

PEDIATRIC HIV IN RESOURCE LIMITED SETTINGS: STOPPING THE HIV EPIDEMIC IN CHILDREN

OVERVIEW

The overwhelming majority of pediatric infections are due to transmission of HIV from the mother to her infant during pregnancy, at the time of delivery, or during breastfeeding and occur mainly in sub-Saharan Africa (SSA). In 2015, UNAIDS estimated that 1.8 million children (< 15 years) were living with HIV; this estimate constituted a significant decrease from previous estimates. Part of the decrease reflects a drop in the number of new HIV-infections among children from 490,000 in 2000 to 150,000 in 2015¹ because of expanded access to services that provide HIV treatment to pregnant and breastfeeding women to prevent mother-to-child transmission. Unfortunately, the decrease in the number of children living with HIV (CLWH) also reflects higher mortality rates among HIV-infected children; this is due to the slower growth of pediatric HIV treatment programs in resource limited settings where the vast majority CLWH live.

This sobering account highlights the urgent need to increase access to diagnosis and treatment for children and adolescents while continuing to expand mother-to-child HIV prevention programs. In 2014, an estimated 824,000 children had started on antiretroviral treatment (ART), a significant increase from 2000 when only 18,000 children had access to ART.² This result that has stemmed from an unprecedented multi-national response against AIDS, of which the U.S. Government including the U.S. Centers for Disease Control and Prevention (CDC) have been an integral part.

To effectively reduce pediatric AIDS-related deaths, new and strategic approaches are needed to:

- Strengthen and implement efficient pediatric HIV case finding strategies with early linkage to treatment, expand access to quality HIV clinical services, and increase HIV viral load monitoring for children/adolescents on ART;
- Improve the development and access to child-friendly formulations (e.g., liquids) of effective antiretroviral drugs and ensure that children remain on ART from infancy into adolescence, and expand routine monitoring of HIV drug resistance development; and
- Improve family HIV status disclosure to increase pediatric access to and retention in HIV-related programs.

CDC'S ROLE

CDC is a major implementer of the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). CDC's focus in addressing the pediatric HIV epidemic has been to establish national programs capable of providing quality HIV services for children in the most affected countries in the world, with the goal of increasing access to HIV care and treatment for children living with HIV and reducing AIDS-related deaths.

To accomplish its mission, CDC works at international, national, subnational, and community levels in close collaboration with other U.S. Government agencies, the World Health Organization (WHO), United Nations Children's Fund (UNICEF), Joint United Nations Programme on HIV/AIDS (UNAIDS), the Global Fund, the Clinton Health Access Initiative, Ministries of Health, civil society organizations and additional 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 pediatric health outcomes and better describe the pediatric HIV epidemic. For example, the Population-based HIV Impact Assessment (PHIA) will provide estimates of pediatric HIV prevalence (ages 0 to 14 years) in many PEPFAR supported countries. In addition, PHIA will measure HIV viral load and antiretroviral medication access among children living with HIV to better understand the impact of the national pediatric HIV treatment program.

Research efforts include operational research on the feasibility of HIV testing at birth, improving HIV testing strategies for children ages two and older, studies on use of dried blood samples for viral load testing, and studies on the prevalence of HIV drug resistance in treated children. CDC has been instrumental in building laboratory capacity to expand access to state-of-the-art diagnostic assays for early infant HIV diagnosis and viral load testing that will help improve early life-saving treatment initiation and extend the effectiveness of existing drugs for children.

¹ UNAIDS. AIDS by the numbers -2016: http://www.unaids.org/sites/default/files/media_asset/AIDS-by-the-numbers-2016_en.pdf

² WHO. <http://apps.who.int/iris/bitstream/10665/246178/1/WHO-HIV-2016.05-eng.pdf?ua=1>.

ACCOMPLISHMENTS / RESULTS

CDC-supported programs have more than doubled the number of HIV-positive children receiving lifesaving ART, primarily in sub-Saharan Africa from approximately 198,000 children in December of 2012 to 397,589 children in June 2016.

From October 2014 to June 2016, CDC partners conducted over 9.25 million HIV tests in children under the age of 15 in PEPFAR-supported countries.³

CDC supports a total of 170 laboratories in 34 countries to build national capacity for early pediatric diagnostics. In 2015, more than 340,00 HIV infant virologic tests were performed at these laboratories.

Between 2014 and 2016, CDC played a key role in implementing PEPFAR’s Accelerating Children’s HIV Treatment (ACT) initiative, which aimed to double the number of children living with HIV on lifesaving treatment in nine countries in sub-Saharan Africa with a high pediatric HIV burden. During the two year initiative, CDC helped develop innovative implementation strategies to increase pediatric HIV case finding and linkage to care and treatment, while ensuring the provision of high-quality care for children and adolescents living with HIV.

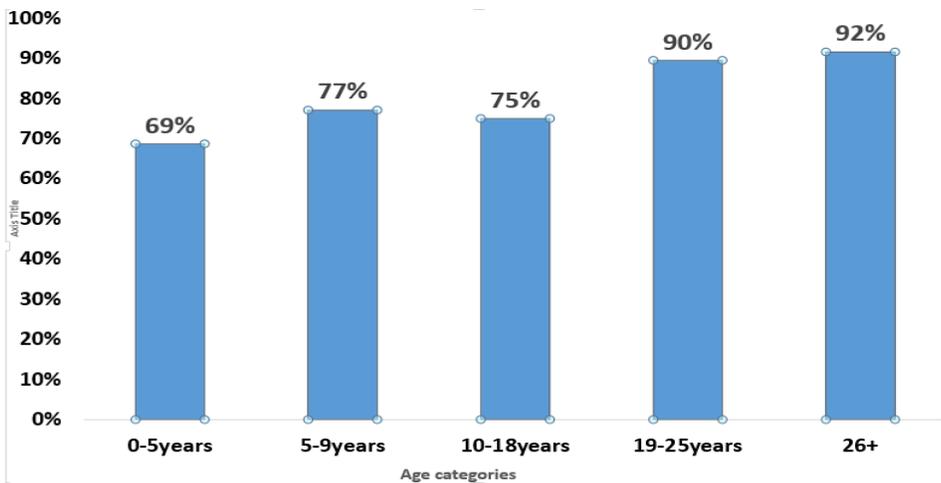
CDC, working with the Ministries of Health in Uganda, Ethiopia, and Zambia from 2013 to 2015, helped introduce the “treat all” strategy for CLWH in advance of the 2016 WHO guidelines and is actively supporting the adoption of this strategy in other countries.

In 2016, CDC assembled a rapid response team to help laboratories in Mozambique clear out a backlog of samples collected for early infant diagnosis by providing intensive training of laboratory technicians, facilitating collaboration with laboratories in South Africa, and processing samples at its International Laboratory Branch in Atlanta. CDC also worked with implementing partners and the Ministry of Health to track infants whose results had not been made available to ensure rapid retesting and/or initiation of treatment as needed.

The development of infant HIV virologic diagnostic capacity has created a platform that will facilitate the expansion of HIV viral load testing, an essential assay to improve the management of CLWH and to reduce the risk of HIV drug resistance.

In Uganda, CDC worked to provide HIV viral load testing and helped examine preliminary results across age groups. This analysis showed the significantly lower levels of treatment success among children and adolescents compared with adults, a finding that will help better focus resources to this population.

Viral Load suppression rates by age group, Uganda, FY 2016



³ Annual Progress Report FY 2015 and Semi Annual Progress Report FY 2016, accessed at PEPFAR.net on October 11, 2016.

FUTURE EFFORTS

In the coming year, CDC pediatric HIV efforts will focus on the following activities in support of UNAIDS' 90-90-90 goals as they relate to children:

- Optimizing HIV testing for infants born to HIV-infected mothers and promoting the implementation of innovative strategies to improve pediatric HIV case finding for older children to more effectively identify those living with HIV and link them to early treatment
- Supporting the implementation and roll out of the "treat all" approach for children
- Working with partners to identify family-based models of service delivery that help children and their parents remain in care while reducing the burden for health workers and caregivers
- Increasing access to viral load testing for children on ART and ensuring that those with high viral loads receive appropriate and timely clinical management
- Working at international levels to advocate for the continued development of better child-friendly formulations and more effective and affordable drugs
- Working with CDC-funded NGOs and Ministries of Health to roll out the use of better first line antiretroviral drugs for children, particularly the newly available lopinavir/ritonavir pellets
- Conducting HIV drug resistance monitoring/surveillance among pediatric populations

BENEFITS OF OUR WORK

As a PEPFAR implementing agency, CDC supports innovative strategies to improve pediatric HIV case finding, to improve linkage to care and treatment services, to decrease the number of children lost to follow-up, and to improve rates of HIV virus suppression. At national levels, CDC has helped introduce, evaluate, and improve novel laboratory tests for infant diagnosis and viral load testing. In addition, CDC leads epidemiologic surveillance efforts to better characterize the pediatric HIV epidemic, and more recently, has spearheaded efforts to understand HIV drug resistance in children which is critical to ensure programmatic success and epidemic control. CDC's efforts are key to saving the lives of thousands of children and ensuring that the goal of an AIDS-free generation becomes a reality.