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# Disaster Preparedness at Health Centers

## Resources to Help Clinicians Prepare Communities for Extreme Weather Threats

By Claire Hutkins Seda, Director of Communications, and Marysel Pagán Santana, DrPH, MS, Director of Environmental & Occupational Health, Migrant Clinicians Network

In the summer of 2024, Hurricane Beryl tumbled into Texas, breaking many records as it reached landfall, including earliest Category 5 hurricane in the Atlantic basin; strongest maximum sustained winds for an Atlantic hurricane before August; and fastest intensification in 24 hours for an early storm.[1] A month before Beryl, Houston had experienced a powerful derecho windstorm that blew out windows in high-rise buildings and caused extensive damage to electrical infrastructure.[2] Hot on Beryl's heels was a heat wave that brought record-breaking temperatures for many days across the entire American West. Due to an aging electrical grid unprepared for high winds and still reeling from the derecho, Beryl knocked power out for over 2.6 million people, who struggled to stay cool in the heat that followed.[3] These three back-to-back weather disasters turned infrastructure weaknesses into health crises. In Houston in the aftermath of Beryl, the state set up an emergency field hospital in a sports arena to support overwhelmed hospitals. However, with the extended loss of power, patients who had stabilized could not be discharged, due to the absence of safe, temperature-controlled discharge locations.[4] Cell service was out, leaving people unable to make emergency calls. Downed power lines and trees, flooding, and other debris and road damage slowed ability to access care. Within such an atmosphere, health center patients struggled to manage their chronic illnesses, cool their medicines, access appropriate foods, and access health care if illnesses became exacerbated.

Most communities are vulnerable to at least one extreme weather event such as prolonged heat, flooding, drought, hurricanes and other severe storms, extended periods of poor air quality, heavy snowfall, or tornadoes and other high-wind events. Many communities face risks from more than one of these hazards, sometimes within the same calendar year, as Houston experienced.

Clinicians at community health centers have a unique and important role in anticipating the types of weather hazards that could occur in their community. Preparations for such events are not limited to the narrow needs related to the weather itself, but must consider a much wider range of infrastructure instabilities, policy consequences, historical pressures, and current events that may compound the consequences of a weather event and its aftermath.

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**This article is eligible for 0.5 Continuing Nursing Credit or a Certificate of Completion.**

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**CEs/Certificates are available until December 1, 2026**

### Learning Objectives

After completing this article, participants will be able to:

1. Identify how extreme weather events and compounding infrastructure failures can disrupt access to care.
2. Differentiate between categories of disaster-related displacement (weather-precipitated, weather-impacted, and response and recovery workers).
3. Identify strategies for disaster preparedness and continuity of care in community health centers, including patient education, chronic disease planning, and care coordination resources such as Migrant Clinicians Network's (MCN) Health Network.

Health centers must consider how the weather event, and the aftermath of the weather event, might affect:

- Ability to adhere to laws and regulations, like health and safety regulations at work,
- Ability to carry out emergency management plans,
- Access to care by all members of the community, and
- Long-term endurance of infrastructure.

Additionally, health centers must consider overlaps between crises. In the case of Houston, the derecho, hurricane, and heat wave occurred when electrical infrastructure was already weakened and aging.
In California, the deadliness and danger of the Los Angeles wildfires of 2025 were compounded by the high population density in the burn area, the failure of emergency alert policies that were outdated and not functioning properly, and staffing shortages among emergency responders.[5]

The health outcomes of these compounding factors – weather emergencies, sometimes more than one at one time, overlayed on policies, systems, and regulations that may help or complicate emergency response and recovery – are wide. Displacement, impact on mental health, illnesses and injuries, both new and exacerbated, and deaths must each be considered in an emergency plan.

## Displacement & Movement

People who are displaced or moving relating to an extreme weather event can be placed into **three categories**, which are delineated below. A clinic's approach to each category may differ. People may fall into more than one of these categories, as well.

**1 Weather-Precipitated Individuals are people who move because of a disaster and/or its aftermath.** When such individuals stay within national borders, they are termed "internally displaced people" or IDPs. The timeframe for displacement among weather-precipitated individuals varies greatly. This may range from a household that is evacuated before a hurricane for just a few days, to a family whose house has burned down in a wildfire, not returning for several years, to a community experiencing ongoing flooding in which many families choose never to return. Many who depart their homes in an emergency arrive in a new service area without records of their health needs or ongoing treatments, and often live in temporary accommodations like hotels, the homes of friends or relatives, or evacuation centers. Those who need to stay away from their homes for longer periods of time may need to move several times before they are settled.

**2 Weather-Impacted Individuals are people who choose to move** – for a new job, for more opportunity, to reduce their cost of living – but experience hardship and challenges related to a weather event during or after their move. For example, a farmworker family relocated to a new agricultural region for work. Soon after moving, the region experienced unprecedented flooding. The family was not well integrated into community and was unaware of resources that may be available to help in emergencies or to assist the family with evacuation options available to them.

**3 Response and Recovery Workers, also called disaster clean-up workers,** are people who move into regions that have been affected by weather-related disasters to aid in clean-up and rebuilding. Entering a post-disaster area has significant associated health hazards, including risk of structural collapses; exposure to toxic substances including mold, pesticides, and asbestos; electrical shocks from downed power lines; carbon monoxide poisoning from unventilated generators; heat-related illnesses; and injuries related to heavy equipment. Worker training may be limited, and personal protective equipment may be unavailable. Availability of healthy food, clean water, and safe housing may also be limited.

## Farmworker Health during Extreme Weather Disasters

When people move out of a service area, their health care often does not follow. Farmworkers who move regularly with the seasons, or who arrive in the US on an H-2A visa for a limited period, are frequently not connected with a medical home. They are also often the first and hardest hit in an extreme weather event. Farmworkers may be categorized as weather-impacted individuals. In some cases, however, they may be categorized as more than one type of displaced individual. For example, some farmworkers apply to become farmworkers in the US because weather disasters have reduced agricultural employment opportunities in their home country, but those same farmworkers may experience an extreme heat wave once they are working in the US. These farmworkers were weather-precipitated individuals before they became weather-impacted. After hurricanes Helene and Milton impacted farms across the south in 2024, farmworkers in North Carolina on H-2A visas received visa extensions to assist in cleanup of inundated fields.[6] In this way, these weather-impacted individuals became response and recovery workers.

**Farmworkers may be at higher risk of health implications from extreme weather because they:**

- May be unfamiliar with the community, the local health center, and resources available to them in the case of a disaster;
- May have limited English proficiency, and weather alerts may not be translated;
- May live in extremely remote areas with few transportation options;
- May lack access to the internet and news sources, to learn about weather alerts and evacuation notices;
- May be reluctant to seek assistance or report dangerous working conditions for fear of jeopardizing their employment;
- Work outdoors with higher exposure to extreme weather;
- May have health-related factors that increase their risk, including:
  - Pesticide exposure
  - Dehydration
  - Air pollution exposure
- Often work in areas like low-lying farms that may be at higher risk.

Other community members who are at higher risk of health complications during extreme weather include: children, those with low income, those with a preexisting chronic condition like diabetes, those who are pregnant, and older people.

**Physical health conditions that may be impacted by a disaster include:**

- **Diabetes**
- **Heart disease**
- **Dementia**
- **Chronic obstructive pulmonary disease**
- **Asthma**

## Physical Conditions

In the example of diabetes, a farmworker who must rapidly leave their home needs to consider his treatment needs. Clinicians are encouraged to help patients with diabetes prepare for a disruption in care by considering:

### Nutrition

Patients should be encouraged to prepare an emergency food container that contains diabetes-appropriate basics.

### Treatment

Patients must be masterful when it comes to understanding diabetes, its impact on the body, and how the patient's care plan stabilizes their blood sugars. When a disruption occurs, the patient who understands the signs and symptoms of hypo- and hyperglycemia will be able to take better care of themselves if monitoring systems fail or become unavailable.

### Medication

Insulin must be kept cool. Discuss how to keep a low temperature when refrigeration is unavailable, like placing insulin in cool, clean water. Discuss what to do if medication gets warm; more insulin may not be available at the pharmacy if they had recently filled their prescription. Additionally, health centers must prepare to provide additional prescriptions after disasters.

## Mental Health Impact

The emotional stress of a weather event affects everyone. Shock, emotional instability, stress reactions, and anxiety are some of the symptoms that may increase among patients who experience a disaster.[7]

Some people may already experience a burden of mental health conditions before the disruption of a weather event. Some of the conditions that lead to poor mental health include: poverty and economic hardship; social isolation or limited social support; poor housing conditions including housing insecurity; lack of health insurance; few mental health services nearby; and limited access to workers' compensation. Farmworkers often encounter one or more of these conditions.[8]

Farmworkers also have unique vital conditions for a healthy life. For example, exposure to certain pesticides, particularly acute poisoning, is associated with a higher risk of depression.[9] Some farmworkers have experienced situations like displacement, extreme weather, or other compounding events when relocating that can further increase their risk of mental health symptoms.

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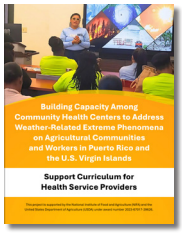
## **Practical Solutions to Prepare for Disaster-Related Disruptions of Care:** Resources and Next Steps

### Education




Community health centers can weave education and preventative measures into their disaster preparedness plans, so that patients and the community at large can prepare before an extreme weather event disrupts their care.

A key resource is Migrant Clinicians Network's (MCN's) 87-page in-depth curriculum, "Building Capacity Among Community Health Centers to Address Weather-Related Extreme Phenomena on Agricultural Communities," which was designed for Puerto Rico and US Virgin Islands health centers but is widely applicable to all clinicians and settings. The curriculum includes seven modules supplemented with dozens of resources in English and Spanish that clinicians can use with their patients.

For example, clinicians serving farmworker patients can provide education on prevention of risk at work. Proper chemical storage, including secure cabinets, chemical inventory, and use of personal protective equipment (PPE), reduces the risk of pesticide exposure during and after a disaster. The fourth module in the curriculum includes ideas and resources on issues like pesticides, non-point source pollution, safe water, heat-related illnesses, and more, to assist clinicians in preparing education for farmworker patients.

### Continuity of Care Systems

A key element of an emergency plan is to determine pathways for patients to continue care if they must leave the service area during or after a disaster. Health Network is MCN's longstanding care coordination program. Since 1995, Health Network has found care for over 15,000 patients who have moved across the United States and Puerto Rico. Health Network serves anyone with an ongoing health condition who must move before their treatment is completed.

Health care providers, community health workers, outreach workers, clinicians, and other community service professionals can enroll patients in Health Network through MCN's online Health Network Portal or via fax, encrypted email, or phone. Once MCN receives complete enrollment information, Health Network will provide patient navigation and care coordination, finding patients a new health center and providing scheduling assistance, medical records transfer, follow-up support, and peer support. Health centers can encourage pre-enrollment as one aspect of emergency planning for highest-risk community members.

Pre-enrollment in Health Network ensures that the Health Network team has patient contact information, patient consent, and access to medical records, to rapidly assist patients in the case of a disaster. Clinicians can identify patients who have ongoing health needs who are most likely to have their treatment disrupted due to extreme weather. By pre-enrolling a patient, a clinician builds pathways to care that may be otherwise difficult to attain after a disaster. During or after a disaster, the clinician can notify Health Network that pre-enrolled patients will need assistance, and Health Network will begin its process to reach out to the patient and determine next steps for care.

- **Learn more about Health Network:** www.migrantclinician.org/healthnetwork
- **Learn how to enroll:** www.migrantclinician.org/enroll

### Mental Health

Clinicians can access a wealth of mental health resources for their patients, including patients who are limited English proficient (LEP) or Spanish-speaking, on MCN's Mental Health and Well-Being page: ***www.migrantclinician.org/mental-health-and-well-being***

An example is the resource, "What is Self-Compassion and Why Is It Important?" which is available at: **www.migrantclinician.org/resource/what-self-compassion-and-why-it-important**

MCN's newest comic book is "My Health Is My Treasure: Embracing Life with Diabetes." Released in March 2026, this comic book offers simple, practical tools for managing stress and caring for well-being in everyday life for people who are living with diabetes while contending with other stressors like extreme weather.

Clinicians must also care for themselves in the event of a disaster, so they can continue to care for their communities. MCN's Witness to Witness (W2W) serves those in high stress jobs who work with clients who are themselves experiencing high levels of stress. Dozens of resources in English and Spanish are available on the W2W webpage: **www.migrantclinician.org/w2w**.


An example is the resource, "Helping the Helpers," a comic book in English and Spanish on self-care for health care providers, available at: **www.migrantclinician.org/resource/helping-helpers-comic-book**

**Other Resources:** Visit MCN's Webinars & Online Trainings page to view upcoming and recently archived webinars or sign up to receive alerts on upcoming trainings: **www.migrantclinician.org/education-and-training**

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0.5 contact hours will be awarded for this activity at no cost to the clinician upon correct completion of MCN's online evaluation. This is a learner-paced activity for which the reader will need to complete all required questions from MCN's online evaluation form pertaining to the article, "Disaster Preparedness at Health Centers." A printable continuing nursing education certificate will be awarded 3-4 weeks following receipt of your online evaluation.

**This activity is valid until December 1, 2026.**


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# Pregnancy & Organophosphate Pesticides

***How Many Farmworkers Live within a Kilometer of Organophosphate Applications while Pregnant – And What Are the Health Implications?***

By Claire Hutkins Seda, Director of Communications, Migrant Clinicians Network

Organophosphate pesticides (OPs) are a class of insecticides applied widely across agricultural regions in the United States. A 2025 study published in BMC Public Health found that 7.5% of pregnant Californians lived within a kilometer of fields treated with OPs during their pregnancy. In Monterey County, however, that number jumps to 50.1%.[1] Known as the "Salad Bowl of the World," Monterey County produces significant amounts of the nation's leaf lettuce (61%), celery (57%), head lettuce (56%), broccoli (48%), spinach (38%), cauliflower (30%), and strawberries (28%), among other crops.[2] One in five households works in agriculture. Many of these crops are labor intensive, requiring care and harvesting by hand, and consequently the region has a high number of farmworker families living near fields.

## One Kilometer Buffer Zone

Monterey County has long served as a location for research on the impact of pesticide exposure on farmworker children, including data collection for the groundbreaking Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS) studies. In 2017, CHAMACOS researchers evaluated prenatal residential proximity to five potentially neurotoxic pesticide groups -- organophosphates, carbamates, pyrethroids, neonicotinoids, and manganese fungicides -- as well as five individual organophosphates: acephate, chlorpyrifos, diazinon, malathion, and oxydemeton-methyl. Researchers then conducted a cognitive assessment when the children of those pregnancies reached seven years of age. The CHAMACOS researchers found a decrease of 2.2 points in IQ and 2.9 points in Verbal Comprehension for each standard deviation increase in toxicity-weighted use of OPs.[3,4] Numerous additional studies from CHAMACOS and others have shown associations between prenatal OP exposure and cognitive, behavioral, sensory, motor, and morphology issues in children,[5] including autism spectrum disorders[6] and attention-deficit/hyperactivity disorder.[7] The 2025 Monterey Co. study, "Temporal trends of agricultural organophosphate pesticide use in California and proximity to pregnant people in 2021," chose the one-kilometer buffer zone to be consistent with the CHAMACOS study, to demonstrate the ongoing use of OPs in California even after the 2020 ban of the most used OP, chlorpyrifos.

## Organophosphates in California

OPs are not limited to the crops common in Monterey Co. OPs are used across many crops, including almonds, citrus, grapes, walnuts, alfalfa, and cotton.[8] In 2019, the California Environmental Protection Agency banned the use of chlorpyrifos with a use-end date of December 31, 2020. Chlorpyrifos had already been banned from residential use since 2001. Both bans were a result of research indicating that chlorpyrifos is associated with brain and neurological development impairment among children at low exposure levels.

By the time of the ban, chlorpyrifos use in California agriculture had already declined more than 50%, from two million pounds in 2005 to about 900,000 pounds in 2017,[9] perhaps as growers sought safer alternatives. Despite the decline, chlorpyrifos was still the most widely used OP in California before the ban.[10] The 2025 Monterey Co. study sought to examine the continued use and distribution of non-chlorpyrifos OPs in California, noting that:

> The US Environmental Protection Agency (EPA) is reviewing the OP class of pesticides and is projected to make regulatory determinations for individual pesticides and a cumulative assessment of the risk from combined exposure to the entire class before October 2026. Additional assessments of non-chlorpyrifos OP pesticides have not been announced in California, nor have there been studies evaluating replacement pest control practices. Although multiple scientific reviews have found evidence of developmental neurotoxicity for individual OP pesticides and combined OP pesticide exposures, there remains considerable variability in the consideration of developmental neurotoxicity in regulatory assessments among countries and within the United States.

The most common OPs used within one kilometer of prenatal residences after the chlorpyrifos ban were acephate (59% of the applications within one kilometer), malathion (40%), naled (16%), dimethoate (16%), bensulide (15%), and diazinon (10%). (The total is above 100% because between one and six different OPs were used within one kilometer of a residence during pregnancy; as the authors note in the quote above, the health consequences of overlapping or ongoing OP exposures during pregnancy are unknown.) The study found that Hispanic people had the highest number and greatest proportion of the population exposed to OPs, California-wide. While Monterey Co. had the highest percentage of prenatal residential proximity to OP use, eight other agricultural counties had higher than 20% of pregnancies with OP use within one kilometer of residence: Santa Barbara (43.8%), San Benito (35%), Santa Cruz (29%), Merced (28.6%) Sutter (24.5%), Ventura (24%), Imperial (23%), and Tulare (23%).

The study is intended to be a first step in identifying what OPs are used and where, to better assess the long-term health implications of the rapid decline of chlorpyrifos and the implemented alternatives, including other OPs, on vulnerable populations like pregnant farmworkers. "This study offers important information to consider, particularly for women of reproductive age working in and/or living near agricultural areas," said Amy K. Liebman, MPH, Chief Program Officer of Migrant Clinicians Network, who has facilitated national pesticide safety programs and trainings for clinicians serving farmworkers for decades. "Given studies showing associations between prenatal OP exposure and cognitive, behavioral, sensory, motor, and morphology issues in children, finding safer alternatives, limiting exposure, and taking other steps to protect farmworker women is needed."

## Resources

MCN's pesticide comic books provide low-literacy and Spanish-language education on pesticide safety:


**www.migrantclinician.org/explore-environmental-and-worker-health/pesticides.html#pesticidecomicbook**

"From the Field to the Clinic: Recognizing Pesticide-Related Illness in Children," recorded on April 29, 2026, features nationally recognized expert in pediatric pesticide exposure Dr. James R. Roberts as presenter, sharing with clinicians the most updated and relevant information. It is now available as a newly archived webinar at **www.migrantclinician.org/webinars/archive**.

Register for MCN's upcoming learning collaborative series in Spanish for community health workers, "¡Campo seguro! Un enfoque comunitario para la salud de los trabajadores agrícolas, las regulaciones y la protección frente a los pesticidas." This series will cover agricultural health, regulations to protect worker health, and community strategies to protect workers, starting May 21, 2026: **www.migrantclinician.org/webinars**

Access all of MCN's resources, including our Pesticide Exposure Reporting Map: **www.migrantclinician.org/pesticides**

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**Editor's Note:** In 2025, Migrant Clinicians Network brought its 87-page in-depth Support Curriculum for Health Service Providers to six partner health centers in the Caribbean. This curriculum builds capacity among community health centers to address extreme weather-related phenomena, and its impact on agricultural workers and their communities in Puerto Rico and the US Virgin Islands. The efforts distributed important health information and emergency strategies to over 1,200 people across the islands. In collaboration with students from the University of Puerto Rico, we are presenting each module of the curriculum in each issue of Streamline. The following three articles cover Modules 2, 4, and 6.
See all of the installations of this series on the Streamline webpage: www.migrantclinician.org/streamline.

**Download the entire curriculum:** www.migrantclinician.org/weather-related-emergencies-and-disaster-management-information-hub or point your camera at the QR code.


# Cultivating Awareness in Times of Extreme Heat

By Mairinete López Santiago, MPH

*Mairinete López Santiago holds a master's in public health from the University of Puerto Rico. She is a Chemical Technologist and Environmental Health Specialist with an interest in contributing to environmental and community well-being through scientific research and environmental education.*

Extreme weather represents a growing threat to agriculture and food security globally. In regions such as Puerto Rico, severe impacts on the agricultural sector have been documented due to extreme weather phenomena such as droughts, hurricanes, heavy rain, and extreme heat events.[1] These events have led to major crop losses, harmed agricultural workers' health, and reduced farms' capacity to produce food. For example, after Hurricane Maria in 2017, estimates showed that Puerto Rico lost more than 80% of local agricultural production,[2] increasing the island's dependence on food imports. These impacts not only harm agricultural workers, but the entire community, as they compromise access, availability, and affordability of food. Given these outcomes, it is urgent to educate and empower rural communities, so they understand how extreme weather affects the agrifood system and what actions they can take to adapt and protect it.

Module 2 of the curriculum presents tools to mitigate the effects of extreme weather events on agriculture, including crop and soil damage, effects on agricultural worker health, and threats to community food security. This module aims to strengthen the agricultural system by protecting not only farmland and crops, but also those who work the land day after day. To reach the agricultural workers who put food on our table every day, we partnered with MEDX, a community health center with 14 clinics across western Puerto Rico.

In this story, heat is the protagonist; although it cannot be seen, it can be felt every day. In June, MEDX invited us to a community health fair at a church in Barrio Salinas de Lajas, Puerto Rico, a scenic coastal community in the southwest part of Puerto Rico. The population is mostly composed of older adults, many of whom live with chronic conditions and have limited awareness of the risks associated with extreme heat. That morning, the temperature rose above 90°F, and the dry air made the heat feel even more intense. And, as MEDX staff had warned, community participation in group activities is low, and community members were not showing high engagement in our efforts.

We began the activity with one-on-one meetings, asking participants what they knew about extreme heat and how they protected themselves. We then provided an educational talk on extreme heat and what practices can help minimize its effects. As expected, the group was hesitant to participate in the group discussion. Far from being discouraged, we adapted: we spoke in a friendly, one-on-one manner and used handouts with large print, bright colors, and examples from everyday life. For example, we explained that drinking water frequently, seeking shade, wearing light clothing, and resting during the hottest hours of the day can make a big difference, especially for older adults or people with chronic health conditions.

During the one-on-one meetings, some people shared their experiences. One woman commented that, on very hot days, she feels she cannot even go out in her yard. The heat was no longer just a nuisance. It became a real threat. After the activity, we observed small but significant changes - some people began to seek shade, and talk to each other about the heat. We raised awareness in the community. The seed we planted is in the ground.

One of the central challenges was the community's limited identification with agriculture, even as agricultural systems continued to shape local environmental and health conditions. Although community members do not see themselves as agricultural workers, they are still participants in the agri-food system, as gardeners, and as consumers of local farm products. We are all part of the agri-food system: those who grow, those who sell, those who cook, and those who consume. Eventually, recognizing extreme weather impacts on agriculture was key to helping this community see how it affects them directly.

This experience taught us that even when resources are limited, thoughtful, tailored interventions that are specific to the population and grounded in community knowledge can have a meaningful impact. Through this activity, the community learned how to protect themselves from extreme heat, understood how this phenomenon affects both agriculture and their whole community, and recognized the value of those who grow our food. There is still a lot of work to do, and every step counts. Protecting agricultural workers also protects our health, our families, and our food.

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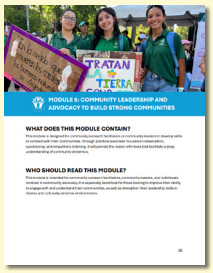
# Beyond the Thermometer: The Power of Advocacy

By Sinaí Santiago Bermúdez, MPH

*Sinaí Santiago Bermúdez holds a master's degree in public health, specializing in environmental health. Her professional interests include extreme weather, occupational safety, and water and air quality.*

Puerto Rico is a tropical archipelago with distinct climatic variations shaped by its geographic location. Climatic diversity is driven by several factors, but primarily by wind and the island's mountainous topography, which causes an orographic effect,[1] bringing heavy rainfall on windward mountain slopes when moist air cools as it rises, causing water vapor to condense, and clouds and rain to form. The leeward side of the mountains remain drier. This effect occurs across the island's coastal regions, although it is less pronounced in the southern region. When air crosses over the *Cordillera Central*, the central mountain range, and into Puerto Rico's southern valleys, it has already lost some of its moisture even as rain falls along the northern slopes. The air descending the slopes of the southern region is therefore drier than the air flowing through the northern region, contributing to lower rainfall. The southern region is predominantly dry and experiences extreme heat. For example, the Guánica Dry Forest shows a near-year-round water deficit, receiving less than 30 inches of precipitation annually, compared to 69 inches for the island overall and upwards of 200 inches in the rainforest, every year.[2]

Last year, in early July, multiple Puerto Rican municipalities, including the drier southern municipalities of Lajas and Guánica, were under an extreme heat advisory. Increases in extreme weather-related events pose a risk to these agricultural communities. Communities that are organized and have local leaders are better equipped to be resilient in the face of such climate threats. Community advocacy processes can empower communities to identify their challenges, explore possible solutions, and take action to implement them. Module 6 of the curriculum, *Building Capacity Among Community Health Centers to Address Weather-Related Extreme Phenomena*, offers advocacy tools for community leaders to strengthen agricultural communities in the face of environmental emergencies like extreme heat. As the module details, advocacy is closely linked to community leadership.




Community leaders must understand the needs of their community, promote mobilization and teamwork to find solutions, and communicate clearly and effectively with a defined purpose. Leaders must be interested in listening to and understanding community members' concerns. Community leadership is grounded in a commitment to the collective well-being of the community, fostered through a special connection to that community. Unfortunately, there is a gap between community awareness and the ability to mobilize members to advocate for public policies that protect them from extreme heat events.

Building leadership in agricultural communities to advance advocacy efforts is essential to foster healthier, more resilient communities in the face of extreme weather events.

In an attempt to address this issue, we presented a community outreach activity on extreme heat just weeks before the extreme heat advisory, at a church in the Barrio Salinas de Lajas, in cooperation with MEDX, our partner community health center in this region. We completed a needs assessment prior to the activity. We found that the population faced barriers to participating in group activities, and had lower educational attainment.

*MCN coordinates with community leaders and organizations in Puerto Rico to develop plans that ensure health and safety in the case of extreme weather-related events.*

Pages 7-11 of this issue of Streamline are supported by the National Institute of Food and Agriculture (NIFA) and the United States Department of Agriculture (USDA) under award number 2023-67017-39626.

These findings align with data indicating that over 25% of adult residents had less than a high school diploma, and just 21% have a bachelor's degree or higher.[3] Most attendees were older adults, who received blood sugar screenings and had their blood pressure checked by a doctor at the event. One participant was blind, and others were patients living with arthritis and diabetes.

Given the weather conditions typical of municipalities in southern Puerto Rico and after planning and coordinating with the MEDX health center, it was deemed appropriate to offer an informational session on extreme heat, including symptoms and protective measures for both people and their pets. Participants also received an informational handout regarding heat, heat-related symptoms, and personal protection strategies. I was surprised that even as we discussed the health effects of extreme heat, two participants chose to remain away from the shade and expose themselves directly to the sun during the activity. Still, the community was engaged and learned about the effects of extreme heat, and they appreciated that we were there to support them. To incorporate the advocacy module, participants were asked whether they agreed with promoting public policies in Puerto Rico that protect agricultural communities from extreme heat. All participants responded that they agreed. Although none were agricultural workers, they recognized that extreme heat affects everyone in one way or another -though not always in the same way.

Advocacy efforts require the involvement and support of the whole community – and this community training can act as a starting point in community engagement. Community leaders play a key role in advocating for the needs of their community members, which is why it is crucial to work with them and consider their recommendations. Recent advocacy leadership efforts have been successful in Puerto Rico. For example, a community took action against a coal plant in Guayama that continuously improperly disposed of its highly toxic coal ash waste. Community mobilization and advocacy were crucial to make change. Eventually, laws were passed that prohibited the disposal of coal ash or coal combustion residues in Puerto Rico.[4-6]

Similarly, advocacy can be central to strengthen agricultural communities in the face of environmental emergencies. Extreme heat advocacy in Puerto Rico includes a recent bill to set public policy to protect the population's health and to support sustainable economic development amid extreme heat risks in Puerto Rico.[7] In California, such advocacy efforts have succeeded, with the passing of a law that requires employers to provide free access to potable, cool drinking water, shade stations when temperatures exceed 80°F, short rest breaks, and monitoring procedures when temperatures exceed 95°F.[8]

Our educational activity in Lajas demonstrated that there is still work to be done. First, educational materials must be clear, adapted to the community's culture, and responsive to the population's needs. In other words, materials should be tailored to the specific population they are intended to reach -- in our case, older adults. Second, existing community resources should be leveraged to promote community-impact activities. Third, it is essential to identify community leaders who will support the community advocacy process. This reflects the idea that leaders must understand community needs to advocate against existing injustices. Finally, community members should be supported by sharing information about existing public policies that protect agricultural communities from extreme heat, and by developing educational strategies on the topic.Health and safety concerns for outdoor workers during climate-related events have become increasingly urgent as extreme weather patterns intensify. The well-being of farmers and agricultural workers is essential to maintain food security. Community leaders often have deep knowledge on local issues, and play a key role in advocating for the needs of their community. It is crucial to consider their recommendations. Our training can be a starting point on the community's path to effective advocacy.

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# The Voices of Loíza

By Adrián Vega Álvarez, MPH

*Adrián Vega Álvarez completed his master's degree in public health at the University of Puerto Rico, Medical Sciences Campus, specializing in environmental health. His academic interests include the fields of chemistry and psychology.*

The air felt heavy with the history – and the resilience -- flowing through the community of Loíza, a coastal municipality just outside of San Juan, Puerto Rico. In June 2025, as we drove to our meeting with the *Concilio de Salud Integral de Loíza* (CSILO, Loíza Comprehensive Health Council), I could plainly see many of the vulnerabilities associated with extreme weather in this community. One was the weakened infrastructure caused by Hurricane Maria, and the other was Loíza's geographic location and proximity to the coast.

When we parked the car and began walking toward CSILO, we had no idea what to expect, much less what we were about to face. The first thing I noticed was that all the educational materials CSILO had developed to promote a healthier community were in a pile on the table, as if no one was interested. But upon arriving at the office and beginning the meeting, CSILO expressed a wide variety of concerns they observed in their community, including transportation challenges, mental health stigma, and coastal erosion.

During the first phase of the meeting, I spoke with CSILO's team about Module 4 of the curriculum on Community Health in the Face of Climate-Related Events. This module offers strategies for identifying environmental risks, including physical, biological, and chemical hazards, and strengthening community health in the face of extreme weather events. After further research, I identified other physical risks associated with extreme weather include flooding, coastal erosion, hurricanes, droughts, and wildfires.[1] Further, during extreme weather events, the mobility of pollutants is altered, posing a chemical risk from pesticide application or from pollutants released into the air by wildfires.[2] Additionally, extreme weather events can contribute to the spread of biological risks, such as viruses and bacteria. One example is leptospirosis, which can spread easily through contaminated water or soil.[3] Although the Loíza community has prior experience dealing with extreme weather events like hurricanes, additional risks exist that can affect and limit community health. With the CSILO staff, we reviewed the module and identified key areas that best suited the community. Through this assessment, a series of questions arose about how to develop strategies to identify environmental risks and strengthen community health in the face of extreme weather using educational tools and resources. "Why not develop educational materials that address mental health?" asked my colleague, Anna Sofía Laguerre López. One CSILO member wondered how to emphasize that topic if most of the community consists of older adults and it can be difficult to get the message across. Recalling the educational materials that CSILO had developed, I recommended we design printed materials that we can hand out in person while talking to each person, and create a more personalized experience for the community. Then my colleague came up with the idea of spreading the message through social media as well, suggesting that older generations like Facebook, so posting information there may increase receptivity and awareness. By the end of the meeting, we agreed that our project would be divided into three phases: creating a brochure and educational materials to distribute, a brief assessment, and finally, three videos to post on Facebook.

Our first task was to create a trifold brochure titled "Mental Health During Hurricane Season." including valuable information drawn directly from the selected module and covered topics like mental health, hurricanes, risks associated with hurricanes, and emergency contacts and types of hurricane alerts. After creating the trifold, we developed a pamphlet with the same information, but in greater detail, so it could be distributed to participants. We then created a brief assessment so people could reflect on their emotions during hurricane season. During these activities, CSILO staff met with us to help record three different videos: the first, titled "Mental Health," featuring Dr. Lexter Rosario; the second, titled "Social Inequalities," featuring Milliam Carrasquillo; and the last, titled "Community Leader in Parcelas Suárez," featuring Alexis Correa.Each video had its own theme emphasizing community health. For example, the first video discussed the stigma surrounding mental health and how people often assume that only those with diagnosed mental health conditions seek these services. The second video described the barriers many people face in accessing the services CSILO provides; one example was the lack of transportation. The third and final video talked about coastal erosion and flooding that the community experiences due to its geographic location. During the Video 3 interview, Correa emphasized that coastal erosion represents a significant problem for the community, because it can weaken infrastructure and cause flooding that in the long run may allow environmental contaminants to enter and harm to the community.

Finally, it was time to go out into the community and make people feel heard. During this time, we had the incredible opportunity to attend two events, in Loíza and Luquillo. Both were held in clinic waiting rooms. As we set up our table and organized our educational materials, we noticed everyone's curiosity. People were wondering what we were doing. As we continued with the preparations, I found myself wondering whether anyone would come to our table. Once we were finally ready, we waited for a while to see if anyone would come over, but no one did. So, we decided to take the information we had on the table to them. As we walked around and spoke with each person, explaining the importance of mental health during hurricane season, we noticed that a more personalized approach made community members feel much more comfortable and confident in their responses. In fact, many began sharing their personal experiences related to hurricane season.

At the end of the conversations, when we asked if they felt prepared to face another hurricane. Many said yes. However, when asked about their emotions ahead of hurricane season, many felt anxious and stressed, which highlights the importance of mental health awareness.During the activities, we had the opportunity to speak with many people. One interaction stuck with me. When one person was asked if they had ever felt the need to seek mental health resources, they replied, "No, no, no, that's for crazy people." We emphasized that these services are not necessarily for people with severe behavioral conditions, but rather for anyone seeking to improve their mental health under stressful circumstances. These interactions resonated with what Dr. Rosario had explained in the video - working to eradicate this stigma in the community.

At the end of the week's activities, barriers related to stigma surrounding mental health, limited transportation, and the environmental risks still persisted. Yet, the activities we carried out reached more than 100 community members, who received new information and education relevant to their needs in Loíza. Not only did it impact many people, but it also gave them the opportunity to be heard and recognized, which allowed us to build a stronger and safer community.

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### *Streamline* Citations and Resources

All of the URLs to the citations and resources that are mentioned in this issue are available online on MCN's *Streamline* webpage.

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## Calendar

### Here are some of MCN's upcoming webinars.

**Please visit migrantclinician.org/webinars/upcoming**
to register and to discover newly announced educational opportunities.

### May 21 – June 4 – June 18

**¡Campo seguro! Un enfoque comunitario para la salud de los trabajadores agrícolas, las regulaciones y la protección frente a los pesticidas.**

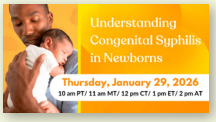
*This Spanish-only three-part series on farmworker protection from pesticides runs through June.*

**migrantclinician.org/webinars/upcoming**

### June 25 – July 23 – August 27

**Trauma-Informed and Community-Centered Responses to Immigration-Related Stress**

*Clinicians and health care workers are caring for immigrant and migrant communities in a time of increased fear, uncertainty, and stress. This three-part series, presented in English with simultaneous interpretation into Spanish, will offer trauma-informed, culturally responsive, and community-centered approaches to supporting migrant and immigrant patients, families, and the workforce that serves them.*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