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Health Recommendations for Relief Workers Responding to Disasters

This notice provides advice specific to the needs of relief workers responding to disasters internationally or domestically. Because of their potential exposures, relief workers are at increased risk for illness and injuries. In addition, they should be aware of potential hazards, such as downed power lines and security measures that may be imposed (e.g., curfews to prevent looting). Those who provide assistance should also pay attention to their mental health needs before, during, and after their time in the field. Moreover, because relief workers' services are desperately needed, it is essential that workers remain healthy during their trip. In addition to this notice, relief workers should refer to the general regional travel recommendations for their specific [travel destination](#).

Prior to Travel

Risks and Health Recommendations

Although, relief workers should be assessed by a health-care professional at least 4-6 weeks before travel so recommended vaccines can be completed and provide maximum benefit, there is value in seeking care even if travel is imminent. Those who know they may potentially do relief work in the future would receive the most benefit by visiting a travel health professional early and completing the relevant vaccine series, if needed, well in advance of any future mission.

Travelers who are pregnant should consider other ways to be of assistance. Pregnant women are especially advised to avoid areas where malaria exists because of increased health risks to both the mother and unborn child; see [Preconceptional Planning, Pregnancy and Travel](#) in *Health Information for International Travel*.

Immunizations

All travelers should be sure their routine immunizations are up to date (tetanus/diphtheria, polio, measles, influenza). Some of the vaccines listed below (polio, influenza, typhoid, and measles) require a single dose and can be given at the same visit. Others require a series of injections for full benefit (hepatitis, rabies, Japanese encephalitis). Some vaccine schedules can be accelerated.

Immunizations for All Travelers

- **Tetanus/diphtheria** vaccine or booster, if the most recent vaccine or booster was 5 years ago or more.
- **Polio** booster, for those who have completed a primary series with either

inactivated polio vaccine (IPV) or oral polio and will be traveling to a polio-endemic or -epidemic area; see <http://www.polioeradication.org/>.

- **Measles** for those who are not immune. Immunity can be assumed if there is documentation of measles diagnosed by a physician, laboratory evidence of measles immunity, proof of receipt of two doses of live measles vaccine on or after the first birthday, or the year of birth was before 1957. However, measles or MMR vaccine can be given to travelers who might be susceptible.
- **Influenza** injectable vaccine if working directly with affected populations. If work is not directly with affected populations, live attenuated nasal influenza vaccine can be administered. Live vaccine is available for most healthy persons 5-49 years of age who are not pregnant; injectable is available for all age groups. See <http://www.cdc.gov/vaccines/pubs/ACIP-list.htm>.
- **Hepatitis B.** For optimal protection, ideally vaccination should begin at least 6 months before travel so that the full vaccine series can be completed. Because some protection is provided by one or two doses, the vaccine series should be initiated, even if it cannot be completed.
- **Hepatitis A.** For optimal protection, the first dose of vaccine should be given at least 30 days prior to travel; however, vaccine can be given even if travel is imminent.

Immunizations for Travelers Going to Select Areas

- **Japanese encephalitis (JE)**, if traveling to an area where JE is endemic; see [Japanese encephalitis](#) in *Health Information for International Travel*. A full 3-dose vaccination series requires 2-4 weeks to complete (days 0, 7, 14 or 30). However, an abbreviated schedule of 2 doses (days 0, 7) has been shown to protect 80% of vaccinees. Because serious adverse reactions to the vaccine (generalized itching, respiratory distress, angioedema, anaphylaxis) can occur in some individuals up to 1 week after vaccination, the full course of immunization should be completed at least 10 days before departure, and vaccinees should remain in areas with access to medical care during this 10-day period.

JE vaccination is not recommended for imminent travel; such travelers should take measures to prevent mosquito bites, such as using insect repellent and sleeping under insecticide-treated bed nets (see [Protection against Mosquitoes and Other Arthropods](#) in *Health Information for International Travel*). For travelers scheduled to depart in 2 weeks or more, JE vaccine should be administered.

- **Rabies** if traveling to areas where rabies is endemic, see [Rabies](#) in *Health Information for International Travel*. Exposure to animal bites, most notably from dogs in resource-poor countries, poses a risk for rabies. Proper administration of the rabies pre-exposure series (days 0, 7 and 21 or 28) requires at least 3 weeks to complete. Although risk of exposure to stray animals and thus increased risk of exposure to rabies may be increased in countries affected by disasters, there would be little to no value in administering **incomplete** pre-exposure prophylaxis.

In the event of an animal bite, the partially immunized individual would be considered **unimmunized** and should receive full postexposure prophylaxis (i.e., rabies immune globulin (RIG) + 5 doses of vaccine). If either rabies immune globulin or rabies vaccine is not available in the country of destination, the exposed person should either return home or travel to the closest major city where these biologics are available to initiate rabies postexposure prophylaxis as soon as possible.

- **Yellow fever** if travel is to endemic areas or if proof of vaccination is required for entry based on travel itinerary; see [Yellow fever vaccine requirements](#) in *Health Information for International Travel*.
- **Typhoid** (oral or injectable)
- **Cholera vaccine** is not available in the U.S. If the traveler will be working in areas where outbreaks of cholera are being reported, the vaccine would have to be obtained at an intermediate destination.

Malaria Prophylaxis

If traveling to an area where malaria is endemic; see [Malaria](#) in *Health Information for International Travel*. There is no immunization against malaria. Although no antimalarial drug is 100% protective, taking antimalarial drugs correctly and consistently is the most

important factor in preventing this debilitating and potentially fatal condition, see <http://wwwn.cdc.gov/travel/contentMalariaDrugsPublic.aspx>.

Malaria symptoms can include fever and flu-like illness, including chills, headache, muscle aches, and fatigue. Malaria may also cause low red blood cell counts (anemia) and yellowing of the skin and whites of the eye (jaundice). If not promptly treated, infection with *Plasmodium falciparum*, the most harmful malaria parasite, may cause coma, kidney failure, and death.

Travelers who become ill with a fever or flu-like illness either while traveling in a malaria-risk area or after returning home (for up to 1 year) should seek immediate medical attention and should be sure to tell the physician their travel history.

Risks from Food and Water

Natural disasters often disrupt water supplies and sewage systems. If a trusted source of bottled water is not available, water should be boiled or disinfected. For more details, see <http://wwwn.cdc.gov/travel/foodwater.aspx>.

Food should be selected with care to reduce the risk of acquiring any gastrointestinal illness. Salads, uncooked vegetables, and unpasteurized milk and milk products, such as cheese, should be avoided. Undercooked and raw meat, fish, and shellfish can carry various intestinal pathogens. Cooked food that has been allowed to stand for several hours at ambient temperature can provide a fertile medium for bacterial growth and should be thoroughly reheated before serving. Consumption of food and beverages obtained from street vendors has been associated with an increased risk of illness. Therefore, food that has been cooked and is still hot or fruit that has been washed in clean water and then peeled by the traveler personally are safer to eat.

Travelers' Diarrhea

Diarrheal disease is a common complaint of travelers in normal circumstances and may be exacerbated in areas where clean water is either not available or the systems have been disrupted by disaster. An antibiotic for self-treatment of acute diarrhea, such as a fluoroquinolone (e.g., ciprofloxacin), can be given. Azithromycin can be used as an alternative. This medication should be taken until symptoms subside (typically 3 days). Anti-motility agents, such as loperamide and diphenoxylate and/or bismuth subsalicylate (Pepto-Bismol), can reduce bowel movement frequency.

Medical attention should be sought for diarrhea accompanied by a high fever or blood. Additionally, replacement of lost fluids by drinking clean water is the most important means of maintaining wellness, although oral rehydration solutions are ideal for the treatment of severe diarrhea.

Risks from Insect Bites

A variety of diseases can be spread by the bite of infected mosquitoes or arthropods, from West Nile in the United States to malaria and dengue in much of the tropics; check the region to which you will be traveling for specific risks. Bites can be prevented through combined use of insect repellent and barrier methods such as wearing long-sleeved shirts and long pants when outdoors or sleeping under a bed net (malaria). Repellent containing DEET should be used if travel is abroad; picaridin can be used if travel is domestic; see [What You Need to Know about Mosquito Repellent](#).

Risks from Snake Bites

Displaced reptiles, such as snakes, are likely to be found following flooding and other natural disasters. The venom of a small or immature snake can be even more concentrated than that of larger ones; therefore, all snakes should be left alone. Fewer than half of all snakebite wounds actually contain venom; however, medical attention should be immediately sought any time a bite wound breaks the skin.

If medical care is rapidly available, then initial treatment should include immobilization of the affected limb and minimizing physical activity as much as possible (ideally of the entire patient) during transport to a medical facility. If care is delayed, then a loose-fitting pressure bandage that does not restrict arterial and venous flow (but does limit lymphatic flow) is the recommended first-aid measure while the victim is moved as quickly as

possible to a medical facility. Tourniquets that impair blood flow to the affected limb are generally contraindicated.

Specific therapy for snakebites is controversial and should be left to the judgment of local emergency medical personnel. Snakes tend to be active at night and in warm weather. As a precaution, boots and long pants should be worn when walking outdoors at night in areas possibly inhabited by venomous snakes. Proper protection such as the aforementioned clothing, careful attention to one's surroundings, and overall avoidance of contact are the best measures that can be taken to avoid injury.

Injuries

The risk of injury during and after a natural disaster is high. Injuries are also one of the most common hazards of travel. Persons who anticipate the need to travel to disaster areas should wear sturdy footwear to protect their feet from widespread debris in these areas. [Tetanus](#) is a potential health threat for persons who sustain wound injuries. Any wound or rash has the potential for becoming infected, and such wounds or rashes should be assessed by a health-care provider as soon as possible. Any wounds, cuts, or animal bites, (see [Rabies](#) in *Health Information for International Travel*) should be immediately cleansed with soap and clean water. Familiarity with basic first aid is advised to self-treat any injury until medical attention can be obtained.

Preventing Electrocutions

Relief workers should be careful to avoid downed power lines. During power outages, many people use portable electrical generators (<http://www.bt.cdc.gov/poweroutage/workersafety.asp>). If the portable generator is improperly sized, installed, or operated, it can send power back to the electrical lines. This problem is called backfeed or feedback in the electrical energy in power lines. Backfeed can kill or seriously injure repair workers or people in neighboring buildings. In addition, electrical power and natural gas or propane tanks should be shut off to avoid fire, electrocution, or explosions. Battery-powered flashlights and lanterns, rather than candles, gas lanterns, or torches, should be used.

Environmental Hazards

During natural disasters, technological malfunctions may release hazardous materials (e.g., toxic chemicals from a point source displaced by winds or rapidly moving water). Natural disasters may also lead to air pollution. Lung infections may occur after inhalation of sea water. Disasters resulting in massive structural collapse can cause the release of chemical or biologic contaminants (e.g., asbestos or arthrospores leading to fungal infections). Persons with chronic pulmonary disease may be more susceptible to adverse effects from these exposures.

Travelers should be familiar with the temperature range in the intended destination, noting that there may be severe fluctuations between daytime and nighttime temperatures. There are health risks related to extreme temperatures (e.g., heatstroke, hypothermia) and to sun exposure in the tropics or at high altitude on the eyes (cataracts) and skin (skin cancer, sunburn); see <http://www.cdc.gov/cancer/skin/chooseyourcover/>. Wraparound sunglasses that provide 100 percent UV ray protection should be worn for eye protection. A broad-spectrum (protection against both UVA and UVB rays) sunscreen and lip screen with at least SPF 15 should be used. Travelers should be familiar with the signs of illness related to extreme heat and what to do; see "[What Is Extreme Heat?](#)" in "Extreme Heat: A Prevention Guide to Promote Your Personal Health and Safety."

Extremes in Environmental Temperatures

Both hot and cold extremes in temperature can pose a danger to health. Heat-related illness, such as heat stroke, can even be fatal. In addition, sunburn, skin cancer, and eye cataracts are linked to overexposure to dangerous UV (ultraviolet) rays of the sun.

Exposure to extreme cold temperatures can lead to frostbite and hypothermia (low body temperature), a condition that can also be fatal. For information on how to prevent temperature and sun-related illnesses, see [Extreme Heat: A Prevention Guide to Promote Your Personal Health and Safety](#) and [Temperature Extremes](#) and [Sunburn](#) in *Health Information for International Travel*.

Psychological/Emotional

Because of the tremendous loss of life, serious injuries, missing and separated families, and destruction of whole areas often associated with disasters, it is important that relief workers recognize the situation they encounter may be extremely stressful. Keeping an item of comfort nearby, such as a family photo, favorite music, or religious material, can often offer comfort in such situations. Checking in with family members and close friends from time to time is another means of support. For additional mental health resources, see [Coping With a Traumatic Event](#).

Other Health Risks

[Leptospirosis](#) may occur as a result of wading, swimming, or bathing in waters contaminated by animal urine. In addition, exposure to animal bites, most notably dogs in the developing world and bats or skunks in the South Central U.S., poses a potential risk for rabies and other infections. Individuals who sustain a bite should seek immediate medical attention for both appropriate management of the wound and assessment regarding post-exposure rabies prophylaxis.

Illness Abroad

If fever, cough, unusual rash, or difficulty breathing develop while traveling, medical attention should be sought as soon as possible. Because illness and injury are a real possibility for people going to areas following a disaster, the traveler should recognize that most functioning hospitals and clinics may be busy caring for people who have been injured and therefore would be unable to treat travelers. For seriously ill travelers, evacuation to other parts of a country or outside the country to receive adequate medical care may be necessary. A supplemental health insurance policy that includes evacuation insurance should be considered. See the U.S. Department of State website for additional information: <http://travel.state.gov/>.

Handwashing

Frequent handwashing using soap and water removes potentially infectious material from the skin and helps prevent transmission of both respiratory and enteric diseases. Waterless alcohol-based hand rubs may be used when soap is not available and hands are not visibly soiled.

Travel Health Kit

Relief workers should plan for travel with the knowledge that there may be shortages of electricity, safe water, or food distribution systems in affected areas. They should try to pack to be as self-sufficient as possible and bring only those items necessary for their trip. In addition to a basic [travel health kit](#), relief workers should bring the following items:

Toiletries

- Alcohol-based hand sanitizer
- Toilet paper
- Sun block (spf 15 or higher)
- Insect repellent containing DEET
- Menstrual supplies
- Extra pair of prescription glasses, copy of prescription
- Eyeglasses repair kit
- Contact lenses, lens cleaner, and eye glasses protective case
- Toothbrush/toothpaste
- Skin moisturizer
- Soap, shampoo
- Lip balm
- Razor, extra blades*
- Scissors*
- Nail clippers/tweezers*
- Q-tips, cotton swabs
- Sewing kit
- Laundry detergent
- Small clothesline/pins

Clothing

- Comfortable, light-weight clothing
- Long pants
- Long-sleeved shirts
- Hat
- Boots
- Shower shoes
- Rain gear
- Bandana/handkerchief
- Towel (highly absorbent, travel towels if possible)
- Gloves (Leather gloves if physical labor will be performed; rubber gloves if handling blood or body fluids).

Activities of daily living

- Sunglasses
- Water proof watch
- Flashlight
- Spare batteries
- Knife, such as a Swiss Army Knife or Leatherman*

Security

- Money belt
- Cash
- Cell phone (with charger)
- Candles, matches, lighter in a ziplock bag
- Ziplock bags
- Safety goggles
- An item of comfort (i.e., family photo, spiritual or religious material)

(* pack these items in checked baggage, they may be confiscated if packed in carry-on bags on a commercial airliner.)

For international travel

- Extra passport-style photos
- Photocopy of all important documents (bring copies and leave copies with employer and next of kin)
- Next-of-kin contact information, first page of passport, driver's license, travelers checks, immunization schedule, birth certificate, credit cards, diplomas/medical licenses, emergency telephone numbers, blood type, Social Security number, travel tickets.

Food and water

If traveling to an area where [food and water](#) may be contaminated:

- Bottled water or water filters/purification system/water purification tablets
- Nonperishable food items

Post Travel

On return from one of the affected areas, relief workers who are unwell or who have become injured for any reason should receive a medical evaluation, which should include psychological support and counseling as necessary. Returning relief workers should seek health care in the event of fever, rash, respiratory illness or any other unusual symptoms.

Travelers returning from areas with malaria who become ill with a fever or flu-like illness (for up to 1 year) should seek immediate medical attention and should be sure to tell the

physician their travel history.

Additional information about responding to a disaster can be found at the CDC Emergency Preparedness and Response website; <http://www.bt.cdc.gov/>.

Content Source:

Division of Global Migration and Quarantine
National Center for Preparedness, Detection, and Control of Infectious Diseases

Page Last Modified: December 22, 2005

Page Created: December 22, 2005

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