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The Haiti research-based model of international public health collaboration: The GHESKIO Centers

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Introduction

Haiti has some of the most challenging sociopolitical and economic problems in the world. The country has been affected by political instability and recurrent natural disasters (1, 2). It is also one of the countries most affected by HIV/AIDS and tuberculosis (TB) (3). Operational research has been essential to mount a successful response against these diseases.

In 1982, the Haitian Study Group on Kaposi's Sarcoma and Opportunistic Infections (GHESKIO) was created with a mission of conducting operational research, training, and patient care for HIV/AIDS and associated infections. Thirty-one years later, Dr. Kathleen Sebelius, the US Health and Human Services Secretary, and Dr. Florence Guillaume, the Haitian Minister of Health (MOH), summarized the role played by GHESKIO in Haiti by saying: "We expect GHESKIO to develop public health models that can be scaled-up at the national level." How did GHESKIO acquire these credentials?

Three Decades of HIV-Related Research in Haiti

In 1980, we established the Cornell Unit at the State University Hospital. With the introduction of oral rehydration solution (ORS) and other measures we were able to decrease the 40% in-hospital mortality rate for infants with acute diarrhea to less than 1% in the first year. In 1982, a national program for the control of diarrheal diseases was implemented with the Cornell Unit as the training site. The massive scale-up of this program is mainly responsible for the decrease in national infantile mortality from 144/1,000 in 1980 to 60/1,000 in 2000 (4–7).

In 1981, we were asked to evaluate adult patients with chronic diarrhea at the same hospital. These patients turned out to be the first AIDS cases recognized in Haiti. In 1982, the U.S. Centers for Disease Control and Prevention (CDC) listed Haitian race as a risk factor for HIV causing unparalleled prejudice to Haitians (8–14). In 1983, GHESKIO published a comprehensive description of the first AIDS cases in a resource-poor setting (15). The story of HIV/AIDS in Haiti has since been inseparable from that of GHESKIO.

GHESKIO demonstrated that modes of HIV transmission among Haitians were the same as those of other nationalities, prompting the CDC to remove Haitians from the so called “risk groups” for AIDS (16–18). GHESKIO also showed that blood transfusions from paid donors were a major contributor to HIV transmission in Haiti, leading the MOH in 1986 to close all such blood banks and to put the Haitian Red Cross in charge of national blood banking operations (19).

Chronic persistent diarrhea and pulmonary TB are the hallmark of AIDS in Haiti. GHESKIO conducted seminal studies on the treatment and prevention of isosporiasis and cyclosporiasis (20–23). They also led the first trials documenting the protective effect of primary and secondary isoniazid prophylaxis in the prevention of active TB in co-infected patients (24, 25). GHESKIO provides same-day TB diagnosis and treatment for patients with chronic cough coming for HIV testing after demonstrating that 30% of these patients had active TB (26). After documenting the role of sexually transmitted infections (STI) in enhancing HIV transmission GHESKIO developed a syndromic STI guide that led to a marked decrease in STIs (27–28).

These research findings led to the development of the GHESKIO comprehensive HIV prevention and care model (29). With the availability of international funding in 2003, the MOH asked GHESKIO to expand its model nationwide. GHESKIO’s first 1,000 patients on ART had a 90% and 75% survival at one and five years, respectively, showing that resource-poor countries were capable of successful national ART scale-up (30–31). GHESKIO documented comparable survival rates in infants on ART (32). In 2005, GHESKIO evaluated the optimal timing for ART initiation, and demonstrated that patients who initiated ART at the then recommended WHO guideline of CD4<200 cells/mm^3 had four-fold higher mortality and twice as many incident TB versus those who started at a CD4 count of <350 cells/mm^3 (33). This study prompted the WHO to revise their guideline to recommend earlier ART initiation (34).

GHESKIO has conducted many other studies as well. A 24-week program for feeding HIV-exposed infants with nutritional supplements and other support was associated with reduced risk of growth faltering (35). This intervention is now being adapted and scaled-up in other settings. GHESKIO has also evaluated the cost for implementing a national rapid test-and-treat program for syphilis and the cost of HIV treatment programs (36–39). The MOH has since initiated a program to eradicate congenital syphilis. GHESKIO and the MOH conducted the first national study on the incidence of MDR-TB in Haiti, showing a rate of 3% in persons without previous TB treatment (40–41). In 2008, GHESKIO was approved by the WHO Green Light Committee as one of only two MDR-TB treatment centers in Haiti, with Partners in Health (PIH).

GHESKIO has sought to achieve an impeccable record of ethical research in Haiti. They have had an experienced institutional review board (IRB) in place since 1984. In 2001, GHESKIO promoted the development of Haiti’s first National Ethics Committee (42–44). In addition, GHESKIO has pioneered many interventions to improve the understanding of illiterate volunteers enrolled in research studies (45–49).

Impact of the Earthquake and the Cholera Epidemic

GHESKIO's response to public health emergencies in Haiti demonstrates its resilience and capacity to refocus rapidly on new emerging health priorities. Though GHESKIO lost many key personnel and 65% of its facilities in the earthquake, they managed to account for 94% of its patients on ART. At the same time, GHESKIO set-up an emergency field hospital in collaboration with U.S. HHS disaster medical assistance team that performed surgical procedures on over 3,000 patients. GHESKIO provided post-operative and rehabilitation services to 8,000 patients over the ensuing two years and assistance to over 7,000 internally displaced persons (50–54).

In October 2010, Haiti experienced its first cholera epidemic. GHESKIO rapidly established cholera treatment centers inside the adjacent slums, trained 2,000 medical staff, and informed 250,000 persons in the community about modes of cholera prevention and treatment (55, 56). As of June 2013, over 33,000 patients were admitted to the GHESKIO cholera sites with 0.1% mortality. In collaboration with the MOH and PIH, GHESKIO introduced oral cholera vaccine (OCV) in Haiti (57–60). The MOH has since launched a national OCV scale-up.

The Current Situation

Clinical Care

GHESKIO has been a major partner with the government and other organizations in combating the epidemic for over 30 years. The HIV prevalence in Haiti has decreased, from 6.3% in 1993 to 2.2% in 2012 (7). Over the past decade, ART has been expanded to 123 clinics providing treatment to 50,000 patients, with 1/3 of these covered by the GHESKIO network. Using the present WHO guideline for initiating ART, it is estimated that in 2014, Haiti will approach 100% ART coverage.

Training

As of June 2013, GHESKIO had trained over 11,000 medical personnel in integrated HIV prevention and care, including 3,500 physicians, 4,900 nurses, 1750 laboratory technicians and 1375 social workers. A diversified Community Advisory Board has sensitized over 300,000 community agents and leaders about HIV modes of transmission. Three specialized training programs have been established: Haiti's first Master's in Public Health Program (MPH) in 2005, the first Nurse Practitioner Program (NP) in 2009 and a specialized laboratory training course (SLT) in 2010. These programs are successful because they fulfilled the needs of expanding human resources and were developed in collaboration with local and international institutions: The MPH and NP programs with Quisqueya University and Cornell and the SLT course with the National Public Health Laboratory.

Research

GHESKIO has been a model of US-international collaboration. GHESKIO research evolved from early epidemiologic and natural history studies to the conduct of clinical trials supported by an NIH MERIT Award (1990) (61–63). GHESKIO was designated an

international site in the HIV Vaccine Trial Network (HVTN, 1997) and in the Adult Clinical Trial Group (ACTG, 2002), and as an independent Clinical Trials Unit (CTU) in 2006. GHESKIO's productivity has been recognized by uninterrupted NIH support since 1983. The GHESKIO CTU has conducted seven adult therapeutic, nine HIV vaccine and four maternal-child-adolescent trials with 3,400 participants enrolled and retention rates of 98%. GHESKIO is currently conducting 17 investigator-initiated research projects independent of the CTU. To date, there have been over 130 peer-reviewed publications with seminal studies published in prestigious journals.

In 2000 GHESKIO was given the status of public utility by the Haitian government (64)

Beyond 2013

GHESKIO is presently implementing an NIH study to provide same-day HIV diagnosis and ART initiation, with the possibility to expand a test-and-treat intervention nationally. GHESKIO has also determined the most common human papillomavirus (HPV) serotypes in both HIV-infected and uninfected populations and plans to conduct a pilot project with the MOH to offer HPV vaccine to adolescents in an urban population. The increasing number of multi-drug resistant (MDR)-TB cases is a major concern and a priority. GHESKIO plans to evaluate new drugs and vaccines and is supported by its BSL-3 laboratory and a new MDR-TB hospital. Nutrition is another focus area with the construction of a Family Nutrition Unit. A 2007 editorial of the Journal of Infectious Diseases stated: "Operational research must be a cornerstone of future success (of AIDS interventions), and it is expected that the GHESKIO program will continue to help lead the way" (65).

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