The CIWEC Clinic Health News
Revised: August 2010

Immunizations Recommended for Travel in Nepal

Name of vaccine	Dosage	Booster	Comment
Hepatitis A - brand names (Havrix, Vaqta, Avaxim) or Twinrix (combined A&B)	0 and 6-12 months (2 doses) Twinrix- 0, 1 and 6 months	Not recommended. No need to check Hepatitis A antibodies.	Rapid schedule available with Twinrix, 0,7 and 21 days with booster at 1 year
Hepatitis B - Engerix, Recombivax or Twinrix (combined A&B)	0,1 and 6 months	Not currently indicated	Antibody levels do not need to be checked routinely Rapid schedule available
Japanese Encephalitis - Inactivated vaccine (Green Cross) or Live SA14-14-2 (Chengdu Institute) vero cell vaccine (Ixiaro) not available	0, 7 and 28 days or rapid schedule 0,7 and 14 days Single dose can protect for 5 years	Every 3 years if risk persists Booster in 5 years	JE vaccine recommended in the months of August-October. Excellent safety profile of live vaccine
Meningococcal meningitis A&C or Quadrivalent A,C,Y, W135 (Menomune)	Single dose Single dose	Every 3-5 years Every 5 years	A & C adequate for Nepal Quadrivalent vaccine needed for the Hajj and parts of Africa
Polio vaccine	Primary series as child	Single dose as adult	Use only the injectable vaccine if not previously immunized
Rabies vaccine	0, 7 and 21 or 28 days	Booster every 10 years if risk persists	Recommended for all residents and travelers
Tetanus Toxoid (Td)	Primary series as a child	Every 10 years	
Typhoid Vaccine (Typhim Vi)	Single dose	Every 2 years	Strongly recommended
Malaria prophylaxis for Nepal: ***Not recommended*** for Kathmandu, Pokhara and the trekking routes. Not recommended for short stays in Chitwan national park even in the hot months of June, July and August. ***Recommended*** for residence in the Terai. Continue personal protective measures against mosquito bites while traveling in malaria endemic zones. Deet 30% is available at the clinic if needed.			

CIWEC Clinic - Travel Medicine Center, Lainchour, Kathmandu, Nepal
Tel: 4424111, 4435232, website: www.ciwec-clinic.com , e-mail: ciwecclinic@mail.com.np

The CIWEC Clinic Health News

Revised: August 2010

Animal bites (dog, monkey, rodents): Wash wound with soap and water immediately and apply antiseptic, then seek medical care. If pre-immunized, need 2 booster doses of the rabies vaccine and if not pre-immunized, need Human Rabies Immune Globulin (HRIG) and 5 doses of the rabies vaccine over a month.
Water safety: Assume all water to be contaminated. Drink boiled water or bottled water or use Iodine (Lugol`s solution 4-6 drops/liter for 30 minutes). Iodine will not kill a seasonal (May-Sept) parasite called Cyclospora, but boiling water will kill it.

Introduction

Every decision to take a vaccine to prevent an illness is essentially a decision that the short term expense and slight discomfort (and slight risk) is worth the improved chance of avoiding an unpleasant or potentially fatal illness. The following recommendations are based on the advice of international agencies such as the World Health Organization and the Centers for Disease Control in the United States, coupled with our local experience. Vaccine recommendations occasionally vary from Europe to North America, usually in regard to the exact schedule of giving the vaccine. The results of vaccination can be the same with different schedules.

The protection that can be gained from vaccines varies from 50% to almost 100%. So remember that even if you have taken a vaccine you might still get the disease, although you will have greatly reduced your chances of getting ill.

1. For the Prevention of Hepatitis A:

Hepatitis A is a virus that infects the liver, causing a disease known as Viral Hepatitis. The disease is distinctly unpleasant, with profound nausea, loss of appetite, and weakness that can last for weeks. It can also be fatal on rare occasions. If you have had Hepatitis A in the past, you will be immune for life and do not need the vaccine. The virus is passed in human feces, and is acquired the same way that you acquire traveler`s diarrhea. Therefore, it is very easily avoided through safe eating habits.

Hepatitis A Vaccine: This is a highly effective and safe vaccine. Some common brand names include "*Havrix"*, "*Vaqta*" and "*Avaxim*". "*Twinrix*" is a combined Hepatitis A and B vaccine. All of these vaccines are equally safe, effective, and interchangeable and offer long lasting protection against Hepatitis A, making gamma globulin injections no longer necessary for people who take the Hepatitis A vaccine. Most of these vaccines are given as a series of 2 injections except for *Twinrix*, the combined vaccine which is given as a series of injections. *Havrix* which is what we stock at CIWEC Clinic, is given as a series of 2 injections, 1440 international units per injection of the vaccine is given on day 0, and then a booster is given from 6-12 months later, with adequate protection about 2 weeks after the first shot. Nepali adults who used to be almost always immune to Hepatitis A through clinical or silent infection in childhood may no longer be immune on account of improved levels of personal and household hygiene and sanitation. It therefore makes sense to give this vaccine to Nepali adults who are not immune to Hepatitis A. Antibody testing is available through the clinic.
Gamma Globulin: This is rarely used nowadays as most travelers and almost all residents are

getting immunized with the Hepatitis A vaccine. The vaccine offers protection even when given after exposure on account of the long incubation period of Hepatitis A eliminating the need for gamma globulin.

2. Prevention of Hepatitis B:

Hepatitis B Vaccine: This is a well established vaccine with high safety and efficacy. Hepatitis B is spread through direct contact with infected blood or through sexual intercourse. Residents and long term travelers are recommended to take this vaccine. In addition, since there are no animal reservoirs of infection, an effort is being made to give hepatitis B vaccine to all humans, which would eventually eliminate the disease from the world, much as smallpox was eliminated by a vaccination campaign in the 1970`s. The regimen for Hepatitis B Vaccine is an initial injection followed by boosters at one month and six months. Rapid schedule is available for people with time constraints. Hepatitis B antibody levels do not need to be checked routinely for healthy adults. Health care workers and immuno-compromised persons can check levels 1- 2 months after the last dose of the Hepatitis B Vaccine. For persons with inadequate levels (<10 mIU/ml), further 3 doses of Hepatitis B Vaccine at 0,1 and 6 months is currently recommended.

3. For the Prevention of Typhoid Fever:

Typhoid Fever is a prolonged febrile illness caused by infection with *Salmonella typhi* bacteria. An almost identical illness, called Paratyphoid Fever, is produced by *Salmonella paratyphi*. The organisms are passed in human feces, and acquired by eating contaminated food or water. The disease is rarely fatal, and can be treated with antibiotics. However, it can make you very ill and complete recovery can take several weeks. Therefore, we recommend taking a vaccine to prevent Typhoid Fever, which is an extremely common illness in Nepal (about 1 in 300 unvaccinated travelers get the disease).

Typhoid Vaccine: (Typhim Vi) There are currently two different Typhoid Vaccines on the market - an oral Typhoid Vaccine using live organisms, and a capsular polysaccharide injectable vaccine. At CIWEC Clinic, we stock the capsular polysaccharide Typhoid Vaccine **(Typhim Vi)** which consists of a highly purified coating of the Salmonella typhi bacteria. Because the whole bacteria is not injected, side-effects are minimal. It consists of a single injection of the vaccine with protective efficacy around 55- 75%, with boosters required every two years. This does not offer any protection against Paratyphoid Fever.

4. For the Prevention of Meningococcal Meningitis:

Although many international agencies have stopped recommending this vaccine for travel to Nepal, we continue to offer it since there are outbreaks of undiagnosed severe febrile illnesses from time to time in Nepal. Meningococcal meningitis is a severe bacterial infection of the lining of the brain which is usually rapidly fatal without treatment. There was an epidemic of meningococcal meningitis in Nepal in 1983 with 6 foreign trekkers contracting the disease leading to the original recommendation for this vaccine for all travel to Nepal. Meningitis is spread through coughing or sneezing in a closed environment, with the bacteria entering your body through the nose and mouth.

Meningococcal Meningitis Vaccine: The vaccine is safe, 90% effective, and protection from a single shot lasts three to five years in people over age five, and two years in children under

five. We currently stock meningitis vaccine A&C and also Menomune, the quadrivalent vaccine consisting of serotypes A, C, Y,W 135. Quadrivalent vaccine is needed for the Hajj, for college entry into some colleges in USA and for travel to the meningitis belt of sub-Saharan Africa that extends from Mali to Ethiopia.

5. For the Prevention of Japanese Encephalitis:
Japanese Encephalitis (JE) Vaccine: JE is caused by a virus carried by culex mosquitoes in rural areas of southern Nepal or the Terai. JE has also been found to exist in the Kathmandu valley since 1996. JE virus can cause a severe and often fatal infection of the brain. The actual risk of contracting JE by a traveler is probably extremely low. Visitors who will spend less than a month in Nepal are the lowest risk individuals and we are not recommending vaccine to this group. Visitors staying more than a month in Nepal particularly if visiting in the post-monsoon months of August-October and all residents of the Kathmandu valley are recommended to receive immunization against JE. We continue to strongly recommend the vaccine for persons living in the Terai and also to visitors who visit the Terai in the high risk transmission months of August- October. The full series of the inactivated vaccine (Green Cross) consists of 3 shots given on days 0, 7, and 28. If time is short, the 3 shots can be given one week apart. Booster shot is recommended every 3 years, if risk persists. Vero cell vaccine (Ixiaro) is available in the industrialized countries but we are not stocking it on account of cost issues. Live vaccine of the SA14-14-2 strain made by Chengdu Institute in China has an excellent side effect profile and single shot is protective for 5 years. We currently stock the Chengdu and Green Cross vaccines at the clinic.

6. For the Prevention of Rabies Encephalitis:
Rabies Vaccine: Rabies virus is transmitted by the bite/scratch of infected animals or from saliva contact with mucous membranes. The disease is present throughout Nepal, India, and Tibet and dogs account for >96% of human cases. The rabies virus, once injected by a bite, travels slowly to the brain over a period of weeks to years, causing a fatal encephalitis. Because of the delay between the bite and clinical illness, rabies vaccine and immunoglobulin can be injected after a bite to prevent the person from developing a rabies infection.

This **post-exposure series** offers essentially 100% protection but it does take a month to complete the five shots plus the initial injection of human rabies immune globulin (HRIG), is very expensive ($800 to $1200 depending on your body weight) and has been in short supply around the world lately.

For this reason, long-term travelers or foreign residents often take a **pre-exposure series**, consisting of 3 shots on days 0, 7, and 28. These "pre-immunized" individuals require only two booster shots 3 days apart if they are bitten by an animal. The risk of being bitten by an animal in our recent study was 2 out of 1000 persons for one year of travel with three times the risk for an expatriate resident living mainly in Kathmandu. Trekking was not associated with increased risk of exposure.

We highly recommend the pre-exposure series to everyone particularly children, who may not report to their parents every contact with a stray animal or someone`s pet. We recommend rabies vaccine booster every 10 years if persons continue living in Nepal.

7. For the Prevention of Tetanus:
Tetanus Vaccine: Tetanus bacteria can infect small wounds and cause a fatal infection. The risk is the same throughout the world. For this reason, most people have received tetanus vaccine (usually mixed with diphtheria vaccine for greater effect), since early childhood. Boosters should be obtained every 10 years, and foreign travel is an opportunity to review one`s tetanus vaccine status.

8. For the Prevention of Polio:
Polio Vaccine: Polio virus used to be endemic in Nepal and mass vaccinations of children under the age of 5 years against Polio have been completed by the WHO. In spite of several rounds of mass vaccinations of children against polio, Nepal is not yet declared polio free by the WHO on account of cases that have cropped up from time to time. Almost all tourist and foreign residents have been vaccinated against this disease in childhood. However, this initial immunity can decrease over the years, and one booster as an adult is recommended if you travel to developing countries. The booster can be oral or injectable if you have previously been immunized. If you have never been immunized against polio, you need to get the injectable inactivated vaccine.

9. For the Prevention of Cholera:
Cholera Vaccine: The risk of cholera to the foreign traveler or resident in Nepal is close to zero. Cholera is mainly spread by heavily contaminated water, or by certain sea coast animals that concentrate the bacteria (such as oysters). If you are conscientious in not drinking untreated water (or milk, which is often contaminated with water), you will have almost no chance of getting cholera. We do not recommend routine cholera immunization nor do we stock the cholera vaccine.

10. For the Prevention of "The Flu." :
Influenza Vaccine: Influenza, or "the flu," is a viral illness that causes fever, muscle aches, cough, and misery for a number of days. The attack rate is high among travelers, who often are more vulnerable due to the stress of travel, and the congestion of many forms of public transport and restaurants. The vaccine consists of killed particles of three different strains of influenza, and can significantly cut your risk of getting sick with the flu. Although not routinely recommended to travelers, it is a safe vaccine that may save you a week of discomfort on your holiday, or prevent you from being ill during a brief working trip to Nepal or India. A single injection offers protection for about 6 months to one year. New vaccines are formulated each year based on world-wide reporting of which flu is going around. The new vaccines are released in the fall and CIWEC Clinic will make this vaccine available each year in September -October. We participate in the global flu surveillance that helps monitor for different strains going around. The 2010-2011 influenza vaccine does contain the H1N1 (swine flu) component.