
Adverse Event

Global Advisory Committee on Vaccine Safety, 910 June 2005

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

The Committee considered the decision taken by the Government of Japan on 30 May 2005 to suspend routine vaccination with the mouse brain-derived Japanese encephalitis (JE) vaccine currently used in Japan (3).

GACVS was advised that there is no definite evidence of an increased risk of acute disseminated encephalomyelitis temporally associated with JE vaccine and a causal link has not been demonstrated.

The national authority recommends vaccination in high-risk areas only and for travel to endemic regions.

GACVS concluded, on the information presently available, that there is no good reason for WHO and national immunization programmes to change the current recommendations for JE vaccination for residents in and travellers to JE-endemic regions.

(3) See <http://www.mhlw.go.jp/topics/2005/05/dl/tp0530-1a.pdf> (in Japanese).

Japanese encephalitis vaccines (WHO position paper)

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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Both the mouse-brain derived and the cell culture-based vaccines are considered efficacious and to have an acceptable safety profile for use in children. However, with the mouse-brain derived vaccine, rare cases of potentially fatal acute disseminated encephalomyelitis (ADEM) and hypersensitivity reactions have been reported among vaccinated children in endemic regions and in travellers from nonendemic locations. Because of the rarity of these adverse events, and the high benefit-to-risk ratio of routine vaccination, the introduction of immunization against JE in public health programmes should not be deferred (page 332.)

The three types of JE vaccines that are currently in largescale use are considered efficacious and acceptably safe for use in children. However, following immunization with the mouse brain-derived vaccine, rare cases of potentially fatal ADEM and hypersensitivity reactions have been reported among children in endemic regions and in travellers from non-endemic locations. An increased awareness of these specific adverse events is recommended, for example when assessing the actual risk of JE for the individual traveller. However, because of the rarity of these adverse events, and the greater benefit to risk ratio of routine vaccination, the introduction of immunization against JE in public health programmes should not be deferred (page 339.)

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.

Contraindications

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.

Yellow fever vaccine (WHO position paper)

[WER 2003, vol. 78, 40, pp 349-359](#)
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Given the very rare, but potentially severe, adverse effects, YF (yellow fever) vaccine for travellers should be administered on strict indications only, particularly in the elderly. Restriction of YF vaccination to authorized centres is likely to promote the appropriate use of YF vaccine.

Global Advisory Committee on Vaccine Safety, 23 December 2004

GACVS reiterates that particular care should be taken that the (17D yellow fever) vaccine is received only by those travellers who are truly at risk of exposure to yellow fever. In addition, vaccine providers should give careful consideration to the risks and benefits for elderly travellers and should routinely enquire about a history of thymus disorder, irrespective of the age of the subject. Where a history of thymus disorder is reported, alternative prevention measures should be considered.

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[WER 2005, vol. 80, 1, pp 3-7](#)
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General

Hepatitis B vaccines (WHO position paper)

All children and adolescents aged less than 18 years and not previously vaccinated should receive the (hepatitis B) vaccine. Hepatitis B vaccination is also indicated for certain groups at high risk of contracting HBV infection, including persons with high-risk sexual behaviour, partners and household contacts of HBsAg-positive persons, injecting drug users, persons who frequently require blood or blood products, recipients of solid organ transplantation, those at occupational risk of HBV infection, including health care workers, as well as for international travellers to HBV-endemic countries.

[WER 2004, vol. 79, 28, pp 255-263](#)
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Measles vaccines (WHO position paper)

In countries with measles elimination goals, a one-time only measles SIA (supplementary immunization activity) should be considered, targeting all children aged 9 months to 14 years, regardless of disease history or previous vaccination status. Efforts are also needed to target specific groups of young adults who may be at increased risk for measles infection, including military recruits, university students, health care workers, refugees and international travellers to measles-endemic areas.

[WER 2004, vol. 79, 14, pp 130-142](#)
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Yellow fever vaccine (WHO position paper)

YF (yellow fever) vaccine should be offered to all travellers to and from at-risk areas, unless they belong to the group of individuals for whom YF vaccination is contraindicated. There is currently insufficient scientific evidence to support a change in the International health regulations for travelers to endemic areas demanding proof of valid YF vaccination within the preceding ten years. However, in at-risk countries, vaccination resources should be directed to ensuring good primary vaccination coverage rather than to providing booster doses.

[WER 2003, vol. 78, 40, pp 349-359](#)
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Yellow fever vaccine (WHO position paper)

All persons aged 9 months or older and living in YF (yellow fever) at-risk areas should receive YF vaccine. Highest priority should be given to those persons most likely to be exposed, such as forestry and agricultural workers, and to those living in villages or towns with a history of previous outbreaks. Immigrants to such regions from non-endemic areas should also be vaccinated against YF.

[WER 2003, vol. 78, 40, pp 349-359](#)
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Travellers should be vaccinated at least 10 days before arrival in the at risk area.

Yellow fever vaccine (WHO position paper)

In countries at risk of YF (yellow fever), YF vaccine is recommended for use in all children aged at least 9-12 months of age. In addition, preventive vaccination of older children and adults is recommended in at risk areas. Vaccination for YF is also recommended for travellers aged above 9 months who plan to visit areas at risk for YF.

[WER 2003, vol. 78, 40, pp 349-359](#)
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Yellow fever vaccine (WHO position paper)

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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 high-dose 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.

Yellow fever vaccine (WHO position paper)

[WER 2003, vol. 78, 40, pp 349-359](#)
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According to the International health regulations and the WHO International certificate of vaccination, a booster dose of YF (yellow fever) vaccine is required every 10 years. However, in most cases, the duration of protection following the first dose of YF vaccine seems to be at least 30-35 years and possibly lifelong. For this reason, it has been proposed to limit vaccination against YF to a single dose. In order to clarify this matter, WHO organized a consultation with a group of YF experts in March 2003. This group reviewed relevant literature and available data and concluded that, at present, the evidence for protective immunity beyond 10 years was insufficient to justify a change in the current YF vaccination policy for international travellers. However, in at-risk countries, vaccination resources should be directed to ensuring good primary vaccination coverage rather than to providing booster doses. For the purposes of international travel, only YF vaccinations performed at nationally authorized YF vaccination sites and using WHO pre-qualified YF vaccines may be entered into the International Certificate of Vaccination.

Yellow fever vaccine (WHO position paper)

[WER 2003, vol. 78, 40, pp 349-359](#)
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Typhoid vaccines (WHO position paper)

Protection (provided by the Ty21a vaccine) is markedly influenced by the number of doses and their spacing. When the vaccine is given in 3 doses 2 days apart, protective immunity is achieved 7 days after the last dose. In endemic areas a booster dose is recommended every 3 years. Travellers from non-endemic to endemic regions are recommended a booster on a yearly basis. There are currently no field trial data to document the efficacy of this vaccine in children aged < 3 years.

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

Typhoid vaccines (WHO position paper)

For the occasional small-scale vaccination in countries of low typhoid endemicity and for individual protection of short-term visitors to highly-endemic areas, either of the 2 modern (typhoid) vaccines is recommended. It should be noted, however, that the vaccines do not provide complete protection and should not replace hygiene precautions.

[WER 2000, vol. 75, 32, pp 257-264](#)
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[WER 2005, vol. 80, 36, pp 242-247](#)
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GACVS reiterates that particular care should be taken that the (17D yellow fever) vaccine is received only by those travellers who are truly at risk of exposure to yellow fever. In addition, vaccine providers should give careful consideration to the risks and benefits for elderly travellers and should routinely enquire about a history of thymus disorder, irrespective of the age of the subject. Where a history of thymus disorder is reported, alternative prevention measures should be considered.

[WER 2005, vol. 80, 1, pp 3-7](#)
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Typhoid vaccines (WHO position paper)

(The Vi polysaccharide typhoid vaccine) can be given simultaneously with other vaccines relevant for international travelers such as the vaccines against yellow fever and hepatitis A.

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

Yellow fever vaccine (WHO position paper)

The (YF) vaccine is also widely used for the protection of travelers to YF-endemic areas.

[WER 2003, vol. 78, 40, pp 349-359](#)
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Hepatitis A vaccines (WHO position paper)

In countries highly endemic for hepatitis A, almost all persons are infected in childhood with the virus without showing symptoms, effectively preventing clinical hepatitis A in adolescents and adults. In these countries, large-scale vaccination programmes are not recommended.

[WER 2000, vol. 75, 5, pp 38-44](#)
page 39

In countries of intermediate disease endemicity, where a relatively large proportion of the adult population is susceptible to HAV, and where hepatitis A represents a significant public health burden, large-scale childhood vaccination may be considered as a supplement to health education and improved sanitation.

In regions of low disease endemicity, vaccination against hepatitis A is indicated for individuals with increased risk of contracting the infection, such as travellers to areas of intermediate or high endemicity.

Hepatitis A vaccines (WHO position paper)

In developed countries with low endemicity of hepatitis A and with high rates of disease in specific high-risk populations, vaccination of those populations against hepatitis A may be recommended. The high-risk groups include injection-drug users, homosexual men, persons travelling to high-risk areas, and certain ethnic or religious groups. However, it should be noted that vaccination programmes targeting specific high-risk groups may have little impact on the overall national incidence of disease.

[WER 2000, vol. 75, 5, pp 38-44](#)
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Meningococcal vaccines: polysaccharide and polysaccharide conjugate vaccines (WHO position paper)

In addition to their use in emergency mass campaigns, meningococcal vaccines are also recommended for groups in which a particularly high risk of disease has been documented. These include those attending army units, training camps, or boarding schools, travellers to epidemic areas, and persons with immunological predisposition to meningococcal disease (such as asplenia and inherited immunological deficiencies).

[WER 2002, vol. 77, 40, pp 331-339](#)
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Japanese encephalitis vaccines (WHO position paper)

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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Both the mouse-brain derived and the cell culture-based vaccines are considered efficacious and to have an acceptable safety profile for use in children. However, with the mouse-brain derived vaccine, rare cases of potentially fatal acute disseminated encephalomyelitis (ADEM) and hypersensitivity reactions have been reported among vaccinated children in endemic regions and in travellers from nonendemic locations. Because of the rarity of these adverse events, and the high benefit-to-risk ratio of routine vaccination, the introduction of immunization against JE in public health programmes should not be deferred (page 332.)

The three types of JE vaccines that are currently in largescale use are considered efficacious and acceptably safe for use in children. However, following immunization with the mouse brain-derived vaccine, rare cases of potentially fatal ADEM and hypersensitivity reactions have been reported among children in endemic regions and in travellers from non-endemic locations. An increased awareness of these specific adverse events is recommended, for example when assessing the actual risk of JE for the individual traveller. However, because of the rarity of these adverse events, and the greater benefit to risk ratio of routine vaccination, the introduction of immunization against JE in public health programmes should not be deferred (page 339.)

Conclusions and recommendations from the meeting of the immunization Strategic Advisory Group of Experts (SAGE) - November 2006

[WER 2006, vol. 82, 1, pp 1-16](#)
page 10

The ACPE (Advisory Committee on Polio Eradication) recommended that the risk of importation from polio-infected areas should be reduced further by ensuring all travellers from such areas are immunized, regardless of their age or immunization status; it proposed that a standing recommendation be established to this effect under the International Health Regulations (IHR) (2005).

Japanese encephalitis vaccines (WHO position paper)

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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For travellers aged >1 year visiting rural areas of endemic countries for at least 2 weeks, the established current practise is to administer 3 primary doses at days 0, 7 and 28; alternatively 2 primary doses preferably 4 weeks apart. When continued protection is required, boosters should be given after 1 year and then every 3 years.

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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.

Rabies vaccines (WHO position paper)

[WER 2007, vol. 82, 49/50, pp 425-436](#)
page 426

Pre-exposure immunization is recommended for anyone at increased risk of exposure to rabies virus, either by nature of their residence or occupation, or when travelling.

Typhoid vaccines: WHO position paper

[WER 2008, vol. 83, 6, pp 49-60](#)
page 51

Typhoid fever vaccination may be offered to travellers to destinations where the risk of typhoid fever is high, especially to those staying in endemic areas for >1 month and/or in locations where antibiotic resistant strains of S. Typhi are prevalent.

Weekly Epidemiological Record, No. 23 2010

page 228

Travellers to polio-endemic countries or areas who have previously received 3 doses of OPV or IPV should be offered another dose of polio vaccine as a once-only dose before departure. Nonimmunized individuals intending to travel to polio-endemic destinations should complete a primary schedule of polio vaccine, using either IPV or OPV. For people who travel frequently to polio-endemic areas but who stay only for brief periods, a one-time only additional dose of a polio vaccine after the primary series should be sufficient to prevent disease.

Weekly Epidemiological Record, No. 23 2010

page 228

Before travelling abroad, persons living in a polio-endemic country should have completed a full course of vaccination against polio, preferably with OPV, to boost mucosal immunity and reduce the risk of WPV shedding. Such travellers should receive an additional dose of OPV 112 months prior to each international travel. In case of urgent travel, a minimum of 1 dose of OPV should be given, ideally 4 weeks before departure.

HIV/AIDS and immunosuppression

Yellow fever vaccine (WHO position paper)

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

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In countries highly endemic for hepatitis A, almost all persons are infected in childhood with the virus without showing symptoms, effectively preventing clinical hepatitis A in adolescents and adults. In these countries, large-scale vaccination programmes are not recommended.

In countries of intermediate disease endemicity, where a relatively large proportion of the adult population is susceptible to HAV, and where hepatitis A represents a significant public health burden, large-scale childhood vaccination may be considered as a supplement to health education and improved sanitation.

In regions of low disease endemicity, vaccination against hepatitis A is indicated for individuals with increased risk of contracting the infection, such as travellers to areas of intermediate or high endemicity.

Hepatitis A vaccines (WHO position paper)

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Hepatitis B

Hepatitis B vaccines (WHO position paper)

[WER 2004, vol. 79, 28, pp 255-263](#)
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All children and adolescents aged less than 18 years and not previously vaccinated should receive the (hepatitis B) vaccine. Hepatitis B vaccination is also indicated for certain groups at high risk of contracting HBV infection, including persons with high-risk sexual behaviour, partners and household contacts of HBsAg-positive persons, injecting drug users, persons who frequently require blood or blood products, recipients of solid organ transplantation, those at occupational risk of HBV infection, including health care workers, as well as for international travellers to HBV-endemic countries.

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Measles

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[WER 2004, vol. 79, 14, pp 130-142](#)
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In countries with measles elimination goals, a one-time only measles SIA (supplementary immunization activity) should be considered, targeting all children aged 9 months to 14 years, regardless of disease history or previous vaccination status. Efforts are also needed to target specific groups of young adults who may be at increased risk for measles infection, including military recruits, university students, health care workers, refugees and international travellers to measles-endemic areas.

Meningococcal

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[WER 2002, vol. 77, 40, pp 331-339](#)
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New Vaccines

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Outbreak Control

Conclusions and recommendations from the meeting of the immunization Strategic Advisory Group of Experts (SAGE) - November 2006

[WER 2006, vol. 82, 1, pp 1-16](#)
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Policy

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

Yellow fever vaccine (WHO position paper)

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According to the International health regulations and the WHO International certificate of vaccination, a booster dose of YF (yellow fever) vaccine is required every 10 years. However, in most cases, the duration of protection following the first dose of YF vaccine seems to be at least 30-35 years and possibly lifelong. For this reason, it has been proposed to limit vaccination against YF to a single dose. In order to clarify this matter, WHO organized a consultation with a group of YF experts in March 2003. This group reviewed relevant literature and available data and concluded that, at present, the evidence for protective immunity beyond 10 years was insufficient to justify a change in the current YF vaccination policy for international travellers. However, in at-risk countries, vaccination resources should be directed to ensuring good primary vaccination coverage rather than to providing booster doses. For the purposes of international travel, only YF vaccinations performed at nationally authorized YF vaccination sites and using WHO pre-qualified YF vaccines may be entered into the International Certificate of Vaccination.

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[WER 2003, vol. 78, 40, pp 349-359](#)
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Given the very rare, but potentially severe, adverse effects, YF (yellow fever) vaccine for travellers should be administered on strict indications only, particularly in the elderly. Restriction of YF vaccination to authorized centres is likely to promote the appropriate use of YF vaccine.

Typhoid vaccines (WHO position paper)

Protection (provided by the Ty21a vaccine) is markedly influenced by the number of doses and their spacing. When the vaccine is given in 3 doses 2 days apart, protective immunity is achieved 7 days after the last dose. In endemic areas a booster dose is recommended every 3 years. Travellers from non-endemic to endemic regions are recommended a booster on a yearly basis. There are currently no field trial data to document the efficacy of this vaccine in children aged < 3 years.

[WER 2000, vol. 75, 32, pp 257-264](#)
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For the occasional small-scale vaccination in countries of low typhoid endemicity and for individual protection of short-term visitors to highly-endemic areas, either of the 2 modern (typhoid) vaccines is recommended. It should be noted, however, that the vaccines do not provide complete protection and should not replace hygiene precautions.

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Typhoid vaccines (WHO position paper)

(The Vi polysaccharide typhoid vaccine) can be given simultaneously with other vaccines relevant for international travelers such as the vaccines against yellow fever and hepatitis A.

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

Yellow fever vaccine (WHO position paper)

The (YF) vaccine is also widely used for the protection of travelers to YF-endemic areas.

[WER 2003, vol. 78, 40, pp 349-359](#)
page 350

Hepatitis A vaccines (WHO position paper)

In countries highly endemic for hepatitis A, almost all persons are infected in childhood with the virus without showing symptoms, effectively preventing clinical hepatitis A in adolescents and adults. In these countries, large-scale vaccination programmes are not recommended.

[WER 2000, vol. 75, 5, pp 38-44](#)
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In countries of intermediate disease endemicity, where a relatively large proportion of the adult population is susceptible to HAV, and where hepatitis A represents a significant public health burden, large-scale childhood vaccination may be considered as a supplement to health education and improved sanitation.

In regions of low disease endemicity, vaccination against hepatitis A is indicated for individuals with increased risk of contracting the infection, such as travellers to areas of intermediate or high endemicity.

Hepatitis A vaccines (WHO position paper)

In developed countries with low endemicity of hepatitis A and with high rates of disease in specific high-risk populations, vaccination of those populations against hepatitis A may be recommended. The high-risk groups include injection-drug users, homosexual men, persons travelling to high-risk areas, and certain ethnic or religious groups. However, it should be noted that vaccination programmes targeting specific high-risk groups may have little impact on the overall national incidence of disease.

[WER 2000, vol. 75, 5, pp 38-44](#)
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Meningococcal vaccines: polysaccharide and polysaccharide conjugate vaccines (WHO position paper)

In addition to their use in emergency mass campaigns, meningococcal vaccines are also recommended for groups in which a particularly high risk of disease has been documented. These include those attending army units, training camps, or boarding schools, travellers to epidemic areas, and persons with immunological predisposition to meningococcal disease (such as asplenia and inherited immunological deficiencies).

[WER 2002, vol. 77, 40, pp 331-339](#)
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Japanese encephalitis vaccines (WHO position paper)

Both the mouse-brain derived and the cell culture-based vaccines are considered efficacious and to have an acceptable safety profile for use in children. However, with the mouse-brain derived vaccine, rare cases of potentially fatal acute disseminated encephalomyelitis (ADEM) and hypersensitivity reactions have been reported among vaccinated children in endemic regions and in travellers from nonendemic locations. Because of the rarity of these adverse events, and the high benefit-to-risk ratio of routine vaccination, the introduction of immunization against JE in public health programmes should not be deferred (page 332.)

[WER 2006, vol. 81, 34/35, pp 331-340](#)
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The three types of JE vaccines that are currently in largescale use are considered efficacious and acceptably safe for use in children. However, following immunization with the mouse brain-derived vaccine, rare cases of potentially fatal ADEM and hypersensitivity reactions have been reported among children in endemic regions and in travellers from non-endemic locations. An increased awareness of these specific adverse events is recommended, for example when assessing the actual risk of JE for the individual traveller. However, because of the rarity of these adverse events, and the greater benefit to risk ratio of routine vaccination, the introduction of immunization against JE in public health programmes should not be deferred (page 339.)

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For travellers aged >1 year visiting rural areas of endemic countries for at least 2 weeks, the established current practise is to administer 3 primary doses at days 0, 7 and 28; alternatively 2 primary doses preferably 4 weeks apart. When continued protection is required, boosters should be given after 1 year and then every 3 years.

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

Rabies vaccines (WHO position paper)

[WER 2007, vol. 82, 49/50, pp 425-436](#)
page 426

Pre-exposure immunization is recommended for anyone at increased risk of exposure to rabies virus, either by nature of their residence or occupation, or when travelling.

Polio**Conclusions and recommendations from the meeting of the immunization Strategic Advisory Group of Experts (SAGE) - November 2006**

[WER 2006, vol. 82, 1, pp 1-16](#)
page 10

The ACPE (Advisory Committee on Polio Eradication) recommended that the risk of importation from polio-infected areas should be reduced further by ensuring all travellers from such areas are immunized, regardless of their age or immunization status; it proposed that a standing recommendation be established to this effect under the International Health Regulations (IHR) (2005).

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Travellers to polio-endemic countries or areas who have previously received 3 doses of OPV or IPV should be offered another dose of polio vaccine as a once-only dose before departure. Nonimmunized individuals intending to travel to polio-endemic destinations should complete a primary schedule of polio vaccine, using either IPV or OPV. For people who travel frequently to polio-endemic areas but who stay only for brief periods, a one-time only additional dose of a polio vaccine after the primary series should be sufficient to prevent disease.

Before travelling abroad, persons living in a polio-endemic country should have completed a full course of vaccination against polio, preferably with OPV, to boost mucosal immunity and reduce the risk of WPV shedding. Such travellers should receive an additional dose of OPV 112 months prior to each international travel. In case of urgent travel, a minimum of 1 dose of OPV should be given, ideally 4 weeks before departure.

Pregnant Women

Yellow fever vaccine (WHO position paper)

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

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Program Management

Yellow fever vaccine (WHO position paper)

YF (yellow fever) vaccine should be offered to all travellers to and from at-risk areas, unless they belong to the group of individuals for whom YF vaccination is contraindicated. There is currently insufficient scientific evidence to support a change in the International health regulations for travelers to endemic areas demanding proof of valid YF vaccination within the preceding ten years. However, in at-risk countries, vaccination resources should be directed to ensuring good primary vaccination coverage rather than to providing booster doses.

[WER 2003, vol. 78, 40, pp 349-359](#)
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Yellow fever vaccine (WHO position paper)

Given the very rare, but potentially severe, adverse effects, YF (yellow fever) vaccine for travellers should be administered on strict indications only, particularly in the elderly. Restriction of YF vaccination to authorized centres is likely to promote the appropriate use of YF vaccine.

[WER 2003, vol. 78, 40, pp 349-359](#)
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[WER 2007, vol. 82, 49/50, pp 425-436](#)
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SAGE - recommend to WHO

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[WER 2006, vol. 82, 1, pp 1-16](#)
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Schedule

Hepatitis B vaccines (WHO position paper)

All children and adolescents aged less than 18 years and not previously vaccinated should receive the (hepatitis B) vaccine. Hepatitis B vaccination is also indicated for certain groups at high risk of contracting HBV infection, including persons with high-risk sexual behaviour, partners and household contacts of HBsAg-positive persons, injecting drug users, persons who frequently require blood or blood products, recipients of solid organ transplantation, those at occupational risk of HBV infection, including health care workers, as well as for international travellers to HBV-endemic countries.

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

Measles vaccines (WHO position paper)

In countries with measles elimination goals, a one-time only measles SIA (supplementary immunization activity) should be considered, targeting all children aged 9 months to 14 years, regardless of disease history or previous vaccination status. Efforts are also needed to target specific groups of young adults who may be at increased risk for measles infection, including military recruits, university students, health care workers, refugees and international travellers to measles-endemic areas.

[WER 2004, vol. 79, 14, pp 130-142](#)
page 132

Yellow fever vaccine (WHO position paper)

YF (yellow fever) vaccine should be offered to all travellers to and from at-risk areas, unless they belong to the group of individuals for whom YF vaccination is contraindicated. There is currently insufficient scientific evidence to support a change in the International health regulations for travelers to endemic areas demanding proof of valid YF vaccination within the preceding ten years. However, in at-risk countries, vaccination resources should be directed to ensuring good primary vaccination coverage rather than to providing booster doses.

[WER 2003, vol. 78, 40, pp 349-359](#)
page 350

Yellow fever vaccine (WHO position paper)

All persons aged 9 months or older and living in YF (yellow fever) at-risk areas should receive YF vaccine. Highest priority should be given to those persons most likely to be exposed, such as forestry and agricultural workers, and to those living in villages or towns with a history of previous outbreaks. Immigrants to such regions from non-endemic areas should also be vaccinated against YF.

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

Travellers should be vaccinated at least 10 days before arrival in the at risk area.

Yellow fever vaccine (WHO position paper)

In countries at risk of YF (yellow fever), YF vaccine is recommended for use in all children aged at least 9-12 months of age. In addition, preventive vaccination of older children and adults is recommended in at risk areas. Vaccination for YF is also recommended for travellers aged above 9 months who plan to visit areas at risk for YF.

[WER 2003, vol. 78, 40, pp 349-359](#)
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Typhoid vaccines (WHO position paper)

[WER 2000, vol. 75, 32, pp 257-264](#)
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Protection (provided by the Ty21a vaccine) is markedly influenced by the number of doses and their spacing. When the vaccine is given in 3 doses 2 days apart, protective immunity is achieved 7 days after the last dose. In endemic areas a booster dose is recommended every 3 years. Travellers from non-endemic to endemic regions are recommended a booster on a yearly basis. There are currently no field trial data to document the efficacy of this vaccine in children aged < 3 years.

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Global Advisory Committee on Vaccine Safety, 23 December 2004

[WER 2005, vol. 80, 1, pp 3-7](#)
page 7

GACVS reiterates that particular care should be taken that the (17D yellow fever) vaccine is received only by those travellers who are truly at risk of exposure to yellow fever. In addition, vaccine providers should give careful consideration to the risks and benefits for elderly travellers and should routinely enquire about a history of thymus disorder, irrespective of the age of the subject. Where a history of thymus disorder is reported, alternative prevention measures should be considered.

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Typhoid vaccines: WHO position paper

[WER 2008, vol. 83, 6, pp 49-60](#)
page 51

Typhoid fever vaccination may be offered to travellers to destinations where the risk of typhoid fever is high, especially to those staying in endemic areas for >1 month and/or in locations where antibiotic resistant strains of *S. Typhi* are prevalent.

Vaccine Administration

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Yellow Fever

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