



Health and Safety Advisory for Humanitarian Aid Work in Puerto Rico and the U.S. Virgin Islands

SUMMARY

In response to the recent hurricanes in Puerto Rico and the U.S. Virgin Islands (USVI), many people who work in the fields of public safety, environmental health, and healthcare have joined other humanitarian aid workers in volunteering to go to these areas to support on-going recovery response efforts. Protecting the health, safety, and well-being of our employees is a priority for the Boston Public Health Commission.

This document provides information (current as of October 2017) on known health conditions and potential safety hazards in these regions. This document will provide information for volunteers as they prepare for these trips, and provides the minimum recommended health and safety guidelines. Volunteers should review their own health history and risks with their healthcare providers prior to departure. This advisory may also provide information to healthcare providers should their patients feel sick after returning to the continental U.S. The period of heightened risk in Puerto Rico and the USVI may last through March 2018, based on current predictions for full restoration of power and safe water systems.

Infectious Diseases

- **Food/Waterborne, Diarrheal and Respiratory Illnesses**
 - Do not drink or use ice made from tap or well water; do not eat food served at room temperature or raw/uncooked meat/fish.
 - Wash hands with soap and water where available; carry an alcohol-based hand sanitizer for use elsewhere.
- **Mosquito-Borne Diseases:** Puerto Rico and USVI are at risk for outbreaks of **Zika, dengue, and chikungunya**
 - Apply insect repellent with DEET or picaridin to your exposed skin; apply insect repellent after sunscreen, reapply as needed.
 - Use permethrin spray on clothes only, avoiding direct contact with skin.
 - Use mosquito netting when you are sleeping unless you are in a facility with window screens and air conditioning.
 - Due to the risk from Zika virus infection, pregnant women should consider not deploying. Men and women considering conception should understand that delaying conception for up to 6 months after travel is still recommended.
- **Vaccination**
 - Volunteers and aid workers should be up-to-date on all routine vaccines including seasonal flu.
 - Additional recommended vaccines include Tdap, HAV, HBV, typhoid, and possibly rabies.
 - Discuss which vaccines you may need with your medical provider prior to planning your trip.

Environmental Health, Occupational Health and Safety, Personal Safety

- Staff should be aware of the potential for spilled chemicals, household and commercial contaminants, carbon monoxide poisoning, and physical hazards including unexpected debris.
- Wear proper clothing and appropriate personal protective equipment (PPE).
- Do not enter buildings that have been structurally damaged; do not drive or walk in standing flood water.
- Assume all downed electrical or power lines are live and energized.
- Avoid contact with stray and wild animals unless you are trained in animal handling and specifically deployed to respond to animal emergencies.
- Bring a sufficient supply of all your daily medications, your insurance card, and current emergency contact card.

Mental Health Resources

- Be mindful of the impact on you and your teammates of working long hours under stressful conditions.

Additional Resources:

Travel safety, visit: <https://www.cdc.gov/niosh/topics/emres/pr-response.html>;

Recent hurricanes, visit: <https://www.cdc.gov/disasters/hurricanes/index.html>;

Specific destinations, visit: <https://wwwnc.cdc.gov/travel/page/yellowbook-home>;

Travel advisories, visit: <https://travel.state.gov/content/passports/en/alertswarnings.html>.

Sources: Centers for Disease Control and Prevention (CDC), Federal Emergency Management Agency (FEMA), New York City Office of Emergency Management (NYC OEM), National Institute for Occupational Safety and Health (NIOSH), and National Institutes of Mental Health (NIMH)

For questions about this health and safety advisory, please contact the BPHC Medical Intelligence Center at 617-343-6920 or mic@bphc.org.

I. PRE-DEPARTURE PLANNING CHECKLIST

- Meet with your healthcare provider** to review your medical history, receive needed vaccines and prescription medications, and to decide if travelling at this time is right for you.
- Volunteers and aid workers should be up-to-date on all routine vaccines**, including seasonal flu vaccine, as well as Tdap, HAV, HBV, and typhoid. Discuss the need for rabies vaccination with your healthcare provider.
- Travelers at risk for rabies should consider medical evacuation insurance**, since rabies vaccine may not be available at the destination. Discuss rabies risk in your area with your organization and/or on-site team.
- Review your packing list** (included below) and consider pretreating clothing and equipment with permethrin.
- Make a communications plan**, including your organization's emergency communication protocol and key phone numbers for professional/personal contacts you may need while away. Arrange a time with your emergency contact at home when you will call upon arrival to your work site, allowing several hours for travel after landing.

II. ON-SITE HEALTH AND SAFETY PRECAUTIONS

You may face chemical, physical, and biological hazards in the aftermath of hurricanes and floods. Proper precautions in affected areas can help you protect your own health and safety as you work.

A. Infectious Diseases

- **Food and Waterborne Illness:** Compromised drinking water and decreased access to safe food preparation tools and spaces can increase risk for food and waterborne illness.
 - Avoid raw food, including raw vegetables, unless washed thoroughly. Avoid cooked food served at room temperature. Drink beverages from sealed bottles and/or cans. Avoid ice unless it is made from bottled or disinfected water.
 - Water is safe if it has been boiled or chemically treated.
 - It is safest to eat only food that is fully cooked and served hot. Refrigerate perishable cooked food within 2 hours. Cooked food that has been stored should be thoroughly reheated before serving.
- **Diarrheal and respiratory illnesses:** When access to safe water and sewage systems are disrupted and personal hygiene is difficult to maintain, people are at increased risk for these types of illnesses.
- **Mosquito-Borne Diseases:** Mosquito breeding is increased in standing water. Puerto Rico and USVI are at risk for outbreaks of Zika, dengue, and chikungunya. These 3 diseases have common symptoms. There are no cures for these infections. Prevention is key. Treatment is focused on alleviating symptoms.
 - Zika
 - Zika Virus has been reported in Puerto Rico with transmission to humans.

- While Zika infection during pregnancy can cause severe birth defects, the infection can be difficult to detect because people often experience either mild symptoms or no symptoms at all.
- Pregnant women should NOT travel to areas with risk of Zika.
- Zika can be transmitted through sexual intercourse. If you are a male and your partner is pregnant, or you or your partner are considering becoming pregnant, talk with your healthcare provider about either not deploying at this time or taking extra safety steps during travel. Use condoms for 6 months following your return.
- Dengue
 - Symptoms of Dengue include fever, headache, nausea, vomiting, rash and pain in the eyes, joints, and muscles. Symptoms develop 2 weeks after infection, and usually resolve within 1 week.
 - Severe symptoms should be evaluated by a medical professional immediately. These symptoms may include severe abdominal pain, persistent vomiting, rapid breathing, bleeding gums, blood in vomit, and fatigue or restlessness.
 - If you suspect you may be infected with Dengue, avoid using medicines containing aspirin (including Pepto Bismol), ibuprofen, or other nonsteroidal anti-inflammatory drugs (NSAIDs) such as Motrin, Advil, and Aleve. These medications can increase the risk of bleeding.
- Chikungunya
 - The most common symptoms are fever and severe joint pain. Other symptoms include headache, muscle pain, joint swelling, rash, and fatigue.
 - Symptoms typically resolve within 1 week, although symptoms can be disabling, and joint pain may persist for months. Death is rare.

B. Environmental Health Concerns

Insects, Animals, and Animal Bites/Rabies

• Mosquito/Tick protection

- Cover exposed skin.
- Reapply repellents as instructed. If using sunscreen, **apply sunscreen first and repellent second**. Avoid applying to your hands, eyes, and mouth.
 - DEET ($\geq 20\%$) is the insect repellent recommended for use against ticks. Concentrations of DEET greater than 50% show no additional protective benefit.
 - Picaridin repellents must be reapplied more often than DEET.
 - Products with $< 10\%$ active ingredient offer limited protection of only 1–2 hours.
 - Oil of lemon eucalyptus is not effective and is not recommended.
 - Use permethrin-treated clothing/gear (boots, pants, socks, and tents). You can buy pre-treated clothing/gear or treat them at home. Treated clothing remains protective after multiple washings. Permethrin should NOT be used directly on skin.
- Stay and sleep in air-conditioned or screened rooms if possible.

- Use a bed net if sleeping area is exposed to the outdoors.
- Spiders and scorpions pose a stinging risk. Travelers should exercise caution in environments where these creatures are likely to be present.
- The waters surrounding Puerto Rico and USVI contain jellyfish, barracuda, eels, and other marine species that may bite, have venomous spines or strong stinging cells. Shark attacks in these waters are extremely rare.
- If you are working outside of an urban area, beware of wild dogs and mongooses. Mongooses are the most common carrier of rabies in Puerto Rico.
- Travelers should avoid touching, petting, handling, or feeding animals, including pets.
- **Animal Bites:** It is critical to be diligent regarding addressing all animal bites.
 - Wash the wound immediately with soap and clean water.
 - Seek medical attention immediately to evaluate need for rabies post-exposure prophylaxis.

Heat Illness

- Symptoms may range in severity from mild discomfort to heat poisoning and the need for serious medical care.
- Heat acclimatization is a process of your body adapting to a hot environment. Partial acclimatization occurs within 10 days. Limit intensity and duration of work during the first week of arrival. It is a good idea to avoid strenuous activity during the hottest part of the day.
- Wear lightweight, loose, and light-colored clothing to allow maximum air circulation for evaporation and to protect yourself from the sun. A wide-brimmed hat reduces radiant heat exposure.
- Pay attention to fluid and electrolyte replacement.
 - Relying on thirst alone is not sufficient to prevent mild dehydration. During mild to moderate physical activities, electrolyte replacement offers no advantage over plain water.
 - For people exercising many hours in heat, salt replacement is recommended. Eating salty snacks and/or lightly salting your food or fluids is the most efficient way to replace salt losses. Urine volume and color are reasonable means to monitor fluid needs.

Plants (trees, shrubs, flowers)

- Many plants have toxic fruits, seeds, or leaves, as well as irritating sap or hairs which pose potential health hazards. Injury may range from moderate rash to severe burns or temporary blindness if eye exposure occurs.
- If you are working in an area with dense vegetation, speak with your supervisors/local authorities about which plants to avoid.

Chemical and Physical Hazards/ Occupational Health and Safety

- All **debris** should be considered hazardous. Be aware that there may be debris in unexpected locations.
- Chemicals from household, commercial, and industrial sources may contaminate the ground anywhere. These include metals from lead based paint, other inorganic metals, asbestos, and household tanks.

- **Carbon Monoxide** is an odorless, colorless gas that can cause sudden illness or death if breathed in. Generators, which produce carbon monoxide, are being used frequently now as the only source of electricity. Keep all generators outside and away from building ventilation systems and open windows.
- Other chemical vapors include xylene, benzene, ethyl benzene, toluene, 2-butone, formaldehyde.
- Avoid spilled hazardous materials and avoid activities that would create dust, fumes, exhaust gases, or debris. Avoid welding, and avoid diesel and gasoline powered equipment.
- Raw sewage from receding water and mold from wet cellulose building materials both pose potential health hazards. Wear appropriate personal protective equipment while working.
- Do not enter buildings/structures that have been structurally damaged. Keep an eye out for outer parts of buildings that appear unstable.

Travel/Communications

- Roads may be damaged, bridges may be out, electricity may be out, traffic signals may be out, and street signs may be down.
- Most signs will be in Spanish, with distance noted in kilometers. GPS may not be useful in Puerto Rico, where many locations don't have specific addresses and are accessible by curvy mountainous roads.

Personal Safety

- Travel in pairs.
- Don't drive or walk in standing flood water.
- Disruption of water purification and sewage disposal systems may affect drinking water.
- Assume all downed power or electrical lines are live and energized. Do not get out of your car if a downed wire is touching it. Do not go near water where there are downed power lines.
- Bring sufficient supply of all of your normal daily medications. Do not rely on being able to refill prescriptions. Bring any additional medications you may want on hand, e.g., pain relievers, allergy medication, etc.
- Bring your insurance card and an updated contact card (see example below).

C. Mental Health Resources

- Be mindful of the impact on you and your teammates of working long hours under stressful conditions, while witnessing the human harms, physical destruction, and psychological devastation associated with disasters.
- Most people have intense responses immediately following a traumatic event. These responses are normal and may last weeks or months, but should lessen over time.
 - People may feel anxious, sad, or angry, have trouble concentrating and sleeping, or continually think about what happened.
 - During this period, 1) avoid use of alcohol and drugs, 2) spend time with loved ones, 3) try to maintain normal routines for meals, exercise, and sleep. In general, staying active is a good way to cope with stressful feelings.

III. UPON YOUR RETURN

These recommendations apply to healthcare providers treating patients from Puerto Rico and USVI, as well as people who recently traveled to hurricane-affected areas (within the past 4 weeks), Sept. 2017 – March 2018.

- All healthcare providers should consider less common infectious disease etiologies in patients presenting with evidence of acute respiratory illness, gastroenteritis, renal or hepatic failure, wound infection, or other febrile illness. Some particularly important infectious diseases to consider include leptospirosis, dengue, hepatitis A, typhoid fever, vibriosis, and influenza.
 - Note: Cholera has not occurred in Puerto Rico/USVI in decades. It is not expected to occur post-hurricane.
- For certain conditions, such as leptospirosis, empiric therapy should be considered pending results of diagnostic tests— treatment for leptospirosis is most effective when initiated early in the disease process. Providers can contact BPHC’s Communicable Disease Control Division at 617-534-5611 with any questions.
- For people who worked in a facility with water damage or contaminated water systems, healthcare providers should be aware of the potential for increased risk of infections due to invasive fungi, nontuberculous *Mycobacterium* species, *Legionella* species, and Gram-negative bacteria associated with water (e.g., *Pseudomonas*).

Mental/Behavioral Responses to Traumatic Events

Most people have an intense response immediately following a traumatic event, including feeling anxious, sad, or angry, trouble concentrating and sleeping, and or continually thinking about what happened. These responses are normal, may last weeks or months, and should lessen over time. During this period, it is best to avoid use of alcohol and drugs. Spending time with loved ones is also important to healing. And, people should try to maintain normal routines for meals, exercise, and sleep. In general, staying active is a good way to cope with stressful feelings.

For some, effects of trauma may persist or even worsen. See your healthcare provider if you are struggling with any of the following:

- Worrying a lot or feeling very anxious, sad, or fearful, crying often, or having trouble thinking clearly.
- Having frightening thoughts or reliving the experience and feeling angry or having nightmares or difficulty sleeping.
- Avoiding places or people that bring back disturbing memories and responses.
- Are experiencing the following physical symptoms: headaches, stomach pain/gastrointestinal issues, feeling tired, racing heartbeat, sweating, being very jumpy/easily startled.
- Mental health symptoms can be treated. If you or someone you know needs help, talk with your health care provider.

The **Employee Assistance Program (EAP)** is available to all City of Boston employees and their family members and offers a confidential, safe and supportive environment which provides 1:1 customized emotional support among other resources. **Contact EAP, Monday-Friday, 7am-5pm, at 617-635-2200.**

For all Boston Public Health Commission employees, Listening Circles are provided on campus. Check the BPHC intranet for more information and schedule. For additional information on resources at BPHC, please contact: Margaret Reid at MReid@bphc.org or Stacey Kokaram at SKokaram@BPHC.org

If you are unsure where to go for help, visit NIMH's Help for Mental Illness webpage available at: <https://www.nimh.gov/health/topics/post-traumatic-stress-disorder-ptsd/index.shtml>.

IV. RECOMMENDED PACKING LIST

Some items may not be relevant to you/your travel plans. Review this list with your healthcare provider.

Prescription medicines

- Your prescriptions; include sufficient supply to include travel days and delays.
- Travelers' diarrhea antibiotic for self-treatment of bloody diarrhea, fever, significant crampy abdominal pain.
- Altitude sickness medicine

Medical supplies

- Glasses/contact lenses (pack a spare in case yours are damaged)
- Inhalers
- Epinephrine auto-injectors (EpiPens)
- Medical alert bracelet or necklace
- Diabetes testing supplies, Insulin, needles – requires a letter from your doctor on letterhead stationery.
- Discuss with your medical provider if deploying now is appropriate for you.

Over-the-counter medicines

- Antacid
- Diarrhea medicine (Imodium or Pepto-Bismol)
- Antihistamine
- Motion sickness medicine
- Cough drops
- Cough suppression/expectorant
- Decongestant
- Medicine for pain/fever (e.g., acetaminophen, ibuprofen)
- Mild laxative
- Saline nose spray

Supplies to prevent illness or injury

- Hand sanitizer or wipes
- Water purification tablets
- Insect repellent
- Permethrin (insect repellent for clothing)*
- Sunscreen (\geq SPF 30 with UVA and UVB protection)
- Sunglasses and wide brimmed hat
- Personal safety equipment **
- Earplugs
- Mild sedative or other sleep aid

*May be needed if you spend a lot of time outdoors. Clothing can also be treated at home in advance.

**Speak with your organization for specific recommendations.

First-aid kit

- 1% hydrocortisone cream
- Antibacterial ointments
- Aloe gel (for sunburns)
- Moleskin or molefoam for blisters
- Disposable gloves
- Digital thermometer
- Cotton swabs (Q-Tips)
- Eye drops
- Antifungal ointments
- Antiseptic wound cleanser
- Insect bite treatment (Anti-itch gel or cream)
- Bandages (Multiple sizes, gauze, and adhesive tape)
- Ace wraps/compression wrap (for sprains and strains)
- Scissors and safety pins
- Tweezers
- Oral rehydration salts

Documents

- Health insurance documents and health insurance card (your regular plan and/or supplemental travel health insurance plan) and copies of claim forms
- Copies of all medication prescriptions (make sure prescriptions include generic names)
- Prescriptions for eye glasses/contacts, and other medical supplies

Carry a contact card containing the following information:

- The street addresses, phone numbers, and e-mail addresses of the following:
 - Family member or close contact in the US
 - Healthcare provider(s) and pharmacy at home
 - Lodging at your destination
 - Hospitals/clinics (including emergency services) at your destination
 - US embassy or consulate in the destination country
- Travel insurance (and any medevac insurance) information
- A list of your medications, including generic and brand names, reason for taking each, dosage information, and how often taken
- A list of all medical conditions or allergies you have
- Documentation of any immunizations required by the country you're visiting