

Summary of the Pertussis Vaccines: WHO position paper – September 2015

Background

The 2015 updated position paper on Pertussis vaccines replaces the 2010 Pertussis position paper. The main revisions in this position paper concern the guidance on the choice of pertussis vaccine – whole cell pertussis (wP) or acellular pertussis (aP) vaccine – reflecting the updated guidance published in 2014, and incorporating recent evidence on the use of additional strategies, particularly vaccination during pregnancy, for prevention of early infant mortality

Pertussis (whooping cough) is an important cause of death in infants worldwide, and continues to be a public health concern despite high vaccination coverage. In 2013, according to WHO estimates, pertussis was still causing around 63 000 deaths in children aged <5 years. Two types of pertussis vaccines are available: wP vaccines and aP vaccines. The wP vaccines were introduced widely in industrialized countries in mid-20th century. Starting in the 80s, many high-income countries have replaced wP with aP vaccines, as a means of decreasing the reactogenicity of the vaccine.

Studies to date indicate that aP vaccines are more effective than low-efficacy wP vaccines (wP vaccines shown to be suboptimal are no longer in use), but may be less effective than the highest-efficacy wP vaccines.

Recent modelling studies as well as data from a baboon model of pertussis suggest faster waning of protection with aP primary series and limited impact on infection and transmission

Although the reasons for the resurgence of pertussis in a number of countries were found to be complex and varied by country, the shorter duration of protection and probable lower impact of aP vaccines on infection and transmission are likely to play critical roles

WHO Position

The main aim of pertussis vaccination is to reduce the risk of severe pertussis in infants and young children. All children worldwide, including HIV-positive individuals, should be immunized against pertussis. Every country should seek to achieve early and timely vaccination and maintain high coverage ($\geq 90\%$) at all levels (national and subnational).

Protection can be obtained after a primary series of vaccination with either wP or aP vaccine. Although local and systemic reactogenicity are more commonly associated with wP-containing vaccines, both vaccines have excellent safety records.

A switch from wP to aP vaccines for the primary schedule should only be considered if additional periodic booster or maternal immunization can be assured and sustained. National programmes currently administering wP vaccination should continue to use wP vaccines for primary vaccination series. National programmes currently using aP vaccine may continue using this vaccine but should consider the need for additional booster doses and additional strategies such as maternal immunization in case of resurgence of pertussis.

The following vaccine dosing schedules and ages of administration are recommended:

- recommends a 3-dose primary series, with the first dose administered as early as 6 weeks
- subsequent doses should be given 4–8 weeks apart, at age 10–14 weeks and 14–18 weeks
- last dose of the recommended primary series should ideally be completed by 6 months
- for those who have not completed the primary schedule, vaccine may be given later than 6 months of age, at any age and at the earliest opportunity
- national programmes using alternate primary vaccination schedules with adequate surveillance should continue using these schedules and continue to monitor disease trends

This schedule should provide protection for at least 6 years for countries using wP vaccine. For countries using aP vaccine, protection may decline appreciably before 6 years of age.

Only aP-containing vaccines should be used for vaccination of persons aged ≥ 7 years.

Although a booster dose in adolescence has been shown to decrease disease in adolescents, this is not generally recommended as a means of controlling disease in infants. Introduction of adolescent and/or adult boosters should only be done after assessment of local epidemiology. When a country implements a programme for adults, vaccination of health care workers should be prioritized, especially those with direct contact with pregnant mothers and infant patients.

Vaccination of pregnant women is likely to be the most cost-effective additional strategy for preventing disease in infants too young to be vaccinated and appears to be more effective and favourable than cocooning. National programmes may therefore consider the vaccination of pregnant women with 1 dose of Tdap in the 2nd or 3rd trimester and at least 15 days before the end of pregnancy were despite high infant coverage there would still be some infant mortality.

Data regarding simultaneous administration of DTap or DTwP containing vaccines with other childhood vaccines indicate no interference with the response to any other antigens. When two injections are given concomitantly, they can be given in different limbs

There is an urgent need to improve surveillance and assessment of disease burden particularly in low and middle income countries and to assess the impact of infant immunization, with particular focus on fatalities in infants <1 year of age and on hospital surveillance.