In Sonoma and Napa counties in Northern California, some local agricultural workers who were finishing up grape harvest season lost everything to last year’s fires, including their jobs. After camping out along the coast amid unhealthy air thick with smoke and ash, many returned to their charred neighborhoods to find a tightened housing market in an already price-prohibitive region. With wage increases not matching skyrocketing living expenses, many agricultural workers already felt displaced — even before the fires. Now, living in Sonoma County is unfeasible. In the weeks following the fires, the median monthly rent in Sonoma County jumped 35 percent to $3224. Just two months later, the Thomas Fire cut through farms and neighborhoods in and around Ventura County in Southern California. Despite “purple” air quality and winds – the first time the color designation has been used for wind – many agricultural workers continued to work. Volunteers handing out N-95 masks to workers on one farm in Ventura County were ask to leave. The workers who didn’t receive masks kept working.

Agricultural workers in California aren’t the only underserved population that has been strongly impacted by a disaster this year. In Houston, Texas, after Hurricane Harvey flooded thousands of homes, a health and safety advocate discovered that most families put their waterlogged belongings in front of their homes so that the damage could be assessed by emergency workers before disposal. Those who were anxious...
Rosa* is a 32-year-old agricultural worker who moves with her husband for work between California, Oregon, and Washington as the seasons progress. When the fires in the Columbia Gorge raged, and the air quality plummeted, the respiratory problems that she had had for years began to flare up. For the first time, she made an appointment at a local health center for this concern and a family nurse practitioner diagnosed her with asthma, prescribed an inhaler, and made recommendations for her to stay indoors while the air quality was poor. Unfortunately, the health center’s intake form didn’t prompt Rosa to disclose that she is an agricultural worker, so the clinician, who was seeing more and more respiratory problems in her patients due to the fires, didn’t realize her advice would pose challenges for her patient who needed to work. Beyond the intake form, nothing prompted the clinician to ask the patient about work during the encounter. This resulted in the clinician missing the opportunity to discuss with Rosa how her asthma may have developed and what on-farm exposures may exacerbate her condition, like harvest dust, chemical exposures, and poor ventilation in out-buildings or in on-farm housing.

In a recent poll of primary care providers participating in a Migrant Clinicians Network (MCN) training, 57 percent stated they had received two hours or less of any training on Environmental and Occupational Health (EOH), both during their health profession schooling and after. And yet, for many clinicians serving vulnerable populations like migratory or seasonal agricultural workers, a deeper understanding of EOH may point clinicians to the underlying and acute conditions that send agricultural workers to the exam room. MCN works to provide clinicians with basic EOH training in primary care, particularly among those serving migratory and seasonal agricultural workers.

“Since its inception, MCN has recognized that occupation is a key social determinant of health for the mobile populations that our clinicians serve. By and large migratory workers are employed in some of the most dangerous jobs, working in industries like agriculture and construction,” said Amy Liebman, MPA, MA, Director of Environmental and Occupational Health at MCN.

To address this important concern, MCN has focused intensive programming and training to help primary care providers improve their recognition and management of occupation-related injuries and illnesses. MCN’s Co-Chief Medical Officer, Ed Zuroweste, MD, has worked side-by-side with Liebman and her team on these efforts. “Our aim is to give clinicians basic tools to address these conditions at the primary care level,” said Dr. Zuroweste. “We don’t expect frontline clinicians to become Occupational and Environmental Medicine Specialists, but we do want them to have the training and the basic tools to address work-related conditions in order to improve the quality of care for their patients.”

MCN’s multifaceted approach brings EOH into primary care through careful identification and screening of agricultural workers through intake form and Electronic Health Record adjustments, on-site and distance clinical trainings, as well as resources, technical assistance, and peer-to-peer networking.

Identification through Electronic Health Records: Puerto Rico

Before Hurricane Maria ravaged Puerto Rico, the island had seen a resurgence in agricul-
tured, and health centers around the island were eager to better serve their agricultural worker patients. Migrant Clinicians Network partnered with Hospital General Castañer, a Federally Qualified Health Center, to both better identify agricultural workers through intake questionnaires and to prompt primary care providers to ask about potential occupational exposures.

Jose Rodriguez, MD, Medical Director of Hospital General Castañer, led the efforts at the health center, and had already begun work to expand its reach beyond Hospital General Castañer to health centers throughout the island.

“Incorporating all health centers into this MCN initiative is very important and will be very productive because some health centers already have programs for [agricultural] workers and others do not, so not all are aware of how to serve this population,” Dr. Rodriguez explained.

Better identification of agricultural workers is not just for day-of appointments; health centers can better prepare for disasters if they understand their patient population’s vulnerabilities. Health centers, equipped with the more accurate assessments of patients’ occupations and exposures, can develop emergency preparation and response protocol that take into account vulnerable populations like agricultural workers and their specific needs and risks. While Puerto Rico struggles to recover from Hurricane Maria, better identification of agricultural workers may help health centers prioritize relief efforts and longer-term health and well-being considerations. The Puerto Rico Primary Care Association is leading the coordination of efforts to better document and serve agricultural workers, as communities begin to rebuild.

**Trainings to recognize pesticide exposures: Hawaii**

In 2016, 19 agricultural workers on the Hawaiian island of Kauai re-entered a research field owned by Syngenta Seeds. Ten of the workers became ill and were transferred to the local hospital for treatment. The field had been recently sprayed with chlorpyrifos, a toxic organophosphate. After the poisoning, the US Environmental Protection Agency along with the Hawaii Department of Health called in Migrant Clinicians Network for an on-site training of primary care providers including first responders to help them better address the recognition and management of pesticide poisonings among agricultural workers. MCN brought in Jimmy Roberts, MD, MPH, a leading expert on the clinical response to pesticide poisoning and a co-author of EPA’s Recognition and Management of Pesticide Poisonings, 6th Edition (RMPP).

Dr. Roberts and Liebman worked with the local hospital and health department to develop improved protocols on treatment, data collection, and care coordination, should another large incident of pesticide poisoning occur. After the training, MCN provided additional technical assistance and networking.

**Using the data to enroll in Health Network: Florida**

Healthcare Network of Southwest Florida saw quick success after integrating changes to intake forms and EHR prompts to better identify and care for migratory agricultural workers. Within a month of its partnership with MCN, one of their clinics had identified over 50 agricultural workers through its new process. But what happens to workers with chronic concerns after they leave the health center’s service area?

“It’s critical that all parties within the health care team have the training to care for agricultural workers’ environmental and occupational health needs, even as they get ready to move to a new location,” said Dr. Zuwoneste. Healthcare Network of Southwest Florida clinicians received training and technical assistance to improve the health center’s systems to recognize and manage occupational and environmental health conditions. This included resources to assist clinicians in identifying its patients working in agriculture, and training on how to enroll patients with any ongoing health condition who intend to move into Health Network, MCN’s bridge case management system.

Health Network keeps up culturally and linguistically appropriate communication with the patient as she moves. A Health Network Associate finds a new clinic and sets up appointments at the patient’s next destination, provides records transfer, and helps with additional case management as needed and available, including arranging transportation to the clinic and helping patients identify and access health resources in their new community. Once a patient completes treatment, records are forwarded to the enrolling clinic to assure accurate reporting. Health Network is unparalleled, providing this service free of charge for all parties and for any ongoing health condition, for patients traveling within the US and to anywhere around the world. For migratory agricultural patients, it is a critical link to enable them to continue treatment despite mobility, which demonstrates how MCN’s EOH approach works with patients from the moment they seek medical care, all the way through multiple migrations as they search for work. In the end, barriers that agricultural workers face are minimized and patients are better able to receive accurate and prompt care.
about seeking services, like day laborers, agricultural workers, and domestic workers, dragged their damaged furniture to their backyards, where they attempted to dry it out for reuse.  

In Puerto Rico, agricultural communities were cut off entirely — no electricity, no communication infrastructure, no potable water, and no passable roads — for weeks. Clinicians quickly began rationing common medications while serving patients from damaged buildings running on generators with low diesel supplies.  

A spike in leptospirosis — a bacterial infection contracted from drinking water contaminated with animal urine — that resulted in at least two deaths indicates how rural residents have turned, and continue to turn, to local creeks and springs, many of which were contaminated after the extensive flooding and infrastructure damage.  

While clinicians in each community that experienced disaster tailored their responses to the needs of their patients, a common thread can be found throughout: vulnerable populations like agricultural workers were likely harder hit than the general population, both in the short and long term. Clinicians can best serve agricultural workers by breaking down disaster preparation and response into three phases, each of which requires a different approach: pre-disaster preparation during which health centers develop systems and protocol that take into account vulnerable populations; post-disaster immediate response, in which the community and clinicians are attempting to save lives and minimize further health dangers after the disaster; and longer-term disaster response, which includes addressing disaster clean-up health risks and mental health issues stemming from the trauma of the disaster.  

Disaster Preparation for Agricultural Workers  

Agricultural workers face numerous barriers to achieve an average level of health even under normal conditions. Many are not eligible for publicly or privately funded health care programs, some lack familiarity with health systems, and many are further stymied by language and cultural barriers. Mobility and poverty, and the many social determinants of health associated with them — food insecurity, unsafe housing, and limited educational opportunities, among others — reduce agricultural workers’ opportunities to regain health after a setback.  

Consequently, disaster response preparations must account for those with fewer resources. For example, while some families may respond to a clinician’s recommendation to develop a disaster kit with extra food and water, an agricultural worker family struggling with food insecurity may be unable to put their limited resources toward disaster preparation. While boarding up windows may work for a typical home to prepare to weather out a hurricane, an agricultural worker who lives in a mobile home on cinder blocks may need to evacuate. Proximity to manure ponds and chemical storage elevates flood risks, while language barriers, poor integration into the local community, apprehension over seeking assistance, and remote farm locations with limited transportation and communication limits an agricultural worker’s access to and ability to follow evacuation instructions.  

MCN’s newly updated Emergency Preparedness, Response, and Recovery webpage outlines several basic strategies for health centers following a disaster. The page can be accessed at: http://www.migrantclinician.org/issues/emergency-preparedness.html.  

- The need to establish back-up systems for energy generation, documentation, communication, and other clinical operations;  
- Identification and location of high-risk patients such as those with disabilities or chronic illnesses, and those who are culturally, linguistically, and geographically isolated;  
- Inclusion of outreach staff and promotores in planning, as they can be critical partners in preparing, educating, locating, and transporting patients in need;  
- Training of staff on clinical aspects of possible emergencies relevant to the migrant population or the geographic setting such as pesticide exposure, weather-related emergencies, and disease epidemics;  
- Collaboration with other service providers in planning for continuity of services and clinical supplies.  

“Often the most vulnerable populations, such as agricultural workers, are both the hardest hit and the least likely to promptly seek medical care,” explained Laszlo Madaras, MD, Co-Chief Medical Officer of Migrant Clinicians Network. “Even if willing to seek medical care, distance could be a major factor in why vulnerable populations cannot access such care. This is one reason why health centers should focus emergency preparation close to such workers and remove distance as one more barrier to giving medical care.”  

Post-Disaster Immediate Response  

Similarly, after the disaster, clinicians need tools and resources to specifically respond to the advanced and compounded health needs of underserved workers and their families. Recovery efforts must take into account the reality of living in poverty.  

As Puerto Rico’s hardworking clinicians explained after three weeks without electricity or communication, even well-developed plans may not account for the level of disasters that North America has recently experienced. While many facilities prepared before Hurricane Maria by stocking a week to ten days’ worth of fuel for backup generators, few anticipated the large scale destruction of transportation and communication infrastructure that continues to hinder regular operations today. Clinicians are encouraged to revisit emergency protocol regularly to update training and planning in light of our changing planet and communities, and in recognition that vulnerable populations will likely be hardest hit in such emergencies.  

Long-Term Recovery: Disaster Cleanup  

After initial first response has concluded, communities begin to assess the damage, and in the weeks and months after a disaster, migratory workers arrive to populate cleanup crews. Many of these workers lack health and safety training and consequently may be unaware of the acute and chronic health concerns associated with cleanup. MCN’s post-Harvey webinar, “After the Storm: Lessons Learned on Worker Health & Safety During Storm Disaster Cleanup,” which was presented and archived in both Spanish and English, covered common exposures like mold, water contaminated with chemicals and waste, hazardous building materials, and vermin, and additional risks including unstable structures and carbon monoxide poisoning from generators operating in poorly ventilated spaces. (See “Resources” for a link to the archived webinar.)
The village of Castaner, which is served by FQHC Hospital General Castañer, was without electricity, water, or communication for months after Hurricane Maria. Much of the island still remains without consistent power. Photo courtesy of Dr. Jose Rodriguez, General Hospital Castaner.

Exposure to asbestos, silica, and lead are also common for these workers. The webinar brought in trainers who had recently returned from cleanup operations after Harvey, to report back on the hazards workers are facing and to outline strategies for reducing occupational injuries and exposures, including what to include in worker trainings, like personal protective equipment, how to read safety data sheets, and how to access local resources.

"Exposures during cleanup are preventable with active measures like training and provision of personal protective equipment," noted Amy Lieberman, Director of Environmental and Occupational Health for MCN. "For the low-paid and often undertrained workers, such efforts can have long-term positive health consequences."

**Long-Term Recovery: Mental Health Concerns**

Even months or years after a crisis, many in the community may still be suffering. The long-term health effects of trauma must be taken into account, long after new houses are built. Low-income patients lack the resources that many rely on for resiliency after a disaster. Tenuous or temporary work situations may reduce their income, language and cultural barriers and apprehension may halt access to recovery efforts, and more. Mental health issues after a disaster often plague an entire community, but among some cultures, seeking help for such concerns as post-traumatic stress disorder is frowned upon. The long-term needs of vulnerable populations must be factored into recovery efforts.

**Selected Resources:**

View MCN’s post-Harvey webinar, “After the Storm: Lessons Learned on Worker Health & Safety During Storm Disaster Cleanup,” in English at https://goo.gl/84aRzn and in Spanish at https://goo.gl/TGTfFG.

Read MCN’s recently updated Emergency Preparedness, Response, and Recovery webpage for a comprehensive list of resources including the following.

http://www.migrantclinician.org/issues/emergency-preparedness.html

**Occupational Safety and Health Administration (OSHA):**

- Keeping Workers Safe during Hurricane Cleanup and Recovery Fact Sheet in English (https://www.osha.gov/Publications/OSHA 3698.pdf) and Spanish (https://www.osha.gov/Publications/OSHA FS-3699_sp.pdf)
- Disaster Cleanup and Recovery PPE Matrix in English (https://www.osha.gov/Publications/OSHA 3898.pdf) and Spanish (https://www.osha.gov/Publications/OSHA 3899.pdf)

**Centers for Disease Control and Prevention (CDC):**

- Medical Management and Patient Advisement After a Disaster: https://www.cdc.gov/disasters/management.html
- Clean Up Safely After a Disaster Factsheet: https://www.cdc.gov/disasters/cleanup/facts.html

**American Public Health Association (APHA):**

- Keeping Food and Water Safe in an Emergency Situation: http://getreadyforflu.org/foodwatersafety.htm

**Migrant Clinicians Network**


**References**

Olfactory Function in Farmworkers:
Do Pesticides Reduce Their Sense of Smell Over Time?

[Editor’s Note: This issue’s Environmental and Occupational Health section features three articles summarizing recent research reports pertinent to the health of farmworkers and migrant workers.]


Over the course of two years, male Latino farmworkers exposed to pesticides maintained significantly reduced olfactory function, compared to the control group of male Latino workers from other industries without pesticide exposure. The findings have been published in the most recent issue of the Journal of Occupational and Environmental Medicine.

Low-level, long-term pesticide exposure has been proven to increase the risk of neurodegenerative diseases like Parkinson’s disease. The authors of this study set out to determine if such low dose and frequent occupational pesticide exposure results in olfactory function decline over time, and to deduce if any differences between exposed and non-exposed farmworkers in olfactory function persist over time.

The authors recognize the challenges of studying the impact of pesticides on farmworker health, particularly in the development of neurological diseases. Many farmworkers migrate for work or begin work in another industry before researchers can conclude long-term studies. “For such populations, it may be useful to identify subclinical disease indicators that precede the development of neurodegenerative diseases. Loss of olfactory function has been consistently identified as one such indicator, occurring early in the disease process before other symptom occur,” the authors noted.

The researchers recruited 158 Latino farmworkers and 118 Latino non-farmworkers in North Carolina. Over the course of two years, the participants completed questionnaires and attended a clinic for the collection of clinical measures and the testing of olfactory function, which included both identification and detection tests.

The results showed that, adjusted for age and smoking, farmworkers had significantly and consistently poorer olfactory function than non-farmworkers, but that over the course of the two years, despite ongoing low-level exposure to pesticides, farmworker olfactory function did not decline further. “This result is somewhat unexpected,” the authors admitted. They conclude that “it is possible that, while pesticides can precipitate initial injury to the olfactory nerve, other factors determine whether there is further neurodegenerative progression. Additional research is needed to confirm these findings in other worker populations and to determine factors that lead to neurodegenerative diseases in pesticide-exposed populations.”

Caring for Children While Working in Agriculture –
The Perspective of Farmworker Parents

[Editor’s Note: Clinicians serving farmworker families recognize that lack of access to childcare can be a safety concern. Here’s the abstract of an article co-written by MCN’s Amy Liebman and Juliana Simmons that summarizes some of the work to date on our project, Protecting Children While Parents Work, published recently in the Journal of Agromedicine. Learn more about our Environmental and Occupational Health initiatives at: http://www.migrantclinician.org/services/initiatives/occupational-health.html.]


Access to safe, off-farm childcare is often a challenge for farmworkers with young children and is likely to become an increasingly salient barrier as more agricultural workers migrate together with families and as the number of women entering the agricultural workforce increases. Agriculture is one of the most hazardous industries, and the presence of young children in the workplace puts them at risk.

To better understand the current nature of childcare for farmworker families and the challenges to accessing services, this project facilitated in-person surveys with 132 parents in three communities in Florida. A convenience sample that intentionally targeted parents living and working in areas with limited access to Migrant and Seasonal Head Start facilities was used to recruit participants. Most participants reported childcare access as a challenge. They expressed a desire to work in an area based on childcare availability. These findings offer agribusiness leaders important data to consider. They also suggest that industry support of childcare may be an important workforce investment. Findings indicate that high quality, affordable off-farm childcare services could serve as a means for attracting farmworkers to regions currently experiencing labor shortages. Additional research is warranted to explore this subject in diverse geographic areas.
New GAO Report: Workers Fear Retaliation If They Complain of Workplace Hazards

When a poultry processing plant worker needs a restroom break, does he feel he can leave the line without retaliation? If a meat processing worker recognizes a hazard, will he alert the Occupational Safety and Health Administration (OSHA)? In December, the United States Government Accountability Office (GAO) released a study on the workplace safety and health in the meat and poultry industry which concluded that agencies could do more to empower workers to disclose safety and health concerns in one of the most hazardous industries in the US.

While OSHA had stepped up inspections of the meat and poultry industry in the last decade, OSHA still “faces challenges identifying and addressing worker safety concerns because workers may be reluctant to contact OSHA for fear of employer retaliation, although employers are prohibited from doing so by federal law,” the report said.

The GAO authors used bathroom breaks as an example of where OSHA has not heard workers’ concerns, a problem that has been called out in recent reports by Oxfam and others. “When asked by GAO, workers in five selected states cited bathroom access as a concern and said they fear speaking up at work, where OSHA inspectors typically interview them. Taking additional steps to encourage workers to disclose sensitive concerns and gathering additional information to determine the scope of bathroom access issues could enable OSHA to better identify worker safety and health concerns,” the report concluded.

The report also discussed the importance of increasing interagency cooperation to better identify and address workplace hazards, including chemical exposure: “Depending on a chemical’s intended use, it may not undergo a federal review of the risks it poses to worker safety and health before it is used in a plant. [The Department of Agriculture’s Food Safety and Inspection Services (FSIS)] collects information on how to protect its inspectors from new chemicals, but it does not have a process to share this information with OSHA or plants, among others, so that plant workers can be similarly protected.” GAO concluded its report with seven recommendations to help workers feel safe in reporting hazards and violations and to assure better interagency communication and information sharing. The first recommendation was that “the Assistant Secretary of Labor for Occupational Safety and Health should take additional steps to encourage workers to disclose sensitive concerns during OSHA inspections of meat and poultry plants; for example, by considering additional off-site interviews or exploring other options to obtain information anonymously.”

The second specified that the Assistant Secretary “should gather more information, such as by asking workers during meat and poultry plant inspections, to determine the extent to which bathroom access is a problem and how to address any identified issues.” The sixth recommendation stated that the FSIS Administrator should “develop a process to regularly share the worker safety information it collects during its review of new chemicals with FSIS inspectors, plant management, OSHA, and the Centers for Disease Control and Prevention’s National Institute for Occupational Safety and Health (NIOSH),” and the final recommendation said that “the Director of NIOSH should consider including in the agency’s research agenda a proposal for examining the extent of peracetic acid’s use in combination with other chemicals in meat and poultry plants, and any safety and health hazards these combinations may pose to workers.”


As the report emphasizes, poultry workers face not only a dangerous day-to-day working environment but obstacles to ensure safety regulations are enforced and that basic workers’ rights like time to use the restroom are maintained. Clinicians are encouraged to ask for patients’ occupation and consider occupational exposures when treating a patient. Here are some MCN resources that clinicians may find useful:

MCN’s Environmental and Occupational Health Screening Questions in English and Spanish are downloadable on the MCN site: https://goo.gl/bSyyfo.


It’s your right to know! Helping Community Health Workers Promote Chemical Safety on the Job is MCN’s archived webinar for CHWs, available in both English and Spanish: https://goo.gl/TTtLhK.

Working With Farm Animals, another piece from MCN’s popular comic book series, has recommendations and terminology accompanying the comic-style graphics on zoonotic diseases. It is available in English and Spanish: https://goo.gl/zPnR0K.
February 22-24
2018 Western Forum for Migrant and Community Health
Seattle, WA
www.nwrpc.org.

March 14-18
2018 Policy and Issues (P&I) Forum
Washington, DC
www.nachc.org.

April 15-18
NNEDLearn 2018
Santa Ana Pueblo, NM
National Network to Eliminate Disparities in Behavioral Health
www.nned.net.

March 14-16
Association for Community Health Improvement National Conference
Atlanta, GA
www.healthycommunities.org.

May 1-3
Conference for Agricultural Worker Health
San Antonio, TX
www.nachc.org.

May 8-11
Rural Health Conference
New Orleans, LA
www.ruralhealthweb.org.

May 15-18
2018 National Health Care for the Homeless Conference & Policy Symposium
Minneapolis, MN
www.nhchc.org