The decreased funding means that Tanzania is unable to meet the blood transfusion services cost. For example, the NBTS suggests that the operating cost of suitable and safe blood in the country is about \$ 76.8 per unit in Tanzania entailing the cost incurred in the recruitment, collection, screening, testing, production, distribution and health education.⁹



However, the estimated annual demand for safe blood appears to exceed the agency supply capacity.^{6,8,9}

Table 1 Financing Trend for NBTS, 2006 – 2011

Year	Amount required (USD)	Amount received from MOHSW (USD)	Amount received from CDC and other donors (USD)	Total amount received (USD)	Variance (USD)
2006	5,500,000	0	3,945,885(72%)	3,954,885(72%)	1,554,115(28%)
2009	6,200,000	270,000(4%)	3,900,000(63%)	4,170,000(67%)	2,030,000(33%)
2010	6,300,000	560,000(9%)	4,000,000(64%)	4,560,000(72%)	1,740,000(28%)
2011	6,400,000	177,000(3%)	3,150,000(49%)	3,327,000(52%)	3,073,000(48%)

Source: National Blood Transfusion Services^{6,9}

DISCUSSION

Given the insufficiency of external financial donations (Table 1), the huge financial requirements for collection, processing and distribution; and inadequate cost recovery mechanisms, the country lacks the capacity to meet the demand. Therefore, the group unmasked two potential ‘internal’ blood financing mechanisms. Firstly, the introduction of blood processing fee and subsequent policy changes and influencing the introduction of ‘blood services’ within the current insurance schemes.

The introduction of blood processing fee as a way of cost recovery through direct charging blood recipients in terms of user fees or hospitals is consistent with Gerald and colleagues¹⁰ who suggest that cost recovery mechanisms can be done by

1. Spreading the cost of blood across user fees paid by all inpatients
2. Charging the recipient of blood directly and
3. Charging hospitals directly for blood used.

While we propose the introduction of blood processing fee in the country, we understand that this approach is not without its challenges. To start with, the NBTS’s focus and mission may need to undergo some changes. The agency’s mission categorizes blood and its products as ‘a public good’ because it is collected from voluntary, non-remunerated blood donors.^{6,9} Voluntary, non-remunerated donation is promoted by the World Health Organization.^{1, 11} Boyle and colleagues¹² also concur with WHO as their report indicates lower risk

of HIV transmission in volunteer donors than paid or family donors. Since blood is obtained ‘free’ making it a public good, charging for it will necessitate changing the agency’s mission and their strategic approaches.

Additionally, there are ethical concerns to consider regarding safe blood services and the charging of patients. Ethically, charging an individual patient may not be justifiable due to the fact that blood is not only freely donated but is also transfused to clinically ill patients, carefully selected and those in need for it.¹³ Furthermore, most of the blood recipients are mainly under-five children and pregnant women who are exempted under the current health service structure.^{6, 8, 9, 14} Embracing the fee exemption to this group will inevitably reduce the possible revenue base significantly. As such, policy change or charging the hospital may be a necessity. Lastly, is the practicability of introducing user fees in the country at a time when the political environment is fragile. We revisited the experiences of Malawi and other countries and noted that in many countries, only a limited portion of the cost of providing safe blood can realistically be raised from users. Therefore, cost recovery from user fees even in policy change, maybe challenging to implement in the country.

We therefore suggest that, if NBTS were to conceive the user fee as an option, any attempt to implement the proposed strategies in the country would require the following

1. Large-scale policy change to create friendly



political and social environment for charging for blood,

2. Seeking approval from the 'public' who are 'volunteers' and 'not remunerated' for the 'products' they donate

3. Intra-country advocacy for treating blood as an essential product.

After a long debate and global advocacy^{2,3} the recent WHO essential medicine list appears to include fresh-frozen plasma, platelets, red blood cells and whole blood as essential medicines.¹¹ As an essential medicine, the agency may then need to charge user fees or hospitals and allow users or hospitals to purchase blood from the agency directly. However, a massive advocacy campaign within the country might be integral in changing the pro-public ideologies of not only the political system, but also the health facilities and citizens towards blood transfusion services in the country.

We further suggest that, in building a case for policy change to allow charging for blood services, there are several considerations. First, in view of Gerald and colleagues¹⁰ and the current funding trends at NBTS, the user fee should be portrayed as the cost of the whole process making the blood safe or what we call 'blood processing fee' and not the cost of blood per se. Secondly, if blood processing fee is considered, it can be charged to patients in private hospitals whose economic wellbeing is considered higher than those in public hospitals, possibly at a price higher than the actual blood processing fee. However, if safe blood users in public hospitals are to be charged, it must be at a price that is much lower than the actual blood processing fee. Thirdly, the agency needs to institutionalize remedial mechanisms to prevent problems associated with charging blood processing fee. Foremost, ensuring quick access of safe blood to patients needing transfusion who have no alternatives in their treatment. This is because, patients' blood transfusion need is prescribed by physicians in response to acute illness such as severe bleeding and thus the service is not demanded electively by the patient.¹⁵ Similarly, since blood processing fees may result in the irrational use of blood because someone is paying for it, the agency need to incentivize

prescribers to not prescribe irrationally. Lastly, since there is no direct relationship between the patients in the hospital (whether inpatient or blood recipients) and NBTS, the revenues from the user fees are not guaranteed to flow back to the NBTS. As such, institutionalization of user fees means that NBTS must rely on an intermediary, the hospital, to collect the fees related to transfusion services¹⁵ and channel them back to NBTS. Based on negative experiences with 'cost sharing' collections and channeling in other services, it is not guaranteed that the hospitals would channel the whole proportion of the collected amount. Therefore, the agency needs to establish effective financial channeling mechanisms from hospitals.

The second cost recovery mechanism is by influencing introducing 'blood services' within the current insurance schemes. Hensher & Jefferys¹⁵ report that 43-percent of surveyed sub Saharan countries substantially funds blood transfusion (BTS) services via patient's charges largely originating from health insurance funds. In Tanzania, for example, NBTS data suggest that the insurance agencies such as; Community Health Funds (CHF), National Health Insurance Funds and other private insurance agencies have about 12.2-percent of blood users, forming a basis for cost-recovery.^{6,9} However, the majority of blood users are under-five children (50-percent) and women with pregnancy related complications (30-percent), making a total of 80-percent of the users^{6,8,9} who are mostly uninsured and are exempted from medical charges. Thus, relying on insurance may only result into recovering a small percent of the cost of producing safe blood. However, compared to other approaches discussed, the insurance may be an easier and implementable cost-recovery mechanism which requires minimal policy changes.

Cost recovery through insurance is part of the corporate social responsibility (CSR) in which the company embraces the actions to positively impact the environment, consumers, employees, communities, stakeholders and all other members of the public sphere. Although pregnant women, may be directly impacted by actions of different companies, the majority of blood users (under-five



children) are often not directly impacted by companies. Furthermore, the majority of the most at risk individuals that may require urgent blood transfusion for example in Road Traffic Accidents e.g. motorcycle or motor vehicle drivers¹⁶ are uninsured. Therefore, NBTS must build a strong case for companies to ensure they understand the link between their business agendas and safe blood beneficiaries. This can be achieved by firstly, increasing awareness of the need for safe blood among insurance members and how safe blood

contributes to a reduction in deaths compared to non-transfusion; as well as how it contributes to a reduction in transfusion related diseases and its cost effectiveness. Secondly, insisting on the idea of 'give and take' in which the agency clearly elaborates how the insurance companies may in turn benefit under CSR, endeavouring a 'win-win' situation. In view of this, we are suggesting simple mathematical equations that may be used to establish the cost effectiveness of blood transfusion services:

Table 2 Mathematical Equations used to Establish the Cost Effectiveness of Blood Transfusion Services

<i># of lives saved by blood transfusion (number of deaths prevented)</i>	<i>= [# of patients in need of blood transfusion MINUS (# of patients dying after transfusion PLUS # of patients who needs but dying without receiving transfusion)]</i>
<i>The proportion of HIV infection prevented through blood screening (HIV Infections if blood was transfused without screening)</i>	<i>= [# of HIV positive blood samples detected through screening / # of blood samples collected (donated)]</i>

These indicators may be compared across time trajectory (month or years)

The second indicator can be used also for syphilis, Hepatitis B and C.

Thirdly, establishing friendly mechanisms for cost recovery through insurance, for example, a pre-determined percentage of the total amount of insurance claims invoiced by various hospitals in other country. This may aim to recover the full or partial amount invested by NBTS in collection, processing and distribution of safe blood in all

hospitals country wide. To obtain a percentage of operational cost recovery through insurance, we are proposing the following formula with the assumption that the insurance company meets the cost for all patients who received blood transfusion regardless of their insurance package through cross subsidization:

Table 3 Mathematical Equations for Cost Recovery through Insurance

<i>Desired % recovery</i>	<i>= 100 X [(Total operational cost of units supplied by NBTS to the hospital) / (Total insurance claims submitted by the hospital)]</i>
<i>Whereby,</i>	
<i>Total operational cost</i>	<i>= [# of units distributed to the hospital x Unit cost (76.18 USD)]</i>
<i>Total insurance claims</i>	<i>= The total amount invoiced by the hospital to the insurance agency within a specific claim period</i>

The advantages of this model of payment are considered to be;



1. Recovering the amount equivalent to the actual units of blood supplied to the hospital by NBTS
 2. Avoiding a flat rate, which may unreasonably overburden the hospitals which didn't receive blood within the claim period
 3. Removing over reliance on intermediary hospital to collect insurance payments for NBTS as money will be deposited directly and on time to the NBTS by insurance companies
1. An incentive for NBTS to collect and distribute more blood units;
 2. Reducing administration cost to NBTS
 3. Creating a win-win situation between NBTS and insurance companies which may use this as an opportunity to increase enrolments of members particularly those at risk.

However, there are two considerations for cost recovery through insurance. Foremost, if the recovered amount comes from the hospitals' insurance claim payments, their buy-in and consent for deductions are necessary. This consent may be expressed in their contracts with the insurance companies which shall channel the agreed deductions to NBTS directly, therefore removing the need for a hospital as an intermediary. This will then be left up to the hospitals to figure out how to recover the percentage deducted, risking the burdening of the patients if unregulated. The second consideration is that, if the equivalent percentage comes directly from the insurance company in terms of a percentage of their profits generated, likewise, buy-in from insurance companies is a prerequisite.

In conclusion, there is a huge demand for safe blood in the country, however, the existing 'external' funding-dependent strategy of collecting blood from voluntary non-remunerated blood donors are insufficient to meet the need. Therefore, there is a need to identify alternative 'internal' financial mechanisms to sustain the supply of safe blood in the country. It is evident that there are several cost recovery mechanisms that can be applied in Tanzania context, such as blood processing fee (user fee) and blood services within insurance schemes. However, in each case, policy, ethical and moral issues are the major barriers. As such, we recommend a continued search for suitable options, however, if the outlined

strategies are considered for implementation, policy change, structural adjustments, massive community sensitization and optimum stakeholder engagement is warranted to maximize their acceptability within the country.

ACKNOWLEDGEMENT

The authors wish to acknowledge the support of the National Blood Transfusion Services for hosting the initial stakeholder discussions.

REFERENCES

1. World Health Organization. World Blood Donor Day 2016: Blood connects us all. Retrieved from <http://www.who.int/campaigns/world-blood-donor-day/2016/en/>
2. Ala F, Allain J-P, Bates I, Boukef K, Boulton F, Brandful J, et al. External Financial Aid to Blood Transfusion Services in Sub-Saharan Africa: A Need for Reflection. *PLoS Med.* 2012; 9(9): e1001309. doi:10.1371/journal.pmed.1001309
3. Klein HG. Should blood be an essential medicine? *N Engl J Med.* 2013;368(3):199-201. doi: 10.1056/NEJMp1213134 National Blood Transfusion Services (2013a).
4. Chevalier MS, Kuehnert M, Basavaraju SV, Bjork A, Pitman JP. Progress Toward Strengthening National Blood Transfusion Services — 14 Countries, 2011–2014. *MMWR Morb Mortal Wkly Rep* 2016;65place_Holder_For_Early_Release:115–119. DOI: <http://dx.doi.org/10.15585/mmwr.mm6505a4>
5. Osaro E, Charles AT. The challenges of meeting the blood transfusion requirements in Sub-Saharan Africa: the need for the development of alternatives to allogenic blood. *Journal of blood medicine.* 2011;2:7-21. doi:10.2147/JBM.S17194.
6. National Blood Transfusion Services. Presentation: National Blood Transfusion Service Regional Exchange and Learning Visit. In Evidence for Action National Blood Transfusion Service Regional Exchange and Learning Visit: September 16-20 2013. Dar es Salaam, Tanzania.
7. Ministry of Health and Social Welfare. The Tanzania Blood Transfusion Service-Policy Guidelines. 2005. [http://ihi.eprints.org/817/1/MoHSW.pdf_\(46\).pdf](http://ihi.eprints.org/817/1/MoHSW.pdf_(46).pdf)
8. Mkama A. Tanzania: Make Blood Donation Part of Your Life. 26-06 2015. <http://allafrica.com/stories/201506260409.html>



9. National Blood Transfusion Services. Presentation: Status of Implementation of Quality Management System. In Evidence for Action National Blood Transfusion Service Regional Exchange and Learning Visit, September 16-20 2013. Dar es Salaam, Tanzania.
10. Gerald C, Sondag-Thull D, Watson-Williams EJ, Fransen L. Safe Blood in developing countries: Principles and Organization. Brussels: European Commission; 1995.
11. World Health Organization. Model List of Essential Medicines. 19th List. April 2015. Available at http://www.who.int/medicines/publications/essential_medicines/en/
12. Boyle Torrey B, Mulligan M, Way P. Blood donors and AIDS in Africa: the gift relationship revisited. Washington, DC: Center for International Research. US Bureau of the Census; 1990.
13. Chandrashekar S, & Kantharaj A. Legal and ethical issues in safe blood transfusion. Indian Journal of Anaesthesia. 2014;58(5), 558–564. <http://doi.org/10.4103/0019-5049.144654>
14. Ministry of Health and Social Welfare. The National Road Map Strategic Plan To Accelerate Reduction of Maternal, Newborn and Child Deaths in Tanzania. 2008. Available at <http://www.who.int/pmnch/countries/tanzaniamapstrategic.pdf>
15. Hensher & Jefferys. Financing Blood transfusion services in sub-Saharan Africa: a role of user fees?. Health Policy and Planning. 2000; 15(3):287-295. <http://heapol.oxfordjournals.org/content/15/3/287.full.pdf>
16. Boniface R, Museru L, Kiloloma O, Munthali V. Factors associated with road traffic injuries in Tanzania. The Pan African Medical Journal. 2016;23:46.