

TRAVEL Immunisation SCHEDULES

November 2004

Vaccine	Minimum age	Course	Booster interval	Notes and cautions
BCG	Birth	0.1ml id (0.05ml <3 months)	Repeat in healthcare workers if Mantoux negative. Otherwise no booster necessary if good scar	<ul style="list-style-type: none"> For most, accept history of BCG and scar as evidence of immunity. Tuberculin test all except neonates before vaccination Severe ulcers and abscess risk if given sc Keloid formation less if injection in mid-upper arm or thigh c/i immunosuppression, pregnancy, positive tuberculin test, pyrexia, generalised skin conditions For doses of SSI vaccines in children, follow manufacturer's recommendations
CHOLERA <i>(oral killed)</i> Unit price £23.42	Adult & children > 6 years	2 doses separated by 7-42 days	2 years	<ul style="list-style-type: none"> Main application will be for health care workers working in cholera epidemic zones Complete course at least 1 week prior to cholera exposure Postpone if traveller has gastroenteritis or fever Avoid food and drink 1 hour before and after each dose Repeat course if >2 years elapses from last booster or 2nd or 3rd doses of primary course are delayed (>6 weeks) Store at 2-8°C Significantly reduces incidence of travellers' diarrhoea protecting against ETEC (unlicensed indication)
	Children 2-6 years	3 doses separated 7-42 days	6 months	
DIPHTHERIA ADULT BOOSTER <i>(toxoid)</i>				<ul style="list-style-type: none"> Previous hypersensitivity Hypersensitivity to neomycin, streptomycin or polymyxin B Boosters of tetanus/low dose diphtheria/inactivated polio advised where indicated in the Country by Country Guide Unimmunised adults should receive either Diftavax or REVAXIS at day 1, 1 month and 2 months dependent on individual vaccine deficits
Diftavax £2.67	10 years	0.5ml sc/im	10 years	
REVAXIS £7.25	6 years	0.5ml im deltoid	10 years 0.5ml sc/im 10 years 0.5ml im deltoid	
HEPATITIS A VACCINES				<ul style="list-style-type: none"> Give all current hepatitis A vaccines into deltoid, not gluteal muscle Risk of disease in children is low but prevents transmission from children who travel to unimmunised children and adults Avoid all hepatitis A vaccines in pregnancy unless definite risk of hepatitis A It is never too late before travel to give hepatitis A vaccine – all vaccines give good protection if administered shortly before or shortly after exposure Avoid Epaxal if true hypersensitivity to eggs or chicken protein Avoid combined vaccines if there is known hypersensitivity to a component of either constituent vaccine 2003 consensus statement recommends that the interval between 1st and 2nd doses of primary course for any hepatitis A vaccine can be extended without restarting the course. Antibody response is better if 2nd dose given at 12 rather than 6 months. Different hepatitis A vaccines are interchangeable for 1st and 2nd doses of primary course Protective antibody levels should last beyond 25 years in immunocompetent individuals, and immunological memory is even longer For combined hepatitis A & B vaccines an anti-HBs of 100 mu/ml is evidence of lifelong protection against hepatitis B For combined typhoid-hepatitis A vaccines boost for typhoid at 3 years
Avaxim Unit price £20.63	16 years	0.5ml im at day 1, 6-12 months	2003 consensus statement recommends that boosters are unnecessary for immunocompetent vaccine recipients. Not all manufacturers' recommendations reflect this view	
Epaxal Unit price £23.81	2 years	0.5ml im at day 1, 6-12 months		
Havrix Monodose Unit price £23.81	16 years	1ml im at day 1, 6-12 months		
Havrix Junior Monodose Unit price £18.03	1 year	0.5ml im at day 1, 6-12 months		
Vaqa Paediatric Unit price £15.65	2 years	0.5ml im at day 1, 6-18 months		
Hepatyrix Combined hepatitis A and typhoid vaccine. Unit price £34.49	15 years	1ml im deltoid		
VIATIM Combined hepatitis A and typhoid vaccine. Unit price £32.49	16 years	1ml im deltoid		
Twinrix (combined A & B) <i>(killed A & genetically derived B)</i> Unit price £29.85	16 years	1ml im at day 1, 1 month and 6 months		
Twinrix Paediatric Unit price £22.36	1 year	0.5ml im at day 1, 1 month and 6 months		
HEPATITIS B				
Engerix B £13.97	12 years	1ml im at day 1, 1 month and 6 months	Anti-HBs of 100mu per ml denote lifelong protection. No further boosters or checks.	
HB Vax PRO 10 £12.90	16 years	1ml im at day 1, 1 month and 6 months		
HB Vax PRO 40 £31.50	16 years	1ml im at day 1, 1 month and 6 months		
Engerix B paediatric £9.85	within a few hours of birth	<12 yrs 0.5ml im		
HB Vax PRO 5 paediatric £9.70		<16 yrs 0.5ml im		
TWINRIX <i>(see details under hepatitis A vaccines)</i>				
JAPANESE B ENCEPHALITIS <i>(killed)</i> Aventis Pasteur MSD Unit price £54 for a three-dose pack	1 year	1ml sc/im at day 1, 7-14 days, 28 days for full protection	2 years 1ml sc/im	<ul style="list-style-type: none"> Risk of infection <1/million travellers but 1:5000 if living >1 month in rural area. Transmission season varies but generally April-October in SE Asia (Philippines April-Jan), and May/June-Dec in South Asia (India, Nepal, Bhutan and eastern fringes of Pakistan) For long-stay travellers, esp children to South and SE Asia Named patients only – vaccine not licensed; not on FP10 Safety and efficacy in infants uncertain Severe reactions in 0.1-10/100,000 doses – avoid alcohol for 48 hours and try to avoid giving last dose <10 days before travel Aventis Pasteur MSD 0500 106410; MASTA 0113 238 7500 Boosters may be required more frequently for those not usually living in areas where Japanese encephalitis is prevalent
Korea Green Cross Single dose £19	1 year	1ml sc at day 1, 7-14 days and 1 year dose <3 years 0.5ml	3 years 1ml sc	

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MENINGOCOCCAL MENINGITIS ACWY Vax (killed) Unit price £17.99	Licensed minimum age 2 years	0.5ml sc/im	5 years for adults and children >5 years 2-3 years for children aged 2-5 years 0.5ml sc/im	<ul style="list-style-type: none"> • Risk of disease is very low • Safety of vaccine unknown in pregnancy • Advised esp. for children and adults going to sub-Saharan Africa and Nepal if at distance from medical facilities • Saudi local authorities require children aged 2 months to 2 years to have had two doses of ACWY vaccine given 3 months apart. In addition, all Hajj pilgrims, including children aged 2 months and over, must carry a certificate stating use of ACWY vaccine, issued <3yrs and >9 days before arrival. • The next Hajj is scheduled for December 2005 • Not recommended <2 months; poor response 2 months-2 years
POLIO (live)	6 weeks	3 drops po at day 1, 1 month and 2 months	10 years 3 drops po 5 years if travelling to high-risk area	<ul style="list-style-type: none"> • Stocks of OPV are now being run down during changeover to IPV • Vaccine associated paralysis 1:520,000 for first dose of OPV • Avoid deep im antibiotics for 1 month after OPV • Give OVP simultaneously with yellow fever or separated by 3 weeks • Use IPV containing vaccines for pregnant women, elderly and immunocompromised • Close contacts should have been immunised or given a booster • Use TdIPV (REVAXIS) for polio boosters once OPV stocks expire or where the combined vaccine is indicated for other reasons
RABIES (killed) Unit price £22.15 Aventis Pasteur MSD HDCV Rabipur PCEC	All ages All ages	1ml sc/im at days 1, 7 and 21/28 OR 0.1ml id (bleb) at days 1, 7 and 21/28 1ml im days 1, 7 and 28	2-3 years 1ml sc/im or 12 months and then 2-3 years 0.1ml id 2-5 years 1.0ml im	<ul style="list-style-type: none"> • Hypersensitivity • Avoid giving id concurrently with chloroquine. If already on latter, give full rabies dose im. • Effect of other anti-malarials on id immunogenicity unknown. • Give into deltoid not gluteal muscle • Id use not covered by licence for HDCV or PCEC vaccines. If Rabipur is given id higher dose may be safer – use 0.1ml at each of two sites • If blister not raised during id admin. repeat or give full dose im • For long-stay and away from medical facilities in rural areas • Rabipur available through MASTA (0113 238 7500) • Travellers who are not animal handlers may have two deep sc/im doses of 1.0 ml on days 1 and 28 if post-exposure treatment is likely to be readily available. If at continuing risk of exposure a booster should be given at 6-12 months. • Booster advised at 12 months if id route used
TETANUS				<ul style="list-style-type: none"> • Use Td (tetanus/low dose diphtheria) Diftavax or TdIPV (REVAXIS) for all travellers if booster required
TICK-BORNE ENCEPHALITIS FSME-IMMUN (killed) Unit price £32 Encepur (killed) Unit price £22.75 Encepur K (killed) Unit price £22.75	12 years 3-12 years 12 years 2-12 years	Adults 0.5ml im at day 1, 2-12 weeks and 6-9 months 0.25ml im at day 1, 2-12 weeks and 6-9 months 0.5ml im at day 1, 2-12 weeks and 9-12 months 0.25ml im at day 1, 2-12 weeks and 9-12 months	3 years 0.5ml im 3 years 0.25ml im 3 years 0.5ml im 3 years 0.25ml im	<ul style="list-style-type: none"> • For long-term residents, foresters, scouts and rambles going to forested regions of Austria, Germany, Switzerland, Central & Eastern Europe, Balkans and Scandinavia • Anti-TBE immunoglobulin an alternative for single visits to endemic areas • FSME-IMMUN licensed, available from Baxter Health Care 01635 206 140 • Encepur/Encepur K (Behring) not licensed in UK; available from MASTA 0113 238 7500
TYPHOID VI ANTIGEN (killed) Unit price Typhim Vi £10.20 Typherix £10.68 Hepatyrix and VIATIM (see details under hepatitis A vaccines)	18 months 2 years	0.5ml sc/im 0.5ml im	3 years 0.5ml sc/im 0.5ml im	<ul style="list-style-type: none"> • Hypersensitivity to vaccine • Safety unknown in pregnancy; withhold unless benefit outweighs risk • Although the data sheets suggest different rates of local reactions with Typhim Vi and Typherix, there are no comparative studies. The vaccines are similar in formulations, and systemic reactions occur in 8% and 9% respectively
YELLOW FEVER Arilvax £118.20 for five single doses Stamaril £23 only in single dose	9 months	0.5ml sc	10 years 0.5ml sc	<ul style="list-style-type: none"> • International requirement • Avoid in pregnancy except for high-risk travel • Not in children <1 year or immunocompromised • Contraindicated if hypersensitive to eggs (NB neomycin and polymyxin no longer used in manufacture of UK YF vaccines) • Arilvax – Evans Vaccines: 08457 451500 • Stamaril – Aventis-Pasteur: 0800 085 5511

Health protection for last-minute travellers

Principles of accelerated immunisation

- After a dose of vaccine, antibody, or an enhanced blood level of antibody, appears after 7-10 days. If the duration of travel is for longer than a week, there is a strong case for giving vaccines to protect the traveller in subsequent weeks.
- Travellers should be told that they will remain at risk of the vaccinable illness for the first 2 weeks after immunisation. If illness supervenes during those 2 weeks, they should inform any medical attendant that a vaccinable disease is a possibility because they will have only partial protection at best. For all vaccinable infections, with perhaps the exception of yellow fever, a large enough infecting dose will break through the immunity provided by vaccination.

Informed flexible approaches to the use of vaccines may be needed, and consideration given to unlicensed vaccine schedules. Where the schedule is unlicensed, this should be clearly explained to the patient beforehand and consent obtained. A note that the patient has consented should be made. The lack of a licence for a particular schedule should not act as a disincentive to providing the best possible theoretical protection.

The length of time for which an anti-malarial has to be taken after return depends on whether it has any action against the early hepatic incubation phase (causal prophylactic activity). Those anti-malarials that do have action against this hepatic stage can be given for a shorter time after return. Those anti-malarials that have no activity against the hepatic stage should be continued for 1 month after return so that adequate blood levels of the drug are still present when parasites exit the liver and appear in the blood.

Individual vaccines

Tetanus-diphtheria

In un-immunised adults two doses 4 weeks apart will give some protection, and the course can be completed on return.

Polio

- No adult should remain un-immunised against polio and the minimum interval between doses of any polio vaccine is 4 weeks. If there is time for only one dose, the other two doses should be given as soon after 4 weeks have elapsed as practical.
- If yellow fever vaccine is also required, give the two vaccines simultaneously.

Typhoid

- For travellers leaving in less than a week, injectable vaccines are preferable to oral vaccine. Typhoid Vi vaccine in a single dose gives 3 years' protection.
- Oral typhoid vaccines require three doses taken at 48-hour intervals and should be active 1 week after the final dose.
- Oral typhoid vaccine should be separated from oral polio vaccine or mefloquine by at least 12 hours.

Hepatitis A

- Secondary prevention studies indicate that hepatitis A vaccines give immediate protection of about 75 per cent against clinical disease. Hepatitis A vaccine should be given to all travellers to endemic areas, however late they present.
- The use of combined immunoglobulin and hepatitis A vaccine is not recommended.
- The generation of an antibody response is more rapid with Avaxim than Havrix, but there is no evidence that this theoretical advantage confers better protection.

Hepatitis B

Both Engerix B and HB Vax PRO are licensed for an accelerated immunisation schedule on day 1, 1 month and 2 months with a booster at 12 months. Eighty-nine per cent of vaccinees are protected after the primary course. A rapid immunisation schedule has been licensed for Engerix B on days 1, 7 and 21 with a booster at 12 months. Seventy-six per cent of vaccinees are protected 5 weeks after the primary course. Both Engerix B schedules achieve protection in more than 95 per cent of vaccinees after the 12-month booster.

Japanese B encephalitis

- If the traveller is not starting his or her journey for 2 weeks, the Korea Green Cross vaccine may be given as two doses on days 1 and 7.
- Two doses of the Aventis Pasteur MSD vaccine separated by 7 days achieve protective immunity in 80 per cent of recipients.

Meningococcal meningitis

Current meningococcal polysaccharide vaccines are given in a single dose with boosters recommended at 3 years (Mengivac) or 5 years (AC Vax and ACWY Vax).

Rabies

For travellers departing in less than a week, pre-exposure prophylaxis may be accelerated by giving four simultaneous intra-dermal injections, one into each limb. (Remember chloroquine may reduce the efficacy of the intra-dermal route.)

Tick-borne encephalitis

- The interval between the first two doses may be reduced to 7-10 days.
- Alternatively, specific immunoglobulin may be substituted.

Yellow fever

- This single-dose vaccine, and the certificate, are valid 10 days after immunisation.
- If polio vaccine is also required, give the two vaccines simultaneously.

Malaria prophylaxis

- Drugs with long half-lives given weekly take several weeks to build up to steady state inhibitory levels. For example:
 - chloroquine half-life 3-7 days, steady state achieved after 3-4 weeks
 - mefloquine half-life 13-24 (mean 18) days, steady state after 7-9 weeks.
- Loading doses (see below) reduce the time to achieve a steady state but the risk of adverse effects increases. This is particularly important for mefloquine, and loading doses are best reserved for those who have used mefloquine previously without adverse effects.

Loading doses of long half-life agents

- Chloroquine 300mg on 2 consecutive days with weekly doses thereafter, although chloroquine is combined with proguanil for many malaria-endemic areas.
- Mefloquine 250mg daily for 3 days, followed by 250mg weekly thereafter.

Short half-life drugs that can be given the day before departure

- Proguanil 200mg daily, although proguanil is usually combined with chloroquine for many malaria-endemic areas.

Doxycycline 100mg daily

- start 1 day before travel and continue for 1 month after return
- contraindicated in pregnant women and children

Primaquine 30mg daily

- not licensed for anti-malarial prophylaxis
- good protection in multi-drug resistant areas
- causal prophylactic activity
- check for G6PD deficiency before prescribing (haemolysis risk)
- administer with food
- start the day before travel and continue for 7 days after return.

Malarone TM (atovaquone plus proguanil) one tablet daily for adults

- causal prophylactic activity; start the day before travel and continue for 7 days afterwards
- expensive
- paediatric preparation now available for children of 11kg weight upwards
- see malaria prophylaxis chart.

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This advice is updated each month. It represents the authors' interpretation of the following information: data published in research papers and reviews, data made available by Travax (Scottish Centre for Infection and Environmental Health) and data supplied by manufacturers. Readers should use the current month's advice only, to ensure their practice reflects the most recent information.