



Cost-effectiveness, Affordability, and Financing of Cervical Cancer Prevention

Dr. Carol Levin
PATH

Video transcript is located below each slide.

Cost-effectiveness

- Compares the cost and benefits of cervical cancer prevention options.
- Helps with allocating scarce resources across competing priorities.
- Generates information that allows policymakers to compare resource costs and public health benefits associated with alternative programs.

Transcript: Cost-effectiveness compares the cost and benefits of cervical cancer prevention options. Policymakers are faced with limited budgets and need to consider allocating scarce resources across competing health priorities. Cost-effectiveness generates information that allows policymakers to compare resource costs and public health benefits associated with alternative programs.

Cost-effectiveness

- Benefits: lives saved, deaths averted, or treatment costs averted from not being hospitalized or from outpatient visits associated with illness.
- Costs: cost of vaccine, costs of screening, labor-to-deliver services, equipment, refrigerators, costs to reach older women, costs to reach girls in and out of school, etc.

Benefits might include the lives saved or the deaths averted from implementing a program. They may also include the treatment costs averted from not being hospitalized or an outpatient visit associated with the illness. Costs include the things you might expect, like the cost of the vaccine if it's a vaccination program or the cost of a screening test. It includes the labor needed to deliver it, it includes the equipment needed to run a Pap smear for laboratory cases, or it might include the cost of refrigeration to keep vaccines cold. In addition to those supply costs, there are program costs that need to be considered, and these can often be quite large. For instance, how do you reach older women in a community? How do you get girls to a school to be vaccinated, how do you get the vaccine to the school to get the girls vaccinated, and how do you ensure that you're reaching those girls that are out of school?

Cost-effectiveness

- Disease burden.
- The ability to reach a high number of girls for vaccination.
- The ability to reach a high number of women for screening.
- The efficacy of the vaccine or the duration of protection vaccinees expect to receive.

Other factors are very important for determining cost-effectiveness of cervical cancer prevention programs for a particular country. Factors include: the disease burden in that country, the ability to reach a high number of girls for vaccination, or to reach a high number of women for screening. In addition, there are some factors related to the vaccine itself. For instance, the efficacy of the vaccine, or the duration of protection that women or girls expect to receive. It's impossible to know all these different factors, and therefore we use computer-based models or mathematical models to test a variety of assumptions.

Global standards of cost-effectiveness

- Working threshold commonly used by public health professionals. *
- Established by the World Health Organization.
- Very cost-effective = an intervention with a cost-effectiveness ratio (CER) less than the GDP** per capita.
- Cost-effective = CER less than 3 times the GDP** per capita.

*2002 World Health Report

**Gross domestic product

What is cost-effective? Well, there are no criteria at this time to set a threshold for what is and is not cost effective. However, over the last few years, there has been a large amount of published literature that has established a working threshold that is commonly used by public health professionals. This threshold is established by the World Health Organization, and it says that if an intervention's cost-effectiveness ratio is less than the country's per capita income—that is, the gross domestic product (GDP) per capita—then it's considered very cost-effective. If it's less than three times the GDP per capita, it's cost-effective.

Cost-effectiveness of cervical cancer interventions

Current modeling suggests that:

- Cervical cancer screening generally is very cost-effective.
- HPV vaccination would be cost-effective with high vaccine efficacy, high coverage, and long duration of protection.
- In certain cost ranges, a combination of screening and vaccination is more cost-effective than either intervention alone.

There have been a lot of models looking at cervical cancer screening without focusing on vaccination, and the majority of these published studies indicate that, in fact, cervical cancer screening and treatment is a highly cost-effective intervention.

What do we know about vaccination? Well, there are fewer published studies on cost-effectiveness of vaccination programs. In fact, there are probably less than a dozen of these, and the majority of them are for industrialized nations. But, all of those studies have indicated that an HPV vaccine is a cost-effective intervention for preventing cervical cancer.

Affordability of cervical cancer screening

- Affordability is different than cost-effectiveness.
- An intervention can be cost-effective, but not affordable for a given program.
- In a five-country study, HPV DNA tests were the most expensive; cytology was next most expensive.
- Visual inspection was cheaper than cytology.
- A rapid, easier to use, and less expensive HPV DNA test will be available soon.

Affordability is different than cost-effectiveness. In fact, you can show that HPV vaccination or cervical cancer screening is very cost-effective or cost-effective, and it may still be unaffordable to national governments. Why is that? Well, let's consider the costs involved in establishing and sustaining a screening program, for instance. A five-country study on the cost of cervical cancer screening showed that HPV DNA tests were the most expensive method for screening women, followed by cytology. There is visual inspection, which is a cheaper and reliable option to HPV DNA testing and cytology. And then of course we're hoping that in the near future there will be a rapid HPV DNA test that's even more affordable, faster to use, reduces the loss-to-follow-up among women who have been screened, and they can be treated quickly. So, for example, in a cervical cancer screening program, maybe it isn't just the cost of the supplies and the labor and the personnel. Maybe the true cost to the government is setting up the infrastructure and training health workers to implement and sustain a program over time. Similarly, with vaccination, if the vaccine price is too high, the program might be cost-effective, but it won't be affordable to the government.

Affordability of HPV vaccination

- Currently the private sector price for HPV vaccine is very high.
- Manufacturers are committed to lowering the cost for low-income countries.
- We don't know what these costs will be.
- Governments will be required to pay a co-payment.

Currently, the private sector price for the HPV vaccine is very high. Manufacturers are committed to lowering the cost for low-income countries, but we don't know what these costs will be at this time. And even once the vaccine price comes down and external funding becomes available, governments will be required to commit some small co-payment to procure the vaccine. That may be 20 or 30 cents per dose procured, but even that may be difficult for countries to afford, depending on their GDP.

Financing screening

- External support will likely be needed for both screening and vaccination.
- Financing options are limited for screening but reproductive health donors may be able to help (United Nations Population Fund, United States Agency for International Development, World Health Organization, etc.).
- Screening services must be integrated into current women's health systems.

It looks like, no matter what happens, and cost-effective or not, decision-makers are going to have to get external support to help introduce an HPV vaccine and to strengthen reproductive health services to offer screening to older women. In the case of cervical cancer screening, those financing options are more limited. So, for instance, they have to fit in to an already overburdened reproductive health system which helps to ensure safe motherhood, which helps to address sexually transmitted diseases, and which offers family planning to women.

Financing vaccination

- There are more options for financing vaccination.
- Pan American Health Organization Revolving Fund for Vaccine Procurement.
- GAVI Alliance and the United Nations Children's Fund.

For the HPV vaccine, the financing options may be a little bit more positive. There are already established external financing mechanisms that could support the HPV vaccine. Other financing mechanisms include the PAHO Revolving Fund for Vaccine Procurement, the GAVI Alliance, and the United Nations Children's Fund, who procure vaccines on behalf of a large number of countries, thereby enabling them to get a better price and helping establish and maintain childhood immunization programs.

Again, as I mentioned earlier, even when external funding is committed to these countries, some of those funding sources will run out after five or ten years, and then countries must have a plan in place to help support cervical cancer screening and vaccination well into the future. Thank you.