# HPV vaccines indicator

## Benefits of the intervention

### Serogroup or serotype coverage by vaccines considered (for serogroup- or serotype-specific vaccines)

As of 2022, authorised HPV vaccines provide protection against HPV types 6, 11, 16, 18, 31, 33, 45, 52, and 58 (types 6 and 11 are responsible for most anogenital warts).1

The older bivalent (Cervarix) and quadrivalent (Gardasil) vaccines show partial protection against HPV types not included in the vaccine (cross-protection), when used in multidose schedules. The bivalent vaccine (targeting HPV-16/18) generally provides stronger and more consistent cross-protection, particularly against HPV31, 33 and 45. Some studies also report partial protection against HPV-35, 52 and 58, though the evidence is less robust and more variable.2, 3, 4

No data on cross protection is available for the newer vaccines. Less evidence is available on the extent of cross protection provided by HPV vaccine in single dose schedule.

### Efficacy and effectiveness estimates (e.g. against infection, disease, hospitalization, death), including in different populations

Three doses of the bivalent (Cervarix) and quadrivalent (Gardasil) vaccines offered significant protection against cervical adenocarcinoma in situ associated with HPV16 and HPV18 among

young women (15–26 years of age): 88% (95% CI: 30–98%).[5, 6]

Trials among vaccine recipients not already infected with HPV showed high efficacy against high-grade cervical, vulvar and vaginal lesions: 98% (95% CI: 93–100) for CIN2+ and 100% (95% CI 83–100) for vulvar and vaginal intraepithelial neoplasia grade 2+ caused by the HPV types in the quadrivalent vaccine.[6, 7]

Approval of the two-dose schedule in girls 9 to 14-years of age- was based on demonstration of non-inferiority of the immune response when compared with young adult women (16–26 years of age) in whom 3-dose efficacy has been proven (immunobridging).[6]

A one-dose schedule is supported by WHO in the general population based on evidence from post-hoc analyses of efficacy trials, post-licensure observational studies and an RCT (0 vs 1) among African females 15-20 years of age. These studies demonstrate that a single dose of HPV vaccine is sufficient to elicit a lasting, stable immune response, and provides protection against persistent HPV infection similar to that of multidose regimens.[5, 6]

Head-to-head RCTs comparing one and two-dose schedules of Cervarix and Gardasil-9 showed VE was non-inferior with a single-dose schedule within the specified margins.[8, 9]

## Duration of protection and waning of immunity in general and risk groups

With a multidose schedule, antibody titres remain high for up to 16 years following the bivalent (Cervarix) vaccine for girls vaccinated at 16-17 years of age, up to 15 years following the quadrivalent (Gardasil) vaccine, and for at least six years following the more recently licensed nonavalent vaccine (Gardasil-9).[10, 11, 12]

Geometric Mean Titers (GMT) following a single dose remain stable for at least 12-16 years.[13, 14, 9]

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