

## THE IMPACT OF AIDS VACCINE RESEARCH ON HEALTH SYSTEMS STRENGTHENING

### Introduction

According to the Canadian HIV Vaccine Initiative, “A safe, effective, affordable and globally accessible preventive HIV vaccine offers the greatest promise for reducing global rates of HIV infection and reversing the devastating social and economic costs and development inequalities that have been exacerbated by HIV/AIDS.”<sup>i</sup>

It may take a long time for a safe and effective vaccine to be discovered and there has been some discouragement related to recent setbacks in AIDS vaccine research.<sup>ii</sup> However, there are scientific indications that an AIDS vaccine is possible and researchers maintain that setbacks help to answer important research questions and are a normal part of the research process.

The development of a safe and effective AIDS vaccine is the primary goal of AIDS vaccine research and, once achieved, will have a remarkable impact on reducing the spread of HIV. But there are other added benefits. Conducting AIDS vaccine research in developing countries also strengthens their health systems by reinforcing their research capacity and contributing to health system functioning more broadly. This fact sheet examines the impact of AIDS vaccine research on health systems strengthening in five key areas: the training and retention of human resources; infrastructure development; institutional development; improved health services; and enhanced HIV services.

#### ***AIDS vaccine research in developing countries***

Vaccine trials are increasingly taking place in low- and middle- income countries. It is important that AIDS vaccine trials take place where targeted HIV subtypes (clades) are present so that future vaccines will be effective in those areas. Moreover, developing countries have historically waited longest to benefit from new health technologies, including vaccines. Given the disproportionate burden of HIV and AIDS on developing countries, it is imperative that strategies be developed to avoid such a delay when an AIDS vaccine is eventually developed.

Conducting AIDS vaccine trials in developing countries has the potential to strengthen political, social and cultural commitment and acceptance of a vaccine when it becomes available. For example, if a vaccine is developed for a subtype in a community and the community has participated in trial governance, there are more assurances that the vaccine will be appropriate for that particular community and that community awareness regarding the benefits of a vaccine will already be high.

At the end of 2007, 19 low- and middle- income countries had hosted AIDS vaccine research efforts. The trials have demonstrated the feasibility of conducting research in resource-poor settings, and have raised important questions about the impact of the trials on the communities in which they are being conducted. The AIDS Vaccine Advocacy Coalition (AVAC) encourages AIDS vaccine scientists to figure out how they can “leave poor communities better off for having taken part in a trial even if the particular vaccine being tested turns out not to work or to be only partially effective?”<sup>iii</sup>

In a speech at the XVII International AIDS Conference, Craig McClure, Executive Director of the International AIDS Society, said, “The push for more research, part of a comprehensive response to HIV, comes at the same time as a clarion call for health systems strengthening.”<sup>iv</sup>

*A **health system** consists of all the organizations, institutions, resources and people whose primary purpose is to improve health. **Strengthening health systems** means addressing key constraints related to health worker staffing, infrastructure, health commodities (such as equipment and medicines), logistics, tracking progress and effective financing.” (WHO, 2008)*

There is evidence that the two goals—increased vaccine research and stronger health systems—are not at odds with one another. Rather, AIDS vaccine research can and is contributing to the strengthening of health systems, including the building of research capacity. This means that throughout the long and

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often discouraging journey towards an AIDS vaccine, the individuals and communities that are participating in vaccine research are benefiting along the way. An overview of the five key areas in which AIDS research is contributing to health systems strengthening is provided below.

## 1. Training and retention of human resources

AIDS vaccine trials train research personnel, who gain new skills in multiple aspects of research, including methodology, good clinical practices, good clinical laboratory practices, standard operating procedures, gender sensitization, research ethics, quality assurance and data management. These skills are transferable to other areas. For example, researchers with the International AIDS Vaccine Initiative (IAVI)<sup>v</sup> have found that staff from AIDS vaccine trials have gone on to work on other local research projects, including microbicide trials and vaccine trials for malaria and human papillomavirus.

*“When you invest in people, you invest forever. Even if we were to find a vaccine against HIV tomorrow, the capacity to do clinical trials in other fields will always be here.”*

—Dr. Elwyn Chomba, principal investigator and chairperson of the Project Management Group at the Zambia Emory HIV Research Project (IAVI, 2008)

The health systems in many developing countries are challenged by the emigration of health professionals. While this issue affects all health workers, it is particularly crucial that developing countries retain highly trained health researchers. Good research capacity is integral to a strong health system. AIDS vaccine research is affording new opportunities for career advancement, leading researchers to remain at home or return from abroad. These researchers are now serving as role models for the next generation of scientists in developing countries. For example, the Uganda Virus Research Institute (UVRI) runs a research mentoring program, allowing junior research teams to work alongside more experienced teams, thereby strengthening local capacity.

*“Personally, I think the best thing is that IAVI is countering the brain drain. The additional funding we receive is used by our best scientists when they come home from training abroad.”*

—Professor Job Bwayo (Hecht, R., Becker, J., and Roca, E., 2006)

Moreover, research capacity is being strengthened as regional scientific networks begin to form. One Ugandan researcher points out, “in the past a lot of the collaboration was with people in the North, not with colleagues in Africa.”<sup>vi</sup> This is changing and regional networks of researchers are coming together to share research and experiences, train one another and write joint publications.

## 2. Infrastructure development

Many AIDS vaccine study sponsors invest in upgraded laboratory and healthcare infrastructure. The equipment and facilities that are left behind once AIDS vaccine trials are finished can be used for future research or for health care services. For example, at the Kenyatta National Hospital in Nairobi, vaccine trial sponsors built an additional floor to the hospital and equipped it for vaccine research. Combined with the training of staff, this resulted in an upgrade of laboratory performance to the same level as facilities in developed countries. Once vaccine trials end, improved infrastructure can be sustained and used for other research or health care purposes.

## 3. Improved regulatory processes

AIDS vaccine research is contributing to strengthened regulatory processes. Regulatory processes involve obtaining approval from a national regulatory institution to study a vaccine candidate in humans, based on the submission of extensive preclinical and manufacturing data. Regulatory processes include ethics approval, based on established international guidelines for ethical treatment of all volunteers in pharmaceutical and vaccine trials. These guidelines are reinforced by an

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independent review system on a national and trial-site basis. Ethical guidelines include requirements that all potential volunteers receive counselling on informed consent; trials employ only competent and highly trained research staff; all necessary steps are taken to maximize the confidentiality of volunteers; all trial participants receive extensive risk-reduction counselling throughout the trial and access to other prevention methods, such as condoms; and a volunteer can decide to leave the study at any time without explanation.

Governments that did not initially have the capacity to approve vaccine trials sometimes strengthen their regulatory processes, including ethics approval, as a result of undertaking vaccine studies. For example, IAVI has supported an effort involving the South African National Foundation for Research and Development to review and update Uganda's "Guidelines for Conducting Research on Human Subjects" based on current international standards. This effort has resulted in stronger and more comprehensive guidelines for the entire research community in Uganda. A Ugandan government official stated that AIDS vaccine trials had contributed to the building of regulatory capacity for all kinds of trials, with the country's regulatory system now coherent and able to evaluate scientific, ethical and safety issues.

### 4. Improved health services

The training and retention of health human resources as well as the development of health infrastructure contribute to improved delivery of health services.

In addition, AIDS vaccine research has been shown to enhance the delivery of health services through an increase in diagnosis and treatment of previously undiagnosed illnesses. During volunteer screening, potential volunteers have their overall health assessed which provides the opportunity to identify other illnesses, such as hypertension. Research staff are then able to provide treatment or to use their networks with health care providers to refer these individuals for treatment.

Participants also receive health monitoring throughout the trial, with treatment or referral to other providers for new health issues that arise.

### 5. Enhanced HIV services

AIDS vaccine trials provide an entry point for delivery of HIV services including prevention, counselling and testing, support and treatment. In addition, trials provide a valuable opportunity for education around HIV at the community level.

Participants in vaccine trials are people who are HIV-negative. Along with extensive education about HIV in general, all individuals who wish to participate in AIDS vaccine trials receive counselling and HIV testing. Many AIDS vaccine researchers are using this screening process as an opportunity to introduce rapid HIV-testing kits to the community, and to teach local health staff how to administer tests and counsel those who test positive.

*During vaccine trials in Thailand, there were decreases in the risk behaviour of Injection Drug Users and increases in condom use. Due to increased HIV education and provision of prevention services, HIV incidence declined from 5.8 % to 3.4 % during the trials. (IAVI, 2007)*

Participants may encounter stigma because of their participation in trials. Researchers have an important role to play in advocating on behalf of the volunteers, and providing education to the broader community in order to dispel misinformation and raise awareness about HIV and vaccine trials. As such, researchers frequently conduct educational events around HIV prevention during recruitment for trial volunteers and throughout the study.

Provision of ARVs during trials in another issue. All major trial networks, including the US government's HIV Vaccine Trials Network (HVTN), the International AIDS Vaccine Initiative (IAVI) and the South African AIDS Vaccine Initiative (SAIVI), have committed to making antiretroviral drugs (ARVs) available to trial participants who become infected during the course of their trials. Community Advisory Boards, made up of a broad range of stakeholders, play an important role in setting appropriate guidelines for ARV provision in AIDS vaccine trials. Some research programs expand treatment to the community beyond trial participants. For example, the US Military HIV Program has created "wrap-around" HIV

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prevention and treatment services for the communities located near trials in Kenya, Uganda and Tanzania.

## Conclusion

Sustained and sufficient investment in AIDS vaccine research is a crucial component of comprehensive HIV prevention.<sup>vii</sup> This research relies on the continued support and dedication of donors, researchers and the individuals and communities that participate in and host vaccine trials. Once developed, an AIDS vaccine could play an unparalleled role in curbing the AIDS epidemic. In addition, AIDS vaccine research has demonstrated the potential to contribute to health systems strengthening, and this added benefit is now being actively pursued. All of those involved in AIDS vaccine research should continue to harness the potential of AIDS vaccine research in order to ensure that the communities that make research possible continue to benefit from the process, and are equipped to benefit from a vaccine when one is developed.

## References

AIDS Vaccine Advocacy Coalition (AVAC) (2004). *AIDS Vaccine Trials: Getting the Global House in Order*. "Vaccine Trials: Leaving Communities Better Off". [http://www.avac.org/pdf/reports/2004AVACReport\\_High.pdf](http://www.avac.org/pdf/reports/2004AVACReport_High.pdf)

AIDS Vaccine Advocacy Coalition (AVAC) (2008). *The Search Must Continue*. <http://www.avac.org/reports.htm#2008>

Canadian HIV Vaccines Initiative (CHVI). <http://www.chvi-icvv.gc.ca/index-eng.html>

Craig McClure, Executive Director, International AIDS Society. *AIDS Vaccines – 2010 and Beyond: Charting a Course for the Future of AIDS Vaccine Research*, XVII International AIDS Conference, Mexico City, 2008.

Global HIV Vaccine Enterprise. <http://www.hivvaccineenterprise.org/>

Hecht, R., Becker, J., and Roca, E. (2006) *AIDS Vaccine Research Today- A Deeper Partnership with Developing Countries*. Global Health Council. <http://www.globalhealth.org/reports/text.php3?id=238>

Interagency Coalition on AIDS and Development (ICAD) (2008). *Tools, Trend and New Technologies in HIV Prevention*. [http://icad-cisd.com/content/pub\\_details.cfm?id=234&CAT=9&lang=e](http://icad-cisd.com/content/pub_details.cfm?id=234&CAT=9&lang=e)

ICAD (2008). *Current Issues in HIV Prevention*. [http://icad-cisd.com/content/pub\\_details.cfm?ID=247&CAT=9&lang=e](http://icad-cisd.com/content/pub_details.cfm?ID=247&CAT=9&lang=e)

International AIDS Vaccine Initiative (IAVI). (2007). *Policy Research Working Paper #16. The Journey Towards and AIDS Vaccine: Perspectives on Conducting Trials in Developing Countries*. <http://www.iavi.org/viewfile.cfm?fid=47633>

IAVI (2008). *IAVI Spotlight: A Boost for African Science*. <https://www.iavi.org/viewfile.cfm?fid=49026>

IAVI (2008a). *AIDS Vaccine Blueprint 2008: A Challenge to the Field, A Roadmap for Progress*. <http://www.iavi.org/viewfile.cfm?fid=49229>

IAVI (2008b). *Questions and Answers about Vaccines and AIDS*. <http://www.iavi.org/viewpage.cfm?aid=33>

Szanton, J and Kuipers, H (2006). *Join forces to advocate for a comprehensive and long-term agenda: An AIDS vaccine is possible*. Bulletin of Medicus Mundi Switzerland No.101. <http://www.medicusmundi.ch/mms/services/bulletin/bulletin200603/kap2/101iavi.html>

World Health Organization. (2008). *About Health Systems*. <http://www.who.int/healthsystems/about/en/>

<sup>i</sup> Canadian HIV Vaccines Initiative (CHVI).

<sup>ii</sup> For more information on the vaccine research process, see ICAD's fact sheet *Tools, Trend and New Technologies in HIV Prevention* (January 2008) or the 2008 AVAC Report *The Search Must Continue*.

<sup>iii</sup> AVAC Report 2004. *Vaccine trials: Leaving communities better off*.

<sup>iv</sup> Craig McClure, *AIDS Vaccines – 2010 and Beyond: Charting a Course for the Future of AIDS Vaccine Research*, XVII International AIDS Conference, Mexico City, 2008.

<sup>v</sup> The International AIDS Vaccine Initiative (IAVI) is a global not-for-profit, public-private partnership working to accelerate the development of a vaccine to prevent HIV infection and AIDS.

<sup>vi</sup> International AIDS Vaccine Initiative (IAVI). (2008). *IAVI Spotlight: A Boost for African Science*.

<sup>vii</sup> For more information on comprehensive prevention, see ICAD's fact sheet *Current Issues in HIV Prevention* (September 2008).