HELPING BABIES BORN TO HIV-POSITIVE MOTHERS IN SUB-SAHARAN AFRICA STAY HEALTHY AND FREE OF HIV

IN 2015, AN ESTIMATED 1.2 MILLION BABIES WERE BORN TO HIV-POSITIVE MOTHERS AND THEREFORE EXPOSED TO HIV.1 HIV CAN BE TRANSMITTED FROM A MOTHER TO HER INFANT DURING PREGNANCY, AT THE TIME OF DELIVERY, OR DURING BREASTFEEDING. WITHOUT ANY INTERVENTION FOR PREVENTION OF MOTHER-TO-CHILD HIV TRANSMISSION (PMTCT), HIV TRANSMISSION RATES FROM MOTHER TO CHILD RANGE FROM 15 PERCENT TO 45 PERCENT, DEPENDING ON THE LENGTH OF TIME AN INFANT IS BREASTFED.2

The most effective PMTCT interventions are the provision of antiretroviral treatment (ART) to pregnant and breastfeeding mothers to suppress the blood levels of HIV and antiretroviral prophylaxis to their infants. These interventions can lower the rate of mother-to-child transmission by the end of breastfeeding to less than 5 percent.3

Infants who are infected with HIV are at high risk of severe illness and death. Without treatment, up to 30 percent will die by their first birthday, and 50 percent by their second.4 Because infants progress to AIDS and death much faster than adults, prompt HIV diagnosis and ART initiation are critically important. The World Health Organization recommends that all HIV-exposed infants be tested for HIV at 4-6 weeks of age to identify HIV infection acquired during pregnancy or delivery so that ART can be started before the disease progresses. Even after a first negative test at 4-6 weeks, all HIV-exposed infants need to be followed closely throughout the breastfeeding period since the risk of infection remains until they are weaned. Comprehensive care for HIV-exposed infants is key to ensuring infants stay healthy and HIV free (see Box 1).5 6

OVERVIEW

Box 1: Comprehensive care for HIV-exposed infants

- **Infant antiretroviral prophylaxis:** Daily oral medication to prevent HIV infection from birth to 6-12 weeks of age, depending on risk of infection.
- **Infant HIV testing:** HIV-testing at 4-6 weeks of age, 9 months, and 3 months after weaning and immediate initiation of ART for those identified as infected.
- **Cotrimoxazole prophylaxis:** Daily medication (cotrimoxazole) from 6 weeks of age to prevent illness and death due to diarrhea, malaria and pneumonia among HIV-exposed infants who have not yet been diagnosed or started ART.
- **Routine infant care:** Immunizations and regular monitoring of growth and development – failure to thrive can be a sign of HIV infection.
- **Monitoring of the mother’s health and HIV care:** Ensures mother’s adherence to ART to minimize the risk of transmission.
- **Family support:** Encourages testing of partner and other biological children; psychosocial support.
- **Preventive medication against TB as needed:** If the infant does not have active TB disease but has known contact with a person with TB disease.

CDC'S ROLE

CDC is a major implementer of the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) and plays a central role in supporting ministries of health to implement effective, sustainable HIV programs that deliver quality HIV services to HIV-exposed infants and their HIV-positive mothers utilizing evidence-based approaches. CDC provides technical guidance and conducts operational research to improve HIV service delivery to HIV-positive mothers and their infants. CDC plays a key role in supporting countries to regularly update their national HIV guidelines to incorporate emerging new technologies and evidence so that mothers and infants receive the best possible care and treatment.

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To accomplish its mission, CDC works at international, national, subnational, and community levels in close collaboration with other U.S. Government agencies and a wide range of global partners including the World Health Organization, United Nations Children’s Fund, Joint United Nations Programme on HIV/AIDS, the Global Fund, the Clinton Health Access Initiative, the Elizabeth Glaser Pediatric AIDS Foundation, Ministries of Health, civil society organizations and other local and international non-government organizations.

In addition to program implementation, CDC also directly conducts research and epidemiologic studies to identify evidenced-based strategies that improve maternal-child health outcomes and better describe the HIV epidemic.

CDC is the primary U.S. Government agency providing laboratory strengthening in resource-limited settings and has been instrumental in building laboratory capacity to expand access to state-of-the-art diagnostic assays for infant HIV diagnosis. CDC helps ensure that programs can benefit from the latest laboratory technologies such as the newly developed point of care testing devices. For example, CDC is evaluating of point of care testing devices to gauge their impact on health outcomes for HIV-exposed and HIV-positive infants, and the health care worker’s experiences of using this device in Zambia.

**ACCOMPLISHMENTS / RESULTS**

**Testing HIV-exposed infants:** Between 2011 and 2015, PEPFAR increased the numbers of HIV-exposed infants tested by two months of age by more than 75 percent, from 255,545 in 2011 to 453,780 in 2015; CDC contributed almost half (216,808) of these results.

**Initiating HIV-exposed infants on medication to prevent HIV-associated infections:** In 2015, PEPFAR-supported clinics initiated almost half a million infants on cotrimoxazole to reduce pediatric illness and death due to diarrhea, pneumonia and malaria; of these, 231,827 were supported by CDC.

**Providing lifesaving treatment to HIV-infected infants:** In 2015, over 5,000 HIV-infected infants started treatment before their first birthday at CDC-supported health facilities. CDC has also facilitated the implementation of optimized treatment regimens for infants including novel infant-friendly formulations of pediatric ART (such as the Lopinavir/Ritonavir “pellets”).

**Laboratory expertise for infant HIV diagnosis:** CDC supports 170 laboratories in 34 countries which provide infant HIV virus testing services. In 2015, 340,895 HIV infant virologic tests were performed at these laboratories. Additionally, CDC collaborated with the World Health Organization and laboratories in South Africa to evaluate two new infant testing technologies that can allow infant HIV diagnosis to occur at or near the point of infant care. These technologies have now been approved by the World Health Organization and may reduce delays in infant HIV diagnosis.

**Provision of technical guidance to improve infant diagnosis:** In March 2009, CDC published a series of three guides on infant HIV diagnosis for program managers, laboratory staff and clinic staff. These guides have been used worldwide in resource-limited settings and are currently being updated to include new advances. CDC conducted national evaluations of HIV-exposed infant programs in Cameroon (2011) and Uganda (2013). These evaluations identified successes in both programs as well as weaknesses. As a result, Uganda compiled a database to record all health care worker trainings and conducted more trainings on medical record documentation and adherence to national guidelines. Cameroon developed national laboratory standards for infant diagnosis and strengthened systems for sample transportation.

**Example of urgent technical assistance in 2016:** CDC assembled a rapid response team to help laboratories in one African country address a backlog of thousands of infant HIV testing samples by providing intensive training to laboratory technicians, facilitating collaboration with laboratories in South Africa, and processing samples at CDC-Headquarters. CDC also worked with the Ministry of Health and partner agencies to track infants whose results were unavailable to ensure rapid retesting and/or initiation of ART as needed. CDC continues to work with Mozambique on systems and quality improvement for early infant diagnosis to prevent future testing delays.

**Operational research to improve HIV services for mothers and infants:** To better understand the challenges to retaining mothers and infants in HIV care, CDC and our partners conducted research to evaluate the needs and preferences of women receiving PMTCT care. These data show that respectful care by providers and access to non-HIV health services in the same visit are the most important clinic characteristics to mothers. CDC is now working with country staff in Swaziland and Malawi to identify strategies for improving respectful care and patient engagement in PMTCT services.
CDC is committed to ensuring all HIV-exposed infants receive the care they need, in order to improve outcomes in this vulnerable population by:

- Optimizing HIV testing for infants born to HIV-infected mothers
  - Improving access to early infant HIV testing (before two months of age) and repeat HIV testing at 9-12 months and at the end of breastfeeding
  - Conducting research on how best to use new point of care testing technologies for infant diagnosis
  - Conducting research to understand how to implement testing services as early as at the time of birth to further reduce early mortality of HIV-infected infants

- Increasing access to care and treatment by working with CDC-supported partners to identify models of care that improve retention of the infant in HIV care until the end of the breastfeeding period
  - Supporting family-based models of service delivery that can reduce the number of visits needed by providing care for women and their infants on the same day
  - Using lay health workers to provide counseling and conduct tracing of mothers and babies who have missed their appointments
  - Conducting rapid assessments of HIV-exposed infant services at the national level to better understand the bottlenecks and challenges, and support development of innovative solutions

- Developing systems to monitor cohorts of HIV-exposed infants:
  - Monitoring birth cohorts to allow better monitoring of infants and their health outcomes, as well as identify those who have missed appointments and need to be traced.

As a PEPFAR implementing agency, CDC supports the implementation of evidence-based innovative strategies to engage mothers and babies in care, reduce the rate of mother-to-child HIV transmission, and improve outcomes for HIV-exposed and HIV-positive infants. CDC’s work is a critical piece of global efforts to save the lives of thousands of infants and children and ensure that the goal of an AIDS-free generation becomes a reality.