
Adverse Event

Pertussis vaccines (WHO position paper)

[WER 2005, vol. 80, 4, pp 31-39](#)
page 32

While in terms of severe adverse events, aP (acellular pertussis) and wP (whole cell pertussis) vaccines appear to have the same high level of safety, mild to moderate adverse reactions are more commonly associated with wP vaccine; wP vaccines are not recommended for use in adolescents and adults.

Contraindications

Pertussis vaccines (WHO position paper)

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Pertussis vaccines (WHO position paper)

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Except for an anaphylactic reaction following prior administration of the vaccine, there are no strict contraindications to this vaccination. There are no data to support the perception that previous encephalitis may be a contraindication for pertussis vaccination.

DPT

Pertussis vaccines (WHO position paper)

[WER 2005, vol. 80, 4, pp 31-39](#)
page 31

At least 90% coverage with 3 doses of the diphtheriatetanuspertussis vaccine (DTP) in infants remains the first programme priority worldwide, particularly where pertussis still poses a serious health problem in infants and young children.

Pertussis vaccines (WHO position paper)

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In countries where the incidence of pertussis has been considerably reduced by successful immunization, a booster dose administered 16 years after the primary series is warranted. The optimal timing of this booster dose as well as the possible need for additional booster doses of DTP depends on the epidemiological situation, and should be assessed by individual national programmes.

Pertussis vaccines (WHO position paper)

[WER 2005, vol. 80, 4, pp 31-39](#)
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The main aim of pertussis vaccination is to reduce the risk of severe pertussis in infancy. The vaccine is usually administered in the national childhood immunization programme as combined DTwP or DTaP vaccine, although the combination often includes additional vaccines (Haemophilus influenzae type b (Hib), hepatitis B (HepB), poliovirus vaccine (IPV)). The optimal schedule and number of immunizations are not well defined but, in most countries, 3 primary doses are administered with at least a 1-month interval to infants aged 26 months. A booster dose is commonly offered 16 years later. WHO recommends the primary series to be administered at the age of 6, 10 and 14 weeks. National recommendations vary considerably, however.

Diphtheria

Conclusions and recommendations from the Strategic Advisory Group of Experts (SAGE) - 10-11 April 2006

[WER 2006, vol. 81, 21, pp 210-220](#)
page 217

In accordance with the recommendations in the previous position paper on diphtheria, use of diphtheriatetanus vaccine is preferable to single-antigen tetanus toxoid vaccine. In future, the inclusion of other antigens, e.g. pertussis or Haemophilus influenzae type b (Hib), in booster doses should be considered.

General

Pertussis vaccines (WHO position paper)

[WER 2005, vol. 80, 4, pp 31-39](#)
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Pertussis vaccines (WHO position paper)

[WER 2005, vol. 80, 4, pp 31-39](#)
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Pertussis vaccines (WHO position paper)

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While in terms of severe adverse events, aP (acellular pertussis) and wP (whole cell pertussis) vaccines appear to have the same high level of safety, mild to moderate adverse reactions are more commonly associated with wP vaccine; wP vaccines are not recommended for use in adolescents and adults.

Pertussis vaccines (WHO position paper)

The wP vaccines have a considerably lower price than aP vaccines and, where resources are limited and the vaccine is well accepted by the local population, wP vaccine remains the vaccine of choice. In countries where the higher reactogenicity of wP is an impediment to high vaccination coverage, aP may be used instead, at least for booster injections.

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Pertussis vaccines (WHO position paper)

Careful epidemiological surveillance of pertussis is encouraged worldwide to monitor disease burden as well as the impact of immunization. Of particular interest are surveys comparing age-specific incidences of pertussis in countries with different vaccine booster policies.

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Pertussis vaccines (WHO position paper)

The main aim of pertussis vaccination is to reduce the risk of severe pertussis in infancy. The vaccine is usually administered in the national childhood immunization programme as combined DTwP or DTapP vaccine, although the combination often includes additional vaccines (Haemophilus influenzae type b (Hib), hepatitis B (HepB), poliovirus vaccine (IPV)). The optimal schedule and number of immunizations are not well defined but, in most countries, 3 primary doses are administered with at least a 1-month interval to infants aged 26 months. A booster dose is commonly offered 16 years later. WHO recommends the primary series to be administered at the age of 6, 10 and 14 weeks. National recommendations vary considerably, however.

[WER 2005, vol. 80, 4, pp 31-39](#)
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Pertussis vaccines (WHO position paper)

Children whose (pertussis) vaccination series has been interrupted should have their series resumed, without repeating previous doses.

In some countries, an additional vaccine dose is now offered to health-care workers and young parents. Only aP vaccines are used for vaccination of older children and adults. (page 36: Local reactions tend to increase with age and the number of injections.) (page 37: In order to reduce the reactogenicity of booster injections, aP vaccines with reduced antigen concentration have been formulated for use in adolescents and adults.)

[WER 2005, vol. 80, 4, pp 31-39](#)
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Pertussis vaccines (WHO position paper)

All infants, including HIV-positive individuals, should be immunized against pertussis.

[WER 2005, vol. 80, 4, pp 31-39](#)
page 35

Pertussis vaccines (WHO position paper)

The standard (pertussis) vaccine dose is 0.5 ml, which is administered intramuscularly in the anterolateral thigh in infants or in the deltoid muscle in older age groups. wP or aP and vaccines are offered in fixed-dose combinations with other antigens, and may be administered with other vaccines simultaneously administered at different injection sites.

[WER 2005, vol. 80, 4, pp 31-39](#)
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Pertussis vaccines (WHO position paper)

(Whole-cell pertussis vaccines) must not be frozen, but stored at 28 C. All wP vaccines have an expiry date of 2436 months.

[WER 2005, vol. 80, 4, pp 31-39](#)
page 36

Pertussis vaccines (WHO position paper)

In principle, the same type of aP vaccine should be given throughout the primary course of vaccination. However, if the previous type of vaccine is unknown, any aP vaccine may be used.

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WHO recommended standards for surveillance of selected vaccine-preventable diseases

In countries where (pertussis) coverage is moderate to low, surveillance should simply monitor improving coverage and decreasing pertussis incidence. Once immunization coverage is high and pertussis incidence is low, surveillance should be enhanced to understand the changing epidemiology of the disease and thus to guide vaccination policy. Bordetella parapertussis, which causes milder disease in general and is not responsible for significant mortality, is not a priority for surveillance in most countries at present.

[WHO/V&B/03.01](#)
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WHO recommended standards for surveillance of selected vaccine-preventable diseases

Recommended types of surveillance for pertussis:

- 1) Routine surveillance (where DTP3 coverage is < 90%): Routine monthly reporting of aggregated data on clinical cases from the peripheral level to the intermediate and central levels is recommended. All levels should be encouraged to report cases stratified by age group (e.g. < 1 year, 1-4 years, >/ 5 years) and immunization status.
- 2) Routine surveillance (where DTP3 coverage is >/ 90%): Case-based surveillance is recommended when coverage reaches 90%. Information on age, immunization status and final outcome (i.e. alive or dead) should be collected.
- 3) Investigation of outbreaks: Every pertussis outbreak should be reported immediately to the appropriate WHO regional office, investigated to understand why it occurred, and confirmed by laboratory methods. Case-based information should be collected on: date of onset, age, immunization status, geographical location and final outcome.
- 4) Sentinel surveillance: Sentinel surveillance is recommended in a few major hospitals to collect more in-depth information than that obtained through routine surveillance. The data collected on each case should include: date of onset, immunization stat, age, laboratory confirmation and final outcome (i.e. alive or dead). This provides additional information on the burden and epidemiology of pertussis (e.g. age-specific case-fatality rates). Sentinel surveillance should be linked to developments in laboratory diagnostics and networks.
- 5) Regardless of the type of surveillance, designated reporting sites at all levels should report at a specified frequency (e.g. weekly or monthly) even if there are zero cases (often referred to as zero reporting).

[WHO/V&B/03.01](#)
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Pertussis vaccines (WHO position paper)

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[WER 2005, vol. 80, 4, pp 31-39](#)
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Conclusions and recommendations from the Strategic Advisory Group of Experts (SAGE) - 10-11 April 2006

In accordance with the recommendations in the previous position paper on diphtheria, use of diphtheriatetanus vaccine is preferable to single-antigen tetanus toxoid vaccine. In future, the inclusion of other antigens, e.g. pertussis or Haemophilus influenzae type b (Hib), in booster doses should be considered.

[WER 2006, vol. 81, 21, pp 210-220](#)
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Weekly epidemiological record No. 40, 2010, 85, 385-400

The main aim of pertussis vaccination is to reduce the risk of severe pertussis in infants. The worldwide priority is to achieve 90% coverage with 3 doses of high quality pertussis vaccine in infants, particularly where pertussis poses a serious health threat to infants and young children.

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Weekly epidemiological record No. 40, 2010, 85, 385-400

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

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Weekly epidemiological record No. 40, 2010, 85, 385-400

in countries where the higher nonserious reactogenicity of wP would be an impediment to high vaccination coverage, the use of aP vaccine may be a mechanism to help improve acceptability. In these cases, aP vaccine should replace the wP vaccine in the national childhood immunization programme, either for the booster dose only or for the entire vaccination series.

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Weekly epidemiological record No. 40, 2010, 85, 385-400

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WHO recommends a 3-dose primary series, with the first dose administered at age 6 weeks; subsequent doses should be given 48 weeks apart, at age 10/14 weeks and 14/18 weeks. The last dose of the recommended primary series should be completed by the age of 6 months. All infants, including those who are HIV-positive, should be immunized against pertussis

Weekly epidemiological record No. 40, 2010, 85, 385-400

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Neonatal immunization against pertussis is not recommended by WHO.

Weekly epidemiological record No. 40, 2010, 85, 385-400

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The booster should be given 6 months after the last primary dose. Completion of this schedule (primary series plus booster) is expected to ensure protection against pertussis for 6 years

Weekly epidemiological record No. 40, 2010, 85, 385-400

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Children whose vaccination series has been interrupted should resume the series without repeating previous doses. Children aged 17 years or older who have not previously been immunized should receive 3 doses of wP vaccine or aP vaccine with intervals of 2 months between the first dose and the second; there should be a 6/12 month interval between the second and third doses.

Weekly epidemiological record No. 40, 2010, 85, 385-400

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Only aP-containing vaccines should be used for vaccination in those aged >6 years.

Weekly epidemiological record No. 40, 2010, 85, 385-400

page 399

Vaccinating health-care workers, especially among staff in maternity and paediatric units and primarily to prevent nosocomial transmission to infants and immunocompromised persons is encouraged in countries with demonstrable nosocomial transmission, if economically and logistically feasible

Weekly epidemiological record No. 40, 2010, 85, 385-400

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Surveillance should be implemented in countries that introduce combinations of vaccines, especially when aP-containing combinations are used.

Weekly epidemiological record No. 40, 2010, 85, 385-400

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Careful epidemiological surveillance of pertussis, particularly laboratory-confirmed disease, is to be encouraged worldwide to monitor the disease burden and the impact of immunization. Of particular interest are surveys comparing age-specific incidences of pertussis in countries with different policies on vaccine booster doses. Outbreak studies may also offer valuable information and should be encouraged.

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Existing research platforms including the Child Health Epidemiology Reference Group, the Pneumonia Etiology Research for Child Health project and the Neonatal Sepsis Etiology Trial should be expanded so that a better understanding of the true burden of pertussis in infants can be gained.

HIV/AIDS and immunosuppression

Pertussis vaccines (WHO position paper)

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All infants, including HIV-positive individuals, should be immunized against pertussis.

Hib

Conclusions and recommendations from the Strategic Advisory Group of Experts (SAGE) - 10-11 April 2006

[WER 2006, vol. 81, 21, pp 210-220](#)
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Immunization Coverage

Pertussis vaccines (WHO position paper)

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page 31

At least 90% coverage with 3 doses of the diphtheriatetanuspertussis vaccine (DTP) in infants remains the first programme priority worldwide, particularly where pertussis still poses a serious health problem in infants and young children.

Outbreak Control

WHO recommended standards for surveillance of selected vaccine-preventable diseases

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Policy

Pertussis vaccines (WHO position paper)

[WER 2005, vol. 80, 4, pp 31-39](#)
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Pertussis vaccines (WHO position paper)

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In countries where the incidence of pertussis has been considerably reduced by successful immunization, a booster dose administered 16 years after the primary series is warranted. The optimal timing of this booster dose as well as the possible need for additional booster doses of DTP depends on the epidemiological situation, and should be assessed by individual national programmes.

Pertussis vaccines (WHO position paper)

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Pertussis vaccines (WHO position paper)

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[WER 2005, vol. 80, 4, pp 31-39](#)
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Pertussis vaccines (WHO position paper)

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WHO recommended standards for surveillance of selected vaccine-preventable diseases

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In countries where (pertussis) coverage is moderate to low, surveillance should simply monitor improving coverage and decreasing pertussis incidence. Once immunization coverage is high and pertussis incidence is low, surveillance should be enhanced to understand the changing epidemiology of the disease and thus to guide vaccination policy. Bordetella parapertussis, which causes milder disease in general and is not responsible for significant mortality, is not a priority for surveillance in most countries at present.

WHO recommended standards for surveillance of selected vaccine-preventable diseases

[WHO/V&B/03.01](#)
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Recommended types of surveillance for pertussis:

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- 3) Investigation of outbreaks: Every pertussis outbreak should be reported immediately to the appropriate WHO regional office, investigated to understand why it occurred, and confirmed by laboratory methods. Case-based information should be collected on: date of onset, age, immunization status, geographical location and final outcome.
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- 5) Regardless of the type of surveillance, designated reporting sites at all levels should report at a specified frequency (e.g. weekly or monthly) even if there are zero cases (often referred to as zero reporting).

Pertussis vaccines (WHO position paper)

[WER 2005, vol. 80, 4, pp 31-39](#)
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Program Management

Pertussis vaccines (WHO position paper)

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Schedule

Pertussis vaccines (WHO position paper)

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Pertussis vaccines (WHO position paper)

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Pertussis vaccines (WHO position paper)

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Children whose (pertussis) vaccination series has been interrupted should have their series resumed, without repeating previous doses.

In some countries, an additional vaccine dose is now offered to health-care workers and young parents. Only aP vaccines are used for vaccination of older children and adults. (page 36: Local reactions tend to increase with age and the number of injections.) (page 37: In order to reduce the reactogenicity of booster injections, aP vaccines with reduced antigen concentration have been formulated for use in adolescents and adults.)

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Conclusions and recommendations from the Strategic Advisory Group of Experts (SAGE) - 10-11 April 2006

[WER 2006, vol. 81, 21, pp 210-220](#)
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In accordance with the recommendations in the previous position paper on diphtheria, use of diphtheriatetanus vaccine is preferable to single-antigen tetanus toxoid vaccine. In future, the inclusion of other antigens, e.g. pertussis or Haemophilus influenzae type b (Hib), in booster doses should be considered.

Tetanus

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[WER 2006, vol. 81, 21, pp 210-220](#)
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VPD Surveillance

Pertussis vaccines (WHO position paper)

[WER 2005, vol. 80, 4, pp 31-39](#)
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WHO recommended standards for surveillance of selected vaccine-preventable diseases

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In countries where (pertussis) coverage is moderate to low, surveillance should simply monitor improving coverage and decreasing pertussis incidence. Once immunization coverage is high and pertussis incidence is low, surveillance should be enhanced to understand the changing epidemiology of the disease and thus to guide vaccination policy. Bordetella parapertussis, which causes milder disease in general and is not responsible for significant mortality, is not a priority for surveillance in most countries at present.

WHO recommended standards for surveillance of selected vaccine-preventable diseases

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Recommended types of surveillance for pertussis:

- 1) Routine surveillance (where DTP3 coverage is < 90%): Routine monthly reporting of aggregated data on clinical cases from the peripheral level to the intermediate and central levels is recommended. All levels should be encouraged to report cases stratified by age group (e.g. < 1 year, 1-4 years, >/ 5 years) and immunization status.
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Vaccine Administration

Pertussis vaccines (WHO position paper)

[WER 2005, vol. 80, 4, pp 31-39](#)
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Pertussis vaccines (WHO position paper)

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Vaccine Handling

Pertussis vaccines (WHO position paper)

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