Pioneering Innovations in Early Infant HIV Diagnosis in Botswana

In Botswana, a country with one of the highest rates of HIV/AIDS infection in the world, one in three pregnant women has HIV. Without intervention, 35-40% of children born to these mothers will become HIV-infected during pregnancy, delivery, or breastfeeding. Left unidentified and untreated, studies show that up to 50-60% of HIV-infected infants die by age two. With the right interventions, however, these rates of infection can be reduced substantially. Early infant HIV diagnosis (EID) enables HIV-infected infants early access to appropriate care and treatment.

Botswana began its national program for prevention of mother-to-child HIV transmission (PMTCT) in 1999, making it the first free national PMTCT program in Africa. CDC's Global AIDS Program has provided critical technical and financial assistance to the program since its inception.

Early infant HIV diagnosis requires complex and expensive tests with significant logistical requirements, such as blood refrigeration and transportation. These tests continue to present obstacles to providing services outside of the developed world. Fortunately, the collection of infant blood on dried blood spots (DBS) is improving infant diagnosis in resource-limited settings. With the simple prick of an infant's heel, toe, or finger, samples can be created that are both easy to transport and stable for relatively long periods without refrigeration.

In 2005, with support from CDC through the U.S. President's Emergency Plan for AIDS Relief, the Botswana Ministry of Health implemented a project to evaluate the effectiveness of the country's program and the feasibility of collecting DBS for infant HIV diagnosis. Botswana's PMTCT program has been remarkably effective. CDC and the Botswana Ministry of Health estimated that only 930 infant infections occurred in Botswana in 2005, compared to 4650 infections which would have occurred without the PMTCT program. Evaluation showed that the program performed DBS testing easily, and allowed large-scale access to HIV testing and treatment for infants.

With CDC's assistance, the Botswana Ministry of Health is expanding DBS collection nationwide so it can provide EID to the approximately 13,300 HIV-exposed infants born in the country each year. The Botswana program is one example of how CDC is providing essential financial and technical support for expansion of EID in resource-limited settings all over the world, giving hope to other countries that PMTCT and infant diagnosis programs can make a difference.

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