
Adverse Event

Japanese encephalitis vaccines (WHO position paper)

[WER 2006, vol. 81, 34/35, pp 331-340](#)
page 337

Occasionally (with mouse brain-derived JE vaccine,) hypersensitivity reactions, in some cases serious generalized urticaria, facial angio-oedema or respiratory distress, have been reported, principally in vaccine recipients from non-endemic areas. The reported rates of such reactions in prospective and retrospective studies are usually in the range of 18-64 per 10 000 vaccinated subjects. A complicating factor is that such reactions may occur as late as 12-72 hours following immunization. Sensitization to gelatine, a vaccine stabilizer, has been suspected in some cases in Japan, but the underlying cause remains uncertain.

The only contraindication to the use of this vaccine is a history of hypersensitivity reactions to a previous dose. However, pregnant women should be vaccinated only when at high risk of exposure to the infection. Mouse brain-derived vaccine has been given safely in various states of immunodeficiency, including HIV infection.

Japanese encephalitis vaccines (WHO position paper)

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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Neither hypersensitivity reactions nor acute encephalitis have been associated with this (cell culture-derived, live attenuated JE) vaccine. However, for immunization of pregnant women or immunodeficient individuals, the live attenuated vaccine should be replaced by one of the inactivated JE vaccines until further evidence has been generated.

BCG

BCG vaccine (WHO position paper)

[WER 2004, vol. 79, 4, pp 27-38](#)
page 36

BCG vaccination is indicated

- for all infants living in areas where TB is highly endemic (concerning HIV, see below);
- for infants and children at particular risk of TB exposure in otherwise low-endemic areas;
- for persons exposed to multidrug-resistant Mtb (impact not established.)

BCG vaccination is contraindicated

- for persons with impaired immunity symptomatic HIV infection, known or suspected congenital immunodeficiency, leukaemia, lymphoma or generalized malignant disease);
- for patients under immunosuppressive treatment (corticosteroids, alkylating agents, antimetabolites, radiation);
- in pregnancy.

Contraindications

Varicella vaccines (WHO position paper)

[WER 1998, vol. 73, 32, pp 241-248](#)
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Contraindications for varicella vaccination include a history of anaphylactic reactions to any component of the vaccine (including neomycin), pregnancy (due to theoretical risk to the fetus; pregnancy should be avoided for 4 weeks following vaccination), ongoing severe illness, and advanced immune disorders of any type.

Except for patients with acute lymphatic leukaemia in stable remission, ongoing treatment with systemic steroids (for adults >20 mg/day, for children >1mg/kg/day) is considered a contraindication for varicella vaccination. A history of congenital immune disorders in close family members is a relative contraindication.

Measles vaccines (WHO position paper)

[WER 2004, vol. 79, 14, pp 130-142](#)
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Mild, concurrent infections are not considered a contraindication, and there is no evidence that measles vaccination exacerbates tuberculosis. However, vaccination should be avoided if there is high fever or other signs of serious disease. On theoretical grounds, measles vaccine should also be avoided in pregnancy.

Immunization in practice: a practical resource guide for Health workers 2004 update _____ Module 2: The vaccines

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Because it contains high levels of diphtheria toxoid, (DT) should not be given to children older than six years old or adults.

Td, or tetanus-diphtheria toxoids adult dose vaccine, is the same vaccine as DT, but with a lower diphtheria toxoid dose. It is suitable for children older than six years old and adults, including pregnant women.

Hepatitis B vaccines (WHO position paper)

[WER 2004, vol. 79, 28, pp 255-263](#)
page 261

Hepatitis B vaccine is contraindicated for individuals with a history of allergic reactions to any of the vaccines components.

Neither pregnancy nor lactation is a contraindication for use of this vaccine.

Influenza vaccines (WHO position paper)

[WER 2005, vol. 80, 36, pp 279-287](#)
page 285

Following nasal administration, (t)ransmission of the (influenza) vaccine virus to exposed non-immune people appears to be very rare. However, as a precaution the vaccine should not be given to highly immunosuppressed individuals or their close contacts.

Contraindications for use (of CAIV-T influenza vaccine) include anaphylactic reactions to eggs, a history of Guillain-Barr syndrome, patients aged <18 years on long-term aspirin therapy, pregnancy during the first trimester, and various states of immunosuppression.

Influenza vaccines (WHO position paper)

(Inactivated) influenza vaccination in pregnancy is considered safe and is recommended for all pregnant women during the influenza season. This recommendation is motivated not only by the potential severe course of influenza during pregnancy, but also in order to protect infants against influenza during their vulnerable first months of life.

[WER 2005, vol. 80, 36, pp 279-287](#)
page 286

Rubella vaccines (WHO position paper)

Rubella vaccination should be avoided in pregnancy because of the theoretical, but never demonstrated, teratogenic risk. No cases of CRS have been reported in more than 1 000 susceptible pregnant women who inadvertently received a rubella vaccine in early pregnancy. Consequently, there is no need to screen women for pregnancy before rubella vaccination. If pregnancy is being planned, then an interval of 1 month should be observed after rubella immunization. Rubella vaccination during pregnancy is not an indication for abortion.

[WER 2000, vol. 75, 20, pp 161-169](#)
page 166

Yellow fever vaccine (WHO position paper)

The (yellow fever) vaccine is contraindicated in children aged under 6 months and is not recommended for those aged 6-8 months, except during epidemics when the risk of YF virus transmission may be very high. It is also contraindicated for persons with severe allergy to egg and for severely immunocompromised persons. On theoretical grounds, the 17D vaccine is not recommended during pregnancy. However, pregnant women may be vaccinated during epidemics when the risk of YFV transmission may be very high.

[WER 2003, vol. 78, 40, pp 349-359](#)
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Contraindications against YF vaccination include age less than 6 months, severe hypersensitivity to egg antigens and severe immunodeficiency. Whereas it is relatively easy to avoid immunization of the first two categories, the principal contraindications against immunization during pregnancy and in severe immunodeficiency cause significant practical problems. Fortunately, the few published cases of congenital infection caused by 17D have not been associated with fetal abnormalities. Similarly, no adverse events occurred in a small study of HIV-infected children with low CD4+ counts who received the vaccine. These observations are important considering the likelihood that many pregnant women and HIV-positive individuals, including children, will be immunized inadvertently during large-scale immunization activities in at-risk countries.

[WER 2003, vol. 78, 40, pp 349-359](#)
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For international travellers, where laboratory and other resources are available, YF (yellow fever) vaccination may be offered to asymptomatic HIV-infected persons with CD4+ counts above 200 cells/mm³ who require vaccination for unavoidable travel. Individual expert assessments are required before YF vaccination may be offered to persons taking highdose corticosteroids or antineoplastic drugs. If possible, tests should be performed to ensure that protective levels of neutralizing antibodies have been achieved, as primary vaccination failure is common in immunodeficient individuals.

Typhoid vaccines (WHO position paper)

[WER 2000, vol. 75, 32, pp 257-264](#)
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It is not known whether this live attenuated vaccine (Ty21a typhoid vaccine) can cause fetal harm when administered to pregnant women. Ty21a can be administered to HIV-positive, asymptomatic individuals without risk as long as the T-cell count (CD4) is above 200/mm³.

Vaccine introduction guidelines. Adding a vaccine to a national immunization programme: decision and implementation

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Yellow fever vaccine is contraindicated for infants less than 6 months of age, immune-deficient persons and persons with egg allergy. The risk of disease should be weighed against the risk of vaccination in pregnant women and in persons with symptomatic HIV infection. These are important factors to consider before planning a mass preventive vaccination campaign.

Mumps virus vaccines (WHO position paper)

[WER 2001, vol. 76, 45, pp 346-356](#)
page 353

There are few contraindications to mumps vaccination. As with all live attenuated vaccines, mumps vaccine should not be administered to individuals with advanced immune deficiency or immunosuppression. Fetal damage has not been documented when mumps vaccines have been given to pregnant women. Allergy to vaccine components such as neomycin and gelatin is a contraindication to administration of the vaccine.

BCG vaccine (WHO position paper)

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Diphtheria

Immunization in practice: a practical resource guide for Health workers 2004 update _____ Module 2: The vaccines

[WHO/IVB/04.06](#)
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Tetanus vaccine (WHO position paper)

[WER 2006, vol. 81, 20, pp 198-208](#)
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Both TT and dT can be used at any time during pregnancy.

GACVS

Global Advisory Committee on Vaccine Safety, 910 June 2005

[WER 2005, vol. 80, 36, pp 242-247](#)
page 243

GACVS acknowledged the excellent safety and efficacy profile of the (live attenuated) SA 14-14-2 (Japanese encephalitis) vaccine but nonetheless recommended more detailed study of the following: the safety profile in special risk groups including immunocompromised people and pregnant women; whether viral shedding occurs in vaccinees and the potential implications of such shedding; further analysis of sequential or co-administration of JE and measles vaccines; the interchangeability of inactivated and live JE vaccines; the safety of vaccine administration to infants aged under 1 year; and the implications for the efficacy and safety of the vaccine in infants with maternal antibodies against JE virus.

General

Varicella vaccines (WHO position paper)

[WER 1998, vol. 73, 32, pp 241-248](#)
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Immunization in practice: a practical resource guide for Health workers 2004 update _____ Module 1: Target diseases

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Neonatal tetanus can be prevented by immunizing women of childbearing age with tetanus toxoid, either during pregnancy or outside of pregnancy. This protects the mother and enables tetanus antibodies to be transferred to her baby.

Immunization in practice: a practical resource guide for Health workers 2004 update _____ Module 1: Target diseases

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WHO, UNICEF and UNFPA agreed to set the year 2005 as the target date for worldwide elimination of neonatal tetanus. This implies the reduction of neonatal tetanus incidence to below one case per 1000 live births per year in every district.

Because tetanus survives in the environment, eradication of the disease is not feasible and high levels of immunization have to continue even after the goal has been achieved.

To achieve the elimination goal, countries implement a series of strategies:

- Improve the percentage of pregnant women immunized with vaccines containing tetanus toxoid.

- Administer vaccines containing tetanus toxoid to all women of childbearing age in high-risk areas. This is usually implemented through a three round campaign approach.

- Promote clean delivery and childcare practices.

- Improve surveillance and reporting of neonatal tetanus cases.

Immunization in practice: a practical resource guide for Health workers 2004 update _____ Module 2: The vaccines

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Immunization in practice: a practical resource guide for Health workers 2004 update _____ Module 2: The vaccines

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Administration summary: TT vaccine and tetanus toxoid immunization schedule for routine immunization of pregnant women (see Appendix 2_9)

Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 6: Holding an immunization session

[WHO/IVB/04.06](#)

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At any immunization session, especially outreach, you should offer routine TT immunization to pregnant women.

Some countries also have a policy of providing TT immunization to non-pregnant or recently pregnant women during routine infant immunization sessions.

Hepatitis B vaccines (WHO position paper)

[WER 2004, vol. 79, 28, pp 255-263](#)

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Neither pregnancy nor lactation is a contraindication for use of this vaccine.

Influenza vaccines (WHO position paper)

[WER 2005, vol. 80, 36, pp 279-287](#)

page 286

Based on data from industrialized countries, and listed in order of priority, the following groups of individuals may be targeted for vaccination (against influenza) in order to reduce the incidence of severe illness and premature death.

1. Residents of long-term care facilities for elderly people and the disabled.
2. Elderly non-institutionalized individuals with chronic conditions such as pulmonary and cardiovascular illness, metabolic diseases including diabetes mellitus and renal dysfunction, and various types of immunosuppression, including people with acquired immunodeficiency syndrome (AIDS) and transplant recipients.
3. All adults and children aged >6 months with any of the conditions mentioned above.
4. Elderly individuals who are above a nationally defined age limit, irrespective of other risk factors. Although the appropriate age for general vaccination may be considerably lower in countries with poor living conditions, most countries define the age limit to be >65 years.
5. Other groups defined on the basis of national data and capacities, such as contacts of high-risk people, pregnant women, health-care workers and others with key functions in society, as well as children 6-23 months of age.

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[WER 2005, vol. 80, 36, pp 242-247](#)
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Vaccine introduction guidelines. Adding a vaccine to a national immunization programme: decision and implementation

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[WHO/IVB/05.18](#)
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Mumps virus vaccines (WHO position paper)

There are few contraindications to mumps vaccination. As with all live attenuated vaccines, mumps vaccine should not be administered to individuals with advanced immune deficiency or immunosuppression. Fetal damage has not been documented when mumps vaccines have been given to pregnant women. Allergy to vaccine components such as neomycin and gelatin is a contraindication to administration of the vaccine.

[WER 2001, vol. 76, 45, pp 346-356](#)
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Tetanus vaccine (WHO position paper)

Both TT and dT can be used at any time during pregnancy.

[WER 2006, vol. 81, 20, pp 198-208](#)
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Tetanus vaccine (WHO position paper)

[WER 2006, vol. 81, 20, pp 198-208](#)
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In countries where MNT remains a public health problem, pregnant women for whom reliable information on previous tetanus vaccinations is not available should receive at least 2 doses of tetanus toxoid-containing vaccine (normally dT) with an interval of at least 4 weeks between the doses. To ensure protection for a minimum of 5 years, a third dose should be given at least 6 months later. A fourth and fifth dose should be given at intervals of at least 1 year, e.g. during subsequent pregnancies, in order to ensure long-term protection. Pregnant women who have received only 3 doses of DTP in early infancy should receive 2 doses of a tetanus toxoid-containing vaccine with a minimal interval of 4 weeks. Those who received 4 doses of tetanus vaccine during their childhood need only 1 booster dose, which should be given at the first opportunity. In both scenarios, to provide protection throughout childbearing age, a sixth dose would be needed after at least 1 year.

Japanese encephalitis vaccines (WHO position paper)

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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Occasionally (with mouse brain-derived JE vaccine,) hypersensitivity reactions, in some cases serious generalized urticaria, facial angio-oedema or respiratory distress, have been reported, principally in vaccine recipients from non-endemic areas. The reported rates of such reactions in prospective and retrospective studies are usually in the range of 18-64 per 10 000 vaccinated subjects. A complicating factor is that such reactions may occur as late as 12-72 hours following immunization. Sensitization to gelatine, a vaccine stabilizer, has been suspected in some cases in Japan, but the underlying cause remains uncertain.

The only contraindication to the use of this vaccine is a history of hypersensitivity reactions to a previous dose. However, pregnant women should be vaccinated only when at high risk of exposure to the infection. Mouse brain-derived vaccine has been given safely in various states of immunodeficiency, including HIV infection.

Japanese encephalitis vaccines (WHO position paper)

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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Neither hypersensitivity reactions nor acute encephalitis have been associated with this (cell culture-derived, live attenuated JE) vaccine. However, for immunization of pregnant women or immunodeficient individuals, the live attenuated vaccine should be replaced by one of the inactivated JE vaccines until further evidence has been generated.

23-valent pneumococcal polysaccharide vaccine (WHO position paper)

[WER 2008, vol. 83, 42, pp 373-384](#)
page 384

Insufficient evidence of a beneficial effect precludes recommending routine PPV23 vaccination of pregnant or breastfeeding women in order to prevent pneumococcal disease in infants during the first few months of life.⁴⁷ In view of the strong herd immunity effect of routine infant immunization with PCV7 and the indirect protection of infants too young to receive conjugated pneumococcal vaccine, emphasis should be placed on ensuring high coverage of PCV7 (or an equivalent conjugated pneumococcal vaccine) in national immunization programmes.

23-valent pneumococcal polysaccharide vaccine (WHO position paper)

[WER 2008, vol. 83, 42, pp 373-384](#)
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deferred during pregnancy, particularly during the first trimester, because their effect on the fetus has not been fully evaluated. However, no adverse consequences have been reported among newborns whose mothers were given PPV23 during pregnancy. In countries that routinely administer PCV23 to individuals with identified risk factors for pneumococcal disease (see above), women considered to be in urgent need of this vaccine may be vaccinated even during pregnancy.

BCG vaccine (WHO position paper)

[WER 2004, vol. 79, 4, pp 27-38](#)
page 36

BCG vaccination is indicated

- for all infants living in areas where TB is highly endemic (concerning HIV, see below);
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BCG vaccination is contraindicated

- for persons with impaired immunity symptomatic HIV infection, known or suspected congenital immunodeficiency, leukaemia, lymphoma or generalized malignant disease);
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HIV/AIDS and immunosuppression

Influenza vaccines (WHO position paper)

[WER 2005, vol. 80, 36, pp 279-287](#)
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Hepatitis B

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Influenza

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[WER 2005, vol. 80, 36, pp 279-287](#)
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[WER 2005, vol. 80, 36, pp 279-287](#)
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(Inactivated) influenza vaccination in pregnancy is considered safe and is recommended for all pregnant women during the influenza season. This recommendation is motivated not only by the potential severe course of influenza during pregnancy, but also in order to protect infants against influenza during their vulnerable first months of life.

JE

Global Advisory Committee on Vaccine Safety, 910 June 2005

[WER 2005, vol. 80, 36, pp 242-247](#)
page 243

GACVS acknowledged the excellent safety and efficacy profile of the (live attenuated) SA 14-14-2 (Japanese encephalitis) vaccine but nonetheless recommended more detailed study of the following: the safety profile in special risk groups including immunocompromised people and pregnant women; whether viral shedding occurs in vaccinees and the potential implications of such shedding; further analysis of sequential or co-administration of JE and measles vaccines; the interchangeability of inactivated and live JE vaccines; the safety of vaccine administration to infants aged under 1 year; and the implications for the efficacy and safety of the vaccine in infants with maternal antibodies against JE virus.

Japanese encephalitis vaccines (WHO position paper)

[WER 2006, vol. 81, 34/35, pp 331-340](#)
page 337

Occasionally (with mouse brain-derived JE vaccine,) hypersensitivity reactions, in some cases serious generalized urticaria, facial angio-oedema or respiratory distress, have been reported, principally in vaccine recipients from non-endemic areas. The reported rates of such reactions in prospective and retrospective studies are usually in the range of 18-64 per 10 000 vaccinated subjects. A complicating factor is that such reactions may occur as late as 12-72 hours following immunization. Sensitization to gelatine, a vaccine stabilizer, has been suspected in some cases in Japan, but the underlying cause remains uncertain.

The only contraindication to the use of this vaccine is a history of hypersensitivity reactions to a previous dose. However, pregnant women should be vaccinated only when at high risk of exposure to the infection. Mouse brain-derived vaccine has been given safely in various states of immunodeficiency, including HIV infection.

Japanese encephalitis vaccines (WHO position paper)

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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Neither hypersensitivity reactions nor acute encephalitis have been associated with this (cell culture-derived, live attenuated JE) vaccine. However, for immunization of pregnant women or immunodeficient individuals, the live attenuated vaccine should be replaced by one of the inactivated JE vaccines until further evidence has been generated.

Measles

Measles vaccines (WHO position paper)

[WER 2004, vol. 79, 14, pp 130-142](#)
page 140

Mild, concurrent infections are not considered a contraindication, and there is no evidence that measles vaccination exacerbates tuberculosis. However, vaccination should be avoided if there is high fever or other signs of serious disease. On theoretical grounds, measles vaccine should also be avoided in pregnancy.

Mumps

Mumps virus vaccines (WHO position paper)

[WER 2001, vol. 76, 45, pp 346-356](#)
page 353

There are few contraindications to mumps vaccination. As with all live attenuated vaccines, mumps vaccine should not be administered to individuals with advanced immune deficiency or immunosuppression. Fetal damage has not been documented when mumps vaccines have been given to pregnant women. Allergy to vaccine components such as neomycin and gelatin is a contraindication to administration of the vaccine.

Outbreak Control

Yellow fever vaccine (WHO position paper)

[WER 2003, vol. 78, 40, pp 349-359](#)
page 356

The (yellow fever) vaccine is contraindicated in children aged under 6 months and is not recommended for those aged 6-8 months, except during epidemics when the risk of YF virus transmission may be very high. It is also contraindicated for persons with severe allergy to egg and for severely immunocompromised persons. On theoretical grounds, the 17D vaccine is not recommended during pregnancy. However, pregnant women may be vaccinated during epidemics when the risk of YFV transmission may be very high.

Pneumococcal

23-valent pneumococcal polysaccharide vaccine (WHO position paper)

[WER 2008, vol. 83, 42, pp 373-384](#)
page 384

Insufficient evidence of a beneficial effect precludes recommending routine PPV23 vaccination of pregnant or breastfeeding women in order to prevent pneumococcal disease in infants during the first few months of life.⁴⁷ In view of the strong herd immunity effect of routine infant immunization with PCV7 and the indirect protection of infants too young to receive conjugated pneumococcal vaccine, emphasis should be placed on ensuring high coverage of PCV7 (or an equivalent conjugated pneumococcal vaccine) in national immunization programmes.

23-valent pneumococcal polysaccharide vaccine (WHO position paper)

[WER 2008, vol. 83, 42, pp 373-384](#)
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deferred during pregnancy, particularly during the first trimester, because their effect on the fetus has not been fully evaluated. However, no adverse consequences have been reported among newborns whose mothers were given PPV23 during pregnancy. In countries that routinely administer PCV23 to individuals with identified risk factors for pneumococcal disease (see above), women considered to be in urgent need of this vaccine may be vaccinated even during pregnancy.

Policy

Varicella vaccines (WHO position paper)

[WER 1998, vol. 73, 32, pp 241-248](#)
page 246

Contraindications for varicella vaccination include a history of anaphylactic reactions to any component of the vaccine (including neomycin), pregnancy (due to theoretical risk to the fetus; pregnancy should be avoided for 4 weeks following vaccination), ongoing severe illness, and advanced immune disorders of any type.

Except for patients with acute lymphatic leukaemia in stable remission, ongoing treatment with systemic steroids (for adults >20 mg/day, for children >1mg/kg/day) is considered a contraindication for varicella vaccination. A history of congenital immune disorders in close family members is a relative contraindication.

Measles vaccines (WHO position paper)

[WER 2004, vol. 79, 14, pp 130-142](#)
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Mild, concurrent infections are not considered a contraindication, and there is no evidence that measles vaccination exacerbates tuberculosis. However, vaccination should be avoided if there is high fever or other signs of serious disease. On theoretical grounds, measles vaccine should also be avoided in pregnancy.

Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 1: Target diseases

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Neonatal tetanus can be prevented by immunizing women of childbearing age with tetanus toxoid, either during pregnancy or outside of pregnancy. This protects the mother and enables tetanus antibodies to be transferred to her baby.

Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 1: Target diseases

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page 20

WHO, UNICEF and UNFPA agreed to set the year 2005 as the target date for worldwide elimination of neonatal tetanus. This implies the reduction of neonatal tetanus incidence to below one case per 1000 live births per year in every district.

Because tetanus survives in the environment, eradication of the disease is not feasible and high levels of immunization have to continue even after the goal has been achieved.

To achieve the elimination goal, countries implement a series of strategies:

Improve the percentage of pregnant women immunized with vaccines containing tetanus toxoid.

Administer vaccines containing tetanus toxoid to all women of childbearing age in high-risk areas. This is usually implemented through a three round campaign approach.

Promote clean delivery and childcare practices.

Improve surveillance and reporting of neonatal tetanus cases.

Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 2: The vaccines

[WHO/IVB/04.06](#)

page 12

Because it contains high levels of diphtheria toxoid, (DT) should not be given to children older than six years old or adults.

Td, or tetanus-diphtheria toxoids adult dose vaccine, is the same vaccine as DT, but with a lower diphtheria toxoid dose. It is suitable for children older than six years old and adults, including pregnant women.

Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 2: The vaccines

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Administration summary: TT vaccine and tetanus toxoid immunization schedule for routine immunization of pregnant women (see Appendix 2_9)

Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 6: Holding an immunization session

[WHO/IVB/04.06](#)

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At any immunization session, especially outreach, you should offer routine TT immunization to pregnant women.

Some countries also have a policy of providing TT immunization to non-pregnant or recently pregnant women during routine infant immunization sessions.

Hepatitis B vaccines (WHO position paper)

[WER 2004, vol. 79, 28, pp 255-263](#)

page 261

Hepatitis B vaccine is contraindicated for individuals with a history of allergic reactions to any of the vaccines components.

Neither pregnancy nor lactation is a contraindication for use of this vaccine.

Influenza vaccines (WHO position paper)

[WER 2005, vol. 80, 36, pp 279-287](#)
page 286

Based on data from industrialized countries, and listed in order of priority, the following groups of individuals may be targeted for vaccination (against influenza) in order to reduce the incidence of severe illness and premature death.

1. Residents of long-term care facilities for elderly people and the disabled.
2. Elderly non-institutionalized individuals with chronic conditions such as pulmonary and cardiovascular illness, metabolic diseases including diabetes mellitus and renal dysfunction, and various types of immunosuppression, including people with acquired immunodeficiency syndrome (AIDS) and transplant recipients.
3. All adults and children aged >6 months with any of the conditions mentioned above.
4. Elderly individuals who are above a nationally defined age limit, irrespective of other risk factors. Although the appropriate age for general vaccination may be considerably lower in countries with poor living conditions, most countries define the age limit to be >65 years.
5. Other groups defined on the basis of national data and capacities, such as contacts of high-risk people, pregnant women, health-care workers and others with key functions in society, as well as children 6-23 months of age.

Influenza vaccines (WHO position paper)

[WER 2005, vol. 80, 36, pp 279-287](#)
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Following nasal administration, (t)ransmission of the (influenza) vaccine virus to exposed non-immune people appears to be very rare. However, as a precaution the vaccine should not be given to highly immunosuppressed individuals or their close contacts.

Contraindications for use (of CAIV-T influenza vaccine) include anaphylactic reactions to eggs, a history of Guillain-Barr syndrome, patients aged <18 years on long-term aspirin therapy, pregnancy during the first trimester, and various states of immunosuppression.

Influenza vaccines (WHO position paper)

[WER 2005, vol. 80, 36, pp 279-287](#)
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(Inactivated) influenza vaccination in pregnancy is considered safe and is recommended for all pregnant women during the influenza season. This recommendation is motivated not only by the potential severe course of influenza during pregnancy, but also in order to protect infants against influenza during their vulnerable first months of life.

Rubella vaccines (WHO position paper)

[WER 2000, vol. 75, 20, pp 161-169](#)
page 166

Rubella vaccination should be avoided in pregnancy because of the theoretical, but never demonstrated, teratogenic risk. No cases of CRS have been reported in more than 1 000 susceptible pregnant women who inadvertently received a rubella vaccine in early pregnancy. Consequently, there is no need to screen women for pregnancy before rubella vaccination. If pregnancy is being planned, then an interval of 1 month should be observed after rubella immunization. Rubella vaccination during pregnancy is not an indication for abortion.

Yellow fever vaccine (WHO position paper)

[WER 2003, vol. 78, 40, pp 349-359](#)
page 356

The (yellow fever) vaccine is contraindicated in children aged under 6 months and is not recommended for those aged 6-8 months, except during epidemics when the risk of YF virus transmission may be very high. It is also contraindicated for persons with severe allergy to egg and for severely immunocompromised persons. On theoretical grounds, the 17D vaccine is not recommended during pregnancy. However, pregnant women may be vaccinated during epidemics when the risk of YFV transmission may be very high.

Yellow fever vaccine (WHO position paper)

[WER 2003, vol. 78, 40, pp 349-359](#)
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Contraindications against YF vaccination include age less than 6 months, severe hypersensitivity to egg antigens and severe immunodeficiency. Whereas it is relatively easy to avoid immunization of the first two categories, the principal contraindications against immunization during pregnancy and in severe immunodeficiency cause significant practical problems. Fortunately, the few published cases of congenital infection caused by 17D have not been associated with fetal abnormalities. Similarly, no adverse events occurred in a small study of HIV-infected children with low CD4+ counts who received the vaccine. These observations are important considering the likelihood that many pregnant women and HIV-positive individuals, including children, will be immunized inadvertently during large-scale immunization activities in at-risk countries.

For international travellers, where laboratory and other resources are available, YF (yellow fever) vaccination may be offered to asymptomatic HIV-infected persons with CD4+ counts above 200 cells/mm³ who require vaccination for unavoidable travel. Individual expert assessments are required before YF vaccination may be offered to persons taking highdose corticosteroids or antineoplastic drugs. If possible, tests should be performed to ensure that protective levels of neutralizing antibodies have been achieved, as primary vaccination failure is common in immunodeficient individuals.

Typhoid vaccines (WHO position paper)

[WER 2000, vol. 75, 32, pp 257-264](#)
page 262

It is not known whether this live attenuated vaccine (Ty21a typhoid vaccine) can cause fetal harm when administered to pregnant women. Ty21a can be administered to HIV-positive, asymptomatic individuals without risk as long as the T-cell count (CD4) is above 200/mm³.

Vaccine introduction guidelines. Adding a vaccine to a national immunization programme: decision and implementation

[WHO/IVB/05.18](#)
page 46

Yellow fever vaccine is contraindicated for infants less than 6 months of age, immune-deficient persons and persons with egg allergy. The risk of disease should be weighed against the risk of vaccination in pregnant women and in persons with symptomatic HIV infection. These are important factors to consider before planning a mass preventive vaccination campaign.

Mumps virus vaccines (WHO position paper)

There are few contraindications to mumps vaccination. As with all live attenuated vaccines, mumps vaccine should not be administered to individuals with advanced immune deficiency or immunosuppression. Fetal damage has not been documented when mumps vaccines have been given to pregnant women. Allergy to vaccine components such as neomycin and gelatin is a contraindication to administration of the vaccine.

[WER 2001, vol. 76, 45, pp 346-356](#)
page 353

Tetanus vaccine (WHO position paper)

Both TT and dT can be used at any time during pregnancy.

[WER 2006, vol. 81, 20, pp 198-208](#)
page 204

Tetanus vaccine (WHO position paper)

In countries where MNT remains a public health problem, pregnant women for whom reliable information on previous tetanus vaccinations is not available should receive at least 2 doses of tetanus toxoid-containing vaccine (normally dT) with an interval of at least 4 weeks between the doses. To ensure protection for a minimum of 5 years, a third dose should be given at least 6 months later. A fourth and fifth dose should be given at intervals of at least 1 year, e.g. during subsequent pregnancies, in order to ensure long-term protection. Pregnant women who have received only 3 doses of DTP in early infancy should receive 2 doses of a tetanus toxoid-containing vaccine with a minimal interval of 4 weeks. Those who received 4 doses of tetanus vaccine during their childhood need only 1 booster dose, which should be given at the first opportunity. In both scenarios, to provide protection throughout childbearing age, a sixth dose would be needed after at least 1 year.

[WER 2006, vol. 81, 20, pp 198-208](#)
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Japanese encephalitis vaccines (WHO position paper)

Occasionally (with mouse brain-derived JE vaccine,) hypersensitivity reactions, in some cases serious generalized urticaria, facial angio-oedema or respiratory distress, have been reported, principally in vaccine recipients from non-endemic areas. The reported rates of such reactions in prospective and retrospective studies are usually in the range of 18-64 per 10 000 vaccinated subjects. A complicating factor is that such reactions may occur as late as 12-72 hours following immunization. Sensitization to gelatine, a vaccine stabilizer, has been suspected in some cases in Japan, but the underlying cause remains uncertain.

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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The only contraindication to the use of this vaccine is a history of hypersensitivity reactions to a previous dose. However, pregnant women should be vaccinated only when at high risk of exposure to the infection. Mouse brain-derived vaccine has been given safely in various states of immunodeficiency, including HIV infection.

Japanese encephalitis vaccines (WHO position paper)

Neither hypersensitivity reactions nor acute encephalitis have been associated with this (cell culture-derived, live attenuated JE) vaccine. However, for immunization of pregnant women or immunodeficient individuals, the live attenuated vaccine should be replaced by one of the inactivated JE vaccines until further evidence has been generated.

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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23-valent pneumococcal polysaccharide vaccine (WHO position paper)

[WER 2008, vol. 83, 42, pp 373-384](#)
page 384

Insufficient evidence of a beneficial effect precludes recommending routine PPV23 vaccination of pregnant or breastfeeding women in order to prevent pneumococcal disease in infants during the first few months of life.⁴⁷ In view of the strong herd immunity effect of routine infant immunization with PCV7 and the indirect protection of infants too young to receive conjugated pneumococcal vaccine, emphasis should be placed on ensuring high coverage of PCV7 (or an equivalent conjugated pneumococcal vaccine) in national immunization programmes.

23-valent pneumococcal polysaccharide vaccine (WHO position paper)

[WER 2008, vol. 83, 42, pp 373-384](#)
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BCG vaccine (WHO position paper)

[WER 2004, vol. 79, 4, pp 27-38](#)
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BCG vaccination is indicated

- for all infants living in areas where TB is highly endemic (concerning HIV, see below);
- for infants and children at particular risk of TB exposure in otherwise low-endemic areas;
- for persons exposed to multidrug-resistant Mtb (impact not established.)

BCG vaccination is contraindicated

- for persons with impaired immunity symptomatic HIV infection, known or suspected congenital immunodeficiency, leukaemia, lymphoma or generalized malignant disease);
- for patients under immunosuppressive treatment (corticosteroids, alkylating agents, antimetabolites, radiation);
- in pregnancy.

Program Management

Immunization in practice: a practical resource guide for Health workers 2004 update _____ Module 1: Target diseases

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- Promote clean delivery and childcare practices.

- Improve surveillance and reporting of neonatal tetanus cases.

Research

Global Advisory Committee on Vaccine Safety, 910 June 2005

[WER 2005, vol. 80, 36, pp 242-247](#)
page 243

GACVS acknowledged the excellent safety and efficacy profile of the (live attenuated) SA 14-14-2 (Japanese encephalitis) vaccine but nonetheless recommended more detailed study of the following: the safety profile in special risk groups including immunocompromised people and pregnant women; whether viral shedding occurs in vaccinees and the potential implications of such shedding; further analysis of sequential or co-administration of JE and measles vaccines; the interchangeability of inactivated and live JE vaccines; the safety of vaccine administration to infants aged under 1 year; and the implications for the efficacy and safety of the vaccine in infants with maternal antibodies against JE virus.

Rubella

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Schedule

Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 1: Target diseases

[WHO/IVB/04.06](#)
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Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 2: The vaccines

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Because it contains high levels of diphtheria toxoid, (DT) should not be given to children older than six years old or adults.

Td, or tetanus-diphtheria toxoids adult dose vaccine, is the same vaccine as DT, but with a lower diphtheria toxoid dose. It is suitable for children older than six years old and adults, including pregnant women.

Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 6: Holding an immunization session

[WHO/IVB/04.06](#)
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[WER 2005, vol. 80, 36, pp 279-287](#)
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Tetanus vaccine (WHO position paper)

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[WER 2006, vol. 81, 20, pp 198-208](#)
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[WER 2006, vol. 81, 20, pp 198-208](#)
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Japanese encephalitis vaccines (WHO position paper)

Neither hypersensitivity reactions nor acute encephalitis have been associated with this (cell culture-derived, live attenuated JE) vaccine. However, for immunization of pregnant women or immunodeficient individuals, the live attenuated vaccine should be replaced by one of the inactivated JE vaccines until further evidence has been generated.

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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Tetanus

Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 1: Target diseases

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Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 1: Target diseases

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Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 2: The vaccines

[WHO/IVB/04.06](#)
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Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 2: The vaccines

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Administration summary: TT vaccine and tetanus toxoid immunization schedule for routine immunization of pregnant women (see Appendix 2_9)

Immunization in practice: a practical resource guide for Health workers 2004 update_____Module 6: Holding an immunization session

[WHO/IVB/04.06](#)

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Travellers

Yellow fever vaccine (WHO position paper)

[WER 2003, vol. 78, 40, pp 349-359](#)
page 357

Contraindications against YF vaccination include age less than 6 months, severe hypersensitivity to egg antigens and severe immunodeficiency. Whereas it is relatively easy to avoid immunization of the first two categories, the principal contraindications against immunization during pregnancy and in severe immunodeficiency cause significant practical problems. Fortunately, the few published cases of congenital infection caused by 17D have not been associated with fetal abnormalities. Similarly, no adverse events occurred in a small study of HIV-infected children with low CD4+ counts who received the vaccine. These observations are important considering the likelihood that many pregnant women and HIV-positive individuals, including children, will be immunized inadvertently during large-scale immunization activities in at-risk countries.

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Japanese encephalitis vaccines (WHO position paper)

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The only contraindication to the use of this vaccine is a history of hypersensitivity reactions to a previous dose. However, pregnant women should be vaccinated only when at high risk of exposure to the infection. Mouse brain-derived vaccine has been given safely in various states of immunodeficiency, including HIV infection.

Typhoid

Typhoid vaccines (WHO position paper)

[WER 2000, vol. 75, 32, pp 257-264](#)
page 262

It is not known whether this live attenuated vaccine (Ty21a typhoid vaccine) can cause fetal harm when administered to pregnant women. Ty21a can be administered to HIV-positive, asymptomatic individuals without risk as long as the T-cell count (CD4) is above 200/mm³.

Vaccine Administration

Immunization in practice: a practical resource guide for Health workers 2004 update _____ Module 2: The vaccines

[WHO/IVB/04.06](#)
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23-valent pneumococcal polysaccharide vaccine (WHO position paper)

[WER 2008, vol. 83, 42, pp 373-384](#)
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Insufficient evidence of a beneficial effect precludes recommending routine PPV23 vaccination of pregnant or breastfeeding women in order to prevent pneumococcal disease in infants during the first few months of life.⁴⁷ In view of the strong herd immunity effect of routine infant immunization with PCV7 and the indirect protection of infants too young to receive conjugated pneumococcal vaccine, emphasis should be placed on ensuring high coverage of PCV7 (or an equivalent conjugated pneumococcal vaccine) in national immunization programmes.

23-valent pneumococcal polysaccharide vaccine (WHO position paper)

[WER 2008, vol. 83, 42, pp 373-384](#)
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deferred during pregnancy, particularly during the first trimester, because their effect on the fetus has not been fully evaluated. However, no adverse consequences have been reported among newborns whose mothers were given PPV23 during pregnancy. In countries that routinely administer PCV23 to individuals with identified risk factors for pneumococcal disease (see above), women considered to be in urgent need of this vaccine may be vaccinated even during pregnancy.

Varicella

Varicella vaccines (WHO position paper)

[WER 1998, vol. 73, 32, pp 241-248](#)
page 246

Contraindications for varicella vaccination include a history of anaphylactic reactions to any component of the vaccine (including neomycin), pregnancy (due to theoretical risk to the fetus; pregnancy should be avoided for 4 weeks following vaccination), ongoing severe illness, and advanced immune disorders of any type.

Except for patients with acute lymphatic leukaemia in stable remission, ongoing treatment with systemic steroids (for adults >20 mg/day, for children >1mg/kg/day) is considered a contraindication for varicella vaccination. A history of congenital immune disorders in close family members is a relative contraindication.

Yellow Fever

Yellow fever vaccine (WHO position paper)

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The (yellow fever) vaccine is contraindicated in children aged under 6 months and is not recommended for those aged 6-8 months, except during epidemics when the risk of YF virus transmission may be very high. It is also contraindicated for persons with severe allergy to egg and for severely immunocompromised persons. On theoretical grounds, the 17D vaccine is not recommended during pregnancy. However, pregnant women may be vaccinated during epidemics when the risk of YFV transmission may be very high.

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Contraindications against YF vaccination include age less than 6 months, severe hypersensitivity to egg antigens and severe immunodeficiency. Whereas it is relatively easy to avoid immunization of the first two categories, the principal contraindications against immunization during pregnancy and in severe immunodeficiency cause significant practical problems. Fortunately, the few published cases of congenital infection caused by 17D have not been associated with fetal abnormalities. Similarly, no adverse events occurred in a small study of HIV-infected children with low CD4+ counts who received the vaccine. These observations are important considering the likelihood that many pregnant women and HIV-positive individuals, including children, will be immunized inadvertently during large-scale immunization activities in at-risk countries.

For international travellers, where laboratory and other resources are available, YF (yellow fever) vaccination may be offered to asymptomatic HIV-infected persons with CD4+ counts above 200 cells/mm³ who require vaccination for unavoidable travel. Individual expert assessments are required before YF vaccination may be offered to persons taking highdose corticosteroids or antineoplastic drugs. If possible, tests should be performed to ensure that protective levels of neutralizing antibodies have been achieved, as primary vaccination failure is common in immunodeficient individuals.

Vaccine introduction guidelines. Adding a vaccine to a national immunization programme: decision and implementation

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Yellow fever vaccine is contraindicated for infants less than 6 months of age, immune-deficient persons and persons with egg allergy. The risk of disease should be weighed against the risk of vaccination in pregnant women and in persons with symptomatic HIV infection. These are important factors to consider before planning a mass preventive vaccination campaign.