

Does HPV vaccination prevent cervical cancer?

Cancer of the uterine cervix is the second most important cancer of women worldwide, and the International Agency for Research on Cancer has estimated that, in 2008, it was the most important cancer of women in India and South Central Asian, with breast cancer ranking second.^[1,2] Therefore, it is not surprising that there is a major interest in the possibility that vaccination against the causative agents, the relevant oncogenic HPV viruses, has attracted so much attention.

However, the readers will have noticed major differences between Gupta *et al.*,^[3] and Basu *et al.*,^[4] in their interpretation of the evidence on HPV vaccination. Although it is true that none of the vaccine trials have produced evidence that invasive cancer of the cervix can be prevented by vaccination, what we know about the natural history of the identified precursors of cancer of the cervix encourages us to believe that prevention of persistent infection with oncogenic HPV viruses will reduce the incidence of the disease. Nevertheless, vaccination cannot abolish it altogether, unless vaccines are expanded to include all oncogenic types relevant in the country.

Basu *et al.*,^[4] report reassuring data on adverse reactions to vaccination and the lack of serious events; these data go a long way toward a conclusion that vaccines are safe.

It is important to bear in mind, however, as both authors emphasize, that the intention to treat analyses of the trials show that, unless vaccines are administered prior to infection with HPV and unless high compliance is achieved, a much reduced impact will be seen. This is critical in considering the introduction of population-based HPV vaccination programs. But provided that appropriate targets are achieved, the expectation is that, with time, at least 70% of cervical cancer will be prevented.

That the incidence of cancer of the cervix in India is falling in the absence of screening is encouraging, but, we have no reason from what we know about the disease and from experience in other countries to expect that it will disappear. Falling incidence does not argue for a lower priority to be placed upon its control when tools are available that can be used. The options are vaccination, promotion of early diagnosis, screening, and accessible treatment.

One aspect that must not be ignored is that the organization of both universal vaccination and cervical

screening is not simple, and only few countries have been able to successfully introduce cost-effective programs. However, all should capitalize on the knowledge acquired in the last few decades on the cause of cervical cancer. This knowledge would make it possible to consider vaccination against the primary cause and develop tests that are sensitive to the detection of infection with the cause. A critical feature of those tests is that the probability of disease developing in the next decade in a woman who tests negative is very low. This makes it possible to plan screening with HPV tests that might start at the age of 35 and be repeated every 10 years up to the age of 65, with almost maximal efficacy; thus, reducing the resources required for screening, although at the same time increasing the need for organization to ensure women return for testing at the appropriate time. In a country already demonstrating remarkable abilities in the information technology era, this should not be an insuperable or overly costly endeavor.

Neither Gupta *et al.*,^[3] nor Basu *et al.*,^[4] mention the possibility that HPV vaccination could have other benefits, in particular, reduction of the incidence of other HPV associated cancers, not only cancers of the vagina, vulva, penis, and anus but also some head and neck cancers (an important issue in India) and perhaps some lung cancers. For a full cost-benefit analysis, this should also be considered.

Cervix cancer control, and, thus, vaccination and/or screening, has to be set within the priorities of the country's national cancer control program (NCCP), which itself is set within the determination of the importance of cancer with regard to other health conditions. It is now recognized that non-communicable diseases (NCDs) are an increasing health burden in all countries, of which, cancer is critical, because it is often a more important cause of premature death than other NCDs. Strategic planning is necessary. Given the existing health and school systems of India, how feasible will it be to vaccinate girls before they become sexually active? Given the need to ensure maximum participation in vaccination to ensure maximal efficacy, what measures can be introduced to ensure this? Given that existing vaccines will not abolish the disease and in fact will only have an appreciable impact starting in about another two decades, can a screening program be introduced that will reach the maximal number of at-risk women? These are the sort of questions that the leaders of India's NCCP must now address. This interchange of views is an important beginning for this process. India is not alone in seeking to grapple with such questions.

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Access this article online	
Quick Response Code: 	Website: www.sajc.org
	DOI: 10.4103/2278-330X.119894

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How to cite this article: Miller AB. Does HPV vaccination prevent cervical cancer?. *South Asian J Cancer* 2013;2:198-9.

Source of Support: Nil. **Conflict of Interest:** None declared.

News

Indian Cancer Congress 2013
21st to 24th November 2013
Kempinsky Ambience Hotel, New Delhi, India
alongwith

35th Annual Conference of Association of Radiation Oncologists of India (AROI)
27th Annual Conference of Indian Association of Surgical Oncology (IASO)
18th Conference of Indian Society of Medical & Pediatric Oncology (ISMPO)
15th Biennial Conference of Indian Society of Oncology (ISO)
Oncology Forum and 25 other organizations