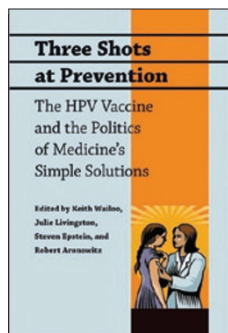


## Vaccine politics



### Three Shots at Prevention: the HPV Vaccine and the Politics of Medicine's Simple Solutions

Edited by Keith Wailoo, Julie Livingston, Steven Epstein and Robert Aronowitz

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Reviewed by Arthur Allen

Mass vaccination campaigns against infectious disease involve a tangle of cultural, political and medical issues, whose impact varies across time and place. When Cotton Mather argued for smallpox vaccination in Boston in 1721, the city was in the throes of an epidemic of the disease, which had already killed a fifth of the city's population. Mather's notion that scratching smallpox pus into healthy individuals would protect them from the scourge provoked a storm of revulsion and anger. Yet the threat it addressed was immediate and obvious.

By contrast, when Merck began advertising its human papilloma virus vaccine, Gardasil, in 2005, vaccination was a well-established procedure. But the company was attempting to convince parents to have their preteen girls injected with a product that would theoretically protect them three or four decades later against a disease that could already be substantially controlled by routine medical examination.

The rollout of the HPV vaccine, as described in *Three Shots at Prevention*, a useful and thought-provoking collection of 15 essays, demonstrates the complexities of vaccination science. On its face, the vaccine is an exceptional preventive. Both Gardasil and Cervarix, sold by GlaxoSmithKline, were created with ingenious bioengineered molecules that mimic HPV proteins. Both vaccines have proved safe and provide excellent protection against the two HPV strains that appear to cause two-thirds of the infections that lead to cervical cancer.

In the US, Merck took the unusual approach of beginning a heavy marketing campaign of the vaccine before Food and Drug Administration and Centers for Disease Control and Prevention advisory committees had completed their reviews and before state public health officials had decided how to incorporate the vaccine into their programs. This might have been justified if the vaccine had offered full protection against a pressing disease threat. Because it did not, the urgency with which Merck and its allies championed HPV vaccination evoked skepticism from many others, including friends.

Although the dramatic impact of infantile hepatitis B vaccination on preventing adult viral carriage offers an encouraging example, the long-term efficacy of the HPV vaccine remains unknown. Concerns have

been raised that the vaccine could lead insurers to stop paying for routine pelvic exams or that the ecological niche occupied by HPV vaccine serotypes 16 and 18 could be occupied by other tumorigenic strains.

Additionally, in countries with regular gynecological screening, cervical cancer is primarily a disease of the disadvantaged and the poor, who also tend to have a lower age of sexual debut. Experience in the US had shown that the best way to protect these underserved populations from a sexually transmitted disease was by mandating a vaccine as a condition for school attendance. Thus, public health officials who wanted the vaccine to have an impact were put in the position of requiring parents to contemplate that their 12-year-old daughters would need a vaccine for protection during sex.

The vaccine's inventors envisioned it as a tool whose most powerful impact would be on the 200,000-plus women who die of cervical cancer every year in the developing world. Yet it was initially priced for and marketed to populations that, as a group, needed it least. The backlash against Gardasil, writes Robert Aronowitz in one of the essays here, was fueled by the apparent hypocrisy of "dressing" the vaccine as a public good while selling it as a consumer product.

A mandate for, say, the measles vaccine is legally justified to build the herd immunity required to prevent the spread of that disease to the vulnerable. This argument appears weak in the case of HPV, notes medical historian James Colgrove in his essay. First, the Gardasil campaign neglected a principal vector of the disease (males), and it was geared at least initially at protecting individual girls rather than society, with herd immunity a rather distant goal.

But Colgrove rightly notes that coercion has proved effective in public health campaigns—to get motorcyclists to use helmets and drivers to use seatbelts, for example, and that compulsory vaccination laws exercise a stabilizing influence amid "fluctuations in public trust." And although pelvic exams have dramatically reduced cervical cancer's impact on the developed world, HPV infections still lead to an estimated 11,000 cervical carcinomas and 3,800 deaths each year in the US.

Economic considerations and skepticism about the vaccine's efficacy have been the major focus during the introduction of HPV in Europe. In France, the historian Ilana Lowy notes in her essay, the vaccine has been marginalized from public health campaigns, in part by an earlier controversy over allegations that the hepatitis B vaccine had caused cases of autoimmune disease.

Purchases or mandates of the HPV vaccine in wealthier countries may eventually make it easier for Merck and GlaxoSmithKline to sell their vaccines at affordable prices in the developing world; indeed, the Global Alliance for Vaccine Initiatives is already involved in negotiating such introductions. But we aren't privy to the strategic pricing decisions of the pharmaceutical companies, and epidemiological evidence for HPV subtype prevalence in Africa is still somewhat sketchy.

We get a vivid sense of the harm these vaccines could prevent in the essay of Doreen Ramogola-Masire, a Botswanan clinician who sees many HIV-infected women dying with aggressive cervical tumors. How long will it take before they can be protected from cervical cancer? This is a question that the controversy over HPV has scarcely addressed.

#### COMPETING FINANCIAL INTERESTS

The authors declare no competing financial interests.

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