Summary

This dissertation is the product of nearly 10 years of work on global blood safety issues within the context of the PEPFAR initiative. It was my great good fortune to have had the opportunity to live in Namibia for three of those years and to observe the blood service and healthcare system up close and in real time.

The questions addressed by this thesis were born from an interest in the relationship between international development projects and the impact external funds had on technical issues of importance to blood transfusion services. Specifically, I was interested in how the rapid injection of massive funding (over $500 million for blood safety since 2004) impacted how blood services in sub-Saharan Africa worked, how the funding influenced services’ ability to meet technical objectives, and what sustainability challenges may have been created by the infusion of cash and other external resources.

To investigate these questions, data were analyzed from Namibia, one of the 14 countries with high HIV burdens originally funded by PEPFAR starting in 2004. The chapters that make up this thesis catalogue six specific accomplishments by the Blood Transfusion Service of Namibia (NAMBTS) as it worked to expand access to blood transfusion services and improve the safety and quality of blood components and transfusion practices in Namibia. These chapters also attempt to document the sustainability challenges created by the infusion, and subsequent withdrawal, of external donor support, and suggest ways other countries may learn from Namibia’s experience.

Because Namibia’s experience did not occur in a vacuum – indeed, it occurred during a period of historic investments in healthcare systems across Africa – this thesis also seeks to understand the broader development challenges faced by blood transfusion services in low-resource countries, and to document the sometimes uncoordinated nature of international development assistance (IDA) provided by external donors in the name of improving the safety of or access to blood worldwide.

Specific questions asked by this thesis include:

- How have investments in the blood transfusion service improved access to blood in Namibia?
- What impact have investments in new technologies had on the safety and availability of platelets in Namibia?
- To what extent did PEPFAR subsidize the cost and price of blood in Namibia – and if a subsidizing effect occurred, what challenges may it present for Namibia as PEPFAR funds are reduced?
- Who consumes Namibia’s blood supply – and what diagnoses drive current use?
- Is transfusion surveillance (also known as hemovigilance) possible in Africa?
are the barriers to reporting and the collection and use of data about adverse transfusion events? What lessons can be learned from Namibia’s national hemovigilance system?

- What are the most common gaps in the global knowledge base about blood safety? How do these gaps negatively impact the safety and availability of blood in low-resource settings? What can be done to bridge them?

Lastly, as noted above, although a comprehensive history of Namibia’s healthcare system is beyond the scope of this thesis, the progress documented within Namibia’s blood transfusion service must also be seen as a reflection of the historic progress Namibia has made in addressing structural and legal inequalities linked to apartheid-era policies prior to Namibia’s independence in 1990.

Beyond Namibia, this thesis also explores the premise that challenges of unsafe and inadequate blood supplies in sub-Saharan Africa can be addressed through timely and adequate investments in the core technical, procurement and leadership elements recommended by WHO to strengthen national blood transfusion services. To describe how this basic premise has been achieved in Namibia – and to explore how the introduction of external aid to achieve these ends may also create sustainability challenges for recipient countries – ten broad assumptions were made.

1. Developing or strengthening healthcare services, whether a blood service, malaria prevention intervention or an antiretroviral drug program, requires governments and external donors to understand program costs, appreciate how current and future demand will influence costs, and develop policies and plans to ensure consistent (and sufficient) funding and human resources.
2. In the context of sub-Saharan Africa, financial and human resources for health are generally scarce.
3. Financing for healthcare in sub-Saharan Africa is usually achieved through a combination of domestic and external funding sources – with external donors often creating subsidies that recipient countries are unable to fully absorb.
4. Functional cost-recovery systems are rare in African blood services, but are a potentially powerful solution to financing challenges faced by blood services in low-resource settings.
5. Technology can (and probably must) play a role in achieving Africa’s blood collection goals – but the costs associated with introducing and sustaining the use of such technologies should be carefully considered to avoid creating sustainability gaps.
6. Changing patterns of disease will influence how much blood is needed by African countries, and how available blood stocks will be used.
7. Blood and blood components are unevenly distributed globally and within individual
countries (e.g., urban areas tend to benefit more from scarce blood stocks than rural areas).

8. Effective data systems are an essential prerequisite to document and evaluate progress and gaps.

9. Investments made in the name of preventing the spread of a single pathogen or disease (HIV/AIDS) can have positive ripple effects across a country’s broader healthcare system – but single disease programs may also divert funds from other pressing healthcare issues (e.g., maternal mortality).

10. The concept of ‘sustainability’ is dependent not only on a stable source of funds, but on adequate human capacity, political will, data to drive evidence-based decision-making, ownership and leadership.

While the strength of Namibia’s overall economy and its blood service’s relatively long history set the country apart from many of its neighbors in sub-Saharan Africa, Namibia also faces significant challenges with income inequality, maternal mortality, education, and child nutrition – challenges that are comparable to less developed neighbors in the Africa region. This dichotomy makes Namibia a unique laboratory in which to observe the impact of IDA on a health care system that is simultaneously capable of delivering complex services including cancer therapy and cardiac surgery, while grappling with chronic shortages of healthcare workers, healthcare facilities, and equipment.

As Namibia has demonstrated, successfully putting together all of the pieces described above – leadership, consistent domestic funding, a deepening pool of well-trained staff, effective use of technology, and the embrace of quality management systems across every department – is possible in a middle-income country, even one facing substantial development challenges. Global data paint a less rosy picture of progress on structural issues, but some progress is nonetheless evident in the GDBS tables presented above. Lessons learned in Namibia may be useful for countries and external donors seeking to invest in blood safety or sustainable blood system strengthening activities, especially those reflecting the critical importance of strong human capacity, routinely collected and easily accessible data for decision-making, and a solid grasp of financial data.

It is the author’s hope that continued progress in this critical area of health systems development will occur in an environment marked by greater emphasis on equity and a continued evolution of donors’ and recipient countries’ understanding of the meaning and implications of the terms “ownership” and “sustainability.”