MEDICAL TRANSMISSION PREVENTION: USING INNOVATIVE STRATEGIES TO IMPROVE BLOOD AND INJECTION SAFETY

Accelerating progress through dedication, leadership, and evidence-based quality improvement to build sustainable systems

OVERVIEW

Blood transfusion and medical injection safety are essential for prevention of HIV transmission worldwide. Safe, available and effective blood transfusion services are a core element of any health care system, and access to safe transfusions is critical to improved patient outcomes in HIV, maternal health and malaria programs. Emerging evidence also suggests a substantial role for safe and available blood as a component of the supportive care package for people living with HIV.

Blood Safety
Throughout the developing world, the lack of stored blood components often results in a reliance on the collection of blood from family replacement and paid donors in times of blood shortage. Such emergency collections may not be properly screened for transfusion-transmissible infections. Paid or family replacement donors may not want to disclose high-risk behaviors. As a result, blood collected from these donors increase the risk of transfusion-transmissible infections and even death. Even in countries that have a robust blood transfusion system, inadequate numbers of low-risk volunteer donors and weak screening systems severely undermine the ability of the system to provide safe blood in a timely fashion.

Injection Safety
Eliminating unsafe practices that result in patient-to-patient, patient-to-healthcare worker, or healthcare worker-to-patient HIV transmission is fundamental in any health care system. Injection safety programs also address increases in and safety related to medical waste elimination.

CDC’S ROLE

Investments in blood safety have supported the development of adequate supplies of HIV- and pathogen-free blood in more than 20 countries worldwide since 2004. Blood safety remains a recognized component of a comprehensive HIV prevention strategy, and blood self-sufficiency challenges remain in many resource limited countries. Assistance from the U.S. Centers for Disease Control and Prevention (CDC) in blood safety is transitioning away from broad infrastructure investment. CDC support is now focusing on addressing the gaps in laboratory testing quality, electronic tracking of blood donor results, and blood bank accreditation.

Current activities addressing blood and injection safety include:

- Accreditation through the Africa Society for Blood Transfusion to include quality system, blood donor management, collections, production, testing, storage, hemovigilance and clinical interface.
- Information systems to monitor and exclude high risk and HIV-positive blood donations, and improve the quality of laboratory test results reporting.
- Quality assurance, especially laboratory focused quality improvement and proficiency testing. This can be accomplished through safer donors, quality labs and better data.
- Linkage of HIV positive donors to life-saving care and treatment services.
From 2011 to 2014, overall blood collections among 14 countries supported by the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) increased by 19 percent.

From 2011 to 2014, the number of countries from this group with 100 percent voluntary blood donations remained stable, and 12 of 14 countries reported an overall decrease in donated blood units that tested positive for HIV. The percentage of blood units reactive for HIV ranged from 0.2-7.7 percent from 2011 to 2014.

All PEPFAR-supported blood services screen 100 percent of donated blood for HIV, an average of 2.4 million blood donations per year.

All PEPFAR supported blood services also offer HIV counseling services to blood donors with suspected or confirmed HIV infection.

Additionally, seven countries published national standards for blood collection, testing, processing, and distribution. Currently, 14 countries have national blood transfusion services that are actively pursuing blood bank accreditation with the African Society for Blood Transfusion.

From 2012-2014, CDC successfully implemented injection safety projects in Kenya, Zambia and Tanzania and produced three injection safety videos for healthcare workers training. CDC and Becton Dickinson (BD), a medical technology company, entered into a public-private partnership with the goal of improving injection and blood drawing practices among healthcare workers in selected countries.

In response to an HIV outbreak in the Roka community in Cambodia in 2015, CDC provided injection safety-related Epi-Aid to the Cambodian Ministry of Health, which made it a priority to reduce the demand for unnecessary medical injections and ensure safe injection practices among healthcare workers.

Beyond HIV, CDC’s global HIV and TB experts has supported the following efforts:

- During the peak of the Ebola epidemic in 2014, CDC staff deployed to Liberia coordinated response activities of community leaders and international aid organizations, provided leadership and technical support to establish an Ebola care center, trained health workers, improved community outreach, and developed patient flow, waste management, staffing, and triage plans.

- In 2016, CDC’s global HIV and TB experts were also key players in modeling population incidence and prevalence of Zika Virus infectivity from blood donor screening data for the CDC 2016 Zika Virus outbreak response.

CDC will continue to provide expertise, support and blood safety technical assistance through PEPFAR to local Ministries of Health and National Blood Transfusion Services.

**Specific future efforts include:**

Operational research to measure progress, the linkage of HIV-positive donors to care and treatment, the impact of blood use by people living with HIV to contribute to global HIV testing, treatment and viral suppression goals, and the detection of transfusion-associated HIV infection.

Injection safety programs will focus on improving the evidence base on risk of HIV transmission through medical transmission and expanding injection safety interventions through public-private partnerships.
CDC has partnered with the American Association of Blood Banks and African Society for Blood Transfusion to develop a blood bank step-wise accreditation system that enabled National Blood Transfusion Services to improve the quality of HIV testing, prevent transfusion-transmitted infections, and gauge the quality of blood services. This step-wise process has enabled the American Association of Blood Banks to create a global step-wise accreditation system for Blood Banking and Transfusion Services Standards.