



Tsunami Disaster: Health Information for Humanitarian Workers

According to the World Health Organization (WHO), countries affected by the December 26, 2004, earthquake that occurred off the west coast of Indonesia and the subsequent tsunamis (Indonesia, Sri Lanka, Maldives, India, Thailand, Malaysia, Bangladesh, Burma (Myanmar), Tanzania, Seychelles, Kenya, and Somalia) are reviewing their situations and focusing on long-term plans for infrastructure rebuilding and rehabilitating their health systems.

While no large-scale disease outbreaks related to the disaster have been reported, infectious diseases such as malaria are endemic in many of the affected countries and may especially pose a risk for persons working in areas directly impacted by the disaster and in temporary camps for displaced persons. For a situational update by country, see <http://w3.whosea.org/index.htm>.

For most of these countries, the U.S. Department of State has rescinded its travel advisories related to the earthquake and tsunami; the exception being Indonesia, see <http://travel.state.gov/>. However, security warnings may still be in effect that you should be aware of before you travel. Consult the DOS website for the latest information about public announcements and travel warnings. Some of the governments of the affected countries may also restrict access to certain areas because of health or security concerns.

Risks and Health Recommendations

Because of their potential exposures to impacted areas and people, humanitarian workers are at greater risk than tourists or business travelers for developing illness and injuries. It is also essential that workers receive all possible support to ensure that they remain healthy during their deployment. These workers should also pay special attention to their mental health needs before, during, and after their time in the field. This notice provides additional advice specific to the needs of humanitarian workers.

Significantly decreased levels of health services may be available in impacted areas; therefore, pre-travel health preparations are important. Ideally, you should consult a health-care provider 4 to 6 weeks before travel. Even if it is less than 4 weeks before you are scheduled to leave, and even if you anticipate imminent travel (e.g., within 24 hours), you should still see your own doctor or schedule an urgent appointment through your organization's occupational health services. If you are pregnant, you should avoid travel to affected areas, especially areas where malaria exists (<http://www.cdc.gov/travel/pregnant.htm>) because of increased health risks to both you and your unborn child.

- **Immunizations** Some of the vaccines listed below (polio, influenza, typhoid, measles) require a single dose and can be given at the same visit. Some vaccine schedules can be accelerated. All travelers to affected areas should be sure their routine immunizations are up to date (tetanus/diphtheria, polio, measles). Because infections and disease outbreaks are more likely following disasters, the following vaccines are recommended:
- **Tetanus/diphtheria** vaccine or booster, if the most recent vaccine or booster was 5 years ago or more.
- **Hepatitis A** even if travel is imminent

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- **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
- **Influenza** injectable vaccine if you will be working directly with populations affected by the tsunami. If you are **not** working directly with populations affected by the tsunami, you can receive live attenuated influenza vaccine. This vaccine is available for most healthy persons 5-49 years of age who are not pregnant; see <http://www.cdc.gov/nip/publications/acip-list.htm>.
- **Typhoid** (oral or injectable)
- **Polio** if you have not had a booster since childhood.
- **Measles** if you are not immune. Immunity can be assumed if you have 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 your first birthday, or you were born before 1957. However, measles or MMR vaccine can be given to travelers who might be susceptible.
- **Rabies** is endemic throughout the tsunami-affected areas. Exposure to animal bites, most notably from dogs in resource-poor countries, poses a risk for rabies (<http://www.cdc.gov/travel/diseases/rabies.htm>). 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 may be increased in countries affected by the tsunamis and thus increased risk of exposure to rabies, there would be little to no value in instituting **incomplete** pre-exposure prophylaxis for rabies. 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.
- **Japanese encephalitis** (JE), which is endemic in SE Asia, is spread by infected mosquitoes. Although risk of Japanese encephalitis may be increased in all countries in Asia affected by the tsunami, full 3-dose vaccination 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 be advised to 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 (<http://www.cdc.gov/travel/bugs.htm>). For travelers scheduled to depart in 2 weeks or more, JE vaccine should be administered (<http://www.cdc.gov/travel/diseases/jenceph.htm>).

- **Cholera vaccine**, if outbreaks of cholera are being reported. Since this immunization is not available in the U.S., it would have to be obtained at an intermediate destination.
- **Yellow fever** vaccine is recommended only if you are traveling to the affected areas in East Africa or to Asia from endemic areas in Africa and South America. **There is no yellow fever risk in Asia.**

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Malaria Prophylaxis

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. 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.

CDC malaria prophylaxis recommendations for countries affected by the earthquake/tsunami, including most of Indonesia, have been returned to the pre disaster standard recommendations with the exception of those for Aceh Province, Indonesia. An antimalarial drug regimen should be taken for travel to all areas of Aceh Province.

For information about antimalarial drugs for countries in Southeast Asia, see <http://www.cdc.gov/travel/regionalmalaria/seasia.htm>.

For East Africa, see <http://www.cdc.gov/travel/eafrica.htm>.

For the Indian subcontinent, see <http://www.cdc.gov/travel/indianrg.htm>.

Risks from Injury

The risk for physical injury during and after a natural disaster is particularly high. Persons who anticipate the need to travel in tsunami-affected areas should wear sturdy footwear to protect their feet from widespread debris present in these areas. Tetanus (<http://www.cdc.gov/travel/diseases/dtp.htm>) is a potential health threat for persons who sustain wounds. Any wound or rash has the potential for becoming infected; therefore, wounds and skin rashes should be assessed by a health-care provider as soon as possible. Immediately cleanse any wounds, cuts, or animal bites with soap and clean water, and apply antibiotic ointment and a clean bandage. Travelers should be familiar with basic first aid for self-treatment of any injury until medical attention can be obtained.

Motor vehicle crashes are a leading cause of serious injury (<http://www.cdc.gov/travel/other/injuries.htm>) among travelers. Avoid drinking and driving; wear a safety belt; follow the local customs and laws regarding pedestrian safety and vehicle speed; obey the rules of the road; use helmets on bikes, motorcycles, and motor bikes; avoid riding on an overloaded bus or mini-bus, and where possible, hire a local driver.

Preventing Electrocutions

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 seriously injure or kill repair workers or people in neighboring buildings. In addition, electrical power and natural gas or propane tanks should be shut off and any open flames nearby extinguished to avoid secondary fires, electrocution, or explosions. Battery-powered flashlights and lanterns, rather than candles, gas lanterns, or torches, should be used when available.

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Risks from Food and Water

Natural disasters contribute to the spread of many serious food and water-borne diseases, through disruption of water supplies and sewage systems. Diarrheal diseases, typhoid (<http://www.cdc.gov/travel/diseases/typhoid.htm>), and hepatitis A (<http://www.cdc.gov/travel/diseases/hav.htm>) and E (<http://www.cdc.gov/travel/diseases/hev.htm>) can possibly occur. Measures to ensure safe food and water are of great importance in preventing the spread of such diseases. Food should be thoroughly cooked; salads and ice cubes should be avoided. If a trusted source of bottled water is not available, water should be boiled or disinfected with iodine or chlorine. For more details, see <http://www.cdc.gov/travel/foodwater.htm>.

If travelers' diarrhea (TD) develops, loperamide (Imodium) can be taken as directed. If you are carrying an antibiotic such as a fluoroquinolone (e.g. ciprofloxacin) for self-treatment of acute diarrhea, you can begin treatment. As an alternative, azithromycin can also be used. This medication can be taken until symptoms subside, which typically takes 1- 3 days, although in tsunami-affected areas it may take longer. If diarrhea is accompanied by high fever or blood, you should seek medical care. Hydration is key to the effective management of any diarrheal disease. Though oral rehydration solutions are ideal for treatment of severe diarrhea, replacement of lost fluids by drinking clean water is the most important means of maintaining wellness.

As with other infectious illnesses, one of the most important preventive practices is careful and frequent hand washing. Cleaning your hands often using either soap and water or waterless, alcohol-based hand wash removes potentially infectious materials from your skin and helps prevent disease transmission.

Risks from Insect Bites

Because of standing water in these areas, mosquito breeding can become a problem, and outbreaks of malaria (<http://www.cdc.gov/travel/diseases/malaria/index.htm>), Japanese encephalitis (<http://www.cdc.gov/travel/diseases/jenceph.htm>) and dengue (<http://www.cdc.gov/travel/diseases/dengue.htm>) are possibilities. In addition to malaria prophylaxis and Japanese encephalitis vaccine, other measures should be used for protection from mosquito and other insect bites. Use an insect repellent containing DEET (<http://www.cdc.gov/ncidod/dvbid/westnile/mosquitorepellent.htm>), wear long-sleeved shirts and long pants when outdoors, and sleep under an insecticide-treated bed net (preferably treated with permethrin) http://www.cdc.gov/malaria/control_prevention/vector_control.htm#itn.

Risks from Snake Bites

Displaced reptiles, such as snakes, may be encountered following flooding and other natural disasters. Snakes tend to be active at night and in warm weather. As a precaution, travelers should wear boots and long pants 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 to avoid injury.

Attempts to kill snakes are dangerous; therefore, all snakes should be left alone. The venom of a small or immature snake can be even more concentrated than that of larger ones. Fewer than half of all snakebite wounds actually contain venom, but travelers should be advised to seek medical attention any time a bite wound breaks the skin because of bacterial contamination from the snake's mouth.

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 entirely immobilizing the patient) while

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transport to a medical facility occurs. If care is delayed, a loose-fitting pressure bandage that does not restrict arterial and venous flow (but does limit lymphatic flow) is recommended as a 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.

Other Risks

Leptospirosis (<http://www.cdc.gov/travel/diseases/lepto.htm>) infection may occur in those who wade, swim, or bathe in waters contaminated by animal urine. Infection with *Yersinia pestis* (plague) (<http://www.cdc.gov/travel/diseases/plague.htm>) is usually contracted through the bite of rodent fleas, but also may be acquired by direct contact with infectious materials or inhalation of infective droplets.

Potential explosion hazards exist from displaced land mines in areas of prior conflict. Stay on highways and asphalt roads to minimize chances of contact with landmines. Earthquake aftershocks may continue to occur, so for safety, avoid coastal areas affected by tsunami, including avoidance of travel by boat and swimming in bodies of water in those regions. Arrange to sleep in the highest location possible.

During natural disasters, technological malfunctions may release hazardous materials (e.g., toxic chemicals from a point source displaced by winds, seismic motion, or rapidly moving water). Natural disasters may also lead to air pollution. Lung infections may occur after inhalation of sea water contaminated with ocean-bottom debris and industrial materials churned up by the tsunamis. Disasters resulting in massive structural collapse can cause the release of chemical or biologic contaminants (e.g., asbestos, petrochemical fuels, and arthrospores, which may lead to fungal infections). Travelers with chronic pulmonary disease may be more susceptible to adverse effects from these exposures.

Health risks are also related to the extremely hot temperatures found in these areas (heatstroke) and the effects of the sun on the eyes (cataracts) and skin (skin cancer, sunburn). See <http://www.cdc.gov/chooseyourcover/SunDay-brochure.htm>. For eye protection, wear wraparound sunglasses that provide 100 % UV ray protection. Always wear a broad-spectrum (protection against both UVA and UVB rays) sunscreen and lip screen with at least SPF 15. Familiarize yourself with the signs of illness related to extreme heat. See http://www.bt.cdc.gov/disasters/extremeheat/heat_guide.asp#def.

Psychological/Emotional Effects

Because of the tremendous loss of life, serious injuries, missing and separated families, and destruction of whole areas, humanitarian aid workers may find the situation extremely stressful. Keeping items of comfort, such as family photos, favorite music CDs, or religious material nearby can often offer comfort in such situations. Checking in with family members and close friends from time to time can also be a source of support. For detailed information about mental health resources following a disaster, see <http://www.bt.cdc.gov/disasters/tsunamis/mentalhealth.asp>.

Illness Abroad

If you develop fever, cough, unusual rash, or difficulty breathing while traveling, you should get medical attention as soon as you possibly can. Because illness and injury are a real possibility for people going to areas following a natural disaster, realize that most functioning hospitals and clinics may be busy caring for hundreds of people who have been injured and therefore would be unable to treat travelers. If you become seriously ill, you may require evacuation to other parts of a country or outside the country to

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receive adequate medical care. Consider purchasing a supplemental health insurance policy that includes evacuation insurance. See the U.S. Department of State website for additional information, <http://travel.state.gov/>.

Security

Always carry passports and travel documents (in a water-tight packet) and make sure a family member/friend has copies of the passport and other travel documents, as well as details of your travel plans and how to contact you. Also, make arrangements to check in with family/friends at specific intervals.

For security warnings consult the DOS website for the latest information <http://travel.state.gov/>.

Suggested Items to Bring with You

Humanitarian workers should plan for travel as if there will be no services, including no electricity, safe water, or food distribution systems, in the country they are visiting. They should try to pack to be as self-sufficient as possible and bring only those items necessary for their trip. Because of space limitations on conveyances to relief sites, only one bag or item may be allowed per person.

In addition to a basic travel health kit (<http://www.cdc.gov/travel/other/travelers-health-kit.htm>), humanitarian workers should bring the following items:

Food and water (<http://www.cdc.gov/travel/food-drink-risks.htm>)

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

Toiletries

- Toilet paper in a zip-lock bag
- Alcohol-based hand sanitizer
- Sunblock (spf 15 or higher)
- Insect repellent containing DEET
- Menstrual supplies
- Extra pair of prescription glasses, copy of prescription and protective case for eye glasses
- Eyeglasses repair kit
- Contact lenses, lens cleaner
- 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

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- Comfortable, lightweight 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
- Safety goggles
- Electricity converters
- Waterproof 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
- 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.

- An item of comfort (i.e., family photo, spiritual or religious material)

Shelter/site

- Mosquito bed net treated with permethrin

Information on country

- Maps
- General information (<http://www.cia.gov/cia/publications/factbook/>)

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*packed in checked baggage, may be confiscated if in carry-on baggage on commercial airliner

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

Additional information about the humanitarian relief work in response to the tsunami can be found at <http://www.reliefweb.int/w/rwb.nsf>.

For more information, visit www.bt.cdc.gov/disasters/tsunamis, or call CDC at 800-CDC-INFO (English and Spanish) or 888-232-6348 (TTY).

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