Health Impacts of Hurricanes

More Than Just Property Damage

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CDC/NCEH/DEHSP/EMRC/PEMS
2019 Hurricane Season Forecasts

- Activity for 2019 is predicted to be slightly less in intensity compared to 2018.
- A total of 13 named storms, five hurricanes and two major hurricanes are expected this season per the Colorado State University prediction center.
- Do not count on the weather getting the memo.
- Prepare for the worst, then you will only have GOOD surprises.
Preparedness for 2019 Season

- Do not rely on 120 hour warning model!
- Preparing self/family will enable you to prepare for your job.
- A direct storm impact is not required to have personal and professional impacts from a hurricane.
- Some of the worst historical damage is from slow moving or stalled tropical storms, not hurricanes.
Medical Services Compromised

- Dialysis clinics
- Oxygen concentrators
- Home IV therapy
- Power loss at medical service companies
- Hospitals have limited fuel storage for generators
- Extremely limited radio communications backup at medical facilities
- Loss of medical refrigeration starts clock ticking on medication shelf life at home, pharmacy, hospital, clinics
- Loss of security systems and lighting will require most facilities/stores to close
Discussion

How have past hurricanes affected access to medical services for your clients?
Direct Citizen Impacts

- Loss of home lighting and refrigeration
- Loss of news sources (radio, TV, internet)
- Outages will eventually impact landlines
- Loss of cell phone charging capability
- Loss of thermostability due to heating/air conditioning failure
- Many hotel companies have a policy to force evacuation if power is not available, to limit liability.
Risk of Electric Shock

- **Fallen power lines**
  - Stay clear of fallen power lines. Call the electric company to report them.
  - Watch out for power lines overhead.

- **Flooded homes**
  - Turn off power to the home if you can stand in a dry place to do it.
  - Otherwise, have an electrician turn off power to the home.
  - Never turn power on or off, or use an electric tool or appliance, while standing in water. (Really people?)

- **Water-damaged power tools**
  - Never use an electrical device if it got wet.
  - If it’s still plugged in, turn off the power at the main breaker.
  - Wait for an electrician to check the device before using it.
Electric shock is also a risk for response workers. Please describe the advice you would give your employees and volunteers to avoid electrocution during post-hurricane response work.
Spoiled or Contaminated Food

- Spoiled or contaminated food and water can make people sick.
- If they get sick, they may have limited access to medical care.
- **Encourage people to do the following:**
  - Stockpile canned food ahead of time.
  - Keep food fresh.
  - Throw out spoiled food.
  - Clean off canned food. Storing canned goods in gallon zip bags buys time.
  - Use bottled water if possible, boiled water if necessary, especially for infant formula. Only use treated water (disinfected or purified) if bottled and boiled water are not available.
Carbon Monoxide Poisoning

- Carbon monoxide (CO) is an odorless, colorless gas that can cause sudden illness and death if inhaled.
- People might use generators and other power sources if their electricity is out.
- The use of alternative sources of fuel or electricity for heating or cooking can cause CO to build up in a home, garage, or camper and to poison the people and animals inside.
Carbon Monoxide Poisoning: Advice for the Public

- Never use gas or coal-burning equipment inside your home, basement, or garage. Keep it outside and at least 20 feet from any window, door, or vent.
- Use a battery-operated or battery backup CO detector any time you use a generator or anything else that burns fuel.
- Never run a car or truck inside a garage attached to your home, even with the garage door open.
- Never heat your home with a gas oven.
- If you have a carbon monoxide detector and it starts beeping, leave your home right away and call 911.
Other Health Risks

- Driving through flood waters
- Animals and pests
- Psychological harm
- Injuries during cleanup
- Mold
- Hyperthermia and hypothermia
CDC Hurricane Resources

- https://www.cdc.gov/disasters/hurricanes/
- https://www.ready.gov/hurricanes
- http://spaghettimodels.com/
Health Impacts of Hurricanes

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COMMUNICATING ABOUT HURRICANES – EXAMPLES FROM 2017 AND 2018 SEASONS
Unusually active hurricane season

- Frequency and intensity of storms have been greater than usual
- 7 of the 13 named storms in 2017 developed into hurricanes
- Just two more storms by end of 2017 would have put this year in the top 15 since 1851
2018 Hurricane Season At-A-Glance

- Another active hurricane season
  - 8 of the 15 named storms in 2018 developed into hurricanes
  - Two storms became major hurricanes (category 3, 4, or 5)
  - For the 4th consecutive year, named storm activity began before the official start of the season on June 1
  - Hurricane Florence made landfall in North Carolina on September 14
    - Reduced from category 4 to category 1 by landfall
    - 22 direct deaths and 30 indirect deaths
  - Hurricane Michael made landfall in Florida on October 10
    - Made landfall as a category 5 hurricane
    - Produced tropical force winds (or higher) in Georgia, South Carolina, and North Carolina
    - 16 direct deaths
2017 and 2018 Hurricane Seasons – Major Impacts

- Drowning
- Carbon monoxide poisoning
- Displaced persons
- Power loss
- Contaminated drinking water
- Damaged/destroyed infrastructure
- Non-functional clinics and hospitals
- Affected medical and public health staff
- Mold in homes and buildings
Communication Channels

How do you get messages out with no internet and no power?

A scene of damage in St. Croix in October, 2017. The island suffered 100 percent power outages and extensive infrastructure damage due to back-to-back hurricanes Irma and Maria. Photo by Myron Douglas/CDC
CDC and USVI DOH collaborated to create a one-page flyer with priority health and safety information. With assistance of CDC Foundation, Office Max, USPS, and USPIS, the flyer was distributed to all 51,000 households and PO boxes in the territory.
Former USVI DOH Communications Director Nykole Tyson, right, shares health messages on Straight Talk with Redfield radio show, WVVI 93.5. Photo by Myron Douglas/CDC.
Communication team member Myron Douglas, right, with USVI DOH epidemiologist Monifa Corillo with table of health information materials at Plessen Health Fair, St. Croix, USVI, Oct. 14, 2017. Photo by Vivi Siegel/CDC
Home improvement store mold cleanup display. These materials show people the equipment and supplies they need to safely clean mold.
Friends and Family

Natural Disasters and Severe Weather

Hurricane Maria: How to Help Loved Ones in Puerto Rico and the US Virgin Islands

If you have friends, family, or other loved ones in Puerto Rico, the US Virgin Islands, or other hurricane-affected areas, you can help ensure they stay safe by sending them health and safety information. This toolkit offers different messages in both English and Spanish you can send via text message, email, or social media. Even if you do not personally know anyone in the affected areas, you can still help spread these important messages.

Post on social media

Post these messages on Twitter or Facebook and tag your friends and family in Puerto Rico, the US Virgin Islands, or other areas affected by hurricanes.

On This Page:
- Post on social media
- Share an image
- Send a text message
- Send an email
- Make a phone call
- Take care of yourself
- Helpful Links
EDUCATIONAL MATERIALS BY TOPIC
Mold

https://www.youtube.com/watch?v=siaHy9yBuEA
Children may not say how they are feeling during a crisis.

Talk to them. Answer questions. Make sure they feel loved.

Call SAMHSA’s Disaster Counseling Helpline at 1-800-985-5990
Text “TalkWithUS” for English or “Hablemos” for Spanish to 66746

Water

Cómo desinfectar el agua

Después de un desastre natural, es posible que el agua no sea apta para el consumo.

Con un poco de cloro se puede hacer que el agua se pueda utilizar en forma segura.

Si el agua de la llave es clara:
  - Utilice cloro que no tenga otros cloros (como cloro).
  - Si utiliza cloro líquido de uso doméstico al 5-4 %, agregue un poco menos de 1/4 de cucharadita de gotas o alrededor de 0.5 milímetros a un galón (3.8 metros) de agua.
  - Si utiliza cloro líquido de uso doméstico al 8.25 %, agregue un poco menos de 1/8 de cucharadita de gotas o alrededor de 0.5 milímetros a un galón (3.8 metros) de agua.
  - Mezcle bien y espere al menos 30 minutos o más antes de usar el agua.

Si el agua de la llave es turbia:
  - Utilice cloro que no tenga otros cloros (como cloro).
  - Si utiliza cloro líquido de uso doméstico al 5-4 %, agregue un poco menos de 3/4 de cucharadita de gotas o alrededor de 1 milímetro a un galón (3.8 metros) de agua.
  - Si utiliza cloro líquido de uso doméstico al 8.25 %, agregue 2 gotas alrededor de 1 milímetro a cada galón (3.8 metros) de agua.
  - Mezcle bien y espere al menos 30 minutos o más antes de usar el agua.

Recuerde que puede ser necesario desinfectar los recipientes antes de utilizarlos para guardar el agua limpia:
1. Utilice cloro que no tenga otros cloros (como cloro).
2. Agregue 1 cucharadita de gotas de cloro líquido de uso doméstico en 1 cuarto de galón (0.94 litros), 4 tazas y alrededor de 1 litro de agua.
3. Vierta esta solución en un recipiente limpio para almacenar y agite bien para asegurarse de que el líquido cubre todo el interior del recipiente.
4. Deje reposar al menos dos días y luego vacíe el recipiente.
5. Desinfectar al aire libre enjuague con agua clara que ya ha sido desinfectada, si la hay.

Nunca mezcle cloro con amoniaco ni con otros productos de limpieza.

Cuando utilice cloro, abra puertas y ventanas para que el lugar se ventile.

For more information about how to make water safe after a disaster, visit

www.cdc.gov/healthywater/energy/drinking/making-water-safe.html

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
Carbon Monoxide

When the power goes out, keep your generator outside.

Portable back-up generators produce the poison gas carbon monoxide (CO), an odorless, colorless gas that kills without warning. Keep your family safe by following these steps:

- Never use a generator inside your home or garage, even if doors and windows are open.
- Only use generators outside, more than 20 feet away from your home, doors, and windows.
- Install battery-operated CO detectors near every sleeping area in your home.
- Check CO detectors regularly to be sure they are functioning properly.

Carbon Monoxide (CO) Poisoning

Can't be seen, can't be smelled, can't be heard, can be stopped.
Drowning

Your National Weather Service Says,

Turn Around Don’t Drown™

Be safe when it comes to flooding.
For important, life-saving safety rules, go to www.srh.weather.gov
Stress

SAMHSA’s Disaster Distress Hotline:
1-800-985-5990 or text “TalkWithUs” (for English) or “Hablanos” (for Spanish) to 66746.

After a disaster, it is important to take care of your emotional health. Pay attention to how you and your family members are feeling and acting.

Taking care of your emotional health will help you think clearly and react to urgent needs to protect yourself and your loved ones.

Coping with Disaster:
https://emergency.cdc.gov/coping/pdf/Coping_with_Disaster.pdf

Coping with Disaster (Spanish):
https://emergency.cdc.gov/es/coping/pdf/Coping_with_Disaster_ESP.pdf
COORDINATING MESSAGING
Phase-Based Messaging

- Developed during response to Hurricane Katrina and used since
- Messages are planned in advance to anticipate and meet needs at different stages of a response
- Uses risk communication principles
- Adaptable as needed
## Phase-Based Messages for a Hurricane

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<td>• Power outage risks</td>
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<td>• Power outage risks</td>
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<td>• Medication storage guidance</td>
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<td><strong>Phase 4</strong></td>
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<td>• Short-term recovery</td>
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<td>• Protect from chemicals</td>
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<td><strong>Phase 5</strong></td>
<td>1 month post-storm, later</td>
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<td>• Long-term recovery and resilience</td>
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• Clear and share in advance with all relevant organizations
• Allow suggestions and comments – iron out any disagreements
• Decide who leads on each type of message
• During the response, stay in sync through constant contact
CDC Disaster Communications Resources

  - Before a Hurricane: https://www.cdc.gov/disasters/hurricanes/before.html
  - After a Hurricane: https://www.cdc.gov/disasters/hurricanes/after.html
- Food and Water Safety: https://www.cdc.gov/disasters/foodwater/index.html
- Clean Up Safely: https://www.cdc.gov/disasters/cleanup/facts.html
- Mold: https://www.cdc.gov/disasters/mold/index.html
- Coping with a Disaster: https://emergency.cdc.gov/coping/index.asp
- Information for Professionals and Response Workers: https://www.cdc.gov/disasters/hurricanes/info-hcp-workers.html
- How to help loved ones: https://www.cdc.gov/disasters/hurricanes/diaspora_toolkit.html
- Information for Specific Vulnerable Groups: https://emergency.cdc.gov/groups.asp
- Social Media: https://emergency.cdc.gov/socialmedia/index.asp
- Public Service Announcements: https://www.cdc.gov/disasters/hurricanes/psa.html
Questions?

For more information, contact NCEH/ATSDR
1-800-CDC-INFO (232-4636)
Follow us on Twitter @CDCEnvironment

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention and the Agency for Toxic Substances and Disease Registry.