

Health Preparation

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Immunizations

Prior to travel students and residents should consider a wide variety of immunizations to protect themselves from vaccine preventable illnesses. See table 1. Preparation should begin as early as six months prior to travel. (Example: It takes six months to complete the entire hepatitis B series) Unfortunately, students are often limited in what vaccines they can receive due to expense. Therefore students should receive expert advice from a travel clinic or the health department so that they can receive some assistance in prioritizing the advice. If they do not have the resources to take appropriate precautions, faculty advisors should urge them not to go.

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Malaria Prevention

Malaria is a significant risk in many parts of the world and students must take anti-malarial medication to prevent it. Drug resistant

strains exist in many parts of the world and must be considered by prescribing physicians

The CDC and WHO annually publish recommendations for malaria prophylaxis based on the region of the world visited. Figure 1 gives the 1997 information on malaria prevalence. Updated information can be obtained by calling the CDC at 888 -232-3228 or via the web at <http://www.cdc.gov>. The WHO website is <http://www.who.ch>.

Faculty physicians should avoid writing prescriptions and ordering vaccines for students without a thorough understanding of the travel plans and health history of the student. Often faculty advisors feel pressured into prescribing vaccines or medicines that the student suggests, which may not be entirely correct. Further, providing chemoprophylaxis is not a substitute for providing instructions on mosquito protection. This includes advice on housing (screened buildings if possible), bednetting, mosquito repellent, insect spray and protective clothing.

Traveler's Diarrhea

As many as 50-80% of student travelers will suffer from traveler's diarrhea while working in developing countries. The offending pathogen is a bacterium 80% of the time and therefore the treatment of choice is usually an antibiotic. Students should consult a personal physician, travel clinic, or student health center to obtain prescriptions for treating traveler's diarrhea. The medication should be self administered promptly at the onset of symptoms

TABLE 1
Vaccines to consider prior to an international health rotation

Vaccine	Region of the World where vaccine should be consider	Relative Cost:
		1. < \$30 2. \$30-60 3. > \$60
Cholera (killed vaccine) [†]	Occurs in most developing countries, bu vaccine relatively ineffective	1
Hepatitis A	Occurs in most developing countries.	3
Japanese Encephalitis *	Indian subcontinent, SE Asi	3
Hepatitis B	Occurs in most developing countries	3
Measles (MMR) booster	Occurs in most developing countries	2
Meningococcal vaccine [⊥]	Sub-Saharan Africa, South America, Nepal, Indian subcontinent	3
Polio (IPV)	Indian subcontinent, Sub-Saharan Africa	1
Rabies	Occurs in most d eveloping countries	3
Tetanus	Worldwide	1
Typhoid (oral or injectable)	Occurs in most developing countries	2
Yellow fever * [†]	Sub-Saharan Africa, South America	2

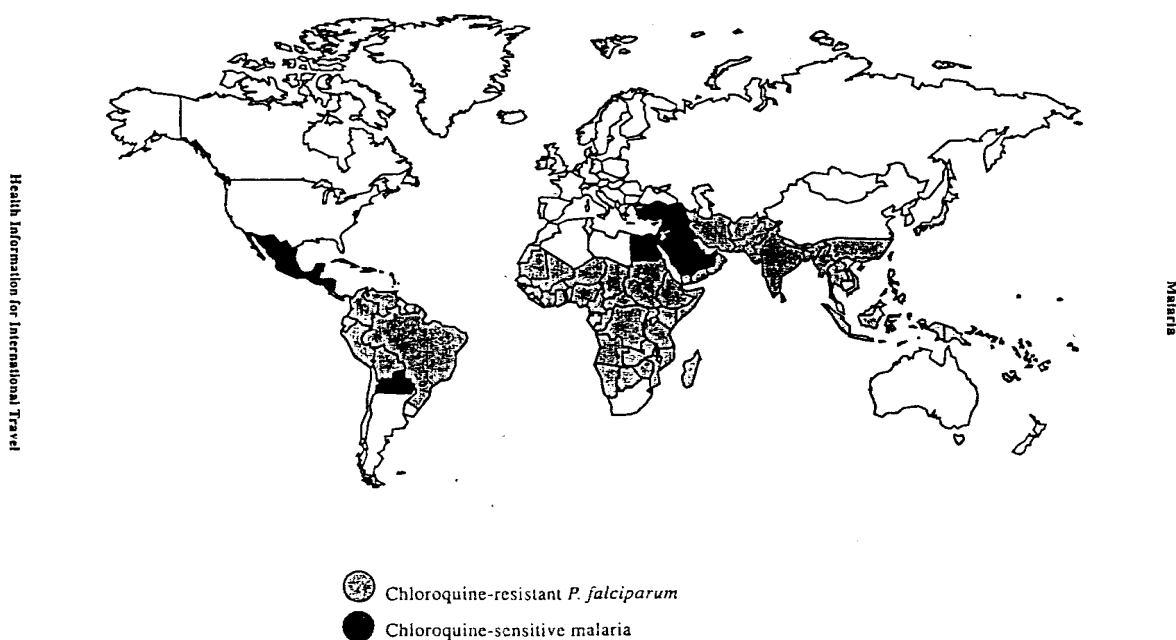
* The primary vector for this infection is mosquito transmission, therefore standard mosquito prophylaxis is recommended including bednets, mosquito repellent, insect sprays, etc.

[†] Some countries may require proof that you received this vaccination, check with the CDC or with the embassy for the nations of intended travel to see if special certification of vaccination is needed.

⊥ Required for pilgrims entering Mecca for Hajj

⊥

Distribution of Malaria and Chloroquine-Resistant *Plasmodium falciparum*, 1997



Blood Borne Pathogens

Due to the high prevalence of various blood-borne pathogens in tropical countries, medical students and residents are advised to take proper precautions when dealing with blood, body fluids and invasive procedures while working. Pathogens include mainly Hepatitis B and C, and HIV. Although there is a vaccine against Hepatitis B that should be administered to all students, prevention of the other two diseases requires avoiding exposure. HIV is a particular concern and the prevalence has been increasing rapidly around the world. In Southern Africa there are adult prevalence rates of up to 25% in some countries.⁸ The risk of acquiring HIV from an infected needlestick is 0.32%.

The first line of defense is using strict universal precautions (Table 2). There needs to be communication between the student, advisor and the faculty on-site overseas to determine the need for the student to bring equipment and supplies so that universal precautions can be practiced. Education of the student regarding risks and precautions is extremely important.

HIV can also be transmitted sexually, prenatally, and through breast milk. All students should be cautioned against having any sexual encounters with local people. This is risky both health wise and legally. Safe sex and the use of condoms should be stressed if this behavior is not avoided.

TABLE 2

UNIVERSAL PRECAUTIONS

- Hand washing before and after patient contact, after removing gloves and immediately if hands are contaminated with blood
- Immediate washing of any needle stick injury with soap and water
- Water used to flush out nose, mouth or eyes that have been splashed with blood
- Gloves worn when hands are likely to come into contact with blood or body fluids
- Masks and protective eye wear or a face shield used when there is danger of blood spraying onto the face
- No recapping of needles
- Puncture resistant containers available for disposal of needles and sharp instruments
- Cleaning of blood spills and disinfection with 1:10 bleach solution

In addition to the use of universal precautions, it is now possible to reduce the risk of HIV infection by over 90% with the use of post-exposure prophylaxis. In the event of an exposure to possibly HIV infected blood, the area should be cleaned and a detailed report prepared. The CDC has prepared an algorithm to determine the need for post

exposure prophylaxis.⁹ Either a two- or three-drug regimen is recommended depending on the exposure code and HIV status code. (Table 3) Since medications must be started immediately, it is recommended that students carry needed drugs along for either a full four-week course or enough for 4-5 days until the return to the United States.

TABLE 3

DRUGS FOR HIV POSTEXPOSURE PROPHYLAXIS

Two drug regimen is Zidovudine 300 mg BID + Lamivudine 150 mg BID

Three drug regimen is the above plus Indinavir 800 mg Q8H or Nelfinavir 750 mg TID

Laboratory work will be needed to monitor for adverse reactions. There should be baseline titers for HIV and Hepatitis C, and a baseline CBC, amylase, CPK, SM -12 and pregnancy test after exposure. The CBC, SM -12, amylase and CPK levels are followed at 2-4 weeks. Any student serving in a high-risk area should be offered an HIV test on return and at 6 weeks, 3 months and 6 months.

Travel Kit and First Aid

Students should be prepared to deal with personal minor medical problems that might occur while traveling. This involves preparing a medical kit to carry along. This kit should not be bulky, but needs to contain any medicine or supplies that are likely to be needed or would be difficult to find locally. The student should also carry along a first aid manual. The list here is compiled from several sources ^{1,2,3} and can be altered depending on individual needs and itinerary.

MINIMAL

Acetaminophen or other analgesic
Thermometer
Antiseptic
Band-Aids
Loperamide or other antidiarrheal
Gauze and Tape
Antacid or H-2 blocker
Scissors
Antihistamine and/or decongestant
Alcohol
Topical Antibacterial
Tweezers
Topical Antifungal
Sling
Topical corticosteroid
Safety Pins
Antibiotic eye drops

Insect Repellent
Ear drops for external otitis
Sunscreem
Laxative
Contact Lens
Sedative
Solution
Eyeglass (prescription or extra pair)
Oral antibiotic (Ampicillin,
Ciprofloxacin, Bactrim,
Prescription or extra pair
Doxycycline, Cephalosporin)
Motion sickness medication
Throat lozenges
Rehydration salts
Malaria medication
Benzonatate or other cough suppressant
Adequate supply of personal medication (Extra in case of change in travel plans)

EXTRAS FOR SPECIAL NEEDS

Various dressings, 4X4's, Kling and non-adhering dressings
Felt pads for shoes for trekkers
ANA-Kit with adrenaline injection
Acetazolamide or oral steroids for high altitude work
Syringes and needles for injectables such as dexamethasone, narcotic, antihistamine, antiemetic, furosemide
Water purification tablets (Iodine) or device

There should also be a place in the kit for documents such as: insurance information and claim form, a letter from a physician stating

the need for personal medication, and a letter stating the need for syringes, needles and narcotics these are carried. These will be needed if questions arise at border crossings. The immunization record can be kept here as well.

Legal Documents

The ability to prove citizenship, authority to be in a certain place, medical/evacuation insurance and vaccination status may become very important in certain circumstances. It is imperative that a traveler maintains these type of travel documents (e.g. passport, visas, International Certificate of Vaccination, letters from sponsoring organizations, etc.) in a safe place.

Web sites for identifying what documents are required or recommended for travel in specific areas:

www.pueblo.gsa.gov/cic_text/travel/foreign/foreignentryreqs.html

http://travel.state.gov/travel_warnings.html

General References

1. American Red Cross. *Advanced First Aid and Emergency Care*, 2 ed. Garden City, NY: Doubleday, 1979.

2. Jong EC, McMullen R. *The Travel and Tropical Medicine Manual*, 2 ed. Philadelphia. B. Saunders Co., 1995.

3. DuPont HL, Steffen R. *Textbook of Travel Medicine and Health*. Hamilton, ON: B. C. Decker Inc., 1997.

4. *Health Information for International Travel*. Annual publication of the U.S. Centers for Disease Control and Prevention (CDC)

5. World Health Organization: Good resources for immunization requirements, health status, and disease updates on various countries are available at the WHO website: **www.who.int**

6. Travel Medicine Clinics Online
www.hsc.unt.edu/clinics/itmc/travel
www.travel-med.com
www.tripprep.com/usdos/usdos.html

Suggested First Aid Manual to Bring on Overseas Rotations

7. Brown R. *Emergency Survival Handbook*, 4 ed. Bellevue, WA: American Outdoor Society League, 1987.

Suggested HIV References

8. *Report on the Global HIV/AIDS Epidemic* June 1998, UNAIDS/WHO, **http://www.who.int/emc-hiv/global_report/rep_html/**

9. Centers for Disease Control and Prevention. Public Health Service Guidelines for the Management of Health-care Worker Exposures to HIV and Recommendations for Postexposure Prophylaxis. *MMWR* 1998; 47(RR-7): 1-33.