Building Laboratory Capacity to Strengthen Health Systems

The Partners In Health Experience

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KEYWORDS

• Health systems strengthening • Partners In Health • Pathology • Cancer care • Tuberculosis • Diagnostics • Haiti • Rwanda

KEY POINTS

- Moving beyond providing only "basic" services in health care to identifying and striving to meet essential patient needs allows for more effective and comprehensive responses to local burdens of disease.
- A well-functioning laboratory system constitutes the backbone of a public health system and is critical to the prevention, diagnosis, treatment, and ongoing surveillance of disease.
- Staff, stuff, space, and systems are central to the equitable delivery of quality diagnostic services and clinical care.
- Partners In Health has demonstrated successful laboratory systems strengthening in multiple settings of poverty with measurable impact.

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BACKGROUND

Well-functioning laboratories constitute the backbone of effective clinical and public health systems and are critical to the prevention, diagnosis, treatment, and ongoing surveillance of disease. In places burdened by poverty and weak health systems, the absence of the staff, stuff, space, and systems needed to detect outbreaks of infectious disease, such as the recent Ebola epidemic in West Africa, and diagnose other medical conditions has underscored the need to not only set up diagnostic equipment in places where it is scarce but also invest resources into training laboratory personnel, introducing laboratory regulations, developing strategic plans that are aligned with national and international standards, and strengthening linkages between laboratories and the clinical facilities they are intended to support.

In recent decades, there have been new, if insufficient, efforts to improve diagnostic services in poor settings. Among the primary catalysts for this interest in laboratory strengthening has been the significant infusion of resources into the prevention, diagnosis, and treatment of HIV and tuberculosis (TB).[1–3] In certain instances, vertical funding to rein in these global pandemics has been leveraged to improve care delivery for a range of chronic conditions and, in the process, to strengthen laboratories, diagnostic services, and supply chains.[4] In many low-income countries, however, such investments have borne fruit only in national or reference laboratories, if at all; diagnostic capacity at lower and intermediate levels of care remains weak. In such settings, it is common practice to establish small laboratories or testing centers linked to rural health facilities, without proper assessment of local needs, context, or epidemiology.[5] These laboratories are often constrained by frequent stock-outs and unreliable supplies of reagents and commodities; obsolete equipment and technology, much of which is phased out from hospitals and larger health facilities; and insufficient staffing and training. Additionally, they lack systems and protocols—from essential diagnostics lists and safety standards to comprehensive guidelines and workflow practices—that can steer service delivery.[6] They are further bereft of adequate referral and transportation systems capable of connecting patients and health centers to national and regional laboratories for more advanced diagnostic procedures.[7]

As a result of such deficits, health systems in most low-income countries can deliver only the most rudimentary of diagnostic services, which often do not correspond to local burdens of disease. This *basic package* or *minimum standard* of services, as it is often termed in poor places, excludes several clinical, microbiological, and pathology diagnostics that are routinely provided by laboratories in high-income countries, rendering readily diagnosable and treatable conditions untreatable and, in many cases, disabling or fatal. Basic or minimum, in other words, is not equivalent to essential.

This article describes recent efforts of the medical nonprofit Partners In Health (PIH) to establish high-quality laboratory networks in some of the poorest parts of the world. With a focus on the expansion of pathology and TB diagnostics at PIH-supported sites in Haiti and Rwanda, it discusses the ways in which robust commitments to building laboratory capacity and to accompanying national health authorities can yield better and higher standards of care while strengthening the public health sector.

PARTNERS IN HEALTH IN HAITI: THE LABORATORY NETWORK

Haiti is the poorest country in the Western Hemisphere, with approximately 60% of the population living under the national poverty line.[8] In a list of 188 nations ranked by human development index—a composite measure of population health, education, and income—the United Nations' 2016 *Human Development Report* ranked Haiti at 163.[9]