Communicable Disease and Other Health Concerns Following Hurricane Helene

This document is intended to provide a brief overview of communicable diseases and other conditions that providers are more likely to encounter following Hurricane Helene, and to provide links to additional resources. This list is not exhaustive; many other conditions and diseases are likely to increase following the storm, including exacerbations of chronic conditions. Additional storm related materials from DHHS are updated on the linked website as they are developed.

Gastrointestinal (GI) Illness

RISKS: Following major floods from Helene, risks for gastroenteritis are higher because of contact with contaminated water and sewage; decreased ability to maintain safe food handling practices; lack of consistent refrigeration of food; and poor sanitation. Flooding can also wash organisms from livestock into areas where fruits and vegetables are grown, contaminating produce.

PREVENTION: Remind patients of the importance of good hand hygiene and other critical actions to prevent diarrheal illness after a disaster. Consider offering hepatitis A vaccine to individuals in areas where water, sewer or septic systems are disrupted.

CLINICAL CONSIDERATIONS: When treating patients with gastroenteritis, consider *Cryptosporidium* ("crypto"), Shiga toxin-producing *E. Coli* ("STEC"), *Giardia*, norovirus, hepatitis A, and other waterborne and foodborne diseases. Leptospirosis may present with GI symptoms and is more common up to 30 days after contact with contaminated flood waters.

RESOURCES: Norovirus; E. coli; Cryptosporidium | CDC; Giardia; Hepatitis A; Leptospirosis

Respiratory Illness

RISKS: The risk of contracting a viral respiratory illness is higher among people living in shelters or other congregate settings and access to care for severe illness may be limited. Western NC is also currently experiencing an increase in whooping cough (pertussis) cases. Exposure to aerosolized water from previously stagnant water systems increases the risk of Legionnaires' disease.

PREVENTION: Encourage patients to practice basic steps to prevent respiratory illness; maintain distancing where possible and consider masking in enclosed spaces; use distilled water in medical devices (like a CPAP machine) or portable humidifiers; and flush faucets and showers that have been out of use for more than one week. Encourage vaccination for seasonal respiratory viruses, and if not previously vaccinated, for pertussis, especially for individuals living in crowded living situations or shelters.

CLINICAL CONSIDERATIONS: When evaluating patients for community acquired pneumonia, consider Legionnaires' disease; test with both urine antigen and lower respiratory PCR or culture if possible.

RESOURCES: Respiratory Viruses Prevention; Preventing Waterborne Germs at Home; Cleaning After Natural Disasters

Wounds or Injuries

RISKS: Injuries are common during storms and clean-up activities. Cellulitis and deeper skin infections typically peak 3–4 days after a flooding event but remain high as cleanup continues. Tetanus can occur in people who are not up to date with vaccine when wounds are contaminated.

PREVENTION: Ensure all patients are up to date with tetanus vaccination.

CLINICAL CONSIDERATIONS: When evaluating patients with wounds, providers should consider the risk for tetanus and provide a tetanus toxoid-containing vaccine dose if recommended. Typical bacterial causes of cellulitis and soft-tissue infections (*Staphylococcus aureus* and *Streptococcus pyogenes*) should be considered first. Less common water-dwelling organisms should be considered if the infection does not respond promptly to treatment. Polymicrobial, nontuberculous mycobacterial, and fungal infections should also be considered.

RESOURCES: Tetanus Vaccination Status Evaluation; Emergency Wound Care

Vector-borne Diseases

RISKS: After a hurricane, there may be an increased risk of mosquito-borne disease due to conditions that are favorable for mosquito breeding and increased exposure to mosquito bites.

PREVENTION: Encourage patients to use EPA-registered insect repellent containing DEET or Picaridin and take other actions to prevent mosquito bites. This includes removing standing water around the home as much as possible and using larvicides to treat containers or bodies of water that will not be used for drinking and cannot be covered or dumped out.

CLINICAL CONSIDERATIONS: West Nile virus and LaCrosse virus are endemic to Western North Carolina. A higher number of West Nile virus cases have been identified in North Carolina this year compared to previous years. There is a risk of mosquito-borne disease transmission even in the absence of mosquito swarms or perceived increases in biting activity.

RESOURCES: Post-hurricane mosquito control and bite prevention; Mosquitoes What to Do After a Hurricane or Flood; Mosquito-borne disease infection prevention; EPA information on insect repellents; Larvicide information; Adulticide information

Non-Communicable Disease Related Illnesses and Conditions

Carbon Monoxide poisoning

RISKS: Carbon monoxide (CO) is a tasteless, odorless, and colorless gas that is produced from the use of generators, gas powered pressure washers, and furnaces. If not used in well-ventilated areas, CO can cause nearby individuals to experience CO poisoning.

PREVENTION: Remind patients not to use gas powered generators, grills, heaters, or tools in enclosed areas.

CLINICAL CONSIDERATIONS: The most common symptoms of CO poisoning include headaches, dizziness, weakness, upset stomach, vomiting, chest pain and confusion. CO symptoms are often described as "flu-like." Blood measurement for carboxyhemoglobin via arterial blood gas (ABG) may help diagnose CO poisoning. CO poisoning can be fatal.

RESOURCES: NCDHHS Carbon Monoxide Poisoning Information

Mold

RISKS: Molds can be found everywhere- both indoors and outdoors. Exposure to damp and moldy environments may cause a variety of health effects.

PREVENTION: Immunocompromised people and people with chronic lung disease should stay away from areas that are likely to have mold to the extent possible.

CLINICAL CONSIDERATIONS: For people who are sensitive, molds can cause nasal stuffiness, throat irritation, coughing or wheezing, eye irritation, or skin irritation. People with mold allergies may have more severe reactions. Immune-compromised people and people with chronic lung illnesses may get serious infections in their lungs when exposed to mold. Recommended treatments include nasal irrigation, antihistamine medications, nasal corticosteroids, decongestants, montelukast tablets or asthma inhalers.

RESOURCES: NCDHHS Mold Information; Cleveland Clinic Black Mold Information

Nitrates and Methemoglobinemia

RISKS: Nitrates and nitrites are byproducts often found in animal waste and fertilizers. Well water near these sources can have high levels of nitrates and nitrites, and this may be exacerbated by flooding.

PREVENTION: Well water nitrate contamination can occur when animal waste and nitrogen-containing fertilizers enter the groundwater from the surface. To keep well water contamination-free, ensure that animal and livestock stay away from well heads and do not spread fertilizer near wells.

CLINICAL CONSIDERATIONS: Drinking high levels of nitrates and nitrites can lead to decreased oxygen transport throughout the body. This may cause shortness of breath, rapid or difficult breathing, lightheadedness, fatigue, weakness, muscle tremors, abnormal heart rhythms, or convulsions. Pregnant women may show signs of anemia, preeclampsia, premature labor or spontaneous abortions. Infants less than six months of age are very sensitive to nitrate and nitrite toxicity. Methemoglobinemia is the critical health effect from this kind of exposure. Blood measurements of methemoglobin can be obtained via arterial blood gas (ABGs) with co-oximetry.

RESOURCES: Nitrate, Nitrite & Private Wells

Overdose Prevention

RISKS: A number of factors may increase risk of overdose and disease transmission (such as HIV/HCV) during a hurricane and in the period following the disaster. These include limited access to harm reduction tools, such as naloxone or sterile injection equipment, increased levels of stress/changes in routine, and reduced drug tolerance. Additionally, individuals who are on medications to treat opioid/substance use disorder may have experienced difficulty accessing their medication from a pharmacy or other treatment disruption.

PREVENTION: Ensure all patients who report substance use or a history of substance use have naloxone on hand. Some forms of naloxone are available over the counter and all forms are available from pharmacies under a statewide standing order. Individuals can also access no-cost naloxone from local health departments or syringe services programs – a list can be found on naloxonesaves.org. Ensure individuals know where to access their nearest syringe services program. Connect practices to substance use treatment, when appropriate.

RESOURCES: NCDHHS Guidance for Management of Xylazine Wounds; NC Safer Syringe Initiative; Naloxone Saves; Currently Operational Opioid Treatment Programs

Domestic and Sexual Violence

RISKS: Domestic and sexual violence rates typically increase following a natural disaster due to close proximity, stress, and other factors related to post-disaster.

PREVENTION: Attempt to speak with patients one on one. If a patient presents with signs of or shares that they have experienced domestic or sexual violence, ask them what steps they would like to take, including safety planning, calling the national domestic violence hotline or speaking with a local service provider. If the patient has experienced sexual violence, prophylactic drugs may be given to reduce sexually transmitted infection.

CONSIDERATIONS: Victims of domestic and sexual violence may not be ready to leave the violent home, relationship, or situation. Ensuring they have access to resources is key and sharing information with them about how they can receive services is necessary even if they do not wish to take any of the above actions. Strangulation increases the likelihood of lethality in an abusive relationship and should be carefully considered if someone shows any signs of having been strangled or experiencing interpersonal violence.

RESOURCES: Health Settings Screening Tool; Risk and Protective Factors for Domestic Violence; Danger assessment tool; Power and Control Wheel