HPV vaccinations—possibly necessary but not sufficient

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See Articles page e406

Using country specific epidemiological-economic modelling, Mark Jit and colleagues[1] show how the adoption of safe, well tolerated,[2] immunogenic, and effective vaccination[3] of 12-year-old girls against the cancer-causing human papillomaviruses (HPV)[4] will prevent hundreds of thousands of cases of, and deaths from, cervical cancer worldwide.

By synergistically combining epidemiological with economic data, this study estimates the gold-standard cost per disability adjusted life-year (DALY) of girls vaccinated in 179 countries worldwide. This global study has advantages over both the many previously reported studies based on individual country or individual countries within a single region, and over a worldwide study that analysed the results only at a regional level (where decisions are not made).

However, to focus on reproducible simplicity, the authors were forced to omit many issues such as calculations from a social perspective including lost work productivity, decreases in condylomas as a result of quadravalent vaccines, possible decreases[5] in non-cervical cancers that might be associated with the HPV virus,[6] possible cross-protection against genotypes[7] other than HPV 16/18, the (admittedly complicated) effect of herd immunity, gains in use because of fewer lesion removals in countries where screening programmes already exist in parallel, and the possibility that a two-dose schedule might be as effective as three doses.[8]

Also omitted, for understandable reasons of simplicity and clarity, are necessary comparisons of vaccination with other potential interventions that would reduce the burden of cervical cancer in regions such as sub-Saharan Africa and southeast Asia—eg, low technology interventions including visual inspection with acid or a one-off PAP smear programme at 40 years of age.[9]

Generally, transparency regarding the costs of vaccine manufacturing and vaccine procurements obtained by individual high-income countries is insufficient in countries other than the USA. However, it is generally known that many developed countries acquire their vaccines at a discount of 50–75% greater than USA costs. Jit and colleagues[1] show vaccination to be very cost effective in 87% of countries. This high value therefore actually represents a conservatively low estimate because Jit and colleagues' model set vaccine prices in high-income countries to the US retail vaccine price of around $130 per dose. Thus, many developed countries that fell only into the cost-effective category could possibly be reclassified as being very cost effective. Perhaps, even some of the low-incidence, high-income oil states of Saudi Arabia and the United Arab Emirates Gulf States would also be reclassified from not cost effective to cost effective if their true potential costs of vaccine procurement were known.

Availability of the HPV vaccination has increased the number of available strategies in the fight against cervical cancer and complicated the choice of which interventions to adopt to reduce the burden. One must not lose sight of the fact that the vaccine only protects against two (or four) genotypes that are associated with 50–90% of cervical cancer in a specific region. If the vaccine is adopted in any country, consideration must be given to supplement the vaccination with the initiation or continued provision (albeit at a different frequency) of one of the many screening options available.

The anticipated 9-valent vaccine,[10] if successful and adopted, will increase the range of covered genotypes by 10–20%, and therefore reduce the need for screening in individuals that have been vaccinated still further. Of course, screening tests will still need to be provided for unvaccinated populations, because even in developed countries the cost of providing a catch-up programme (eg, vaccinating girls aged 14–26 years) is likely to be prohibitive.

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I declare no competing interests.

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