Tackling Tuberculosis and Diabetes

INTERSECTING EPIDEMICS

The world faces a rapidly growing population of people with diabetes in low-resource settings. Half of these people are unaware they have the disease. It is estimated that the number of people living with diabetes will reach 552 million by 2030, with 80 percent of cases occurring in low- and middle-income countries.[1]

Similarly, 90 percent of tuberculosis (TB) cases occur in low-resource settings.[2] Diabetes and TB are not only common among the same populations, but the two diseases amplify each other. Diabetes triples the risk of developing TB, and the rates of TB are higher in people with diabetes than in the general population.[2] The increased risk of TB due to diabetes is comparable to the risk posed by HIV.[3] Given the enormous and growing burden of diabetes globally, the impact of diabetes on the incidence of TB could be staggering. On the other hand, addressing these two diseases in a joint manner could improve case detection and follow-up care for both conditions.

PATH'S APPROACH

PATH is an international nonprofit organization that transforms global health through innovation. We take an entrepreneurial approach to developing and delivering high-impact, low-cost solutions, from lifesaving vaccines and devices to collaborative programs with communities. Through our work in more than 70 countries, PATH and our partners empower people to achieve their full potential.

For more than 30 years, PATH has developed, adapted, transferred, and introduced technologies to improve global health. Our principles and experience are shaping PATH's response to the intersecting epidemics of TB and diabetes. Guided by the World Health Organization's TB and Diabetes Collaborative framework and global research priorities, our developing portfolio is aimed at ensuring that technological innovation facilitates the detection and management of diabetes in people with TB and TB in people with diabetes. We are also focused on building the evidence base for innovative approaches that can improve TB/diabetes collaboration and identifying appropriate procedures for diagnosis, management, and care. Our work is supporting the collective efforts of national governments, civil society, and the private sector to achieve the greatest impact.

WHAT WE ARE WORKING ON

Bidirectional screening for TB and diabetes

Our goal: To improve and increase the diagnosis of diabetes in TB patients and of TB in people with diabetes by identifying new and existing technologies that optimize diagnostic procedures and by integrating services to ensure early access to care and treatment.

Evaluating new, non-invasive screening technologies for cross-screening of TB and diabetes in Mexico

With funding from USAID, PATH and the Mexican Secretariat of Health are piloting a cross-screening model for TB and diabetes in five high-burden states. We're assessing the performance of new, noninvasive screening technologies for TB and diabetes to create new procedures aimed at increasing detection of both diseases. In primary health care settings and TB centers, a more accurate and convenient screening test that confirms type 2 diabetes could improve early detection of the disease and its precursors in TB patients. In people with diabetes, a combination of new low-cost TB screening technologies and modified procedures has the potential to increase the sensitivity of current diagnostic methods, including TB symptom screening and sputum smear microscopy.

Integrating TB and diabetes diagnostic, treatment, and care services in Tanzania

With support from USAID, PATH is supporting the government of Tanzania and several partners to design the national integration plan for TB and diabetes. Specifically, PATH is conducting an in-depth needs assessment, facilitating the development of a strategic plan, and developing a training curriculum for staff in both TB and diabetes clinics. PATH will then pilot a cross-screening model that can be scaled up and adapted for other settings.

PATH/Lesley Reed

Integrating TB case detection activities in existing diabetes systems

Our goal: To find more cases of TB and prevent ongoing transmission in populations at higher risk.

Screening for TB in a large diabetes clinic chain in southern India

With funding from the US National Institutes of Health and the Indian Department of Biotechnology, PATH is working with the Madras Diabetes Research Foundation (MDRF) on a population-based study to evaluate new diabetes screening technologies, including two devices that use light to measure changes in a person's skin that are indicative of prediabetes and type 2 diabetes. PATH and MDRF are currently in discussions to add a TB screening arm to this study.

ABOUT PATH'S TUBERCULOSIS AND DIABETES PORTFOLIOS

PATH also works on many other TB and diabetes projects.

Our work in TB

PATH is helping countries make progress toward universal access to TB prevention, diagnosis, and treatment. We focus on practical, culturally acceptable solutions. We're also addressing the global threat posed by multidrug-resistant TB. Our TB activities have touched every region in the world, with our most in-depth work in Cambodia, China, Democratic Republic of Congo, Ethiopia, India, Kenya, Mexico, Peru, Swaziland, Tanzania, Ukraine, and Vietnam. PATH is addressing the challenge of TB by engaging health providers through public-private mix strategies; advancing proven new, improved, or underutilized health technologies and approaches; and generating the evidence base for better TB programs. We are also working to promote integration of TB control with other health focus areas, such as HIV and pediatrics, and addressing barriers to effective HIV and TB programs through advocacy, communication and social mobilization. To learn more please visit: www.path.org/our-work/tuberculosis.php.

Our work in diabetes

PATH is developing evidence-based programs on diabetes prevention and management. We hope to identify, adapt, and develop appropriate screening technologies and programs for low-resource settings and understand how they will be used and programmed. This includes developing and evaluating novel biomarkers and tests for diabetes screening that would be appropriate and affordable for low-resource settings, including through clinical sites in India and Tanzania. We are expanding our work in technology development and introduction to develop an effective, acceptable, feasible, and sustainable model for providing diabetes prevention and care in low-resource settings.

FORGING AHEAD

By addressing the critical intersection between communicable and noncommunicable diseases, PATH helps ensure that promising health technologies and strong health systems have a sustained impact on the health of people around the world.

References

1 International Diabetes Federation Diabetes Atlas website. Available at: www.idf.org/diabetesatlas/. Accessed November 30, 2012.

2 International Union Against Tuberculosis and Lung Disease and World Health Organization. *Collaborative framework for care and control of tuberculosis and diabetes*. Geneva: WHO; 2011. Available at whqlibdoc.who.int/publications/2011/9789241502252_eng.pdf.

3 Ponce-De-Leon A, Garcia-Garcia L, Garcia-Sancho MC, et al. Tuberculosis and diabetes in southern Mexico. *Diabetes Care*. 2004;27(7):1584–1590.

PATH
A catalyst for global health

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