Summary of the WHO Position Paper on Vaccines against Human Papillomavirus (HPV), May 2017

This position paper published in May 2017 replaces the corresponding document published in October 2014. It incorporates recent developments concerning HPV vaccines, including the licensure of a nonavalent (9-valent) vaccine and recent data on vaccine effectiveness, and provides guidance on the choice of vaccine. New recommendations are proposed regarding vaccination strategies targeting girls only or both girls and boys, and vaccination of multiple birth cohorts.

Epidemiology and Virology

Persistent infection by oncogenic HPV types is a prerequisite for the development of cervical cancer, which each year hits about 528000 women and causes 266000 deaths worldwide. The viral types 16 and 18 HPV are the most common types in invasive cervical cancer, accounting for about 70% of all cervical cancers. In total, 85% of cervical cancer cases occur in the less developed regions and mortality rates vary as much as 18-fold between industrialized and developing countries. Other manifestations of HPV infection include vaginal, vulvar, penile, oropharyngeal and anal cancers. In addition, HPV types 6 and 11 cause anogenital warts and recurrent respiratory papillomatosis. HPV is mainly transmitted sexually. Cervical cancer occurs only in a small fraction of those infected and takes a decade or more to develop. Properly implemented screening and treatment programmes contribute to the low mortality observed in some countries.

Vaccines

Three prophylactic HPV vaccines, directed against high-risk HPV types, are currently available and marketed in many countries worldwide for the prevention of HPV-related disease: the quadrivalent vaccine was first licensed in 2006, the bivalent vaccine in 2007 and the nonavalent vaccine in 2014. The bivalent vaccine contains non-infectious protein antigens for HPV 16 and 18, the qudrivalent against non-infectious protein antigens for HPV 6, 11, 16, and 18 and the nonavlent non-infectious protein antigens for HPV 6, 11, 16, 18, 31, 33, 45, 52 and 58.

Current evidence suggests that from the public health perspective the bivalent, quadrivalent and nonavalent vaccines offer comparable immunogenicity, efficacy and effectiveness for the prevention of cervical cancer, which is mainly caused by HPV types 16 and 18. All three HPV vaccines have an excellent safety profiles.

By 31 March 2017, globally 71 countries (37%) had introduced HPV vaccine in their national immunization programme for girls, and 11 countries (6%) also for boys.

Recommendations

Recognizing the importance of cervical cancer and other HPV-related diseases as global health problems, WHO recommends that routine HPV vaccination should be included in national immunization programmes.

For the prevention of cervical cancer, the WHO-recommended primary target population for HPV vaccination is girls aged 9–14 years, prior to becoming sexually active.

The current evidence supports the recommendation for a 2-dose schedule with adequate spacing between the first and second dose (min. 6-month interval) in those aged 9–14 years. An interval no greater than 12–15 months is suggested in order to complete the schedule promptly and before becoming sexually active. If the interval between doses is shorter than 5 months, a third dose should be given at least 6 months after the first dose. Individuals older than ≥15 years and older and HIV infected/immunocompromised should receive a 3-dose schedule (0, 1–2, 6 months).

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The choice of HPV vaccine should be based on:

- assessment of locally relevant data;
- the scale of the prevailing HPV-associated public health problem (cervical cancer, other anogenital cancers, or anogenital warts);
- the population for which the vaccine has been approved;
- unique product characteristics, such as price, supply, and programmatic considerations.

The initial vaccination of multiple cohorts of girls aged 9–14 years is recommended when the vaccine is first introduced. Vaccination targeting multiple age cohorts of girls aged between 9 and 18 years together at time of HPV vaccine introduction would result in faster and greater population impact than vaccination of single age cohorts, due to the estimated increase in direct protection and herd immunity.

Vaccination of secondary target populations e.g. females aged ≥15 years or males, is only recommended if feasible, affordable, cost-effective and does not divert resources from vaccinating primary target population or from effective cervical cancer screening programmes.

HPV vaccines should be introduced as part of a coordinated and comprehensive strategy to prevent cervical cancer and other diseases caused by HPV. The introduction of HPV vaccine should not undermine or divert funding from developing or maintaining effective screening programmes for cervical cancer. Opportunities should be sought to link the introduction of HPV vaccination to other vaccinations carried out at this age (e.g. diphtheria and tetanus vaccination) and programmes targeting young people.

HPV vaccine can be co-administered with other non-live and live vaccines using separate syringes and different injection sites. Efforts should be made to administer the same vaccine for all doses. However, if the vaccine used for prior dose(s) is unknown or unavailable, either of the HPV vaccines can be administered to complete the recommended schedule

HPV vaccine can be administered safely to immunocompromised and/or HIV-infected individuals. HPV vaccination of pregnant women should be avoided due to lack of data, though no adverse effects in mother or offspring have been observed. If a young female becomes pregnant after initiating the vaccination series, the remaining dose(s) should be delayed until after the pregnancy is completed. Breastfeeding is not a contraindication for HPV vaccination.