

streamline



Is COVID-19 Airborne?

Q&A with Dr. Chad Roy and Dr. Ed Zuroweste

By Claire Hutkins Seda, Senior Writer, Migrant Clinicians Network, Managing Editor, *Streamline*

In mid-May, Migrant Clinicians Network hosted a one-hour webinar with Chad Roy, PhD, a microbiologist and director of the infectious disease aerobiology and biodefense research programs at Tulane University's National Primate Center, and with Ed Zuroweste, MD, Founding Medical Director at Migrant Clinicians Network. The two presenters responded to a lengthy list of participant questions around new COVID-19 findings from the growing data that researchers are amassing regarding the airborne infectiousness of the virus. But both were clear: as the virus spreads, we gather more data, and these data combined with increased understanding from newly conducted experiments lead to a more refined understanding of COVID-19, its spread, and the best ways to reduce the spread.

"Everything is moving so quickly – and this is the best we know today," advanced Dr. Zuroweste. To demonstrate the rapid changes in our understanding, Dr. Roy added, consider scientists' understanding of the aerobiology of COVID-19. Initially, there was little evidence of the aerosol efficiency of COVID-19, the ability for aerosolized particles with the virus to maintain themselves in the air. Early recommendations from the Centers for Disease Control and Prevention

(CDC) did not recommend masks, due to the lack of data to demonstrate the need for masks among the general population to prevent the inhalation of aerosolized particles

with the virus, and perhaps also with the goal to reserve limited supplies of masks for

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New Studies on Airborne Transmission

During the webinar, Dr. Zuroweste described two recent epidemiological studies that highlight the risks associated with the aerobiology of COVID-19. One research paper covered the resulting COVID-19 infections at different tables in a restaurant where one diner at a center table was COVID-19 positive, called A1. There were four other tables in the vicinity of A1's table, and a ventilation system along one wall that circulated air across A1's table and two others. Four of ten of the diners at A1's table became symptomatic. Of the four diners at the table "downwind" of A1's table, three of them became infected within a week. Of the seven diners "upwind", two became infected. Two other tables were not in line with the ventilation system; no diners from those tables became sick with COVID-19. "This shows that, probably, a significant part of this was the airborne component," Dr. Zuroweste said. While perhaps some sharing of food occurred at A1's table, the cases at surrounding tables point to airborne transmission, he added.

In a Morbidity and Mortality Weekly Report (MMWR) from the CDC, researchers followed a choir that practiced for 2.5 hours. One COVID-19 positive and symptomatic individual attended choir practice. After the practice, 32 confirmed cases of COVID-19 and 22 probable cases were identified to be related to the symptomatic singer. Three were hospitalized and two died. "Again, there may have been handshaking and hugging, but probably a significant part of this infection rate was airborne," Dr. Zuroweste concluded.

Read the MMWR: High SARS-CoV-2 Attack Rate Following Exposure at a Choir Practice — Skagit County, Washington, March 2020: <https://bit.ly/2LW9Hhs>

The restaurant example comes from a recent article by Erin Bromage, PhD, a Professor of Biology: "The Risks, Know Them, Avoid Them:" <https://bit.ly/2ZEB4EE>



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health care workers. Then, new research published in the *New England Journal of Medicine* found that aerosolized particles retained infectivity for three hours. This was followed by initial research that a significant number of infected individuals – perhaps 40 to 50 percent of total cases – never become symptomatic.¹

“Even in those who do become symptomatic, for the first two to four days, they are not symptomatic, yet they can spread it,” noted Dr. Zuroweste. These new understandings of the virus prompted new CDC recommendations on face masks among the general population. Masks of any kind, including surgical masks, homemade masks, or any type of cloth barrier, will impede big droplets expelled from the mouth to enter the air. This reduces the spread of COVID-19 from asymptomatic but infected individuals to those around them. However, the research needs to catch up to quantify how much it protects mask-wearers from inhaling aerosolized particles with COVID-19.

“Surgical masks, face masks – they do an incredible job of protecting others from transmission, but not vice-versa, necessarily,” Dr. Roy said. This confusion over mask effectiveness – that they protect others from the mask-wearer, but they provide unknown protection for the mask-wearer – is further complicated by N-95 respirators. N-95 respirators are utilized by health care workers who work with COVID-19 cases, where the providers require a high level of protection for themselves. “Ninety-five percent of these tiny particles are not going to permeate [the N-95 respirator],” Dr. Zuroweste said, as long as the fit is correct. “[Health care workers] have to be fit tested to make sure they form a seal on your face.” Such respirators, which remain in short supply, are less critical for the general public, who are not working in close proximity with infectious patients.

Our understanding of the aerobiology of COVID-19 continues to evolve. Dr. Roy’s

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research has contributed to our growing knowledge. “[The conclusion of initial research in the *New England Journal of Medicine*] wasn’t because [researchers] had determined that at three hours, the infectivity was gone; it’s just that they had done that experiment for three hours,” and then concluded the research, explained Dr. Roy. He and his colleagues replicated the experiment. “We felt it obvious to extend those time periods [until] the aerosol infectivity drops off... kind of like an [infectivity] half-life.”

“At 16 hours, there was still an infective fraction of the virus in those aerosols,” Dr. Roy continued. “I’ve worked with a number of viruses in my career, doing the same types of experiments. In influenza, for example, we don’t see that – we see it decay in a couple of hours.” Initial findings, currently under peer review for publication, are accessible for pre-publication view.

Dr. Roy’s research, that COVID-19 viruses can be found in aerosolized particles for up to 16 hours after expression, significantly changes our understanding of the virus, yet not all aerosolized particles will remain active

in the air for such a long period of time. The research was conducted in a dark chamber, under ideal temperature and humidity for the virus. Dr. Roy says that his colleagues are presently completing chamber research on the virus that exposes the aerosolized particles to ultraviolet light, similar to that from the sun. They found COVID-19’s aerosol efficiency with exposure to UV light dropped from 16 hours to a minute and a half. “It’s highly susceptible to light,” Dr. Roy said. “It’s all a matter of context.”

Similarly, temperature and humidity may play a role in the decay of the virus. Outdoor workers, including agricultural workers and outreach workers providing education to agricultural workers, can take advantage of wind, light, and warm days. Many worker health advocates are focusing heavily on ventilation, which may be the key adjustment to reduce indoor workplace spread of COVID-19, including for agricultural worker housing and transportation.

The frustrations, the misinformation, and the exhaustion are in part because the research is only beginning to be gathered,

and it takes time for the public health authorities to translate the research into action. Drs. Roy and Zuroweste ask health advocates to remain vigilant and stay informed as new data are released. COVID-19 is new, and consequently, it takes time for researchers like Dr. Roy to gather data, analyze findings, and write up their conclusions. Research is then followed by peer review and publication, which in turn finally influences public health decisions. “As this develops, and as we learn more about this, it can really inform about transmission, and mask use, the [other] engineering controls to protect yourself against the virus.”

Key Resources

Watch the MCN webinar with Dr. Chad Roy and Dr. Ed Zuroweste: <https://bit.ly/3gpt0xD>

Access Dr. Chad Roy and colleagues’ research in this pre-publication article: Comparative dynamic aerosol efficiencies of three emergent coronaviruses and the unusual persistence of SARS-CoV-2 in aerosol suspensions: <https://bit.ly/3d6UENN>

Dr. Zuroweste recommends an article by Erin

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Participant Questions

The questions that participants asked during the webinar, answered by Drs. Roy and Zuroweste.

What is the probability of transmission outdoors?

“It’s highly susceptible to light,” Dr. Roy said, as new research is beginning to indicate.^{2,3} When outside, “you’re in millions of cubic meters of air, so the dilution effect on these particles – I was working with highly concentrated particles – is massive,” when outside. “Remember, it takes probably more than one virus particle to induce infection. There’s a multiplicity of viral particles that you’re exposed to in order to become infected,” he added, although the dose of aerosolized particles needed for infection is still unclear.⁴ The dilution, aided with early research on sunlight, point to a reduced risk of transmission outdoors, as long as distance is maintained. “It depends on the situation, and considering all the environmental factors,” he added.

I am an Outreach Worker with a pre-existing lung disease.

What is the best practice to protect myself in the labor camps and confined workspaces in the health center?

In addition to keeping sufficient physical distance and wearing a mask, “if you have a pre-existing condition at a labor camp, if you’re interacting with farmworkers, I would have the wind at your back. This is something we learned from tuberculosis a long time ago. If I can be outside, interviewing people with the wind at my back, going toward them, I feel much safer,” Dr. Zuroweste answered, again, alluding to the importance of good ventilation to reduce virus transmission. He also recommended an N-95 respirator for maximum protection for an enclosed space.⁵

Are cloth face coverings helpful at all?

“If I happen to have COVID myself and I’m talking, [which] would expel [the virus], if I have anything covering my nose and mouth, I would assume that part of that, especially the big droplets, would be impeded by the mask,” Dr. Zuroweste said. A meta-analysis in *The Lancet* confirmed that masks were beneficial in impeding

droplets.⁵ “It would help the person who’s wearing it, not to spread [the virus] as much.” Dr. Roy added that cloth and surgical masks do not protect from viruses flowing around the edges as a mask-wearer breathes in. Only N-95 respirators that are fit-tested to the wearer can protect the mask-wearer from inhaling particles that may contain the virus, which is why N-95 respirators are better protection for any health care worker who may be working with COVID-19 positive patients.⁶

What do you recommend for farmworkers who need to be transported to and from work in buses or vans? Should they wear masks, and what about the staff who drive these workers?

“If anybody is sick – any symptoms at all of COVID – they shouldn’t get in the van,” Dr. Zuroweste said. Additionally, all windows should be kept open to maximize ventilation, and all riders, including the driver, should don a mask. Distance should be maintained by increasing the number of vehicles and frequency of trips. The CDC’s interim guidance provides more specific “special considerations” for shared transportation: <https://bit.ly/2Ve3faL>.

You talked about ventilation in the vans – that’s one type of engineering control. What kind of engineering controls can we use in a clinical setting, in a closed space?

“This virus, as well as rhinoviruses, noroviruses, and other viruses that cause illness that are transmitted in the air are highly susceptible...to UV,” Dr. Roy said, noting that the data around UV and COVID-19 is still preliminary.^{3,7} “When we stay out of enclosed areas, or ventilate in enclosed spaces, and get into the light, or... increase circulation, then it will further reduce the possibility of us coming in contact with the multiplicity of viruses that it proba-

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Bromage, PhD, a Professor of Biology, on the airborne component of COVID-19: "The Risks, Know Them, Avoid Them:" <https://bit.ly/2ZEB4EE>

This article is available on MCN's blog in English and Spanish: <https://bit.ly/3fFl6Ou>

Additional Resources by Topic:

You can access this complete list of resources with links by visiting: <https://bit.ly/2X6EFtH>

On Masks and Respirators:

Respiratory Protection During the COVID-19 Pandemic: Best Practices for the Agricultural Community, from Colorado State University's High Plains Intermountain Center for Agricultural Health and Safety: <https://bit.ly/3gp8bSX>

NIOSH's Guide to Air-Purifying Respirators: <https://bit.ly/2ZBEgRm>

CDC's infographic on surgical masks versus N95 respirators: <https://bit.ly/3d3uifE>

Johns Hopkins Bloomberg School of Public Health's "Can a Mask Protect Me?" video: <https://bit.ly/2TBr3ED>

OSHA's COVID-19 poster, Steps to Correctly Wear a Respirator at Work: <https://bit.ly/3em0gEi>

Minnesota Department of Health's Youtube video, "Donning and Doffing Facial Protection – Mask alone": <https://youtu.be/OABvzu9e-hw>

On Minimizing Risks:

CDC's Interim Guidance for Agricultural Workers and Employers: <https://bit.ly/2Na5FCH>

CDC's Interim Guidance for Businesses and Employers Responding to Coronavirus Disease 2019: <https://bit.ly/3gl3oSu>

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bly takes to infect us." Opening a window or getting into the sunlight are "practical solutions we all can do," he added. "This virus is not Superman – it is susceptible to all those things." In an enclosed space in which these controls are not possible, respiratory protection is necessary, and proper ventilation remains key.⁸

Additional Participant Questions:

The participants of the webinar had additional questions that Drs. Roy and Zuroweste were unable to answer in the limited time provided.

Here are some of the additional questions posed by participants, answered by MCN's environmental and occupational health team.

Should we rethink our PPE program? Should all employees wear respirators?

The determination of who should use respiratory protection is made after the employer conducts an appropriate risk analysis. In some cases, this may mean expanding or establishing a respiratory protection program. For those employees whose risk is high or very high and whose risk cannot be eliminated or significantly decreased by engineering controls, the use of personal protective equipment such as respirators is recommended. OSHA and the CDC have generated various guidelines to assist in risk classification and determination of controls to be used:

CDC's COVID-19 Businesses and Workplaces: <https://bit.ly/3en1mj3>

OSHA's COVID-19 Standards: <https://bit.ly/3d1EJAd>

What are the differences between surgical masks and respirators?

Surgical masks and respirators, like N95 or N99, differ mainly in the intention of protection and their efficiency. On one hand, face masks (including surgical masks and homemade masks) are intended to protect the people around who wears it, while respirators protect the individual who is wearing it. On the other hand, their filtration efficacy when tested using NIOSH methods, could be less than 70 percent for a facemask and as high as 99 percent for respirators.

More information regarding the differences between facemasks and respirators like the N95 masks can be found here:

3M's Respirators and Surgical Masks: A Comparison: <https://bit.ly/3gikC33>

FDA's N95 Respirators and Surgical Masks (Face Masks): <https://bit.ly/2X46z9H>

Are all respirators the same? There seems to be more KN95 respirators available than N95.

There are several types of respirators available; however, not all are certified by NIOSH or accepted by OSHA. Typically, in the US, a respirator must be NIOSH approved in order to be used as respiratory protection. However, due to the COVID-19 emergency, OSHA is allowing the use of some non-NIOSH approved respirators, like KN95 or PFF, that are certified using standards from non-US jurisdictions.

OSHA's Enforcement Memo: <https://bit.ly/3gkOBao>

NIOSH's Understanding the Use of Imported Non-NIOSH-Approved Respirators: <https://bit.ly/3bZAdkn>

CDC's Interim Guidance for Conserving and Extending Filtering Facepiece Respirator Supply in Non-Healthcare Sectors: <https://bit.ly/36thNHP>

What adjustments can we make to ventilation systems?

Modifications in ventilation systems are an engineering control to protect workers from COVID-19 that would probably lower the pressure on PPE inventory. However, this is currently a field in development. The following organizations are leading the research on ventilation system effectiveness. Please watch their updates on COVID-19 for new information, resources, and tools.

American Industrial Hygiene Association's COVID-19 Resources: <https://bit.ly/3c94Y6R>

American Conference of Governmental Industrial Hygienists: <https://www.acgih.org/coronavirus>

American Society of Heating, Refrigerating and Air-Conditioning Engineers: <https://bit.ly/2A4suo2>

Best Practices in Mobile Team Outreach

By Claire Hutkins Seda, Senior Writer, Migrant Clinicians Network, Managing Editor, *Streamline*

Just west of Portland, Oregon, thousands of acres of orchards, vineyards, and berry bushes stretch out across fertile plains. Every June, these fields are closely tended and harvested by migrant and seasonal agricultural workers who have arrived from around the country and throughout the Western Hemisphere. But 2020 is different: the COVID-19 pandemic has hit this region hard, with Washington County, at the heart of this agricultural region, experiencing the second-highest rate of infection in the state by late April. Even more concerning is the disparity in infection. While Latinos accounted for around half of those tested for COVID-19, they were roughly 20 times as likely as other patients to have the virus.¹ “[Latinos] represented 97 percent of our positive cases,” said Eva Galvez, MD, a family doctor at Virginia Garcia Memorial Health Center, which serves this agricultural worker community, and a member of MCN’s board of directors. “My concern is that, as we get more farmworkers coming in, the numbers could get higher, so I want to do more prevention.”

Virginia Garcia has quickly mobilized to address the spread by taking a proactive approach to protect the agricultural worker community from COVID-19: it’s mobilizing its clinics to provide testing at the farmworker camps as workers arrive. Every year, Virginia Garcia provides outreach to arriving agricultural workers by sending teams out to the farms that provide housing for their workers, but they have adjusted their strategy. “We’re going to start to test people, and my hope is that we can test them before they begin work,” Dr. Galvez explained. “We want to find people [who are COVID-19 positive] before they are living and working together, so we can decrease the risk of spread.”

Health centers have a critical role to prevent further spread among those who grow, harvest, and process food, who, despite the increase in attention from news media as “essential” workers, continue to lack worker protections afforded to other worker categories. The COVID-19 pandemic has exposed these worker health protection disparities, particularly among meatpacking plants where close worker proximity, poor ventilation, rapid line work, and cold environments have accelerated infection rates. “We’re seeing the impact when you don’t have [sufficient] regulations, and [workplaces] are unprepared,” Dr. Galvez noted. She was a critical actor in pushing Oregon’s Occupational Safety and Health Administration to adopt emergency regulations to protect agricultural workers dur-

ing the pandemic.² Even with the guidelines in place, workplaces will need health centers to assist in health and implementation education as well as testing, and Dr. Galvez is thrilled that her health center is filling that role.

“This is a public health issue,” she warned. “Wherever you have essential workers, we need to keep them as safe as we can by trying to prevent illness. So, let’s go out there and start testing, identify possible cases, and isolate them – otherwise we’ll continue to see these pockets” of outbreaks related to essential workplaces, she said.

Wisconsin

Across the country, as the COVID-19 pandemic picked up speed, health centers have pivoted their efforts to keep patients safe. The Wisconsin Farmworkers Coalition, led by Family Health La Clinica (FHLC), the only migrant health center in Wisconsin, has developed a comprehensive risk mitigation strategy to protect the state’s agricultural workers and to help clinicians determine

protocol for on-farm testing and education. The strategy also provides farms with best practices to ensure implementation of a statewide emergency order that outlines specific measures that must be met on farms. A Risk Mitigation Strategy document outlines Family Health La Clinica’s overall approach, including education, communication, and logistics measures, testing results management, post-outbreak support, and other considerations. The Migrant and Seasonal Farmworker Playbook and the Pre Arrival Site Visit and Workplace Modifications feature scripts for first engagement with farm owners, arrival at the farm, COVID-19 education on symptoms, testing, safety measures, and test responses. It also includes workflows for farm arrival and testing. A fourth document to round out their approach is Supporting Migrant Seasonal Agricultural Workers: Housing and Workplace Best Practices. This document

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Best Practices in COVID-19 Mobile Team Outreach: Questions to Consider

Pre-Arrival: Contact the grower to determine:

- **Schedule:** When do farmworkers arrive? Can the health center team provide testing immediately on arrival?
- **Precautions:** What precautions and standards of practice are in place to protect farmworkers:
 - On the job?
 - In farmworker housing?
 - During transportation to work?
 - If a worker exhibits symptoms of COVID-19?
 - If a worker’s test returns positive?
 - When in isolation?
- **Resources:** Does the grower need more education or resources (signage, PPE, hand-washing stations) to implement precautions before farmworker arrival? To communicate these precautions once farmworkers have arrived?
- **Logistics:** Is there a suitable outdoor area where the health center team can facilitate testing?

Arrival and Testing: The mobile team must determine:

- **Safe travel:** How will the mobile team maintain distance while in transit to/from the farm?
- **Testing protocol:** Develop and practice an in-field testing process including:
 - Donning and doffing PPE;
 - Administering swab tests;
 - Preparing the tests for transport to the testing facility; and,
 - Returning to the farm to provide results.

Farmworker Education

- **Training:** What farmworker education can the mobile team provide?
- **Materials:** What handouts, signage, other resources can be provided?
- **What do farmworkers need to know if they feel ill?** What are the steps to getting care and what are their rights as essential workers?

gives growers and farm owners specific and detailed recommendations for how to implement each safety and health measure delineated in the state's emergency regulations.

The Wisconsin Farmworkers Coalition is a multi-sector statewide group that typically meets quarterly. During an April emergency meeting, FHLC's Chief Executive Officer, Laura Waldvogel, MSE, proposed closer collaboration to develop a more cohesive and collaborative approach, to ensure uniform messaging and strategy. Within two days, a new steering committee had been formed and began meeting.

"It has really blossomed into something far beyond what I had anticipated," Waldvogel noted. "It includes partners we typically wouldn't see working together," like migrant and seasonal agricultural worker employers, migrant and seasonal agricultural worker advocacy groups, Legal Action of Wisconsin, the Wisconsin Department of Workforce Development, a regional Occupational Safety and Health Administration (OSHA) representative, a medical college, and public health department officials from a number of counties, among others. "Both the employers and workers have been incredible," she added.

The coalition identified gaps in the processes designed to mitigate the spread of COVID-19, and filled them. FHLC's Chief Medical Officer, Cheston Price, MD, was instrumental in developing the risk mitigation strategy, to get to an endpoint where the health center can engage with growers and agricultural workers in a way that benefits and is supported by all parties. A Wisconsin-based health improvement philanthropy provided a large grant to support their COVID-19 educational efforts, further bolstering the process.

"We started with a survey to find out what resources [growers] might need," Waldvogel explained. "We go on-site to do a pre-arrival assessment of the workplace and housing – it's all voluntary – and we do a review and make recommendations. The employers have been incredible."

As close as possible to the arrival of agricultural workers, a team from FHLC begins to do on-site testing. At first, the state of Wisconsin was not advocating for on-site testing on arrival. The coalition was hoping the state would support their position, as "it's what we really need to do, for this vulnerable population, and employers simply couldn't quarantine everyone for two weeks," Waldvogel noted. Their approach, which they pushed forward, is a necessity, as is education.

"Education is probably even more important than the testing. If you don't provide the education, many [agricultural workers]



Photo Credit: Ruth Fremson/The New York Times

Dr. Eva Galvez, a family physician, tested patients for the coronavirus at a clinic in Hillsboro, OR

have a difficult time understanding the ways they can keep themselves safe, not just in the housing," Waldvogel said. She also noted that education around testing was also important, to ensure that workers understand the test is only for that moment in time, and not an indicator of or guard against future infection. "Then there's the results management, follow-up care if primary care is necessary, and outbreak support," all of which the coalition has mapped out, and FHLC has supported.

"As we started [providing all these COVID-19 services], we got a lot of attention from the state of Wisconsin, and they asked if we could scale it up," Waldvogel recalled. "Now we're partnering with them." The state has committed funding and the support of the National Guard to support FHLC's testing and on-site work.

Nationwide

Among communities that lack statewide regulations, health centers may recommend their own best practices and implement strategies to support agricultural workers, when federal and state guidance are lacking. Dr. Galvez in Oregon was instrumental in securing her state's regulations after partnering with a legal rights organization. She encourages her fellow clinicians at health centers to take part in such a medical-legal partnership because such regulations, as opposed to statewide guidelines or no guidance at all, can have a profound impact on agricultural worker health. Read more about Dr. Galvez's medical-legal partnership to secure emergency regulations in Oregon on Migrant Clinicians Network's blog: <https://bit.ly/3dSACai>.

"Community health centers can play such an important role in helping our essential workers stay safe on the job," added

Amy K. Liebman, MPA, MA, Director of Environmental and Occupational Health. "In many places they are trusted sources and can help educate workers in a language they understand, using a culturally competent approach."

FHLC hopes its materials will benefit other health centers; they've made their resources and education widely available on a site dedicated to the coalition's COVID-19 work: <https://www.famhealth.com/wi-msaw-covid-19.html>. "We make no claims that [the information on the website] is perfect. It's constantly in evolution, and as soon as we have it out, it's obsolete because things change," Waldvogel admitted. "But we put it out there because we want it to benefit everyone."

Access FHLC's guiding documents on their website:

Pre Arrival Site Visit and Workplace Modifications: <https://bit.ly/2TDI4xj>

Supporting Migrant Seasonal Agricultural Workers: Housing and Workplace Best Practices (COVID-19): <https://bit.ly/2M1tko4>

COVID-19 and Wisconsin's Migrant and Seasonal Agricultural Workers: Family Health La Clinica's Risk Management Strategy: <https://bit.ly/2X0Nzbv>

Migrant and Seasonal Farmworker Playbook: <https://bit.ly/36ulYlq>

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Pesticide Exposure During the Pandemic

What Clinicians Need to Know

By Claire Hutkins Seda, Senior Writer,
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COVID-19 has reformulated health systems and clinical practice, but, while primary care clinicians work to limit the spread of the coronavirus among agricultural worker communities, they must also contend with ongoing unaddressed or under-addressed health concerns that may prompt a primary care or urgent care visit. As the summer season barrels forward, incidents of pesticide exposure and illness will surface. The Worker Protection Standard (WPS) is the primary regulation to protect agricultural workers from the health risks associated with pesticide exposure. The Environmental Protection Agency's 2015 updates to the WPS are in full effect, but many clinicians serving agricultural workers may still be unaware of the basic protections afforded by the WPS, and the important role clinicians play in recognizing, managing and preventing pesticide overexposure. Migrant Clinicians Network and Farmworker Justice's newly updated "Clinician's Guide to EPA's Worker Protection Standard" reviews the processes to which a worker is entitled, after exposure, even amid the COVID-19 pandemic.

"Clinicians play such a critical role in helping farmworkers who have been exposed to pesticides," noted Amy K. Liebman, MPA, MA, Director of Environmental and Occupational Health at Migrant Clinicians Network. "Being informed about the regulations aimed to protect workers and their families is an important part of caring for this population."

Personal Protection Equipment for Pesticide Applicators

Particularly relevant during the ongoing COVID-19 pandemic is the right to personal protective equipment (PPE) for both pesticide handlers during application, and for workers who work in treated areas before the restricted entry interval has ended. PPE shortages have risked the health of frontline clinicians across the country in recent months. However, shortages among health care providers cannot justify an application of pesticides without proper protection. Pesticides must be applied according to the label and that often involves employer-provided and -maintained personal protective equipment, such as gloves, respirators, and coveralls. In the case of a respirator or other PPE shortage, pesticide applications must be postponed until the employer is able to secure sufficient PPE. There is also the potential to substitute the pesticide and use one that does not require a respirator

Primary Care and Pesticides

The Clinician's Guide serves to inform clinicians on both the protections agricultural workers should have to avoid exposure, and the process to follow in the case of exposure. In addition to emergency medical assistance, the guide outlines retaliation restrictions, enforcement responsibilities, and state-by-state medical monitoring and incident reporting. The WPS is a wide-ranging stan-

dard, and the guide includes summaries of such provisions as: required annual training on pesticides provided by the employer; required provision of pesticide product information and safety data sheets to clinicians attending to a worker exposed to pesticides; and stipulations on how employers must inform workers about where and when pesticides were sprayed.

Proposed Changes Not Finalized

In 2019, the EPA proposed changes to the provision within the WPS to reduce the size of the Application Exclusion Zone, or AEZ. The AEZ is currently a 100-foot buffer zone around the pesticide-treated area, where "only properly trained and equipped pesticide handlers involved in the application may enter," notes the guide. This proposed provision change has not been finalized, and consequently is not reflected in the current edition of guide, but its implications are outsized. Limiting the AEZ may result in increased pesticide exposure among agricultural workers who work in or traverse the buffer area.

Access the newly updated Clinician's Guide to EPA's Worker Protection Standard on MCN's website: <https://www.migrantclinician.org/toolsource/resource/2020-clinicians-guide-epas-worker-protection-standard.html>

Visit MCN's pesticide reporting map: <https://www.migrantclinician.org/issues/occupational-health/pesticides/reporting-illnesses>

Subscribe to MCN's blog to receive updated information and perspectives on worker safety and pesticides: <http://migrantclinician.org/blog>



This photo does not depict the actual patient to preserve confidentiality

Gathering Mobile Patients' History, Social Determinants of Health with Health Network

Ajay,* a 60-year-old man living in a West Coast state, has active tuberculosis, but earlier this year he needed to return to his hometown in Andhra Pradesh, India. His doctors enrolled him in Health Network, Migrant Clinicians Network's virtual bridge case management system, to keep him connected to TB care as he traveled and when he arrived in India.

Health Network Associate Robert Corona received Ajay's enrollment forms. Several days a week, Rob works outside of US business hours in order to accommodate patients in time zones in the Middle East and Asia. Now that Ajay was enrolled in Health Network, Rob was tasked to contact him, determine his travel plans, connect him with care in his next location, transfer medical records as needed, communicate with the National TB Program in India, and update the enrolling clinic in the US on Ajay's tuberculosis treatment progress. Ajay's enrollment forms indicated that English was not his primary language, so Rob used an interpretation service when first calling him. But the enrollment notes were incomplete; it didn't specify which language Ajay preferred. Consequently, when Rob and the interpreter contacted Ajay, they used Hindi. The first three times that the interpreter and Rob con-

tacted him, they could not connect, with either Ajay hanging up before they could communicate, or not answering the call. During the fourth call, the interpreter realized that Ajay did not speak Hindi, but Telugu, and Rob finally managed to give him the introduction to Health Network and its services, with the help of the interpreter speaking Telugu, and despite a fairly poor connection. Ajay verified to Rob that he had arrived in India, he was feeling well, and he was continuing his TB treatment at a local government hospital. Over the next two months, Rob continued to track Ajay's progress, ensuring that he was able to continue treatment. Most

recently, he spoke with Ajay's son in the US, who told him that Ajay was still in India and continuing treatment. Ajay's son is Ajay's "anchor contact," a geographically stable relative or close friend who stays in regular contact with the patient while the patient is moving. Health Network maintains communication with anchor contacts to confirm the progress of the patient and as backup if the Associate is unable to establish communication with the patient. Ajay is slated to complete his treatment while still in India, after which Rob will secure completion records to

continued on page 9

What is PRAPARE?

PRAPARE, the Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences, is an assessment tool that helps health centers gather data on the social determinants of health of patients while assisting health centers to meet national core measures. The PRAPARE tool has been translated into 26 languages and is used at health centers around the country. It is available in paper format and also as a template for the four most common electronic health record programs.

Read more about PRAPARE and access the tool and associated resources and information on the National Association of Community Health Centers site: <http://www.nachc.org/research-and-data/prapare/about-the-prapare-assessment-tool/>

forward back to Ajay's US-based clinician, and will close the case.

Patient's preferred language is one data point collected by Health Network, and is an important field in Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE) assessment tool, which is used by health centers around the country. (See sidebar for more on PRAPARE.) After receiving the Health Network enrollment and consent forms, which are filled out by the US-based clinician and signed by the patient, the Health Network Associate inputs the form information, which includes PRAPARE data, into the Health Network database. The PRAPARE data provide additional background information like primary language, ethnicity/race, occupation, and type of residency at time of enrollment. This helps Health Network Associates better serve their patients by illuminating potential barriers to care or highlighting additional occupational health concerns that might otherwise go unnoticed.

"We have always collected this information for individual patient case management, but it's been only recently that we've started using it to think globally of our patient population," said Deliana Garcia, MCN's Director of International Projects and Emerging Issues, who supports the Health Network team. As health centers around the country incorpo-



Migrant Clinicians Network's Founding Medical Director, Ed Zuroweste, MD, with a patient at a recent TB clinic.

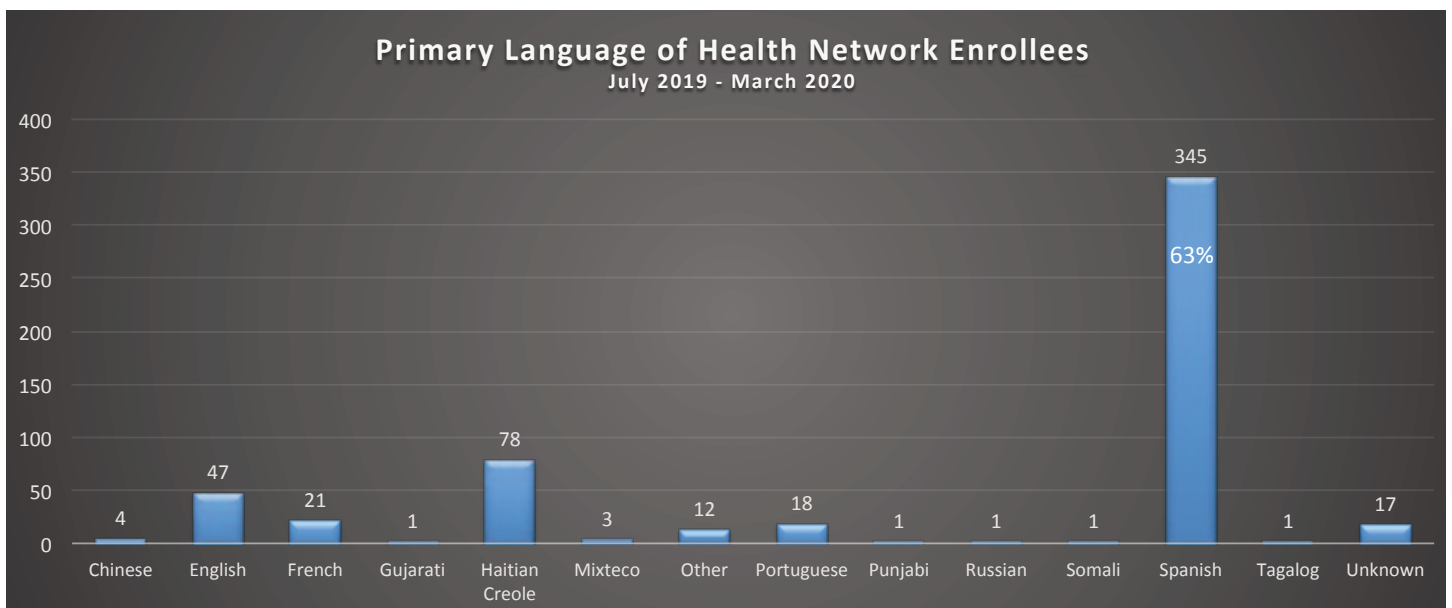
rate PRAPARE data points into their electronic health records, Health Network began to document PRAPARE data in the Health Network database in a format that allows for easier data extraction and analysis. This analysis then allows the Health Network team to make better decisions about staffing, lan-

guage lines, communication platforms, and hours of operation. "We had been [making these decisions] ad hoc, but now we could really look at the data," to inform the Health Network team, Garcia said.

*Name, locations, and some details have been edited or generalized to protect the identity of the patient.

PRAPARE Data and Health Network

A snapshot of Health Network patients for the eight months between July 2019 and March 2020 shows the changes in enrollment since the opening of the Humanitarian Care Network, in which Migrant Clinicians Network enrolls patients through a Health Network Associate works out of the Catholic Charities Respite Center in McAllen, Texas. Recently, in addition to agricultural worker patients who are primarily Spanish-speaking, Health Network has been enrolling asylum-seeking pregnant women from Haiti and other Caribbean nations or the Democratic Republic of Congo and other African nations. Here are the primary languages of all 550 enrollees during the designated period. While Spanish continues to be the dominant language among enrolled patients, the diversity of languages points to a more complex picture of migration in the US.



COVID-19:

Clinicians Ramp Up Testing, Outreach, Contact Tracing, Partnerships to Support Farmworker Health

By Claire Hutkins Seda, Senior Writer, Migrant Clinicians Network, Managing Editor, *Streamline*

In Immokalee, Florida, the nation's tomato capital, the coronavirus has taken hold, with almost 1,000 cases recorded since April. Overcrowding in farmworker housing, during transportation to worksites, and while laboring in fields has made farmworkers particularly vulnerable to the virus. Now, thousands of migrant farmworkers are leaving the region and heading northward as the summer season progresses, traveling to farms across the South and the East Coast.

Seth Holmes, MD, PhD, a medical anthropologist and physician, headed to Immokalee early into the pandemic to provide support for health advocates, community organizations, and public health officials. In early June, during a Migrant Clinicians Network webinar, Dr. Holmes provided a snapshot of farmworker support and COVID-19 response in southwest Florida. Joining him in conversation was Gerardo Reyes Chavez, senior staff member with the Coalition for Immokalee Workers, a world-renown worker-based human rights organization that has successfully pushed for improved conditions for farmworkers in the region. Dr. Holmes highlighted the widely collaborative and proactive nature of the response; Reyes delineated the limitations of its effectiveness when confronted with the exploitative and racist structures embedded within industrial agriculture that leave farmworkers particularly vulnerable to the virus and with limited avenues of redress.

"You hear the job that we do is essential," Reyes said, speaking about farmworkers, "but you realize as a worker you are not treated as essential. You are treated as dispensable." Health recommendations "don't make sense when you are poor," he added: maintaining six feet of separation is impossible in crowded housing and transportation, and where workers don't have the means to obtain less crowded alternatives; shelter-in-place orders didn't apply to "essential" workers, but farmworkers often lack the political and social capital to advocate for their health needs on the job; testing and hospitalization are difficult in deeply rural locations where health services are far and transportation is limited. Dr. Holmes outlined the efforts and engagement of organizations including international NGOs Doctors Without Borders and Partners in Health to reduce the spread despite these

widespread and entrenched limitations, including by providing culturally and linguistically appropriate community health education, regular and accessible testing, contact tracing, resources for isolation, and case management for migrant patients through MCN's Health Network.

Further north, clinicians and their community partners had more time before farmworkers arrived to organize. Now, they are implementing their outlined strategies and workflows. With limited or no farmworker-specific regulation on the state and federal levels around COVID-19, each farm owner has his or her own approach to coronavirus worker health and safety, and the farmworkers themselves, arriving from around the country and the world, have differing levels of understanding of the virus and how to protect themselves. Farm owner and farmworker engagement is therefore critical to developing an effective region-wide strategy. Joining Dr. Holmes and Reyes on the webinar were Lori Talbot, MD, a physician serving farmworkers through her private practice South Cumberland Medical Associates in rural New Jersey, and Melanie Finkenbinder, MD, a family physician and medical director of the agricultural worker program at Keystone Health, a community health center in Pennsylvania. Dr. Talbot's first COVID-19 case was a year-round farmworker who was intubated while in the ICU. Recognizing that the virus had already arrived, she called the owners of local farms and offered to test farmworkers during her lunch break. She also discussed the implications of testing with the farm owners, requesting them to ready their farmworker housing for isolation and quarantine. She tested about 200 workers over five days with a 17 percent positive rate. One of the camps, she said, had 63 of 90 workers test positive – a 70 percent positive rate. Dr. Talbot has been working with a loose coalition of agencies in preparation for the biggest increase in workers that the region expected in early to mid-June for the blueberry harvest, when roughly 10,000 farmworkers arrived, and for which Dr. Talbot's lunchtime approach was inadequate. Dr. Talbot also noted that up to 40 percent of farmers are refusing to let workers be tested, speculating that they don't want to draw attention to their farms, their pro-

vided housing, and their workers, all of which may not be up to regulation, and complicating efforts to limit the spread of COVID-19.

Dr. Finkenbinder's health center has implemented a "no-touch" outreach model with a focus on COVID-19 education ahead of the height of their agricultural season. While her region has not yet seen many COVID-19 cases, "we're getting a little nervous from what we're hearing from Florida and South," she admitted. Keystone hopes to reach out to some health centers in Florida to better open communication channels in recognition that most of their workers will arrive from there. She says farm owners in her region have been eager to prevent an outbreak. The collaboration has been "an exciting opportunity to build our relationships" with farm owners. Her team has reached out to local farm owners, both large-scale corporate farms and small family farms, to offer to help build a prevention strategy, including providing an on-site visit to help build it. Keystone Health has modified numerous programs to better serve farmworkers when they arrive, including "open access telemedicine," a pilot program for larger camps with good wireless access for workers.

The new systems, workflows, and partnerships in place, noted panelists, are still in progress as the science develops and the realities on the ground shift. "It's a huge moving target," admitted Ed Zuroweste, MD, Founding Medical Director of Migrant Clinicians Network and a co-host of the webinar, when speaking about testing.

"The coronavirus, it's [unclear] how long it will last... Part of what we're doing is building these systems fast, because they're needed now, but also [we're] strengthening them for the long term of this virus – but also beyond this virus," noted Dr. Holmes. While the pandemic won't last forever, future emergencies – new viruses, natural disasters, climate change – will always be on the horizon. "The people who are essential frontline workers who feed us and have to keep working, and [who] live and work in difficult circumstances that make them more likely to be at risk for different illnesses, need stronger systems," and to strengthen those systems, that requires partnerships, Dr. Holmes added. As

This article was paid for by Migrant Clinicians Network.

is evidenced in community health centers around the country, partnerships are growing rapidly. How they will reshape community health and response to emergencies in the long term has yet to be seen.

Watch the entire webinar, "COVID-19 and the Realities for Farmworkers and the Clinicians Who Care for Them: A Learning Session," at <https://bit.ly/2Nq8EqT>.

Visit our Archived Webinars page (<https://www.migrantclinician.org/archived-webinars.html>) and our Upcoming Webinars page (<https://www.migrantclinician.org/trainings.html>) to see all of our COVID-19 related webinars, including many in Spanish. Be sure to sign up for updates to hear about upcoming webinars: <https://bit.ly/2YvjeTO>.

Learn how to enroll migrant farmworker patients in Health Network: <https://www.migrantclinician.org/services/network.html>

Learn more about the organizations mentioned in this article:

Coalition of Immokalee Workers: <https://ciw-online.org/>

Doctors Without Borders: <https://www.doctorswithoutborders.org/>

Partners in Health: <http://www.pih.org/>

South Cumberland Medical Associates: <http://southcumberlandmed.com/>

Keystone Health: <https://keystonehealth.org/>

Read *Fresh Fruit, Broken Bodies: Migrant Farmworkers in the United States* by Dr. Seth Holmes: <https://www.sethholmes.com/fresh-fruit-broken-bodies>

An Inside Look at: Keystone Health in Pennsylvania

Melanie Finkenbinder, MD, is a family physician and medical director of the agricultural worker program at Keystone Health in Pennsylvania. Keystone's Agricultural Worker Program developed five primary responses to COVID-19, which they are now implementing at their sites throughout the state:

1. No-Touch Outreach Model: "We realized that if we wanted to do physical outreach... we'd need to maintain distance," Dr. Finkenbinder noted. Their no-touch model:

- Consists of a team that looks different throughout the state, but may include a nurse, a medical assistant, and outreach coordinator, and, if needed, an interpreter.
- Asks the supervisors to do a check of farmworkers' temperatures before the outreach team arrives, to reduce close contact between farmworkers and the outreach workers. "This doesn't always happen, but we use it as an opportunity to talk to the growers and supervisors about the practice of doing daily health checks," she said.
- Is entirely outdoors, with social distance cues.
- Focuses on group education around COVID-19, including posters in line with CDC recommendations and modeling of proper distance, use of masks, and handwashing.
- Provides modified health screenings: The team shifted their focus from close-contact screenings of hypertension, diabetes, and HIV, to no-touch screenings of depression, substance use, and human trafficking. "These screenings can be done from a distance, and they address problems we expect to see more of at this time," Dr. Finkenbinder noted. Next steps for positive screenings are conducive to telemedicine.
- Provides PPE for nurses if a physical exam is necessary, to not ignore the needs of those patients who require close contact.

2. Supporting Farm Owners and Advocating for Workers: As with other communities, Keystone has found that the pandemic has pushed them to reach out to and develop stronger ties with farm owners, who are eager to avoid outbreaks on their farms. Keystone built guidelines for farm owners, which leaned on both CDC and statewide guidelines, and shared that with them on initial calls and emails. They have offered assistance to develop a prevention strategy including an on-farm consultation.

3. Building Partnerships: Keystone has also built stronger partnerships with local organizations, state government, and agricultural worker programs as a result of the pandemic. Information sharing through webinars and panels, advocating through new avenues, and sharing guidelines, plans, and best practices, and partnering to solicit and distribute

donated masks to farmworkers are just a few ways that the partnerships have expanded Keystone's ability to assist local farmworkers.

4. Primary Care Service Delivery Changes: Previously, to address the primary care needs of farmworkers, Keystone transported "large groups of workers to a crowded clinic, which is obviously not an option at this time," Dr. Finkenbinder said. Keystone initiated numerous adjustments to primary care for farmworkers including:

- Provided transportation is limited to a few farmworkers at a time.
- Screening occurs before boarding the bus, masks are required, windows are open, and disinfection takes place after every use.
- An outdoor waiting room augments the limited indoor waiting area, which has been redesigned to allow for distancing.
- Education is provided throughout, including with distancing cues and COVID-19 educational videos.

5. Telemedicine: "The changes that we're making in the clinic and that we have to make with transportation are going to decrease the capacity to see patients in our clinics, so we are simultaneously increasing capacity to care for workers via telemedicine," Dr. Finkenbinder noted.

- A provider is on call when the outreach team is in the field.
- A registry of patients with diabetes and hypertension has been developed:
 - Returning workers will be registered by phone.
 - Registered workers will be provided a telemedicine appointment, before the outreach team comes to their farm.
 - Then, during the outreach trip, a nurse can deliver medication, check their A1c and/or blood pressure, and draw labs that have been ordered. They can also distribute blood pressure cuffs to those patients.
 - An additional telemedicine follow-up can be arranged if needed.
- For camps with additional barriers – like a large population of people requiring interpretation, or poor cell or wifi reception, or a high incidence of chronic disease – the outreach team will include a provider.

6. Open-Access Telemedicine: A newly piloted program offers farmworkers who live in camps with good wifi reception "telemedicine office hours," during which a provider is on call for anyone to call in for any concern, no appointment needed. A QR code on the flyer guides the patient directly to the virtual waiting room of the provider.



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Visit our webinars page to see the complete list:

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