International Journal of Gynecology and Obstetrics (2006) **94** (Supplement 1), S89–S94

International Journal of
GYNECOLOGY
& OBSTETRICS

www.elsevier.com/locate/ijgo

CHAPTER 9

Delivering HPV vaccine in the industrial and developing world: the role of the ob-gyn community

Mark A. Kane

KEYWORDS
HPV vaccine;
Immunization;
Developing world

Abstract The development and demonstration of the safety and effectiveness of new HPV vaccines is a major breakthrough in medical science that could prevent most cases of cervical cancer, the first or second cause of cancer death in women in most developing countries. This chapter discusses the delivery of HPV vaccine in the industrial and developing world, from the point of view of what obstetricians and gynecologists need to know to use and advocate for the use of this powerful new tool.

1. Introduction

The development of new HPV vaccines and the demonstration of their safety and effectiveness are major breakthroughs that could prevent most cases of cervical cancer, the first or second cause of cancer death in women in most developing countries [1]. One of these new vaccines contains antigens that can also prevent genital warts, which are due to common HPV subtypes [2]. The purpose of this chapter is to discuss what obstetricians and gynecologists need to know before they deliver HPV vaccine in the industrial and developing worlds — and advocate for its use. This chapter will raise many issues that are not yet resolved because research on key scientific issues is not complete, and because policies on vaccine use have not yet been made in most countries or by the appropriate global organizations. However, this vaccine will be licensed and available soon, and it is time for all obstetricians and gynecologists, as well as their professional organizations, to start planning for their contribution to the introduction and use of this vaccine.

Traditionally, ob-gyn practitioners have not been highly involved in immunization delivery or policy development and decision making, and the immunization community knows little about cervical cancer or HPV infection, but this will change with the advent of HPV vaccine. It is now essential to educate the ob-gyn community about immunization and the HPV vaccine, and to educate the immunization community about the importance of preventing cervical cancer and the best way to reach target groups for the vaccine. Ob-gyn practitioners may use HPV vaccine in their practice, but more importantly they should become the most powerful and effective advocates for its use, because they are the physicians who see and understand the

0020-7292/$ – see front matter

devastating consequences of cervical cancer firsthand.

2. How are vaccines delivered in industrial and developing countries?

Vaccines are arguably the most effective and cost-effective tools of medicine. They can be delivered to "at risk" individuals by physicians, and can also be given routinely to all children, adolescents, or adults ("universal immunization") by the public health system. The goal of the first strategy is to protect individuals, and the intended goal of the second is to protect the community and cause significant reduction in morbidity and mortality. For example, hepatitis B vaccine is (and should be) given to health workers to protect them and their patients, but immunizing health workers did not provide a significant reduction in rates of hepatitis B-related morbidity and mortality in the community [3]. For that reason, all children and/or adolescents are now given hepatitis B vaccine in most countries. Likewise, ob-gyn practitioners can give HPV vaccine to "at risk" patients, but this alone will not control the disease in the community. Only routine use of this vaccine to all adolescents and young women (and possibly other groups discussed below) will achieve the control and elimination of cervical cancer.

Immunization is the most successful public health program globally, and approximately 75% of the world's children receive routine basic immunizations. Poliomyelitis and measles vaccination campaigns reach more than 90% of children and adolescents in the developing world, including those in the poorest countries [4,5]. In industrial countries almost every child is immunized, but a number of the poorest developing countries still only immunize 40% to 60% of their children [6]. Every country has a national immunization program (known by a variety of names) that delivers vaccines to infants, children, and often adolescents. In some countries the program also delivers vaccines against influenza, pneumococcal infection, hepatitis B, and other diseases, as well as vaccine booster doses, to adults. Most families in both developing and industrial countries receive vaccines through the public sector, although many countries also have a significant private sector market that serves wealthier families — those covered by insurance plans or who can afford to pay for the vaccines themselves.

In developing countries, new vaccines, which are expensive relative to older ones, are usually introduced first into the private sector, and after a number of years, as prices fall, they are made available to those served by the public sector. Hepatitis B vaccine, which became available in the industrial world in 1982, was not introduced into public sector programs in many of the poorest developing countries until 2000 or even 2004. By that time the price of the vaccine had fallen from approximately $20 per dose to $0.25 per dose. More than 80% of the countries in the world now use hepatitis B vaccine as a routine part of their national immunization programs [7,8]. This time gap between use in the industrial and developing world often means that many cohorts of people who need vaccines do not receive them. In the case of cervical cancer, screening programs that identify disease early, when it can be effectively treated, are available to women in industrial countries (and wealthier women in the developing world), and the mortality from cervical cancer is much lower where such programs are in place and functioning. Most women in the developing world will never be screened for cervical cancer, and when the disease does present clinically, women usually do not receive adequate treatment. The public health community is exploring new ways to make adequate supplies of affordable new vaccines available to the developing world in a much shorter time than in the past [9]. It would be a tragically missed opportunity to wait for decades to pass before the benefits of HPV vaccine are made available to women in the developing world.

3. Competitive realities in the developing world

Developing countries have very limited budgets for immunization; and as underused and new vaccines are made available, governments and the donors that support them will have difficult choices to make regarding which new vaccines, if any, to introduce. HPV vaccine will compete with vaccines against major killers of children such as pneumococcal pneumonia and meningitis, *Haemophilus influenzae* type b, meningococcal meningitis, and rotaviral diarrhea. The impact of these vaccines will be seen more quickly than that of HPV vaccine because of the long incubation between HPV infection and cervical cancer. Pediatric vaccines will also be favored in many countries, because pediatricians have major input into immunization programs and policies as they seek to prevent the diseases they treat. In addition, delivering pediatric vaccines utilizes an existing system that routinely reaches 75% of the world's children. Giving vaccine to adolescents (except through campaigns) and adults (except tetanus toxoid [TT]) to pregnant women to protect the newborn is not part of the immunization