ABC of Healthy Travel

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IMMUNISATION—I

Travellers are at increased risk of infection from both unfamiliar organisms and new strains of familiar organisms. Furthermore, contact with these organisms is increased through food and water contamination, biting arthropods, and increased human contact of varying intimacy.

The likelihood of contracting any infection can be only crudely estimated and is related to (a) the countries visited, (b) the mode of travel and lifestyle, and (c) the length of stay. The likelihood of developing an illness after contact with certain organisms, usually those causing severe illness, can be reduced by prior active or passive immunisation.

Immunisations may conveniently be considered in the following groups: (a) compulsory, where evidence of vaccination is a prerequisite for entry into a country; (b) commonly recommended; (c) occasionally recommended.

Smallpox

No countries are now known to require certificates of smallpox vaccination from travellers, although Chad remains the sole country that has not officially notified the World Health Organisation to this effect. On the other hand, some embassies still maintain that vaccination is required and reports occur of some border posts requesting valid certificates despite their national administration's advice to the contrary. The WHO asks that all such incidents should be promptly reported to it. We think that it is unethical to vaccinate against smallpox for administrative convenience because of the potential risks. If a doctor is asked to do so he should supply a letter of exclusion stating that vaccination is contraindicated and have it stamped by the local health authority.

Compulsory: yellow fever

Yellow fever is caused by a virus that circulates enzootically in certain tropical forested areas. It mainly infects monkeys but if man enters these areas the virus may be transmitted to him by mosquitos whose normal hosts are these monkeys. This is "jungle" yellow fever. It occurs haphazardly and is clearly related to man's habits. If, from an enzootic source, the virus begins to circulate between man and his own mosquitos, primarily *Aedes aegypti*, epidemics of "urban" yellow fever result.

Yellow fever

Live, attenuated virus - 17D strain
 0.5 ml subcutaneously
 Certificate valid after 10 days for 10 years
 Boost every 10 years
 Not recommended: under 9 months old
                             pregnant
                             immunosuppressed
                             severe egg hypersensitivity

Compulsory: cholera Cholera

Heat killed *Vibrio cholerae* - Inaba and Ogawa serotypes
 > 10 years old: 0.5 ml subcutaneously or intramuscularly
 4-6 weeks later: 1.0 ml subcutaneously or intramuscularly
 or 0.2 ml intradermally
 < 10 years old: see manufacturers' insert
 Certificate valid after 6 days for 6 months
 Boost every 6 months
 Not recommended: under 6 months old

Immunisation protects the individual and is effective in preventing spread of the virus to countries where *A. aegypti* is prevalent. It is therefore reasonable for such countries to request a certificate of vaccination from all travellers from areas where human cases are occurring. Many national administrations, however, require immunisation of all travellers over 1 year of age from all countries, or else all over 1 year from countries where enzootic foci occur. These policies cause many unnecessary immunisations. Maps of zones where yellow fever is endemic (enzootic) and lists of countries' requirements are readily available (see later article on information sources).

Immunisation is clearly not indicated when travelling outside the enzootic zones. Within the zones, if it is not compulsory it is not always necessary. For instance, in the absence of an epidemic of yellow fever a business trip within the confines of Nairobi would be perfectly safe. Nevertheless, local and current knowledge of cases is required for such decisions to be made, so in practice immunisation is recommended to all travellers within enzootic zones.

Immunisation in Great Britain is undertaken only at recognised yellow fever vaccination centres.

In 1973 the WHO, recognising that immunisation cannot stop the spread of cholera among countries, deleted from the International Health Regulations the requirement of cholera immunisation as a condition of admission to any country. Nevertheless, at the time of writing, Mozambique still requests valid certificates from all travellers, and many countries require certification from travellers entering from an infected area.

Cholera vaccination should be used for protecting the individual, and estimates of its effectiveness range from 40% to 80%. If not compulsory it should be recommended for all travelling to rural areas or living rough in countries where cholera is occurring—at present subSaharan Africa, Iran, and tropical Asia.

If immunisation is purely for certification one dose will suffice.

Commonly recommended: typhoid fever

Typhoid fever is endemic worldwide and spread is usually faecal-oral. The risk of infection is increased in areas of high carriage rates and poor hygiene. The risk is not significantly increased for the traveller to areas with public health standards similar to those of Britain—namely, northern Europe, USA, Canada, Australia, New Zealand, and Japan—and immunisation for these areas is not necessary. Outside these areas the risks reflect not only local hygiene and carriage rates but also lifestyle. Travelling or living rough, living in rural areas, or “eating out” make faecal-oral transmission of any pathogen more likely. The risks are therefore small for the air traveller with full board at a reputable hotel, and immunisation is unnecessary. On the other hand, overland travel to Australia would be a clear indication for immunisation. Between these extremes there are many circumstances for which risks cannot be precisely defined. For instance, it is debatable whether there is sufficient increased faecal-oral transmission in southern Europe to justify recommending typhoid vaccine to the many millions travelling there each year. In 1981 only 25 of the British notifications for typhoid fever arose in these countries compared with 24 cases arising in the UK. We would not recommend this vaccine for southern Europe unless extra risk factors concerning lifestyle or length of stay are present.

Typhoid feverHeat killed *Salmonella typhi*

>10 years old 0.5 ml subcutaneously or intramuscularly

1-10 years old 0.25 ml subcutaneously or intramuscularly

4-6 weeks later repeat same dose or
0.1 ml intradermally for all ages

Boost every 3 years

Not recommended under 1 year old

Only monovalent typhoid vaccine is now produced because of the lack of efficacy and the side effects associated with the paratyphoid A and B components of TAB vaccine. The vaccine is 70-90% effective for three to seven years. If exposure continues boosters should be given every three years. Intradermal injection of boosters are effective and result in fewer side effects.

A recent trial of an oral live attenuated vaccine resulted in a 95% protection rate for the test group. Further testing is needed before this vaccine becomes widely available.

Commonly recommended: hepatitis A Hepatitis A

15% concentrate of pooled human immunoglobulin

England and Wales — 250 or 750 mg ampoules from Public Health Laboratory Service laboratories

Scotland — 750 mg ampoules from Blood Transfusion Service laboratories

Adults 250 mg intramuscularly will protect for six weeks
500-750 mg intramuscularly will protect for about six months

Hepatitis A virus is endemic worldwide and spread by the faecal-oral route; protection from symptomatic infection can be provided by passively acquired immunoglobulin. The virus circulates freely in our own population, however, and many travellers will be immune already. For instance, almost 60% of blood donors aged 18-40 years in the west of Scotland have hepatitis A antibodies, although prevalence is lower in England and Wales.

Immunoglobulin should be offered to the same groups as are offered typhoid immunisation, as exposure to one infection would imply the risk of exposure to the other. Before it is given to the long term traveller (more than six months) and perhaps the recurrent traveller, it is reasonable to check for the presence of hepatitis A antibody as this test is now readily available. When antibody is present lifelong immunity is inferred, and immunoglobulin is unnecessary. If antibody is absent immunoglobulin should be given just before departure and repeated at least every six months while the risk continues. Hepatitis A antibodies can be checked again during home leave to see if subclinical infection has occurred. Hepatitis A in children is usually mild and more often asymptomatic so immunoglobulin is not essential. It can, however, be given in reduced doses.

Commonly recommended: poliomyelitis Poliomyelitis

Live attenuated viruses - 3 serotypes

3 drops orally

Three times, four weeks apart for primary course

Boost every 10 years

If pregnant or immunosuppressed use inactivated poliomyelitis vaccine available from -

England 01-636 6811 x 3117

N Ireland 0232 224431 x 330

Scotland 031-552 6255 x 2162

Wales 0222 825111 x 4658

A survey undertaken in England in 1978 showed that 40% of the tested population did not have antibodies to all three serotypes of poliovirus. Hence a consultation about travel abroad is a useful opportunity to complete primary courses or boost immunisations which are nationally recommended. Oral poliomyelitis vaccine is given but supplies of inactivated polio vaccine are available if oral vaccine is contraindicated.

Commonly recommended: tetanus Tetanus

Inactivated toxin

0.5 ml subcutaneously or intramuscularly

Adsorbed vaccine, six weeks apart for primary course

Plain or adsorbed for boosters, 1 year after primary course and then every 10 years

If previous severe reaction use 0.1 ml plain vaccine intradermally

As with poliomyelitis, all individuals should gain or maintain immunity to tetanus. As the source of tetanus spores is environmental, herd immunity is irrelevant, and immunisation is solely for the benefit of the individual. It is as firmly recommended for life in Britain as for travel abroad.

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