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How IAVI builds scientific capacity in developing countries

In service to its mission to ensure the development of AIDS vaccines for use throughout the world, IAVI and its partners have established an international network of clinical facilities and laboratories, building technical infrastructure and cultivating human resources to conduct vaccine trials and related epidemiological studies. These research centers, located in South Africa, Zambia, Kenya, Uganda and Rwanda, are linked to existing national institutions. They are locally staffed and led, for the most part, by local clinicians and scientists who are recognized experts on HIV. Over the past decade, they have evaluated 13 AIDS vaccine candidates in early-stage clinical trials, probed the immunology of HIV infection and contributed significantly to the body of knowledge on regional AIDS epidemics.

THE RATIONALE

Making an AIDS vaccine of use to the developing world is integral to IAVI's mission, and such vaccine candidates must be tested where they are ultimately meant to be used. IAVI recognized early on the benefits of working with partners to establish clinical research centers in developing countries—specifically, the opportunity to leave something of lasting value behind. The organization thus invested for the long-term in local research institutions, improving their ability to participate in HIV research and making them active partners in global health intervention research.

IAVI has gone well beyond equipping clinics and laboratories. It has overseen

the training of research center staff to ensure research is conducted in accordance with the highest of scientific and ethical standards and the meticulous care required by regulators who approve new vaccines.

- More than 1,000 clinicians, nurses and counsellors involved in clinical trials have received training in Good Clinical Practices.
- Laboratory scientists and technicians have also been trained to enable the accreditation of their labs under the stringent Good Clinical Laboratory Practices (GCLP) scheme, which is based on the legal requirements in Europe and South Africa for collecting and analyzing clinical trial data. Upwards of 750 individuals in South Africa, Kenya, Rwanda, Uganda, Zambia and India have benefitted from basic GCLP training through IAVI's programs. Roughly 70% of the GCLP trainees have worked directly on IAVI studies. The rest have come from other laboratories in their home countries—helping to build technical capacity well outside IAVI's network of labs.

Training and other activities are coordinated by two core labs: IAVI's Human Immunology Laboratory (HIL), based in London, and by Contract Laboratory Services (CLS) in Johannesburg. The HIL and CLS teams closely monitor the integrity of data generated in the network labs to make sure that they adhere to the high standards required in clinical trials. Their

tests consistently show that the network labs in Africa perform complex clinical and immunological analyses at least as competently and consistently as their US counterparts. Network labs provide real-time safety testing at all facilities. This is vital to ensuring the wellbeing of volunteers during and after clinical trials.

BUILDING CAPACITY

To date, IAVI has supported the training of more than 220 technicians in the preservation, processing and analysis of samples collected in clinical trials and related studies. This includes training in everything from basic laboratory safety to specialized immunological analyses to evaluate the control of HIV by infected individuals and the immune responses elicited by vaccine candidates.

The Kenya AIDS Vaccine Initiative (KAVI)—which was IAVI's very first partner in Africa—is today well along the path to becoming a center of excellence in mucosal immunology, the assessment of immune responses in the tissue that lines body cavities. It is in such tissues that HIV establishes a beachhead in the earliest stages of infection. Some of the most exciting AIDS vaccine candidates in preclinical development today, including those in IAVI's portfolio, are devised to activate immunity in mucosal tissues. KAVI is well positioned to become a hub for clinical trials evaluating such candidates.

Many of the skills transferred through the training IAVI has provided its partners are broadly applicable to biomedical research.

- KAVI is working to become a leading partner for the conduct of clinical research in East Africa. KAVI has already launched one trial evaluating a treatment for a sexually transmitted disease in partnership with another institution.
- The Kenya Medical Research Institute Centre for Geographic Medicine Research-Coast (KEMRI-CGMRC), in Kilifi, IAVI's other partner in the country, has pioneered the use of audio computer-assisted self interview (ACASI) technology in risk assessments for sex workers and men who have sex with men (MSM).
- The Uganda Virus Research Institute (UVRI) contributed to KEMRI-CGMRC's selection as a central laboratory of the Bill & Melinda Gates Foundation-NIH T-cell consortium in 2006. It also harnessed the technical capabilities established with IAVI's support to participate in a recent trial that used large-scale analysis of gene expression to probe how the yellow fever vaccine activates the immune response.
- The Uganda Research Unit on AIDS—a field research site in Masaka run by UVRI and the UK's Medical Research Council—is today capable

of conducting a wide range of HIV-prevention and epidemiological studies in part due to IAVI's support.

- The Zambia-Emory HIV Research Project has applied the research capacity built in partnership with IAVI to investigate the nature of transmitted HIV viruses.

IAVI also takes a comprehensive public health and development-driven approach to engaging communities in AIDS vaccine research. For instance, IAVI has trained counselors and health care providers in communities surrounding collaborating research centers in Africa. This ensures that such communities benefit in immediate, tangible and lasting ways from their participation in HIV research.

DOMINO EFFECTS

IAVI-trained scientists and technicians are making their presence felt in many ways in the African scientific community.

- UVRI runs a mentoring program that enables young clinical trial managers and lab scientists to work alongside more experienced teams.
- Scientists from government-sponsored research programs in Kenya, Tanzania and Malawi have been mentored by IAVI's Ugandan partners in designing and managing clinical trials and complying with GCLP.

- IAVI has invested in a “train-the-trainers” program that will ensure that the skills learned by the scientists in its laboratory network are passed on to their colleagues at other institutions in their home countries. KAVI's researchers and technicians have thus trained more than 140 people in GCLP, including staff from the laboratories of the US Centers for Disease Control and Prevention in Kisumu and Nairobi. They have also trained researchers from Sudan, Uganda, Ethiopia and Rwanda working with the Drugs for Neglected Diseases initiative. This work is supported by a grant KAVI has obtained from the Canadian government to expand the capacity building done so far in partnership with IAVI, and to assist in the development and GCLP accreditation of labs across the region.

IAVI believes that ending the AIDS pandemic will require the contributions of researchers from the countries most burdened by the virus. It also believes that the establishment of sustainable, local scientific and technological capacity is critical to the success of not only the AIDS vaccine enterprise but of economic development efforts as well. Investing in AIDS vaccine research in developing countries can have benefits that reach beyond the ending of the AIDS pandemic.



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