

Studies investigate best practices to ease major HIV disease burden in Sub-Saharan Africa

June 30 2016



An expectant mother in Nigeria is tested for HIV while attending a "baby shower," at a church, where free HIV tests and prenatal care are offered. Credit: Dina Patel/HealthySunrise Foundation

An emerging field, known as implementation science, may help reduce the nearly 150,000 instances of mother-to-child HIV transmissions that occur annually around the world, mostly in developing countries. A team of scientists and program managers, led by the National Institutes of Health, has been studying a variety of implementation science approaches to prevent mother-to-child transmission and has published the results in a 16-article open-access supplement to the *Journal of Acquired Immune Deficiency Syndromes*. In implementation science, scientists study how to integrate research findings and other evidence-based practices into routine care and services.

"We have the tools at this moment to further decrease incidence of new infections, but we need to apply these tools more effectively to reach the undiagnosed and untreated mothers," Fogarty Director, Dr. Roger I. Glass, and U.S. Global AIDS Coordinator, Dr. Deborah Birx, wrote in a foreword to the supplement.

Preventing mother-to-child transmission (PMTCT) involves a cascade of factors that is inherently complex, crossing multiple biological phases for women and their infants—during pregnancy and after delivery—and requires deployment of multiple health services. Some studies used systems engineering approaches to examine treatment workflow, identify bottlenecks and gaps, task shifting options and other issues. Facility-level problems were considered, including drug shortages, overburdened staff, lack of service integration, insufficient mentoring, and poor patient-

provider interactions. The scientists also identified domestic violence, abandonment and stigma as key barriers.

The authors reported on the effectiveness of a variety of interventions:

- Collaborating with churches to invite pregnant women to "baby showers," which included HIV testing and gifts, was nearly twice as effective for screening and recruiting for treatment those who tested positive for HIV, than were invitations to clinic visits providing the same benefits.
- Offering HIV testing and counseling for breastfeeding, family planning and other issues in the homes of study participants made it twice as likely the male partners—who often report feeling uncomfortable making clinic visits but are key to reducing HIV transmission—would be tested.
- Training lay volunteers or "feeding buddies," to provide information about breastfeeding, infant health and HIV treatment protocols may diminish the damaging impact of stigma on an HIV positive mother's ability to safely feed her child and adhere to World Health Organization (WHO) guidelines, which recommend exclusive breastfeeding, antiretroviral therapy and early infant testing.
- Providing cash incentives for prenatal clinic visits appeared to help keep women in care, but did not boost adherence to antiretroviral therapy.
- Initiating drug therapy during pregnancy caused rapid declines in viral load, but more than 95 percent of women studied reported at least one side effect before delivery, which may lower adherence.
- Deploying a point-of-care test for infant diagnosis of HIV using a portable, battery-operated device may result in more timely initiation of drug therapy, decreasing the number of children who are diagnosed with HIV weeks or months after birth and never

receive treatment.

- Administering pre-exposure prophylaxis for HIV prevention among pregnant and breastfeeding women in sub-Saharan Africa is likely cost-effective, economic modeling indicates.

Researchers and policymakers from the United States and Africa who contributed to the supplement articles were part of the PMTCT Implementation Science Alliance, created and supported by the NIH and the President's Emergency Plan for AIDS Relief, to investigate the role implementation science can play in enhancing the quality and effectiveness of PMTCT efforts. Research projects described in the supplement were funded by NIH grants from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institute of Allergy and Infectious Diseases, National Institute of Mental Health and the Office of Research on Women's Health.

The alliance was led by the Fogarty's Center for Global Health Studies. In addition to the funders, other participants in the alliance include, the Office of AIDS Research at NIH, along with outside agencies including the Centers for Disease Control and Prevention, the Elizabeth Glaser Pediatric AIDS Foundation, South Africa's Anova Health Institute, the United States Agency for International Development and the WHO.

Despite enormous successes in PMTCT, important challenges remain. The scientists have identified priority areas for future study, including how to optimize linkage of HIV-positive infants into early treatment, improve models for retention and adherence of children receiving antiretrovirals, and prioritize locally driven research questions and processes that engage end users throughout.

"Continuing to find innovative ways to foster collaboration of implementation science researchers with decision makers and program implementers will be critical to speed the translation of effective

PMTCT interventions in the local context and health system programs," the authors concluded.

More information: journals.lww.com/jaids/toc/2016/08011

Provided by National Institutes of Health

Citation: Studies investigate best practices to ease major HIV disease burden in Sub-Saharan Africa (2016, June 30) retrieved 4 May 2024 from <https://medicalxpress.com/news/2016-06-ease-major-disease-burden-sub-saharan.html>

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