SCIENCE TO PROGRAM IMPACT

OVERVIEW

A strong focus on the linkage between research findings and program activities is the foundation of the U.S. Centers for Disease Control and Prevention’s (CDC’s) successes in public health impact. Scientific excellence, integrity and public health ethics are at the core of the CDC mission. CDC leadership and support for the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) and global TB program activities have contributed to broader scientific knowledge as relates to global health. Over the past 10 years, global HIV and TB experts at CDC country offices and headquarters have developed over 2,000 scientific protocols supporting the collection and reporting of data to guide, monitor, and evaluate programs.

CDC’S ROLE

CDC serves as a leader in the production of top-notch science to inform program development and improve public health impact. As part of the global HIV and TB program, CDC ensures compliance with global public health standards regarding scientific integrity and human protections in both data collection and service delivery. This is accomplished by overseeing the review and approval of scientific information products; providing training, capacity-building, and technical assistance on protection for human subjects and scientific ethics; and monitoring regulatory compliance. These activities ensure that high quality research is conducted; the rights and well-being of study participants are protected; data collected are accurate, complete, and verifiable from source documents; and studies are in compliance with approved protocols, their standard operating procedures (SOPs), guidelines for Good Clinical Practice and Good Laboratory Practice, and all applicable regulatory requirements.

To strengthen the link between public health research and practice in CDC’s global HIV and TB programs, CDC coordinates, develops, and oversees several different operational research initiatives including Public Health Evaluations, Implementation Science, Key Populations Implementation Science, and Combination Prevention Impact Evaluations. The purpose of these activities is to yield knowledge that will enhance the delivery of services and maximize the population-level impact of HIV prevention, care, and treatment services provided in the 44 PEPFAR-supported country and regional offices and those initiated at headquarters.

ACCOMPLISHMENTS / RESULTS

CDC-supported implementation science has resulted in public health program developments that have strengthened and expanded the global prevention, care and treatment landscape for TB and HIV. Among these are advances in the access to and accuracy of HIV testing; the development and scale up of models for HIV care and treatment services, including methods to improve retention in care and adherence to antiretroviral (ARV) therapies; the expansion of voluntary medical male circumcision services; innovations in the prevention of mother-to-child transmission (PMTCT); the impact of integrating HIV services into those for antenatal care and TB; and the development of model HIV testing and treatment services for key populations.

Numerous specific examples highlight the critical role performed by CDC working in partnership with local research partners in advancing PEPFAR goals. Data from implementation science research on provider-initiated testing and counseling\(^1\) in Botswana contributed to widespread introduction of routine testing into programs for the prevention of mother-to-child HIV transmission (PMTCT) across Africa; a detailed multi-country study of the PMTCT cascade\(^2\) yielded data that provided the basis for further evaluation of these programs; evaluation

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of home-based testing and counseling in Uganda, including analyses of cost-effectiveness, led to expanded implementation of home-based testing, which has been adopted now in many other countries; a project that developed methodologies for costing analysis of ART programs in five countries led the way for the systematic expenditure analysis that is routinely utilized throughout PEPFAR and is now a central component of country operational planning; a randomized trial that demonstrated the effectiveness of cell phone text messaging in improving ART adherence and virologic suppression contributed to its widespread introduction into programs; a multi-country study of risk factors for low ART retention demonstrated the higher success rates among programs that provide for community-delivery of ART, which supported their further expansion; a study of TB diagnostic algorithms among persons with HIV and of the cost-effectiveness of expanding TB diagnostic testing contributed to new WHO guidance on TB/HIV management; CDC’s development and field evaluation of new assays for use of dried blood spots for monitoring ARV resistance and viral load are now in increasingly widespread use; scientific protocols used to monitor scale-up of VMMC, PMTCT Option B+, and the new WHO Test and Start guidelines have demonstrated progress in each of these areas while also providing data that highlights critical challenges in reaching adolescents and men that need to be addressed in every country program.

CDC country offices have global HIV and TB experts who work with closely with local and international research partners to develop operational research capacity at local universities and other institutions. This alignment of CDC scientific experts in country offices with local implementing partners facilitates the rapid translation of research findings into HIV and TB programs.

As of 2015, critical information and findings from CDC-supported work have been shared through over 4,000 information products, including more than 1,200 manuscripts published in peer-reviewed journals, nearly 1,400 abstracts presented at scientific conferences, and over 1,460 other publications, such as surveillance reports, technical guidance, and training materials. CDC has also provided technical consultation to support the publication of over 100 documents published by the World Health Organization and the Joint United Nations Programme on HIV/AIDS (UNAIDS), including technical guidance documents to support the implementation of national HIV and TB programs.


On-going implementation science and program work will maintain CDC’s contributions to the public health impact on global HIV and TB. In addition, a U.S. Government-wide initiative to expand access to the results and data from U.S. Government sponsored work will provide broader access to CDC’s global HIV and TB implementation science research. All of these new CDC-sponsored publications are now made available for free open access through Pubmed Central and CDC Stacks, with efforts underway to increase the availability of the machine-readable datasets from surveillance and implementation science research studies that are part of CDC’s global HIV and TB portfolio.

Research continues to be widely disseminated to inform and improve future programming within countries and across PEPFAR through publications in peer-reviewed journals and presentations at scientific conferences. Findings have informed intervention tools adopted by other countries, PEPFAR technical guidance, and World Health Organization guidelines. Training materials, tools, and experience derived from this research have made it possible for CDC, partner country ministries of health, and other implementing partners to translate new knowledge rapidly and directly into evolving country policies and programs.