

Sustainable long-term health financing for national safe blood systems

Learnings from a three-tier technical assistance approach in Malawi, Liberia, and Rwanda

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Background

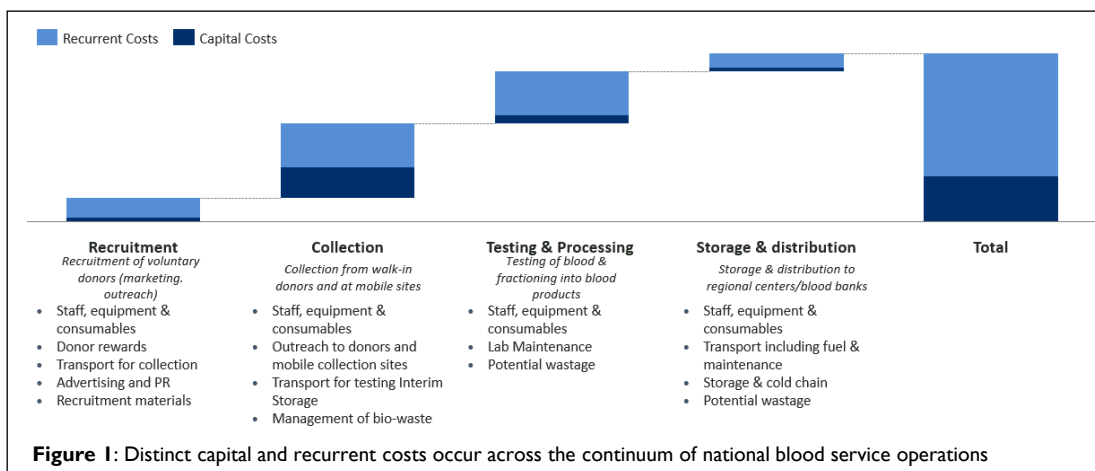
Blood and blood products—such as, red blood cells, platelets, and plasma—are critical lifesaving commodities needed to treat severe postpartum hemorrhage (the leading cause of maternal mortality), mitigate severe cases of widespread childhood anemia from causes such as malaria and sickle cell disease, and provide vital care for other adverse health events that are on the rise, e.g., cancers, road accidents, and severe dengue fever. National safe blood systems in countries are tasked with collecting blood from voluntary donors, ensuring it is tested using the best possible methods and ascertained to be free of transfusion-transmissible infections (TTIs such as HIV, hepatitis, and syphilis), and distributing it to health facilities to be transfused as whole blood and/or fractionated sub-components. But blood systems—usually spearheaded by a national blood transfusions service (NBTS)—face serious challenges in many low- and middle-income countries (LMICs) that cause them to underperform and underprovide.

Box A: Key messages

- National blood transfusion services are often critically dependent on receding donor funding. Withdrawal of donor funding may cause a sharp reduction in operations and potential shortages of essential blood supplies.
- The USAID Blood Systems Strengthening Activity implemented a 3-tier approach to stimulating sustainable long-term blood system financing, with promising results and learnings.
- Moving forward, blood services may integrate with wider health systems, pursue efficiencies, and experiment with options for revenue generation.

Critically, many NBTSs depend significantly on donor funding to sustain core operations and obtain key commodities. Historically, such support has mainly come from global HIV and malaria donors interested in infection prevention. For example, the NBTSs in Rwanda and Malawi are funded by the Global Fund (GF) to the tune of 60-65% and 15-20% of total operational cost, respectively. GF support is especially critical for blood donor recruitment and management as well as laboratory equipment, supplies, and operations for blood testing and preparation of components (see figure 1 for a summary of key NBTS costs). But such funding is now increasingly receding: CDC/PEPFAR have largely pulled out from supporting NBTS operations in countries while GF

support is tapering off and/or being renewed on short-term basis. There is a danger of blood services facing sudden withdrawal of financial and in-kind donor



support and having to scale back or limit operations, potentially leading to catastrophic shortages of essential blood supplies in service delivery settings.

Goal

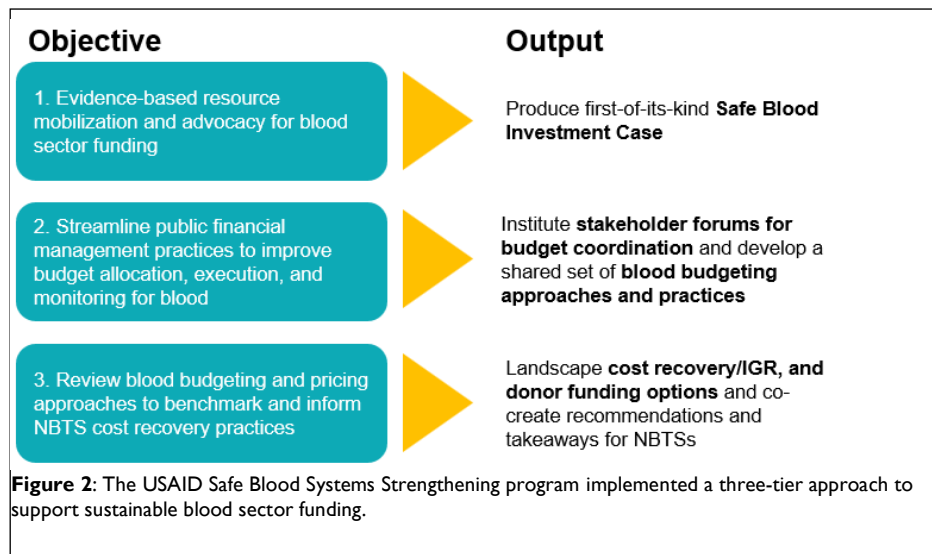
To tackle these and other challenges, the Office of Maternal and Child Health and Nutrition (MCHN) and the Center for Innovation and Impact (CII) within the Bureau for Global Health at USAID supported the Health Systems Strengthening Accelerator (HSS Accelerator) initiative and partner program Market Access & Innovative Finance to develop and implement a program for strengthening national Safe Blood systems in Liberia, Malawi, and Rwanda. The partners utilized the USAID Safe Blood Starter Kit tool (now released as the [WHO Blood System Self-Assessment Tool](#)) to analyse blood system challenges, identifying lack of sustainable and adequate financing among other major barriers to establishing well-functioning national blood systems. The USAID Safe Blood Systems Strengthening activity then proceeded to co-develop solutions for addressing priority challenges in each country and implemented short-term technical assistance programs together with NBTs.

This brief describes how these NBTs have demonstrated a viable approach to enhancing health system responsiveness to the sustainable financing needs of national safe blood systems—strengthening cross-sectoral cooperation across health programs and actors and among health and financing authorities and leveraging market-based strategies to viably deliver essential public health services. Specifically, technical assistance in the three countries explored how more health system resources can be raised for sustainable NBT operations, how blood system financing needs can be effectively integrated into routine health sector planning and budgeting processes, and how NBTs can generate own funding from other internal and external sources to complement health system funds in order to invest in key capacities and expand their health system footprint.

Approach

Under the USAID Safe Blood Systems Strengthening activity, NBTs in Malawi and Liberia have implemented a three-tier approach to mobilizing domestic and catalytic donor funding for sustainable blood system financing (shown in figure 2). Tier 1 involves developing evidence-based investment cases to demonstrate the cost and benefits of high-quality blood systems, resulting in awareness-raising about blood services and blood system needs among key decisionmakers and advocacy to integrate blood sector priorities into associated health areas and mobilize domestic resources. Tier 2 involves targeted follow-up within routine resource allocation processes—such as annual health sector budgeting and donor priority-setting exercises—to optimize the allotment, execution, and monitoring of enhanced funding for the blood system against clear outputs and performance goals, such as production and distribution targets. Finally, Tier 3 involves more tactical actions to improve revenue generation capabilities internally at NBTs, e.g., leveraging evidence-based best practices for “cost recovery” strategies in blood supply, optimizing patient blood management to tap efficiencies, and sourcing complementary funding from testing services, plasma sales, non-traditional global health funders, among other avenues.

This three-tier health financing approach for the blood sector provides an instructive model for navigating the complexity of diverse health system actors, policies and institutional frameworks for overlapping programs and priorities, and of multifaceted and competitive resource allocation decisions to finance national blood systems.



Activities and results

Below, each level of intervention is explained briefly, followed by immediate results and emerging recommendations:

Developing an investment case to mobilize resources for national safe blood systems

The USAID Safe Blood activity team worked with the Malawi Blood Transfusion Service (MBTS) to develop a novel methodology to conduct an investment case for safe blood access. The aim of this case was to provide a quantitative indication of the need and impact of safe blood access in Malawi and facilitate the unlocking of sustainable funding from domestic stakeholders and international donors. This was a first-of-its-kind effort to design an investment case for safe blood access, and to gauge the direct, numerical impact of safe blood access on human life across health sectors in Malawi. To create a factual and comprehensible argument for the need, impact and cost to provide safe blood, the investment case comprised of five main components: assessment of blood demand, analysis of direct and indirect health impacts of safe blood access, breakdown of recurrent and capital costs for a well-functioning safe blood system, review of funding availability and needs, and a cost-benefit analysis of requisite safe blood investments. Figure 3 below shows the investment case methodology, co-developed and implemented with the MBTS in mid-2023, with data collection from published analyses, MBTS, health facilities and health system stakeholders, and proxy (regional and modeled) sources.

The final investment case projected scenarios for the increase in total blood demand in Malawi by 2030—utilizing rates of historic growth in demand, rate of population growth, and WHO benchmarks for blood need—and highlighted factors that may affect blood demand, such as improvements in maternal health management, better

malaria protection among high-risk populations, and greater demand for health services in “blood intensive” sectors, among others. It also assessed the health impact of safe blood in terms of preventable mortality and morbidity, estimating that an additional 6,100-7,400 patients could survive annually and a further 30,000-43,000 patients could benefit from blood transfusions if sufficient safe blood stocks were available, and zero lives were lost due to lack of access to blood. Finally, it reviewed the financial costs and revenues for scaling up blood supply to meet the national needs—making recommendations and highlighting factors for generating revenue and tapping efficiencies by, for example, producing more fractionated blood components and promoting rational use of blood in hospitals. Overall, the Malawi Safe Blood Investment Case established a novel methodology for developing an evidence-based understanding of blood needs and impacts as well as advocacy-related messaging on health system funding requirements and the associated returns on investment (ROI).

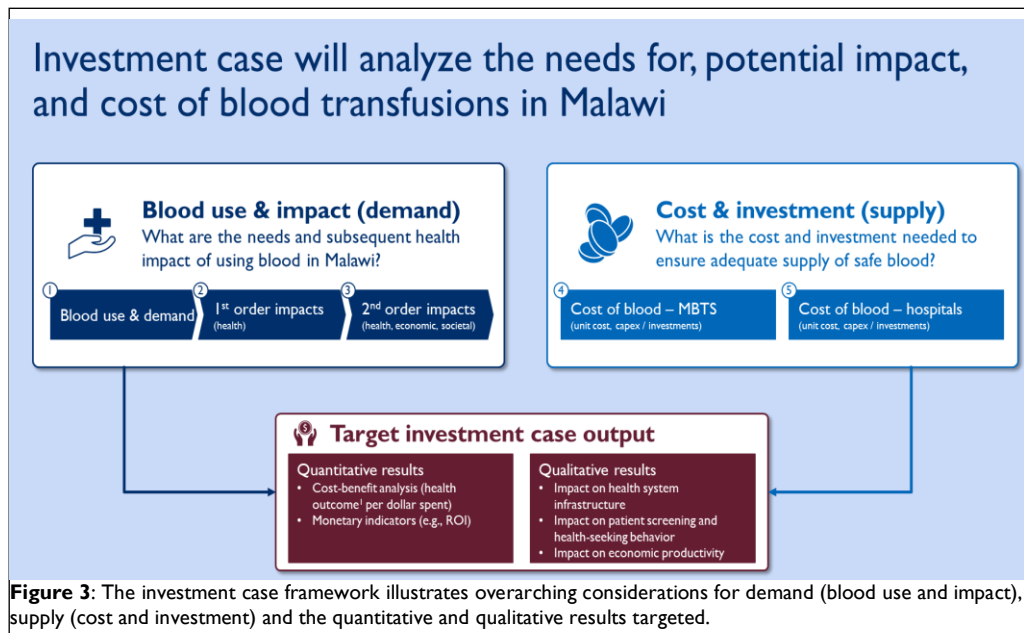


Figure 3: The investment case framework illustrates overarching considerations for demand (blood use and impact), supply (cost and investment) and the quantitative and qualitative results targeted.

Streamlining public financial management practices for sustainable blood system funding

For health financing for national blood systems to be adequate, sustainable, and efficient, it must flow through routine health sector planning and budgeting processes to fund the operations of NBTs and hospitals where blood transfusion services are delivered. But NBTs are often unintegrated in these routine functions because of (1) a legacy of donor-led funding for routine operations and procurement of supplies, (2) lack of integration into the planning and financing of key health sector programs—like maternal and child health and surgical care—that

are key “customers” of NBTSS¹, and (3) the typically low priority accorded in many LMICs to centralized, nation-wide systems for the supply and transfusion of safe blood and blood products. Hence, even as evidence-based investment cases may draw policymakers’ attention and greater health system resources for blood services, NBTSS must closely engage in routine health sector planning and budgeting processes to ensure adequate funds are allocated in line with strategic priorities, released and utilized in a timely manner, and properly monitored and accounted for. In Malawi, where the MBTS operates as a vendor providing blood and blood products to public hospitals, the HSS Accelerator program provided close technical assistance to: (1) facilitate an intensive stakeholder engagement process to discuss health sector budgeting challenges that hamper smooth flow of funds allocated for blood to the MBTS, and (2) co-develop and institutionalize forums and procedures to integrate “blood budgeting” into annual health sector budget planning, allocation, execution, and monitoring steps.

The MBTS and the HSS Accelerator started by convening and co-facilitating a multi-stakeholder taskforce to enable closer coordination on budgeting and resource flow among the various (autonomous) actors in Malawi’s wider health and blood systems. The partners aimed to institutionalize adequate allocation of funding based on estimated blood needs, protecting budgeted funding for blood at the hospital level, and ensuring timely release of payments to the MBTS against the supply of blood and blood products. The multi-stakeholder taskforce included representatives from the MBTS, Ministry of Health (MOH), Ministry of Finance, the four central hospitals that monopolize most of MBTS’s supply and receive most of the public sector budget for blood-related payments to the MBTS, and the local governments and faith-based providers that deliver blood transfusion services in district-level facilities, among others. Together, the “blood budget taskforce” implemented the following steps to integrate and streamline health and blood system budgeting processes:

Defining and quantifying the budget allocation needed to pay for the national blood demand: First, the taskforce agreed upon the necessary overall budget needed to pay for blood supplies to meet the national blood demand. This estimation was performed using an estimation of blood needs developed by the MBTS with assistance from the Accelerator and incorporated associated cost projections from the MBTS finance team. The MBTS led the process by convening high-level stakeholders to establish the goals, purpose, and objectives of the taskforce, presenting the estimated blood needs and associated budget required for the fiscal year, and organizing a team to advance the work of the taskforce into developing line-item based proposed allocations.

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Providing guidance on blood-related budget ceiling amounts and line-items for relevant entities: The taskforce then assisted the MOH with developing guidance for ministries, departments, and agencies (MDAs) on “ceiling amounts” for blood-related line-item allocations, which would be protected from being used for other priorities like making payments for drugs. This process ensured budget holders like central hospitals and local governments adhered to this guidance and the relevant offices in the ministries of health and finance were engaged and positioned to ensure sufficient funds were disbursed to match allocations.

Jointly monitoring adherence to budget allocation and execution plans: The MBTS and other stakeholders in the taskforce collaboratively monitored adherence to the guidance on blood budget allocations by payers after funding envelopes were communicated by the Ministry of Finance in March-April 2024. The taskforce also monitored adherence in budget execution (the release and drawdown of the allocated budget for blood supplies),



Figure 4: Participants from the Malawi Blood Transfusion Service, ministries of Health and Local Government, the Global Fund, WHO, Red Cross, and other stakeholder institutions in a workshop to co-develop planning and budgeting modalities for streamlined health financing for Malawi’s national blood system. Lilongwe, December 2023
Photo Credit: Dr. Yamikani R. Chimwaza, USAID HSS Accelerator

¹ Often because NBTSS may be set up as non-profit trust arms of ministries of health (“parastatal organizations”), which affords them the flexibility and autonomy to organize and scale up operations but may also place them at arm’s length to routine health sector functions, such as for planning and budgeting, data collection, procurement of supplies, and training of health workers.

which was ongoing when the Accelerator project concluded in mid-2024. However, the taskforce had been successfully institutionalized by then using MBTS’s own resources to independently drive such engagement.

As a result, public financial management practices for health are considerably streamlined in relation to blood and blood products: health and blood system stakeholders in Malawi can now leverage an institutionalized forum for routine engagement and coordination, have co-developed a “Blood Budget Manuel” to structure the blood system budget process, and are already seeing improvements in allocation and reduction in payments arrears to the MBTS, with 2 out of 4 central hospitals increasing 2024 allocation for payments to MBTS.

Enhancing options and capabilities to raise internally generated revenue (IGR) at NBTSS

In Liberia, Malawi, Rwanda and beyond, NBTSS may also explore options for raising complementary funding as “internally generated revenue.” These funds may be sourced from (1) charging for units of blood and blood products supplied to public and private health facilities on commercial “cost recovery” basis, (2) sale or export of (TTI-positive) blood samples for research purposes and of blood plasma for developing plasma-derived medicinal products, subject to appropriate national regulations for trade in blood and other products of human origin, and (3) proceeds from providing commercial services such as sale of testing reagents, lab commodities, blood bank office supplies, and blood bags to private facilities, or from performing regulatory duties such as oversight of private blood banks that may result in revenues from fines imposed and/or charges billed for training and supportive supervision services. Finally, where national blood systems are especially nascent, such as in Liberia, NBTSS may also explore non-traditional (for blood systems) global health donors for funding and capacity building support to grow their operations and pursue long term sustainability.

NBTSS practice a wide range of such IGR practices in LMICs. The USAID Safe Blood Systems Strengthening activity explored and profiled these options for the NBTSS in Malawi, Rwanda, and Liberia—helping them fine-tune existing mechanisms (such as the use of cost recovery in Malawi) based on learnings and best practices from other settings, explore new potentially viable options (e.g., prospects and requirements for exporting surplus blood plasma from Rwanda to regional fractionation companies), and connect with new global health donors for investment in growing NBTSS operations and pursuing strategic growth priorities. Specifically, the HSS Accelerator engaged NBTSS in Liberia, Malawi, and Rwanda with the following types of technical assistance for sourcing sustainable (complementary²) funding for their operations:

Landscape analysis of cost recovery and other IGR options: In Malawi, where the MBTS intends to significantly scale up cost recovery operations, the HSS Accelerator program produced a detailed review of best practices in using cost recovery approaches to fund national blood transfusion services. The analysis drew on the experience of regional peers such as NBTSS in South Africa, Namibia, Zimbabwe, Nigeria, and Cote d’Ivoire, as well as those in Asian and Latin American countries, e.g., Nepal and Paraguay. The review profiled variation in cost recovery practices, synthesized findings and takeaways on developing a strategic approach to using cost recovery and on costing and pricing product units and effectively generating revenues, and co-developed recommendations for implementation by the MBTS. The MBTS has already implemented or started to roll out 5 out of 8 key recommendations, begun to enact mitigation approaches for 3 out of 6 key challenges, and



Figure 5: Participants from the NBTSS of Malawi, Liberia, Rwanda, and Namibia and from USAID, HSS Accelerator, and the Africa Society for Blood Transfusion in Windhoek, Namibia, for a cross-country peer learning event. April 2024. Photo Credit: Julie Wieland, USAID HSS Accelerator

² It is useful to note that some blood services in the region—such as those in Namibia and South Africa—rely fully on commercial cost recovery for funding their operations. But we treat IGR options mainly as “complementary” funding sources in Liberia, Malawi, and Rwanda given the lower income levels, smaller sizes of NBTSS, and the need for continued investment by governments and their partners in the reach and capacity of national blood systems in these countries.

developed plans to implement key policy measures (e.g., for sourcing better costing data, tapping and instituting forums for essential stakeholder engagement, and tapping operational efficiencies).

Cross-country study tour to learn from best practices: The HSS Accelerator program also implemented a cross-country learning sub-activity to ensure Liberia, Malawi, and Rwanda could learn both from each other and jointly about shared topics and approaches for blood systems strengthening. Developing complementary IGR funding options was a part of such joint learning. The Accelerator hosted a 3-day study tour for the three blood services to Namibia, where, in addition to other topics, they also learned about the cost recovery practices and plasma export operations of the Namibia Blood Transfusion Service, discussed other financing options and reviewed the global landscape analysis of cost recovery approaches, and co-developed strategies and roadmaps to use in their respective countries.

Support with sourcing funding from non-traditional donors: As noted, NBTs have typically sourced funding from HIV and malaria funders interested in infection prevention to fund and grow their operations. As this funding recedes, NBTs in more nascent blood systems may still need to replace it with other sources of external funding so as to continue operating. Funders of other key programs that are important customers of NBTs—e.g., maternal health funders interested in preventing mortality from postpartum hemorrhage—have a vested interest in ensuring ready access to safe and effective blood transfusion services and may be receptive to advocacy and interest in more integrated programming by NBTs. To that end, in Liberia, the HSS Accelerator supported the MOH National Blood Safety Program (NBSP) with mobilizing additional resources through the World Bank/Global Financing Facility for Women, Children and Adolescents (GFF) and the USAID Liberia Mission—bringing the NBSP’s operating budget from \$50k in 2022 to over \$500k in 2024. This was a successful example of technical capacity strengthening on proposal writing, donor relationship building, and development of a National Implementation Plan laying out priority funding areas. The NBSP is comprised mostly of technical medical experts, not politicians or grant writers. Thus, such technical capacity strengthening was essential to secure such a large budget increase, though more work is needed to continue to succeed in effectively utilizing existing funds and mobilizing additional funds.

Recommendations

Key recommendations to promote sustainable blood system financing from the three-tier approach implemented under the USAID Safe Blood Systems Strengthening activity include the following:

- **Blood services in LMICs should pursue integration with the wider health systems** in their specific country contexts. This would mean becoming part of routine health system functions like resource planning and budgeting, procurement of supplies such as consumables and lab commodities, and periodic health system strategic planning processes. Similarly, NBTs, as typical blood system stewards, should be “present at the table” for critical conversations with internal and external actors for health system investments and resource mobilization. The legacy model of operating in isolation from the wider health systems as parastatal agencies, obscure divisions within diagnostics departments, or as special programs of ministries of health is no longer conducive to expanding the health system footprint of NBTs and establishing blood system operations on a firm, long-term footing. This will take deliberate and intensive efforts to shake off a legacy of health system disjunction in many LMICs, where blood services need considerable investment to expand blood collection from “voluntary non-remunerated blood donors,” implement sophisticated testing approaches to ensure safety, and continuously train human resources within NBTs and hospitals.

Box B: In Liberia, Malawi, and Rwanda, the USAID Safe Blood Systems Strengthening program has impacted integrated mobilization and deployment of health sector resources for national safe blood systems:

- **Malawi has developed a first-ever national safe blood investment case**, which can be leveraged for evidence-based advocacy to systematically raise domestic budget allocations and replicated in other countries such as Rwanda and Ghana to urgently focus policymakers’ attention on blood sector needs.
- **Liberia, Malawi, and Rwanda have all set up technical working groups to enhance alignment and jointness in programming between the blood sector and priority health areas**, such as MNCH, HIV, malaria, hepatitis, and hospital-based services (e.g., trauma, cancer, and surgical care). These can be sustained and institutionalized to mitigate the gaps and overlaps in operations relating to, for instance, health worker training, community engagement, diagnostic testing, disease surveillance and reporting of transmissible infections, etc.

- **NBTSs will benefit from pursuing efficiency in blood system operations to achieve long-term sustainability.** For example, increasing the supply of fractionated blood components—a fiscally beneficial approach, as well as useful in treating certain health conditions where blood sub-components are more useful than whole blood—has proved effective in many blood system contexts, such as in Namibia and Rwanda. However, it requires significant capital expenditure and personnel structures—such as skilled laboratory workforce and physicians trained in guidelines to identify and request blood components where appropriate—that are not available in many LMICs at present. Greater investments in NBTS capacity, proposed through the investment cases, would create the necessary conditions for fractionating to be possible in the future. Similarly, on the demand side, training physicians to promote more rational use of blood (especially in private facilities where there is greater anecdotal evidence of overordering) and minimizing expiries and wastage of blood stocks in health facilities will reduce pressure to increase supplies and lower costs. Supply-side factors to successfully use cost recovery include tapping economies of scale so costs increase at a lower rate than does production.
- **NBTS have the opportunity to be enterprising with generating internal revenues.** In settings where cost recovery approaches are in use—such as Malawi—NBTSs may pursue and design evidence-informed cost recovery strategies to ensure they can recover some or all operational costs, build “rainy day” reserves, and enhance available resources in times of high demand (e.g., malaria season). NBTSs may also help regulate the often ubiquitous private blood banking sector—ensuring blood collection, handling, and testing guidelines are followed, health workers are trained, and consistent supplies of quality-assured consumables, commodities, and equipment are channeled to these blood banks for use. NBTSs are uniquely positioned to step into this regulatory vacuum, which may generate revenues in the forms of fines, licensing fees, training charges, and proceeds from commodity sales. This will also help to enhance private sector engagement under public sector stewardship mechanisms in LMICs.
- **Finally, obtaining better data for advocacy and planning underlies all strategies for promoting sustainable blood system financing.** NBTSs need data on the consumption of blood by health conditions, outcomes of blood transfusion services and any adverse events like transfusion reactions and TTIs, seasonality and variation in blood demand, expiries and wastage of blood supplies, detailed operational costs, and other elements to draw up compelling investment cases, create credible annual budgets, and plan how to tap efficiencies where possible. Unfortunately, the state of routine blood system data collection is very underdeveloped, with priority indicators not integrated into health information systems, lack of routine reporting on ward-level use of blood and outcomes of transfusion services in hospitals, and poor understanding of the epidemiological drivers of blood demand. More research and investment in this space will help with planning and preparation to position blood services for longer term sustainability.

Acknowledgements

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