



VACCINE: PERTUSSIS



1. Vaccine indication

Pertussis vaccine (DTP) is indicated for the active primary prevention of pertussis in persons not previously infected with *Bordetella pertussis*.

2. Rationale for vaccination

The primary objective of pertussis vaccination is to prevent infection with *B. pertussis*, and thereby prevent:

- whooping cough
- malnutrition
- complications such as cyanosis, otitis media and encephalitis

3. Types of vaccines

There are two types of pertussis vaccines:

- **Whole-cell vaccines** – produced from a suspension of inactivated whole *B. pertussis*
- **Acellular vaccines** - produced from the components of *B. pertussis* that are important in inducing host immune response

4. Composition of the vaccine

- **Whole cell vaccine**

This is prepared from the entire inactivated *B. pertussis* bacterium. The suspension is adsorbed onto aluminium salts to enhance immunogenicity and lessen reactogenicity.

- **Acellular vaccine**

This is prepared from certain bacterial components of *B. pertussis*, such as filamentous haemagglutinin, inactivated pertussis toxin, pertactin and fimbrial proteins, which are the major virulence factors.

- Both the whole-cell and acellular vaccines can be available in combination with the diphtheria and tetanus toxoids as DTP.

5. Immunogenicity of the vaccine

Following vaccination with pertussis vaccine, antibodies are developed against certain components of *B. pertussis*. The extent of the immune response is proportionate to the number of doses administered.

6. Efficacy and long term protection

Both the whole-cell and acellular pertussis vaccines have been shown to be highly efficacious with rates of between 83% and 98%. Vaccination is not necessarily lifelong against typical manifestations of the disease

7. Candidates for vaccination

In South Africa, pertussis vaccine (DTP) is given to babies in 4 doses as part of the EPI-SA schedule. Children under the age of six can also be vaccinated with pertussis vaccine. Infants with HIV infection should be vaccinated within the EPI-schedule.

8. Vaccination regimen and route of administration

Pertussis vaccine (both acellular and whole cell) is available in combination with diphtheria toxoid and tetanus toxoid vaccines as DTP vaccine and is given in 4 separate doses by intramuscular injection to the anterolateral aspect of the thigh for infants, or the deltoid muscle for older children and adults. DTP in combinations such as DTP-Hib or DTP-Hib-HepB can be given into one limb. If hepatitis B or Hib vaccines are to be administered as monovalents and on the same day as DTP, then the vaccines should preferably be given at different sites.

9. Interchangeability of vaccines

Acellular vaccines from different manufacturers can be interchanged without any serious adverse events. The use of two different makes of vaccine to complete an immunisation schedule does not affect safety or immunogenicity.

10. Side effects and special precautions

Reactions to DTP are usually mild, although in rare events, cases of allergic reaction to DTP vaccine have been observed. In such cases, vaccination should be discontinued. Common side-effects include:

- Pain and swelling at the site of injection
- Fever that usually disappears within a day
- Irritability and loss of appetite.

Where to find us:

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