COMMENTARY

HPV Vaccination: A Public Good and a Health Imperative

Lawrence O. Gostin

In this issue of *JLME*, Michelle Bayefsky writes an erudite and powerful defense of mandatory HPV vaccination, with robust public health and ethical justifications.[1] I agree with her conclusion and will offer additional reasons for, and strategies to achieve, more universal uptake of HPV vaccination among adolescent women and men.

Shortly after the Food and Drug Administration approved Gardasil in 2006 and the Advisory Committee on Immunization Practices recommended routine vaccination of girls aged 11 to 12 years,[2] Catherine DeAngelis (then editor-in-chief) and I wrote an editorial for *JAMA*, cautioning against mandating HPV vaccination. We expressed concern about limited efficacy and safety data, with no existing evaluation of the efficacy of Gardasil among young girls (aged 9 to 15 years). We nonetheless recommended, "when additional data and experience better inform clinicians and policy makers about the risks and benefits, states might consider requiring HPV vaccination as a condition of school entry."[3]

The time for action has come and is perhaps overdue. By 2011, citing an "impressive" record of safety and efficacy, and dismally low vaccination rates, I argued that "if voluntary vaccination proves unsuccessful, states should seriously consider compulsory vaccination laws without generous exemptions."[4] States have not heeded the call for a comprehensive campaign to promote HPV vaccination, including: paying for the vaccine or requiring public or private coverage, health education, and social marketing. Consequently, HPV vaccination rates have remained unacceptably low.

The public's health now requires mandating HPV vaccines as a condition of school entry. I come to this conclusion not only because of the reasons offered by Michelle Bayefsky: the child's best interests, solidarity, and health equity. I do so also because the restrictions on autonomy and parental rights are negligible compared with the robust benefits for the vaccinated adolescent and his or her future sexual partners.

Law and ethics already support vaccination for a wide swath of childhood diseases. Where mandates are systematically implemented (without major opt-outs), they virtually eliminate targeted childhood diseases that were once common. California, for example, experienced a major measles outbreak at Disneyland in December 2014, where 159 people contracted the disease. The spread of measles was linked to low immunization rates. In 2016, the state enacted a law eliminating all out-outs for mandatory vaccination, except in cases of medical necessity. Between 2014 and 2016, schools with the lowest vaccination rates saw an increase of 20% to 30% in kindergartners vaccinated, leading to the observation that, "One law changed the behavior of impassioned resisters more effectively than a thousand public service announcements might have."[5]

Individual and Public Benefits

HPV is the leading sexually transmitted infection (STI) in the U.S., causing virtually all cases of cervical cancer in women. Based on 2010-2014 data, about

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41,000 HPV-associated cancers occur in the U.S. each year: 23,700 among women and 17,300 among men. Cervical cancer is the most common HPV-associated cancer among women, and oropharyngeal cancers (cancers of the back of the throat) are the most common among men.[6] The Centers for Disease Control and Prevention (CDC) recommends that 11 to 12-year-olds get two doses of HPV vaccine to prevent HPV-related cancers. CDC urges providers to offer HPV vaccination for all their 11- and 12-year-old patients on the same day and in the same way they offer other preteen vaccines. Yet, in 2016, only 43 percent of adolescents were up to date on all the recommended doses of HPV vaccine.[7] Overall, young men receive HPV vaccinations at lower rates than young women, although the gap is narrowing.

These data make very clear the major public benefits that would accrue with more universal uptake of CDC-recommended HPV vaccines. The vaccine's health risks are exceedingly low compared with the benefits. The CDC concludes, "HPV vaccine is very safe, and it is effective at preventing HPV." Patient reported adverse effects are almost always "very mild," with "very rare" occurrences of (anaphylactic) allergic reactions.[8] Beyond benefiting the vaccinated teenager, higher immunization rates would also lower the population prevalence of HPV, reducing risks for all sexually active adolescents and adults. HPV immunization, therefore, has an individual as well as a public or population-based benefit. All of these benefits come with miniscule risks of individual adverse effects.

Autonomy and Parental Rights/ Responsibilities

From a public health perspective, the benefit/risk ratio of HPV immunization programs clearly weighs in favor of achieving as close as possible universal vaccination — even though there remains scientific uncertainty about achieving "community" or "herd" immunity for HPV infection.[9] Yet, many parents claim a parental right to make *any* medical decision for their children, including whether they will be vaccinated. While parents undoubtedly have wide discretion to make medical decisions for their minor children, parental rights are not unlimited. For interventions that are clearly in the child's best interests, parents lose their right to object. A strong argument also can be made that 11- and 12-year-olds can make their own choices, irrespective of the desires of their parents, and most would probably opt to receive the vaccine when presented with all the relevant data.

Informed consent, moreover, needs to be understood in the context of risk perception. The lay view of risk heavily weighs immediate risks over longer-term risks. Parents may under-estimate the risk of not vaccinating because the consequences (cervical cancer) usually occur in the distant future. The scientific perspective would fully account for the future suffering and early death of longer-term cancer risks.

Suppose that parental rights are more robust than I have just supposed. Even so, the state has a power and duty to mandate vaccination for the wider public good. The reason goes beyond the negligible adverse risks of vaccination. Just as important is the observation that the interference with personal autonomy is slight. Individuals subject to vaccines do not have to undergo onerous autonomy-limiting measures, for example the way they would if their children were quarantined. In other words, the burdens on parents and minors — both physical and in terms of their dignity — are small. They are particularly small when compared with the burdens on children and their sex-

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ual partners if they acquire HPV infection that could have been prevented.

Fair and Consistent Vaccination Policies

The justification for mandatory vaccination in the case of readily transmissible infections is easy to make because prevention is a public good. Although most childhood vaccines fit into this category (e.g., MMR vaccines against measles, mumps, and rubella), immunization against STIs are also common, such as for hepatitis B. Vaccines against HIV and herpes simplex are also under development. There is nothing exceptional about STIs. Just because sexuality, particularly among adolescents, is shrouded in social mores should not obscure the fact that STIs are a major public health threat for which vaccines can provide solutions. Even if parents have a moral or religious tradition that counsels against sexuality among youth, the facts show that sexual acts are common at a young age. There is no particular moral dimension to a potentially lethal infection that could lead to cervical cancer later in life.

Respecting and Upholding Science

Immunization policy has become politicized, with members of the public and political leaders challenging, or denying, the scientific underpinnings. Vaccine skeptics have repeatedly claimed that there is an association between MMR vaccines and autism, despite robust evidence to the contrary. Vaccination-resisters challenge not only the scientific evidence of vaccine benefits and risks, they also question CDC recommendations about the number of vaccines that should be administered in close proximity. Vaccine policy, of course, is not the only area in which we see instances of science-denial. In areas from climate change to genetically modified foods, there is a major strain of science-resistance. Just this year, the White House urged CDC to avoid 7 words in Congressional budget requests, including "science-based" and "evidence-based."[10] On April 14, thousands marched for science. Science is under attack. But the HPV debate shows very clearly how science can bring enormous benefits to the public. Imagine a country — and a world — where we could meaningfully reduce the risk of cervical cancer.[11] It does not take an expensive "cure" once the disease is contracted, but a simple vaccine. Why would we as a society not want to do all we could to make the world healthier and safer, particularly for girls and women throughout the life course?

Note

This author has no conflicts to declare.

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11. Consider also the huge public health benefits of disease eradication, such as the smallpox vaccination campaign. Disease eradication can even form a justification for mandating immunizations, as in the case of polio. L.O. Gostin, "Mandatory Vaccination: Understanding the Common Good in the Midst of the Global Polio Eradication Campaign," *Israel Journal of Health Policy Research* 7, no. 4 (2018): 1-4, doi 10.1186/s13584-017-0198-4.

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