

ensuring rapid global access to aids vaccines

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IT WOULD BE morally unthinkable to have a safe and effective AIDS vaccine without the capacity to deliver it quickly to those most at risk of HIV infection. Yet there are enormous challenges to making a new vaccine available in developing countries at the same time as in industrialized countries—in fact, it's never been done before.

Advocates and policymakers are beginning to think about how these challenges can be overcome. As they do, they must also consider the amount of time, resources and political capital to invest in the access issue, when a safe and effective AIDS vaccine may still be at least a decade away.

At first glance, it might seem unnecessary (or even wasteful) to start planning now for delivering a vaccine that doesn't yet exist. But the world's experience with licensed vaccines demonstrates the terrible consequences of failing to tackle access issues early. Poor countries still wait an average of 20 years after a vaccine is licensed in industrialized nations before it starts reaching their own populations.

This unconscionable delay has several causes, including:

- › Too little money to buy the vaccines. This is true even with the creation of new organizations dedicated to closing this gap, such as the Global Alliance for Vaccines and Immunization (GAVI) and the Vaccine Fund.
- › The slow pace at which companies scale up capacity to manufacture large enough amounts of new vaccines to meet global needs.
- › Needlessly long regulatory approvals processes.
- › Too few effective systems for distributing new vaccines in poor countries.

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Access to AIDS vaccines first captured global attention at the 2000 International AIDS Conference in Durban, which was dominated by the issue of access to *antiretroviral* therapy in developing countries. Citing this glaring example of public health disaster stemming from early failure to plan for treatment access, a small number of advocates began urging

policymakers to start thinking about vaccine access in advance of having a product. The meeting also featured the release of “A Blueprint for Ensuring Rapid Access to AIDS Vaccines” by IAVI and the distribution of buttons and posters calling for “An AIDS Vaccine for ALL.”

One year later, at the United Nations General Assembly Special Session on AIDS (UNGASS), advocates from several countries succeeded in getting a statement on AIDS vaccines included in the final “UNGASS Declaration of Commitment.” In this document, nations of the world agreed to:

Encourage investment in HIV/AIDS-related research, in particular for sustainable and affordable prevention technologies, such as vaccines and *microbicides*, and encourage the proactive preparation of financial and logistic plans to facilitate rapid access to vaccines when they become available.

key challenges to aids vaccine access

MOST PEOPLE IN THE FIELD agree on the main challenges to ensuring rapid, broad access to AIDS vaccines. These include:

Estimating demand

Demand for an effective AIDS vaccine is likely to be very high. Yet precise estimates of how high (and therefore how much vaccine will be needed) don't exist. That's partly because demand will depend a lot on the specific properties of the vaccine, such as its level of effectiveness, its cost and ease of use. For example, there will be much more demand for an inexpensive product that protects 80% of all vaccinated people after one dose, compared with a more expensive vaccine that gives only 40% protection and requires three injections. In the latter case, different countries will probably make different decisions about vaccinating their populations, depending on the severity of their epidemic. (See chapter 6 for more discussion of these issues).

But difficult as it is to come up with comprehensive estimates of demand, this information is crucial for planning how to finance, produce and deliver a successful vaccine. A broad group of stakeholders therefore needs to work together on demand estimates for a range of different AIDS vaccines. Vaccine manufacturers, who do not usually collaborate, must make a special effort to tackle this problem together.

Manufacturing

Building a large vaccine production plant that meets the requirements of regulatory agencies typically takes 4–5 years and costs hundreds of millions of dollars. This long time scale and high cost creates a dilemma. If building begins only after *Phase III* trials show a vaccine to be safe and effective, the result will be a 4–5 year delay until the new facility can produce large amounts of vaccine. If it starts early enough to avoid this delay—that is, several years before a vaccine has

been shown to work—it risks the entire investment should the product prove ineffective.

But there are ways to begin scaling up manufacturing capacity before a vaccine's *efficacy* is proven, yet without requiring manufacturers to assume the full financial risk. These include:

- › Sharing the risk between the public and private sectors.
- › Building production plants with the flexibility to shift into making other vaccines by other technologies, if the candidate AIDS vaccine turns out to not to work.
- › Engaging manufacturers who already produce licensed vaccines in developing countries, to see whether they have potential for large-scale production of AIDS vaccines.

Not even the most advanced regulatory agencies have clear guidelines on what properties an AIDS vaccine needs for licensure.

Regulatory approval

Regulatory agencies, particularly those in developing countries, are often not well set up to review new products such as AIDS vaccines quickly. But not even the most advanced agencies have outlined clear guidelines on what properties an AIDS vaccine will need to show to be granted a license. Nor is it clear whether countries will require a vaccine that has proven effective in one (or several) regions to be tested again in local populations and/or against locally circulating HIV *strains*. Also, since each country or region has its own licensing authority with its own requirements, it will be impossible for vaccine producers to apply for a single license that's valid everywhere; instead, many different regulatory applications will be needed.

Authorities in developing countries may look to industrialized nations for guidance in licensing a particular AIDS vaccine, but ultimately they will want and need to reach their own conclusions. Those with established regulatory capacity (such as Brazil, India and South Africa) will need to play a leading role. But many others will desperately need technical assistance to strengthen their capacity for making these regulatory decisions.

Delivering AIDS vaccines

The infrastructure for delivering vaccines in poor countries is focused almost entirely on infants and children. But an AIDS vaccine, at least initially, will be targeted to adolescents and adults—groups that are not effectively reached through existing infrastructure, even in wealthy countries.

Developing sustainable systems for getting vaccines to people is expensive, even for childhood *immunization*. The six basic vaccines given to infants in most countries cost less than US\$1 per dose, but delivering them costs 10 to 20 times more—due to the price of transporting them, sometimes to remote locations, while keeping them cold (depending on the type of vaccine), developing local infrastructure and training personnel to immunize people, and a range of other steps. It is crucial that funds to help developing countries pay for AIDS vaccines cover the cost of both purchasing and delivering them.

Financing vaccine purchase

A highly effective AIDS vaccine is likely to be cost-effective at any reasonable price (although this may not be true for low-efficacy vaccines, especially in countries where HIV infection rates are relatively low). But even cost-effectiveness does not guarantee that enough money will be available to buy AIDS vaccines for poor countries. Although childhood vaccines are among the most cost-effective health interventions ever developed, more than 2 million unvaccinated children a year still die from the diseases these vaccines prevent (see table 5.1, following page).

The cost of purchasing hundreds of millions of vaccine doses over many years will be significant, even if prices are heavily tiered (meaning that they are much lower in developing countries than in industrialized ones). Some advocates have called for donor countries to set aside funds to buy large amounts of vaccine, even before one is developed. Their reasoning: this step would give the pharmaceutical industry and international funders more confidence to invest in AIDS vaccine development and manufacturing capacity, since it

would guarantee buyers for the product. Others question these proposals, citing the desperate need for funds and commitments targeting health interventions that already exist but are under-used. (For example, much more money is needed to avoid falling even farther behind with childhood immunization coverage.) But public health advocates agree that donor organizations and governments must do more to improve vaccine coverage in poor countries—both to save millions of lives and to help build confidence in the world's willingness to buy a future AIDS vaccine and deliver it where it is desperately needed.

Table 5.1 Annual deaths from vaccine-preventable diseases (2002)

Disease	Number of deaths
Diphtheria	5,000
Measles	612,000
Polio	1,000
Tetanus	215,000
Pertussis	294,000
Hepatitis B	600,000
Heamophilus influenzae b	413,000
Yellow Fever	30,000
Total	2,169,000

Source: World Health Organization

conclusion

THE CHALLENGE of getting an AIDS vaccine quickly to people in poor, hard-hit regions of the world will be enormous, but not impossible—if steps are taken well in advance of having a vaccine ready for delivery. This will also require resources and political will. AIDS vaccine advocates must continue to pressure policymakers, governments in the North and South, multilateral agencies and vaccine manufacturers to work together on access issues. We must also continue to aggressively push the research and development effort, because a safe and effective product is still the bottom line.

resources

www.vaccinealliance.org

Global Alliance on Vaccines and Immunizations (GAVI) and the Vaccine Fund. Information on the levels of vaccine coverage and funding for childhood vaccines globally, plus news and updates about global immunization programs and policies.

www.who.int/vaccines

World Health Organization (WHO). Immunization, Vaccines and Biologicals. Report on the status of basic vaccine coverage globally.

www.iavi.org/pdf/AccessBlueprint.pdf

www.iavi.org/pdf/whitepaper.pdf

International AIDS Vaccine Initiative (IAVI). Two papers analyzing the policy challenges and making recommendations on how to ensure global access to an AIDS vaccine.