The Problems And Promise Of Vaccine Markets In Developing Countries

Several promising and innovative initiatives are under way to increase access to vaccines in developing countries.

by Amie Batson

ABSTRACT: As in the market in North America, major barriers to private investment in the development and production of vaccines exist for markets in developing countries. These include the risks of uncertain funding and demand and the difficulties created by historically low pricing. A number of promising and innovative approaches nonetheless are being explored to increase the incentives and reduce the risks of investing in vaccines for developing countries. These innovations are fueled by the growing recognition of powerful stakeholders that vaccines are a critical technology for ensuring global health.

The barriers to private investment in the development and production of vaccines for developing countries are more pronounced than those for the North American market. Tragically, the resulting impact on vaccine availability, and thus on health, is much worse—and is measured in millions of deaths.

A vaccine manufacturer’s decision to invest in the development and commercialization of vaccines, although tied to scientific progress, is based largely on economics: the costs and risks of investments and the expected return on future sales. An evaluation of vaccine markets in developing countries yields a different mix of economic factors inhibiting investment from that found in the United States. But as noted by Mark Pauly, the problems in the vaccine market—and the solutions—ultimately stem from the priority accorded by consumers (donors, governments, and individuals) to vaccines.1 Thankfully, the seeds of a solution may be growing, with an increasing number of powerful stakeholders recognizing and investing in priority vaccines for developing countries.

Funding

National health budgets in the poorest developing countries are severely underfunded, averaging only $29 per capita in sub-Saharan Africa in 2000 (versus $4,499 in the United States).2 External donors provide critical funding to augment health budgets generally and immunization specifically. However, this support is usually unpredictable and inadequate to fill the funding gaps, with commitments generally limited to only one year.

Donors, foundations, and other partners recently created a public-private partnership called the Global Alliance for Vaccines and Immunization (GAVI). GAVI’s mission is to save children’s lives and protect people’s health through the widespread use of vaccines. GAVI’s sister entity, the Vaccine Fund, raises money in support of this mission. From 2000 to 2005 GAVI and the Vaccine Fund committed roughly $1.2 billion to the poorest developing countries to support their national immu-
nization programs and to purchase newer vaccines. The Vaccine Fund enables donors to make multiyear commitments and implement innovative supply strategies, such as guaranteeing the purchase of future vaccines.

**Pricing**

**Differential pricing.** Historically, the price of vaccines in the public-sector markets of developing countries has been extremely low compared with prices charged in private markets and the public markets of industrialized countries. Developing countries’ low prices have been facilitated by manufacturers’ use of differential pricing (also called tiered pricing). Low prices allow developing countries to buy vaccines, and higher prices in industrialized markets allow manufacturers to recover their research and development (R&D) costs and earn a profit. The vaccine market has historically had major price differentials, with the lowest segment often being bulk purchases made by international agencies on behalf of developing countries.3

**Pooled procurement.** Pooled procurement has helped facilitate differential pricing. The United Nations Children’s Fund (UNICEF) and the Pan American Health Organization (PAHO), purchasing on behalf of numerous countries, negotiate lower prices for large quantities of basic pediatric vaccines. The vaccines they procured in the 1980s and 1990s were identical to those used around the world, making tiered pricing a highly effective strategy. However, increasing divergence in the products used in industrialized and developing countries is changing the dynamics of the market. Although this trend is reducing the potential for extreme price differentials, with the lowest segment often being bulk purchases made by international agencies on behalf of developing countries.5

**“Fair” pricing.** Both public and private partners in the vaccine market are grappling with the question of what is a “fair” price, for whom, and for how long. Segmenting the price curve into the short term, when global donors might pay higher prices, and the long term, when governments and local partners pay lower prices, is one possible solution. Questions about the affordability of vaccines are causing both sides to explore strategies that rely on new approaches to procurement, financing, and demand forecasting.

**Demand**

The vaccines that form the backbone of most immunization programs are mature, off-patent products that have been available for decades. These vaccines are widely used around the world and reach up to 90 percent of infants in developing countries.

More recent experience with the introduction of newer vaccines such as hepatitis B and *Haemophilus influenza* type B (Hib) conjugate into developing countries has shown demand to be unreliable and slow to grow. For example, fourteen years after its introduction in industrialized countries, less than 10 percent of infants in the seventy-five poorest countries are routinely immunized with Hib vaccine.7 The failure to rapidly and reliably create demand in developing countries for these new
Finding Solutions

The vaccine market in developing countries is a good news–bad news story. The bad news is that this market has been characterized historically by slow market penetration, inaccurate demand forecasts in the early years of a vaccine's introduction, expectations for very low prices, high price elasticity, procurement systems designed to drive prices down, and government budgets that are highly constrained and unpredictable from year to year.

The good news is that GAVI partners—including manufacturers, the Bill and Melinda Gates Foundation, the World Health Organization (WHO), the World Bank, UNICEF, donors, and others—are actively exploring innovative solutions to increase the incentives and reduce the risks of investing in vaccines for developing countries. These partners have identified vaccines as one of the most cost-effective tools to improve the health of both individuals and the broader public.

Why is the private sector interested? It is motivated by the possibility of returns from an untapped market and the desire to fill a market need—before governments and competitors do it for them. It is also motivated to contribute to improving global health—a motivation that is reinforced by the high staff morale and good will gained from contributing to the prevention of millions of deaths.

Investing in R&D. In addition to the funds from traditional research-funding institutions, the Gates Foundation has invested hundreds of millions of dollars in R&D of new vaccines against the leading killers of children and adults everywhere.

Investing in development and introduction. GAVI has established public-private partnerships to accelerate late-stage development and introduction of priority vaccines against diseases such as rotavirus and pneumococcus. These partnerships are designed to work with governments, donors, and industry to streamline demand, supply, and financing decisions. They coordinate and fund the efforts of partners supporting national decision-makers in whether to introduce these new products, ensuring a reliable and sustainable supply of affordable vaccine to developing countries, and reducing risks and creating incentives for private investment to ensure access to the product.

New strategies. A variety of new procurement and supply strategies are being explored. One of the most developed is an advance-purchase contract, which would legally bind donors to purchase a new vaccine once it becomes available on the market. Guaranteed purchase in advance would reduce uncertainty and increase the size of a market by accelerating a vaccine’s introduction into countries. The reduced risk and increased incentives could attract private investment in developing and supplying the vaccine more rapidly. It could also allow the manufacturer and the purchasing entity to structure a price curve that would allow for high prices during the early donor-financing years but guarantee lower prices once developing-country governments became responsible for the purchase.

New funding sources. GAVI and the Vaccine Fund are receiving increased funding for immunization and new vaccines from foundations and donors. As GAVI works with governments to determine funding priorities for 2006–2010, the Vaccine Fund has committed to raising $400 million per year—a reasonable goal given that the Gates Foundation and the government of Norway have already committed more than $1 billion over five to ten years.

Also, it is exciting to note that the United Kingdom has taken a lead in promoting an In-
The international Financing Facility for Immunization (IFFIm), which would provide proof of concept for this novel financing mechanism by raising $3–$6 billion for financing immunization programs in low-income countries over the next ten years. The IFFIm mechanism front-loads funding by using long-term government commitments as security for bonds issued in the capital markets. The proceeds from the bonds could be disbursed immediately to fund aid programs or to guarantee the purchase of future vaccines, for example, through an advance-purchase contract. If tied to such a contract, the bond issuance would be timed to correspond with the procurement of the new product once it is on the market. Whenever the bonds are issued, IFFIm would pay bondholders a modest rate of interest and, as money pledged by donor governments became available gradually over thirty years, would eventually repay the capital value of the bonds.

The vaccine market in developing countries is in flux, but a number of promising and innovative initiatives are under way to overcome the historical barriers. The public-sector partners in GA VI are reconciling the realization that they must pay higher prices to attract investment in vaccine development and use budgetary constraints to sustain production with their ingrained discomfort at paying the private sector “too much.” Manufacturers are also struggling with their desire to maximize revenues while recognizing that if prices are too high, demand will be reduced (or even destroyed), leaving unmet demand to attract competitors, or worse, public criticism.

As Pauly notes, the market is driven by economics, and the economics are driven by incentives and systems that ultimately stem from the priority accorded vaccines by consumers— in this case, key public-sector decisionmakers. There is cause to hope that donor partners funding vaccine development and purchase, and implementation partners structuring demand, finance, and supply strategies, will be able to substantively increase incentives and reduce the risks of providing vaccines to developing countries where they are needed the most.

The findings, interpretations, and conclusions expressed in this paper are entirely those of the author and should not be attributed in any manner to the World Bank, its affiliated organizations, or to members of its Board of Executive Directors or the countries they represent.

NOTES
2. World Bank, “Global Poverty Goals within Reach but Only with Strong Action on Trade, Aid, and Investing in People” (Press Release, 13 April 2003).