

streamline



Crisis in the Countryside:

Addressing the Opioid Epidemic in Rural Washington and Idaho

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

The opioid crisis touches all sectors of America's patient population — especially underserved patients like agricultural workers in rural areas. In Washington and Idaho, six rural health clinics representing over 20 sites are working through the difficult questions to make sure their policies, workflow, and clinical visits are all aligned and implemented to address the crisis that has swept the nation.

"A lot of the people who live in [these] rural areas have agricultural and other types of jobs that are very physically demanding. People depends on their ability to do manual work for their livelihood, and as a result a lot of their population really do have chronic pain issues," says Michael Parchman, MD, MPH, a lead physician in the Team-Based Opioid Management Project and a member

of MCN's External Advisory Board. He points out that patients with chronic pain are the population that is at high risk for chronic high opioid use. The goal of the project is to improve safe prescribing of chronic opioid medication for patients with non-cancer pain at these rural clinics, which are affiliated with critical access hospitals. But the task is not easy, both because the tools are lacking, and because the problem is so big.

"Ideally, patients with chronic pain on opioid medication should be seen every 90 days, to see where they are, how their pain is controlled, and how safe their medication use is," explained Dr. Parchman. "One of our clinics said, 'We did that calculation for our population. If we did that, about every fourth visit on our schedule would be one of these patients, and we just don't have that

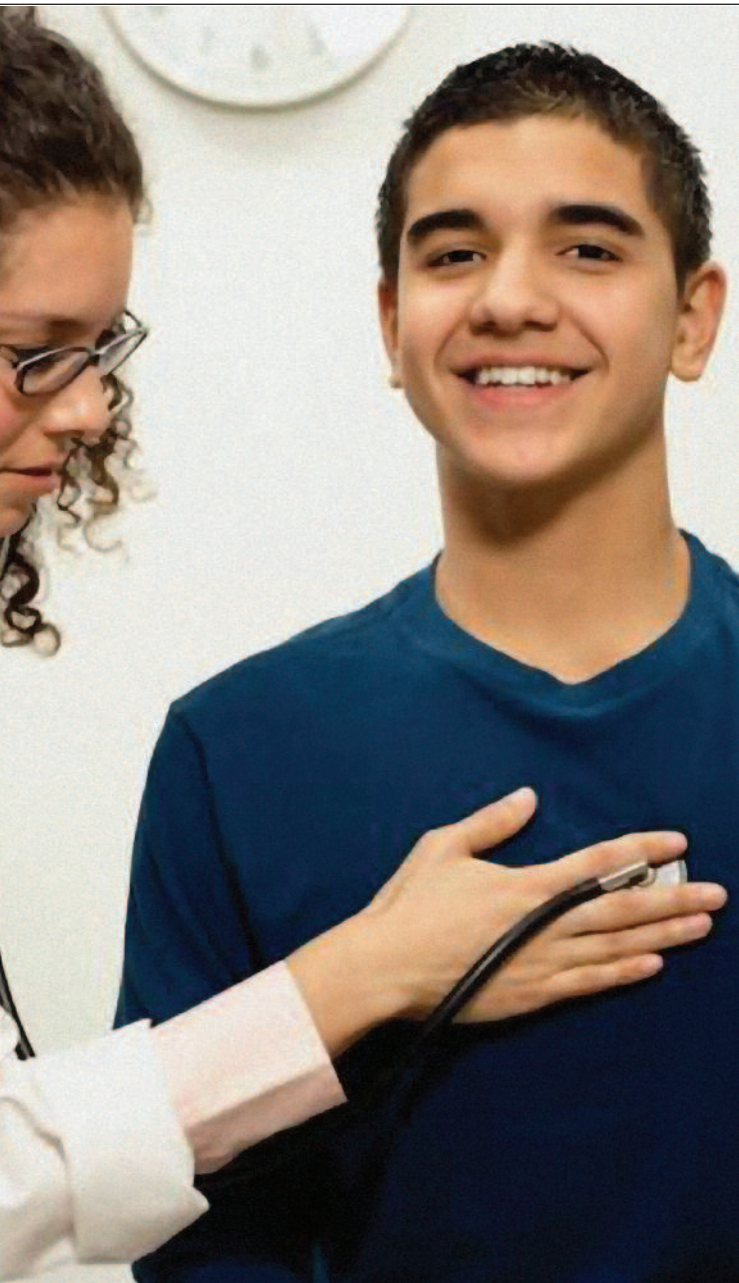
capacity.'" Many health clinics around the country can relate. Once high opioid use patients are identified, next comes the arduous and seemingly unprecedented work of figuring out how to best adjust policy, procedure, and workflow to serve those patients and address the crisis head-on.

The project approaches the problem in part through guided self-assessments and 2shared learning opportunities, during which the clinics can dive into the project's six building blocks for safe, team-based opioid prescribing in primary care.

Six Building Blocks

Dr. Parchman, in a recent post on the active blog, *Implementing Innovations*, described

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[Editor's Note: In this piece, John Schlitt, President of the School-Based Health Alliance (SBHA), interviews Dr. Tamara Baer about a recent article on adolescent health. Read the full article at SBHA's website, www.sbh4all.org. Submit abstracts for SBHA's 2017 National School-Based Health Care Convention at <https://goo.gl/wyfhfs>.]

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The Social Determinants of Adolescent Health: Q&A with Dr. Tamara Baer

Sometimes the contents of the doctor's medicine bag are just plain insufficient. Innovators in medicine and public health are re-imagining traditional adolescent care management tools to help providers and systems tackle the significant—and often devastating—effects of social, economic, and environmental conditions on the health and wellbeing of young people. Some call it upstream medicine: treating the root cause rather than the symptom.

Three national physician leaders, Tamara Baer, Laura Gottlieb, and Megan Sandel, in an article published in *Current Opinion in Pediatrics*, made a strong case for an upstream framework to address the influences of poverty and social disadvantage on adolescent health outcomes.¹ The physicians prescribe a model for practice transformation that identifies and remediates non-medical threats to adolescent health. To better equip the adolescent medical home, the authors outline three fundamental strategies:

1. Improve triage for social determinants of health need.
 2. Develop a comprehensive community resource referral system.
 3. Expand the team to include a community resource connector.
- School-Based Health Alliance President, John Schlitt, spoke with lead author, Dr. Tamara Baer, about the role of social determinants in adolescent health and how providers can make practice adaptations to respond more effectively to them.

John: You make a compelling case for aligning a public health construct with traditional medical practice. And it seems particularly tailor-made for adolescents.

Dr. Baer: Adolescents are especially vulnerable to risks commonly associated with their developmental stage. Add to those risks the context of their social environment, which has a weighty effect on their behaviors – injuries and violence, substance use, sexual activity. If there is nothing to counterbalance the influence of social determinants of health (SDOH) like poverty and unrelenting stress, or inadequate access to basic needs like food and shelter, these behaviors can have a cumulative effect with serious life-long health consequences. Research has shown that adolescents with greater social needs are at higher risk for poor health outcomes.

John: Your recommendation to include social determinants in screening tools seems rather practical.

Dr. Baer: You can't intervene if you don't ask the questions. We urge providers to take a critical look at screening tools for adolescent patients: are they inclusive of items like personal safety, food security, income instability, home life, school performance? What about frequency of screening: are you asking about basic social needs at every visit? Unfortunately, for too many teens, any of these factors can change from month to month.

John: Have you encountered any specific standardized tools that align with your framework?

Dr. Baer: There are several that we found in our research. A great example comes from the National Center for Medical-Legal Partnership, which developed a social screening assessment that includes income, housing, education, legal status, literacy and personal safety – the mnemonic IHELLP. In addition, The University of Michigan has developed a screening tool called Rapid Assessment for Adolescent Preventive Services – Public Health (RAAPS-PH) intended for youth impacted by conditions of poverty and addresses areas such as hunger and housing.

John: Is there any one factor that seems to be correlated with co-occurring risk?

Dr. Baer: Food insecurity alone can be a valuable way to identify

1 Baer TE, Gottlieb L, Sandel M. Addressing social determinants of health in the adolescent medical home. *Curr Opin Pediatr*. 2013;25(4):447-53.

hunger as well as risk for other social problems. The American Academy of Pediatrics (AAP) now recommends that health care providers routinely screen children and adolescents for food insecurity using two validated questions that were adapted from the U.S. Department of Agriculture (USDA) Household Food Security Scale, and validated by Erin Hager and colleagues: 1) "Within the past 12 months, we worried whether our food would run out before we got money to buy more," and 2) "Within the past 12 months, the food we bought just didn't last and we didn't have money to get more."

Research that I recently published demonstrated that youth who answered yes to one or both of those questions have significantly greater likelihood of also experiencing other social problems, including health care access, housing, education, income insecurity and substance use.

John: How do you push back against the argument that providers are too constrained for time to address adolescent SDOH issues?

Dr. Baer: In addition to researching the benefits of short screening tools like the 2-item food insecurity screen, we've discovered some online tools that health care practices and clinics could adopt to facilitate self-screening by the patient. It doesn't take time out of the clinical interaction. My colleagues at Boston's Children created a web-based platform called HelpSteps that includes a self-administered needs assessment, which, upon completion, triggers targeted referrals to community-based resources. It's been tested to be highly effective with adolescents in clinical settings in Massachusetts.

There is another distinct advantage to web-based electronic screening instruments

besides being cost and resource efficient – they may be more effective at eliciting highly sensitive information for adolescents.

John: Where do clinics and offices start in developing a comprehensive community resource referral system?

Dr. Baer: It's overwhelming and reasonable for a provider to think, "How am I to respond to my patients' complex social issues?" if they believe they're in it alone. But they have many potential partners who share in their goal of patients' health and safety. Community resource guides are quite common and available through local public and private child and family service agencies. A great model being used in a number of cities is CAP4Kids, a website that links healthcare providers, social workers, child advocates and parents and teens with up-to-date information on community resources.

John: I imagine most health practices aren't configured for this. How do you convince providers to take on additional staff?

Dr. Baer: Every health care home needs a resource connector of sorts – but it doesn't necessarily require advanced degrees or highly-priced expertise. Some of the most creative innovations, in fact, are being led by models using volunteers and paraprofessionals. One of the best known examples is Health Leads, which employs college student volunteers who are trained to assist families in filling social prescriptions that meet basic needs. Community and street outreach workers are integrated into health care teams to engage in patient advocacy around housing, job training, education and health care.

John: Are these practice reforms sustainable?

Dr. Baer: Yes, absolutely. Just this month Centers for Medicaid and Medicare Services (CMS) announced a first-ever innovation model to address SDOH. Health care payment reforms are definitely moving in this direction. Accountable care organization and patient-centered medical home models are looking to reward providers to pay more attention to social determinants, to get to the root cause of disease. When outcomes rather than units of service become valued by health payers, we're going to see much more innovation in care coordination.

John: Is there anything else you consider imperative for providers to consider when addressing the wellbeing of young people?

Dr. Baer: All youth should be screened for social determinants, because these are often 'hidden' problems that health care providers may not detect and youth will not bring up without asking. However, certain groups of youth may be particularly vulnerable, such as sexual and gender minority youth, homeless or runaway youth, youth who are incarcerated or in the juvenile justice system, youth in foster care, and immigrant youth. It is important for health care providers to normalize these questions in their practice, and let youth know that social determinants matter because they affect overall health. Providers should use terminology that youth can understand, ask questions in a respectful way that does not convey blame, and let youth know that while they may not want to discuss these issues at the current visit, the door is always open. Finally, providers should identify other team members whom youth may feel more comfortable turning to, such as social workers, psychologists, or resource specialists. ■

Risk Management: MCN's Toolkit Has You Covered

Serving migratory and seasonal agricultural workers brings a set of risks that other patient groups might not present. Migrant Clinicians Network's Risk Management Toolkit gives health centers guidance on some of the most critical areas of risk in serving this underserved population. View the resources at <http://www.migrantclinician.org/toolsource/475/risk-management/index.html>. Here is each of the resources, with a short introduction to each one.

- **Behavioral Health Care for Mobile Populations:** In recognition of the importance of behavioral health as a component of quality health care delivery, most health centers provide these services to their patient population. These are services that are difficult for many migrant health centers to provide onsite so they may be contracted to outside providers. Behavioral health services may include,

but are not limited to, counseling for mental health issues (e.g., depression, anxiety) and substance abuse (e.g., alcohol, recreational drugs).

- **Care for Undocumented Patients:** Unlike providers of many other federally-funded services and benefits, health centers are permitted to serve undocumented patients, and are not required to ask about a patient's immigration status. Health centers need to ensure that their policies protect patient privacy while complying with applicable laws on collection and disclosure of patient information.
- **Incident Report:** The purpose and instructions for such incident reporting accompanies an example incident report form.
- **Off-Site Care:** In order to meet the needs of special populations such as migratory agricultural workers, health centers often

use non-traditional delivery methods to provide health care. This resource dives into the risk management of care at a site other than a brick-and-mortar clinic.

- **Referrals to Specialty Care:** Health centers can reduce their liability for lawsuits by ensuring they are eligible for coverage by the Federal Tort Claims Act (FTCA), which offers protection akin to medical malpractice insurance to federally funded health center program grantees. Since health centers refer patients to medically necessary specialty care services that are not within their capacity to provide, it is important to be consider the health center's coverage and potential exposure in the event that problems arise connected to the referral. These resources are just a few of the hundreds of tools and resources available on our website, www.migrantclinician.org. ■

A Clinician's Guide to Burnout and Balance

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



Burnout, in which a worker is physically and emotionally exhausted from too much difficult work, is often associated with the medical field. Almost every clinician knows someone in the office who has experienced the serious and debilitating condition. A 2014 Mayo Clinic survey uncovered that burnout increased between 2011 and 2014, with now over 50 percent of physicians experiencing at least one symptom of burnout. With increasing patient loads, fewer clinicians choosing primary care nationwide, and growing demands on clinicians like electronic health record utilization, the increase in burnout is a concern that can alter a clinician's life and cause conditions like depression. For patients, it jeopardizes high-quality, compassionate health care delivery around the country.

Burnt-out physicians feel a high degree of cynicism, or "depersonalization" toward their patients, viewing them more like objects than human beings; burnout may also increase medical errors. Overly stressed work environments negatively affect others in the office, too, creating a culture of burnout. Clinicians serving migrant and seasonal agricultural workers and other underserved populations may experience greater levels of frustration and hopelessness as a

result of their patients' health situation. Agricultural workers – because of their frequent mobility, their often tenuous financial situation, and concerns about missing work, among other barriers – may struggle to get to the clinic. When they do, they may have a backlog of health concerns that cannot all be addressed in the short window of time with the clinician. "We try to adjust treatment modalities to take into account the realities of their lives – but it can be very stressful" for clinicians, admitted Karen Mountain, RN, MSN, MBA, Chief Executive Officer for Migrant Clinicians Network. A clinician may "know what the patients need, but...be unable to assure that they can get it," a frustrating and disheartening experience for many clinicians, said Mountain, yet another contributor to burnout.

The work-life balance — in which a clinician ensures enough down-time to decompress, take care of personal needs, and come back sufficiently refreshed and ready to work every morning — is an essential measure to prevent or lessen burnout. How does one achieve a balance, within work and outside of work, to prevent burnout?

"Wellness is about finding balance, but it means something different to each person," said Ben Morrison, MD, Chief Medical Officer at Community Medical Centers, Inc,

a Federally Qualified Health Center in the northern reaches of the San Joaquin Valley, California. He is seeking to address clinician burnout at his health center. "Some of it has to do with work ethic, where [clinicians] are in life. I think our goals change as we go through life....There's no set formula."

But there are parameters one can assess. Clinicians can regularly reevaluate their personal work-life balance, which changes as life progresses. Health center administration can take steps to relieve the pressure on clinicians while they are at work. And clinicians and administrative officials together can create a work atmosphere that values balance and strives to help clinicians find it.

Changes throughout the stages of life

Many clinicians coming out of medical school recognize the stress that is ahead of them. After many years of higher education, they willingly sign up for an often grueling residency. "We're prepared for residency — you're prepared to work the long, hard hours," Dr. Morrison remarked. When a clinician finally ends residency, though, "then life starts to happen." Clinicians may have greater control over work pressures, but simultaneously many of these younger clinicians begin to have life events that require greater attention.

When a clinician is pregnant or has a young child at home, or when a personal relationship ends, or when parents need to be cared for, daily priorities and motivations shift. "[Modern clinicians] have it correct: We want it all. We don't mind working hard, but we want to be able to enjoy these experiences," outside of work life, Dr. Morrison says.

Dr. Morrison reminds clinicians to regularly evaluate their work-life balance as both work and life shift. As a clinician enters a new phase of life, his or her needs and responsibilities outside of work may change — and few clinicians account for this in their work life. Anticipating personal life changes can help buffer the stress of a big change at work — and vice-versa.

The simple stress of the job

The work-life balance can be difficult for those who spend their entire careers serving people with significant and overlapping health issues, but it may be amplified for clinicians serving the underserved.

Underserved patients often come with stories of dire poverty, homelessness, trauma, and other serious struggles, all of which

affect the health of the patient. A 2012 Walter Reed study found that clinicians who spent time every week at an on-site complementary and alternative medicine wellness clinic not only reported feeling more relaxed after sessions (97.9%) and feeling less stressed (94.5%), and experiencing less pain (78.8%), but, after five or more visits, more than half of respondents strongly agreed on their surveys that they experienced increased compassion with patients. Lead author on the study, Elaine Duncan, L.Ac, a Maryland-based licensed acupuncturist who focuses on trauma in her patients, believes the work-life balance message is clear: self-care is essential in the face of trauma.

"Clinicians may experience burnout as a sense of overwhelm with the suffering of the world, and not knowing what to do with it," Duncan said. Day-in and day-out experiences with traumatized or suffering patients may weigh heavily on clinicians. Recognizing this additional burden and scheduling in time to recuperate and process is essential when dealing regularly with trauma.

Additionally, a clinician's reaction to the patient is critical to avoid burnout. "We lose our witness state," she said, "and we fall into their stories." Duncan encourages clinicians to seek education on trauma resolution to best focus on resiliency of patients and "to treat the patient's dysregulation — not the [patient's] story."

Changes in the health world, too

"I don't think medicine has gotten harder," Dr. Morrison states, but the world of medicine has significantly changed in the last fifty years, which presents new challenges to clinicians. Take the national rollout of the electronic health record. While some clinicians are relieved to have gotten over the initial learning curve, others still struggle. Either way, many clinicians were frustrated when new systems disrupted workflows and required cumbersome and at times repetitive electronic entries. While all clinicians recognize the many important benefits that patients and health centers will gain as a result of the EHR, productivity went down throughout the country. In recent years, after the initiation of the Affordable Care Act, a new influx of patients has created provider shortages. Such system-wide struggles place undue burden on clinicians and need to be addressed throughout the country.

Just as clinicians can anticipate home life shifts that will change the work-life balance, health center administrators can account for new shifts at the workplace. Such big stressors like clinician shortages and the drop in efficiency related to the EHR can't be fixed easily, but administrators can make concrete

steps to lessen the blow.

Mountain says that when she visits health centers around the county, she doesn't see the burnout — she sees the wreckage. "When you see people who feel valued, that just comes across. When you see leaders who are insensitive, who are projecting the needs of the corporation over the needs of the employee... there's resentment, and anger, or just flatness," among the employees, Mountain said. "And that just carries right down to the patients."

Dr. Morrison recommends that adminis-

tration address the work-life balance at the organizational and individual level. At the organizational level, "having a provider advocate is important," Dr. Morrison emphasized, to keep clinician needs at the table during executive decision making. A provider advocate can guarantee that big decisions aren't made without the work-life balance in mind.

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Equally essential is the support team. "We're trying to develop our work teams to better support the provider," Dr. Morrison noted. Better coordination of the provider's team reduces the burden on the provider and assures that all clinicians are working at the top of their profession. "We also are reevaluating our compensation models," Dr. Morrison said, looking into how the schedule is built, and attempting to find flexibility in the schedule for those who need it.

On the individual level, Dr. Morrison has taken the extra step of reaching out to each clinician to meet one-on-one. A CMO cannot discover what the clinicians need unless you directly ask, he says. "I will bring a provider to lunch, find out what's going on with them. Sometimes everything is going great and we just talk about their families... but I'm letting the providers know that I really care about them," he said. "I want to be proactive... What are their needs? Are there things that we could be doing better for them?" Additionally, the one-on-one time helps Dr. Morrison get a wider perspective, hearing from busy or quiet clinicians he may otherwise not hear from: "We want everyone to have a say on things that are going on and not implement policies without getting their input."

One final individual-level adjustment that

Mountain agrees: "It's not just the clinicians, it's everybody" who can experience burnout. She recounts a recent visit with a health center during which the vice president of operations took the time to help a patient navigate a new building. "That to me spoke volumes of the values of the leadership — the fact that there's somebody who is mission-driven and caring. When you're burned out, you lose touch with caring about others — because you haven't been able to care for yourself."

Finding compromise

Dr. Morrison cautions that not all rebalancing attempts will be successful. If a clinician is seeking part-time work only in the middle of the day for a few days a week, health center administration may not be able to accommodate that. "We have patient needs — we have evening and Saturday clinics — so we need to set realistic expectations. But communication is absolutely important," he stated. "Ultimately, as a provider, we have to work very hard. But it doesn't mean we have to suffer because of it, and not have any balance. We have to have a team approach — because no one can create the balance for you, but you have to have people who are willing to listen and acknowledge that that balance is important."

Dr. Morrison believes his approach is working. A couple of clinicians who left his health center have returned, which he thinks is a good sign for the work environment he's set up. But he recognizes it's an ongoing, lifelong process: "We're not a perfect system, but I definitely think we're heading in the right direction and we're listening to our providers." ■

Promotores as Needs Assessment Champions

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

Needs assessments are a unique opportunity to gain insight into the communities a health center serves — and a great way to assure a health center is on the right track with its programs and services. So, engaging and relying on the health center's outreach team is a natural fit. At Moses Lake/Quincy Community Health Center, halfway between Yakima and Spokane in central Washington, Mary Jo Ybarra-Vega, MS, LMHC, and Maria Blancas have been steering each step of their health center's needs assessment process as an integral part of their daily work as promotoras, community health workers serving the migratory agricultural worker community. "When you talk about needs assessments, promotoras are doing needs assessments all the time," Ybarra-Vega, Outreach/Behavioral Health Coordinator, said. "They are the ones who go get the data," but they can also lead the process. Partnering with the health center's promotores, Ybarra-Vega says, is the most efficient and effective way to best ensure that the health center's services are truly meeting the needs of the community. What's more, the healthy, long-term relationships that promotores have with the community can help the health center maintain ongoing support and flexibility as the community's needs shift — and to prioritize funding to make sure that level of support is possible.

What is a needs assessment?

A needs assessment is just as it sounds: a process under which a health center evaluates and re-evaluates program effectiveness, to determine if it is reaching out to the full community in its service area and serving the needs that the community has. Each health center program grantee under Section 330 must undertake a needs assessment, and each health center approaches it differently. "It is a requirement — but it's also the principle of being a health center that is serving the underserved; you want to make sure that you're being responsive," Liam Spurgeon, Associate Project Manager at Health Outreach Partners (HOP) said. "It's a big undertaking."

HOP provides training, technical assistance, and information services to health centers, primary care associations, and other community-based organizations around the country. A National Cooperative Agreement through the Health Resources and Services Administration (HRSA), HOP's goal is to build strong and sustainable grassroots health models to increase access for underserved populations. They have been key in many health centers' needs assessments processes, and



Mary Jo Ybarra-Vega heads up a community meeting that ranks health priorities using "bolitas."

have been an important resource for Moses Lake/Quincy, Ybarra-Vega said.

For many health centers, the needs assessment is a yearlong or multi-year process, replete with surveys and extra funding and staff meetings. For Quincy Community Health, part of Moses Lake/Quincy, it's an ongoing and integral part of the day-to-day operations. "Health centers should always be doing something to assure that they are responding to the needs of their population because needs change — and health centers need to keep that in mind, to make sure that they're checking in with their communities, to make sure that their services are appropriate," Spurgeon explained. "If they find out that their needs are something else, [they need to] figure out how to adapt to those needs."

There isn't one correct way to completing a needs assessment, Spurgeon noted, but HOP does offer a comprehensive needs assessment toolkit that encompasses the basic processes. (Learn more about the toolkit in "Needs Assessments, Step-By-Step with Health Outreach Partners" in the autumn 2015 issue of *Streamline*.) The first step is defining specifically what the health center wishes to obtain from the process. After defining the key steps and goals, the health center plans how to roll out the assessment. The third step, developing data collection tools, is followed by the actual collection and analysis of data. Finally, the health center and its team share the results and use the findings to adjust its programs and services and to prioritize and develop new actions to better address the needs of the community. "Maybe your health center doesn't have the resources,

but it's a good way to find out [what's really needed], and then maybe you can make a good case for funding or change your services to adapt to the need," Spurgeon noted.

Ongoing work

At Moses Lake/Quincy, the process starts with the promotores. "Our [process] is very organic," Ybarra-Vega admits. But she believes it works. Every year, they use their "bolita method," says Blancas, Outreach Coordinator and long-time volunteer promotora at Moses Lake. With the bolitas, (Spanish for "little dots"), the outreach team hosts meetings throughout the service area in which "everyone gets three little round stickers," she said, where "they get to pick the three most important issues." The method helps guide the process and also provides a low-literacy format to encourage greater participation. The outreach team collects and tallies the votes. Then, the team meets one-on-one with providers to ask what issues and concerns they have been hearing, and what they'd like to see the health center focus on in the coming year. Finally, the outreach team meets as a group to discuss its own perspectives, and to develop its plans in response to the assessments. When the outreach team renews its meetings the next year, it provides a summary of the previous year's concerns and how the health center responded. This format provides the base of the health center's formal needs assessment. In this way, Moses Lake/Quincy has integrated its needs assessment process into a cornerstone of its outreach team's work.

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Newly Updated Clinician's Guides:

How Policy Affects the Health of Agricultural Workers

[Editor's Note: This article first appeared as a blog post on Migrant Clinicians Network's active blog, *Clinician to Clinician*. Please visit our blog to read up on timely migrant health news, current events analysis, profiles of clinicians, and updates from the field: <http://www.migrantclinician.org/community/blog.html>.]

Migrant Clinicians Network (MCN) and Farmworker Justice have jointly released three updated field guides for clinicians serving agricultural workers, to best equip them with knowledge and resources on federal policies that are critical to the health and well-being of this particularly vulnerable population.

The Clinician's Guide to OSHA's Field Sanitation Standard, *The Clinician's Guide to the EPA's Worker Protection Standard*, and *The Clinician's Guide to FIFRA and FQPA* lay down in simple and nontechnical terms how the federal policies work, and what clinicians need to know to best support their patients.

"Workers in agriculture are one of the most vulnerable worker populations in the country," noted Amy K. Liebman, MPA, Director of Environmental and Occupational Health at MCN. "Water and sanitation standards are a basic need — and it's important

that clinicians understand the regulatory protections."

The Clinician's Guide to OSHA's Field Sanitation Standard dives into the Occupational Safety and Health Administration's 30-year-old requirements to assure workers access to toilets, potable drinking water, and hand washing facilities. The guide covers the illnesses and injuries related to field sanitation, including agricultural workers' very high risk of heat stroke and other heat-related illnesses, which can be lessened if workers have access to clean water to drink and are encouraged to take breaks to drink it.

The Clinician's Guide to the EPA's Worker Protection Standard reflects the Environmental Protection Agency's recent revisions to the Worker Protection Standard (WPS), which are set to go into effect in January 2017, and, in the case of pesticide safety training changes, in January 2018. The WPS provides critical protections to agricultural workers who work with pesticides, including required safety training and readily available information on the chemicals used. The five-page guide also covers WPS protections regarding medical assistance due to pesticide exposure, protections and restrictions during and after pesticide application, personal protective equipment, decontami-

nation supplies, and emergency medical assistance. It also provides more information on additional requirements and protections at the state level.

Finally, the *Clinician's Guide to FIFRA and FQPA* covers the requirements placed on the use and sale of pesticides. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requires the registration of all pesticides on the market, if proven to not "generally cause unreasonable adverse effects on the environment." The Food Quality Protection Act (FQPA) amended the FIFRA to require that pesticides used on food undergo a health-based assessment before EPA approval. The guide outlines the importance of clinician engagement in identifying and reporting pesticide exposure in agricultural worker patients, which can affect EPA decision making on a pesticide's ongoing licensure.

All three guides are supported by the Health Resources and Services Administration (HRSA) in recognition of the import of these federal policies on the health risks faced by the patient population at health centers across the US.

They are available at <http://www.migrantclinician.org/toolsource/resource/clinician-guides-farmworker-health-and-safety-regulations.html>. ■

■ **Promotores as Needs Assessment Champions** continued from page 6

Blancas and Ybarra-Vega point out that their ongoing process is especially adept at responding to new and changing community needs. In recent years, massive and unprecedented wildfires have raged through the community. During one fire, mandatory evacuations were in place — but the local migratory agricultural worker community was not kept informed. "We started to hear about it from another promotora," Ybarra-Vega recalled. "One of the waitresses [that she knew] knew a worker at a labor camp," who said that when the sheriff came to announce a level three evacuation, the farm manager gathered his family and left — without informing the farm crew. The promotores began to recognize a gap in emergency preparedness. "What happened is as we started doing our needs assessments with the *bolitas*, these issues came up [there], too," Ybarra-Vega said. In response, a volunteer promotora/pre-med student, Emma Zavala-Suarez, developed a two-page Spanish emergency preparedness informational sheet working with the Grant County Sheriff Department and their existing document. Partnering with Molina Health Care, the team assembled

emergency kits and the two-page sheets. At a national Stream Forum sponsored by North West Primary Care Association in San Diego, a panel presentation was held to get the community in on the conversation, and to inform state and federal authorities of the issue. Visits to the migrant camps continue and now the *promotores* also distribute the new materials to ensure that migratory agricultural workers won't be left behind in the next big emergency.

While the process checked off the needs assessment box for the health center, it also proactively addressed serious and new concerns in the health center's patient population. Should the issue no longer be of concern among the patients, providers, and outreach team, the health center will adjust its tactics to better reflect newer concerns as they come. An added bonus is a better pulse on the community at large. When Ybarra-Vega grew up in Quincy, she says only a handful of Latinos lived in the region. By the time Blancas joined in, "it was about 50/50" between Latinos and non-Latinos. Now, she says, a vast majority of the population in the community are Latino — and that, too, comes out as they do their needs assess-

ments, which further informs their programs and services.

Ybarra-Vega is proud of the "level of personal commitment" that her team of outreach workers has demonstrated, time and time again, and she encourages other health centers to give the outreach team the lead in developing and executing needs assessments. "They have the heart, they know how important it is to ask the community, to get them involved, to get the youth involved... We've become a change agent in town. I think our community [has been] transformed," Ybarra-Vega said. "We are always getting better and trying to improve... but we feel honored to do the work that we do, with the population that we work with." ■

Resources

Health Outreach Partners is at www.outreach-partners.org. They offer short "coffee break" webinars, including the recent "Three Key Lessons Learned From Needs Assessments"

Contact Liam Spurgeon at HOP to request a copy of HOP's Needs Assessment Toolkit, at liam@outreach-partners.org.

Visit Moses Lake/Quincy's website at <https://www.mlchc.org/>.

Making the Biggest Impact with Dr. Selwyn Rogers

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

[Editor's note: This article is part of a series on the lives of members of Migrant Clinicians Network's External Advisory Board. Learn more about the board at <http://www.migrantclinician.org/about/external-advisory-board.html>.]

Selwyn Rogers, Jr., MD, MPH, FACS, began his career as a trauma surgeon. During a fellowship at Brigham and Women's Hospital, which is associated with his alma mater, Harvard University, he noticed a trend among his patients.

"It was clear to me that trauma, especially intentional trauma, was not random. In the city of Boston, disproportionately the people getting shot or stabbed were people of color," Dr. Rogers recalled. The realization brought him back to why he studied medicine in the first place: to use his skills to help as many people as he could. He began to question whether he could do more to serve others, before they were victims of trauma. "I can do a lot of laparotomies, open people's bellies and sew up holes, but what was I doing about upstream determinants of disease? What did I understand about processes of care and their link to outcomes? What did I understand about variations? About epidemiology, about statistics? The answer, after almost a decade of training: absolutely nothing."

With a wife and two young children in tow, and while on call as a trauma surgeon, Dr. Rogers went back to school to receive a Master's in Public Health at Vanderbilt University. When he returned to Boston, Dr. Rogers developed a violence intervention and interruption program to stop the retaliatory cycle of violence after a gang-related shooting, through targeted community health worker engagement — an unusual step for a surgeon. He developed a population-based perspective of the social factors that influence community violence or prevent people from accessing health care when they need it — the types of social determinants of health that influenced his work ever after, including now, as he serves on Migrant Clinicians Network's External Advisory Board. He is the only surgeon on the Board. "We picked Dr. Rogers because he brings his perspective as a clinician who has worked to address community violence, an issue that has a profound impact on agricultural workers," explained Karen Mountain, RN, MSN, MBA, Chief Executive Officer for Migrant Clinicians Network, adding that he has a "in-depth understanding of special populations who, like agricultural workers, face social isolation and who may have



Selwyn Rogers, Jr., MD, MPH, FACS

an inherent distrust of the health care system." Additionally, Dr. Rogers has brought to the EAB a willingness to translate his expertise in urban violence to the largely mobile immigrant population that MCN serves.

Early Life and Education

Dr. Rogers' life intentions to serve as many people as possible were developed early, while growing up without much on St. Croix in the United States Virgin Islands. "Early on, my mom did a lot with a little," Dr. Rogers said. His mother put a strong emphasis on education as a pathway out of poverty and a gateway to service. He did exceptionally well academically, and early mentors encouraged him to go into medicine. When it was time to apply to universities, young Selwyn pulled down the Encyclopedia Britannica to determine what medical schools to apply to. "The only things under [the entry for] 'Medical Schools' were Johns Hopkins and Harvard," he laughed. He was accepted to both. After a short stint at Johns Hopkins on a full ride scholarship, he called up the Dean at Harvard to confess that he had made a mistake and wished to transfer. The Dean got him in, and assured he got the financial assistance he needed. He graduated from Harvard Medical School in 1991.

Searching for the Greatest Impact

After receiving his MPH, Dr. Rogers began a series of positions where he continually strove to make the biggest impact in his day-to-day work, starting as a trauma surgeon at Brigham and Women's Hospital and professor

at Harvard Medical School. He then became chief surgeon and department chair at Temple University in 2012, in North Philadelphia, an economically depressed community that he says is tormented with "burned-out homes, burned-out lives, and severe poverty." "People present to Temple University with advanced stages of disease that you would say, 'we are still in 1920,'" despite proximity to the hospital, he stated. His work in Philadelphia demonstrated the impact of poverty on health — and shaped his perspectives on the health system at large.

"Transparency [in health care] is what I'm the most enthusiastic about," he said. He recognizes that some inequities in the US health system still exist, despite efforts to alleviate some of the lack of access. Some patients are able to navigate the system; others cannot. "It's a system that's porous," he says, that leaves behind populations without power — like the poor, minorities, women, unemployed men, immigrants lacking authorization to work — and "those who just don't have the social support and network that my kids are blessed to have," just by the social circumstances under which they were born, he said. "How just is that?"

Now, he continues to push for the rights of the underserved as Vice President and Chief Medical Officer for University of Texas, Medical Branch Health System in Galveston, Texas. His recent move to Texas was once again predicated on a desire to increase his impact, believing that the "greater context" of the huge service area along the US-Mexico border offered an opportunity for his leadership to positively affect the lives of even more patients in need: "What greater impact can you make than as the Chief Medical Officer of a health system in Galveston, that covers a landmass of patients that's half of New England?"

Given the turmoil of intentional violence and alarming health disparities in one of America's great cities, Chicago, Dr. Rogers will push forward with a new challenge in 2017. Dr. Rogers will serve as the founding Director of the Trauma Center and Executive Vice President of Community Health Engagement at The University of Chicago. "In these roles, I will lead strategic initiatives to address social determinants of disease and population health on the South Side of Chicago," he said.

Lessons along the way

Dr. Rogers, like many health professionals,

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the six building blocks as “the core components of safe, team-based opioid prescribing that we have seen in primary care settings across the country.” The project’s website has its resources aligned with each of these building blocks, under “Resources and Tools”. Here’s a short summary of each of the six from the Implementing Innovations blog post. Visit the website at www.improvingopioidcare.org for more on each topic.

- 1. Leadership and consensus:** Build organization-wide consensus to prioritize safe, more selective, and more cautious opioid prescribing.
- 2. Use a registry to proactively manage patients:** Implement pro-active population management before, during, and between clinic visits of all chronic opioid therapy patients to ensure that care is safe and appropriate and to measure results of chronic opioid therapy improvement activities.
- 3. Revise policies and standard work:** Revise and implement clinic policies and define standard work for health care team members to achieve safer opioid prescribing and chronic opioid therapy management in each clinical contact with chronic opioid therapy patients.
- 4. Planned, patient-centered visits:** Through planned visits, conduct proactive population management before, during, and between clinic visits of all patients on chronic opioid therapy to ensure that care is safe and appropriate. Support patient-centered, empathic communication for chronic opioid therapy patient care.
- 5. Caring for complex patients:** Develop policies and resources to ensure that patients who become addicted to opioids, or who develop complex opioid dependence, are identified and provided with appropriate care, either in the care setting or by outside referral.
- 6. Measuring success:** Continuously monitor progress and improve with experience.

Implementing the Building Blocks

The project assigned a clinic coach, someone who stays in touch with the clinics each month to provide technical assistance in implementing each of the building blocks. During that time, the clinics began reviewing their policies and procedures — which Dr. Parchman says can be a revealing process.

“A lot of the [clinics] already had some kind of patient agreement form, also known as a ‘pain contract,’” Dr. Parchman noted, but they often found “their policies weren’t in agreement with the patient agreement form,” and vice versa. Once they aligned the two, the clinics began to question the workflow in the clinic to make sure the policies are implemented. For most clinics, this unleashed a barrage of questions: Where do we get random urine drug tests done? Who’s going to check the state prescription database once or twice a year? Who’s responsible for checking to make sure that the patient agreement has been updated and signed in the past year during the clinic visit? Where does that workflow occur?

An additional challenge is determining what measures the clinic will use to track whether the care patients receive is improving and that their patients are actually getting better. “There are no validated measures out there, traditional quality measures,” Dr. Parchman explained. “So now, they’re struggling with how to measure success,” how to determine whether the added work that is being factored into the workflow is worth the time and effort.

In addition to a clinic coach, the clinics share questions and gain insight through shared learning opportunities, which include monthly phone-in discussions among the clinics to help them troubleshoot issues and share resources. During one recent call, the group discussed how to taper someone off of opioids, which sparked a number of ques-

tions: Is there a good protocol? How do you assess a patient’s willingness to taper off? Does anyone have an opioid tapering tool? When does someone qualify as a chronic opioid user?

The project also offers the clinics monthly webinars with the Director of Chronic Pain Management at the University of Washington, after which each clinic gets the opportunity to present a difficult case for discussion.

The project is about halfway through its 36-month grant from the Agency for Healthcare Research and Quality, at the end of which they hope to release a package of tools — but the project has created a number of resources that they’ve already released on the website. “We’re releasing tools and resources on the website as fast as we can,” Dr. Parchman explained, “Because it’s a crisis.” ■

Resources

The project’s website, www.improvingopioidcare.org, is full of useful resources. Here are a few recommended by Dr. Parchman:

Get tips on how to navigate the difficult opioid conversation with patients by downloading “Opioid Patient Discussion Guidelines,” available on the Planned Patient-Centered Visits page: <https://goo.gl/94nQ78>.

“Revise Policies and Standard Work” features four resources to help health centers adjust their guidelines and treatment agreements: <https://goo.gl/1wcj3Z>.

The US Surgeon General has called on clinicians to lead against the opioid crisis. Learn more and sign on at www.turnthetidex.org/join.

Read the Implementing Innovations blog post on the Six Building Blocks at <https://goo.gl/qO8lc>.

The Clinician Consultation Center offers free, real-time clinician-to-clinician telephone consultation, focusing on substance use evaluation and management for primary care clinicians. With special expertise in pharmacotherapy options for opioid use, its addiction medicine-certified physicians, clinical pharmacists, and nurses provide advice based on Federal treatment guidelines, up-to-date evidence, and clinical best practices. Call 1-855-300-3595, 10:00am – 6:00pm, EST. For more information: <http://nccc.ucsf.edu/clinician-consultation/substance-use-management/>

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has struggled with work-life balance. During his time at Temple, while battling health issues and managing stress, he began to feel burned out. “That was a hard lesson for me,” he admitted. His genetic makeup, mixed with lack of sleep, poor eating habits, and not enough exercise is “a recipe for death. Who can I help if I’m dead? I can’t help my patients, I can’t help my kids — I’m just another statistic.” So he began to slowly adopt a healthier lifestyle. “Emphasizing self-care is so important,” among clinicians, he said. (Read more about the work-life balance in this issue’s article, “A Clinician’s Guide to

Burnout and Balance.”)

Despite the added pressures of the positions he’s chosen, Dr. Rogers is adamant that recalibrating regularly is essential for clinicians — not just to avoid personal burnout, but to keep reminding ourselves of the importance of our work. “[We] need to remain steadfast to the principles that got [us] to make the commitment to hard work in the first place... to serve others,” he said. “Somewhere along the line — with the insurance categories, the paperwork, the Affordable Care Act, value-based purchasing — there [have been] artificial barriers placed

between the patient and provider.” He calls on clinicians to strengthen the sanctity of the relationship between clinician and provider, by listening, by treating patients with respect — and to go a step further.

“We still have power that our patients may not have, especially those serving patients who have no voice, like migrant workers,” he said. “If you have power as a physician — the education, the background, your resilience, your income, your standing in society — you should speak to power.... Physicians need to stand up more. We’ve got to be the voice of the patient.” ■

Head Lice Now Resistant to Common Treatments, Study Says

The human head louse is now mostly resistant to common insecticide treatments, say researchers in a recent article in the *Journal of Medical Entomology*.¹ *Pediculus humanus capitis* is well known to cause itching and annoyance, particularly for school children around the world, leading it to be one of the most prevalent human parasitic infestations. Here in the US, widely available over-the-counter topical treatments like Nix or Rid have been relied upon for several decades to rid human head hair of the small dark colored insect. The active ingredient of most of those OTC insecticides are pyrethrins or synthetic pyrethroids, the latter including permethrin and phenothrin.

For this study, volunteer school nurses and professional lice combers collected lice from 138 sites in 48 states between 2013 and 2015. Researchers then extracted and analyzed the DNA of the lice to determine the frequency of knockdown resistance (*kdr*-type mutations. Such a mutation is associated with nerve insensitivity to insecticides like pyrethroids, pyrethrins, and DDT, chemicals that target the nervous system. *Kdr*-type mutations have already been identified in the common house fly and among the potato tuber moth, an agricultural pest.

While the identification of *kdr*-type mutations might not necessarily predict the failure of one of these insecticides to kill lice, its identification seems correlated with reports of product failures, the authors note. And product failure has been on the rise. Between 1984 and 1995, studies consistently found permethrin to have a 96 to 100 percent effectiveness in killing lice, but by 2001, a study reported the effectiveness at just 80 percent. The researchers describe recent studies that have shown effectiveness rates between 28 and 55 percent.²⁻⁶

This report's findings were even graver. The overall mean percent resistance allele frequency — meaning, the percentage of lice with genes that were found with at least one *kdr*-type mutation — was 98.6 percent. Only one of the 138 sites collected lice with no mutations. Forty-two of the 48 states sampled had a mean resistance of 100 percent. Urban, suburban, and rural lice showed similar levels of resistance.

The study demonstrates that permethrin-



based insecticides like Nix are no longer effective as a lice treatment. The study does not analyze or recommend alternative treatments nor does it explore the insecticides' impact on human health.

The Centers for Disease Control and Prevention continues to recommend FDA-approved OTC treatments containing pyrethrins or permethrins, or to ask a doctor for a prescription medication. While some small peer-reviewed studies exist, more research needs to be conducted into alternative products. ■

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Resources

The CDC's complete recommendations on head lice are at: <http://www.cdc.gov/parasites/lice/head/treatment.html>.

American Academy of Pediatrics recommendations are at: <http://pediatrics.aappublications.org/content/pediatrics/early/2015/04/21/peds.2015-0746.full.pdf>

American Academy of Dermatology recommendations are at: <https://www.aad.org/public/diseases/contagious-skin-diseases/head-lice>

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Home Use of a Pyrethroid-Containing Pesticide and Facial Paresthesia in a Toddler: A Case Report

[Editor's Note: The following has been excerpted from an open-access article published in the *International Journal of Environmental Research and Public Health*. Please visit the journal's website for the complete article: <http://www.mdpi.com/journal/ijerph>.]

Perkins A, Walters F, Sievert J, Rhodes B, Morrissey B, Karr CJ. Home Use of a Pyrethroid-Containing Pesticide and Facial Paresthesia in a Toddler: A Case Report. *Int J Environ Res Public Health*. 2016;13(8). DOI: 10.3390/ijerph13080829.

Abstract

Paresthesias have previously been reported among adults in occupational and non-occupational settings after dermal contact with pyrethroid insecticides. In this report, we describe a preverbal 13-month-old who presented to his primary care pediatrician with approximately one week of odd facial movements consistent with facial paresthesias. The symptoms coincided with a period of repeat indoor spraying at his home with a commercially available insecticide containing two active ingredients in the pyrethroid class. Consultation by the Northwest Pediatric Environmental Health Specialty Unit and follow-up by the Washington State Department of Health included urinary pyrethroid metabolite measurements during and after the symptomatic period, counseling on home cleanup and use of safer pest control methods. The child's symptoms resolved soon after home cleanup. A diagnosis of pesticide-related illness due to pyrethroid exposure was made based on the opportunity for significant exposure (multiple applications in areas where the child spent time), supportive biomonitoring data, and the consistency and temporality of symptom findings (paresthesias). This case underscores the vulnerability of children to uptake pesticides, the role of the primary care provider in ascertaining an exposure history to recognize symptomatic illness, and the need for collaborative medical and public health efforts to reduce significant exposures in children.

Introduction



Low-dose chronic pesticide exposures are common in the United States and around the world given widespread use in homes, gardens, and agricultural settings.¹ A population-based survey of households with young children found that over 80% reported applying some type of insecticide in the previous year.² Children have been identified as particularly vulnerable to uptake of pesticides from their environment due to frequent hand-to-mouth behavior, ingestion of soil and dust, mouthing of nonfood items, increased contact with soil, floors and carpets where spray residues settle, and higher concentrations of pesticide residues close to the floor in their breathing zone.³⁻⁵ In the US, residential applications have been identified as the most important contributor to children's exposure to pyrethroid insecticides.⁶

We describe a case of pyrethroid insecticide toxicity in a toddler resulting from use of a common household insecticide product. Symptomatic pediatric pesticide poisonings are relatively rarely reported, especially in countries such as the US, where regulatory protections have reduced risk. However, it is likely some pesticide-related toxicity in children goes unrecognized due to the non-specific presentation of these illnesses.

Case History

A 13-month-old boy with normal development and no prior significant medical problems presented to his primary care pediatrician with a one-week history of persistent

odd facial movements. His parents observed no other unusual signs or symptoms and reported he was otherwise behaving normally. The pediatrician observed the symptoms as somewhat tic-like. History taking revealed the patient's family had been coincidentally treating an ant problem in their house (previous two weeks) using products they purchased and applied themselves as instructed on the label. They also reported hiring a licensed pest management professional (PMP) to treat their home (indoors and outdoors) during the same period. The child was not taking any medications and no unintentional exposure sources to medications or other toxic substances were identified. All other household members who included his parents and a 32-month old sibling were in good health without symptoms or health complaints. The pediatrician requested the label for the home use products. Given the rarity of tic disorders in the toddler period and the temporal relationship of the symptoms to pesticide use in the home, the physician consulted the Northwest Pediatric Environmental Health Specialty Unit (NW PEHSU) at the University of Washington (Catherine Karr) and a child neurology specialist. The pediatric neurologist found no abnormal findings beyond the facial movements and electroencephalogram (EEG) testing was normal.

The NW PEHSU informed the pediatrician that the pesticide active ingredients identi-

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fied on the label had known neurotoxicity and further investigation was merited. The family was advised that use of the product should be discontinued immediately.

Suspected pesticide-related illness is a reportable condition in Washington State and NW PEHSU alerted the Washington State Department of Health (WDOH). The WDOH Pesticide Illness Monitoring and Prevention staff and NW PEHSU worked together to assess the exposure history by time, location, and active ingredient. The child's parents were interviewed further, application records were obtained from the PMP, and medical records from the pediatrician were reviewed. The family was counseled to clean treated areas with soap and water, and steam clean carpeting to remove residues in the home based on the pesticide manufacturer recommendation. Symptoms resolved spontaneously in the days following home cleaning.

The expanded exposure history discerned multiple pesticide types and applications in the home.

Approximately one week before the symptoms developed, the family purchased and applied a product containing active ingredient D-limonene (5%) but found it ineffective. One week later, the licensed PMP applied fipronil (0.06%) to the foundation and applied chlorfenapyr (0.5%) and imidacloprid (0.05%) inside as crevice treatment in the kitchen and master bath. An ant bait gel containing sodium tetraborate decahydrate (5.0%) was applied to the window sills of the master bath. Two days after the PMP application, the parent purchased an indoor/outdoor ready-to-use insecticide containing pyrethroids bifenthrin (0.05%) and zeta-cypermethrin (0.0125%). This spray product was applied at night to the kitchen, living room, master bath and along baseboards in the child's carpeted play room.

Onset of the toddler's facial movements was noted the day after first use of this home spray pyrethroid insecticide. The product was sprayed several more times over the following week coincident with the persistence of the child's facial symptoms. The PMP returned the next week and applied a second pyrethroid product to the foundation of the home (bifenthrin 7.9%). Indoors, the PMP applied an insecticide containing pyrethrins, piperonyl butoxide, and amorphous silica, as well as the same gel bait applied the week before along the window sills of the master bath.

NW PEHSU suspected that the symptoms could represent facial paresthesias caused by



dermal contact with the pyrethroid home spray applied to baseboards in the carpeted playroom and other areas of the house. Such manifestations had been reported in several case reports of adults following both occupational and non-occupational exposures to pyrethroid-containing insecticides and their volatilized form.⁷⁻⁹ NW PEHSU requested that the WDOH biomonitoring program provide analysis of the patient's urine for pyrethroid metabolites. Pyrethroids are metabolized and excreted rapidly in humans and urinary metabolites provide a measure of recent exposure. The WDOH program had recently conducted pyrethroid metabolite biomonitoring in a general statewide population sample including a sample of children aged 6–11 years. WDOH agreed to test the patient's urine.

A spot urine sample collected from the patient on day six of the symptomatic period showed urinary metabolite concentrations of 2.22 $\mu\text{g/g}$ creatinine (Cr) for 3-PBA and 3.82 $\mu\text{g/g}$ Cr for trans-DCCA. These levels were in the range of the 90th and 95th percentile observed for a representative sample of young school age children during the Washington State survey (age 6–11 years), respectively.

Exposures to the other pesticides used in the home have not been associated with paresthesias and applications were done in a manner that would present less opportunity for the child's exposure (e.g., crack and crevice treatment, gels, outdoor foundation treatments) compared to repeated spray application of the home-use pyrethroid product in areas where the child spent a significant amount of time (sprays along base-

boards in the carpeted playroom).

Follow up urine testing seven weeks later, in the non-symptomatic period, showed a significant drop in 3-PBA and trans-DCCA metabolites to below the 50th percentile range of the reference sample.

A diagnosis of pesticide-related illness due to pyrethroid exposure was made based on the opportunity for significant exposure (multiple applications in areas where the child spent time), supportive biomonitoring data, and the consistency and temporality of symptom findings (paresthesias).

Discussion

To our knowledge, this is the first child case report of pyrethroid pesticide toxicity manifesting in facial paresthesias. It illustrates several key points including the particular vulnerability of young children to commonly used pest control products including toxicity under use conditions described on the label. Furthermore, the important role of the health care provider in recognizing potential toxicity and the collaborative public health role in surveillance and prevention are demonstrated.

Pyrethroids are a class of neurotoxic insecticides used widely for agricultural and residential pest control. Toxicity testing identifies multiple nervous system targets in mammalian systems, including voltage-gated sodium and chloride channels, and gamma-aminobutyric acid (GABA), nicotinic acetylcholine, and peripheral benzodiazepine receptors.⁸ The pyrethroids used in this child's home, cypermethrin and bifenthrin,

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have generally low systemic toxicity via dermal contact and inhalation but moderate to high acute toxicity if ingested. Absorption across intact skin is low^{5,11,12}. Notably, topical contact with pyrethroids is associated with paresthesias, which are believed to result from local action on sensory neurons in the skin.¹³ Paresthesias, which manifest as stinging, itching, and numbness commonly in the face, have been observed in the absence of other pyrethroid toxicity symptoms in occupational case reports.^{8,14-16} This preverbal child's odd facial movements were suspected to represent a response to these well-described paresthesias. In general, paresthesias dissipate within 24 hours of removal from the exposure source and in this case, symptoms resolved in the days following home cleaning to remove remaining residues⁸.

Young children are at higher risk of exposure than adults following use of indoor pesticide sprays. After spray application, pesticide residues settle on floors and surfaces, which contributes to a higher risk of dermal contact for children who crawl and play on the floor.³ Younger children exhibit the highest extent of hand to mouth and mouth to object behavior, which can increase exposure to residential pesticide residues.^{4,17} Children take in more air on a per kilogram basis than adults, so when air contains volatilized pesticides or dust containing pesticides, they receive a higher dose. Spraying of baseboards in the playroom provided a significant source of exposure for this toddler.

Partly due to their more favorable (less acute) toxicity profiles, pyrethroids have replaced organophosphorus insecticides in residential pest control products.¹⁸ They are among the most commonly used and stored class of pesticide in US homes and are among the most commonly identified pesticide residues on household surfaces.¹⁹ They also represent the class associated most frequently with pesticide exposures in children reported to US network of Poison Control Centers.²⁰

In the case presented, multiple pesticides were applied in and around the child's home on at least six different days in a two-week period. This case illustrates the need for raising awareness of the health risks associated with pesticides, especially to children. Greater education is needed for consumers seeking do-it-yourself pest control. For example, integrated pest management (IPM) methods which prioritize no or low toxicity approaches are recognized for their effec-

MCN's Popular Pesticide Resources for Clinicians Now Available in Spanish

This month, Migrant Clinicians Network released key guidelines, protocols, and forms related to patient pesticide exposure, newly translated into Spanish. Pesticides are heavily used in agricultural settings across the United States, and illnesses resulting from exposures to pesticides are a significant and common occupational injury for agricultural workers and their families. But primary care providers — those who are most likely to see an agricultural worker patient suffering from pesticide exposure — often lack the training and resources to diagnose and treat pesticide exposures. Last year, MCN launched important partnerships with Costa Salud and Corporación De Servicios Médicos, two community health centers in Puerto Rico, as part of our *Workers and Health* program. The *Workers and Health* program includes on-site clinical training, the provision of resources and technical assistance, and peer-to-peer networking between frontline providers and occupational and environmental medicine specialists. To best support the health centers' frontline clinicians, MCN translated its key pesticide resources, which are now available to all clinicians on MCN's online Tools and Resources page.

"These resources give Spanish-speaking clinicians the basic framework to identify pesticide exposure, to better serve agricultural workers and their families," explained Amy Liebman, MPA, MA, Director of Environmental and Occupational Health with MCN. "This will help clinicians assure agricultural worker health and safety on the job."

The resources include:

Acute Pesticide Exposures Clinical Guidelines/Guías de Manejo de Exposición Aguda a Plaguicidas — A six-page instructional guide with sections on crisis response, decontamination, data collection from an exposed patient, physical exams, lab tests, treatment, reporting, and documentation, as well as additional resources.

Pesticide Exposure Assessment Form/Evaluación de Exposición a Plaguicida — An easy-to-read two-page questionnaire. During the clinical assessment, the clinician reads specific questions aloud to the patient and fills out information regarding the exposure and symptoms. A second page prompts the clinician to gather relevant physical signs, collect materials, execute lab tests, report the incident, and more.

Cholinesterase Testing Protocol Algorithm/Algoritmo del Protocolo de Prueba de Colinesterasa — a one-page dichotomous key for clinicians to quickly and accurately determine whether and when to conduct cholinesterase testing.

Cholinesterase Protocols for Health Care Providers/Pruebas de Colinesterasa para Proveedores de Cuidado de la Salud — A short one-pager on baselines, testing, retest for return to work, and more.

Access the pesticide resources in English and Spanish at goo.gl/ydR091.

Access the Cholinesterase-specific resources in English and Spanish at <https://goo.gl/sMgTQX>.

Learn more about MCN's Environmental and Occupational Health initiatives at <http://www.migrantclinician.org/services/initiatives/occupational-health.html>.

tiveness as well as safety.^{21,22}

In this case, state-based public health resources for biomonitoring and investigation were helpful but unfortunately are not available to clinicians in every setting. In the US, suspected pesticide-related exposure is a reportable condition in all but 13 states (reporting is optional in six states).²³ Such programs provide useful public health tracking as well as individual case support. A more comprehensive national or global pesticide-related illness surveillance system

would greatly enhance our understanding of the magnitude of pesticide-related illnesses in children.

The ability of health care providers to take an environmental history, to read pesticide labels, to identify symptoms of poisoning, and to provide anticipatory guidance is a critical part of efforts to prevent unnecessary and potentially harmful exposures. Unfortunately, data suggests that most pediatricians in the

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■ Home Use of a Pyrethroid-Containing Pesticide continued from page 13

US are poorly prepared for this. Only 12% of chief residents in pediatric residencies surveyed in 2003 reported pesticide content was part of their curriculum.²⁴ A 2006 survey of health care providers in a highly productive agricultural area with high pesticide use revealed that only 30% had training on pesticides and children's health.²⁵ This illustrates the need for knowledge of pesticides and their health effects in medical education as well as accessible specialty consultation resources.²⁶ In North America, the network of academically-based PEHSUs are available for consultations on non-emergent management and questions related to low dose, chronic environmental exposures while the Poison Control Centers remain the primary source of guidance on acute poisoning management in most settings.²⁷

Pyrethroid biomonitoring was available in this case but its usefulness for case diagnosis is subject to a few limitations. These urinary metabolites are an indicator of exposure only. There is no established threshold of exposure associated with symptom onset. Elevated biomarkers may be associated with diverse sources of pyrethroids including: background dietary exposure, lice and scabies treatments, public mosquito spraying programs, or mosquito resistant clothing. In the case presented, dietary exposure could not be ruled out. Finally, spot urine measurement of rapidly excreted metabolites can be highly variable throughout a day. While the elevated 3-PBA metabolite in this case report is consistent with increased exposure, it cannot alone confirm that the child's symptoms were caused by the pyrethroid, nor that the pesticides sprayed in the home were the source of elevated pyrethroids in the child's urine. In this case, the urine tests were supportive but not confirmative of the diagnosis. Diagnosis relied on patient history, presence of a hallmark sign, supportive urine testing, and the ruling out of other etiologies.

Conclusions

We report a clinically significant exposure to home-use pyrethroid insecticide in a toddler. The case illustrates the unique vulnerability of children to routine pesticide exposure and the frontline role of the pediatric health professional in recognizing toxicity through taking an environmental history. Once recognized, collaborative support of environmental medical and public health specialists can support clinicians in deciphering timely and appropriate diagnosis and thwarting ongoing exposure and potentially more significant health conse-

quences (secondary prevention). This case also illustrates the ongoing need for programs and policies to reduce pesticide applications in children's environments (primary prevention). ■

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New Release: Comic Book on Zoonotic Diseases

Migrant Clinicians Network, in partnership with The Ohio State University and with support from the United States Department of Agriculture, is excited to announce the release of a new comic book, *Working with farm animals: Keeping Yourself, Your Family, and Your Community Healthy*. This comic book delves into the causes and symptoms of zoonotic diseases, and depicts ways that workers can protect themselves, their loved ones, and their local community.

Workers who work with animals, be it in a milking parlor on a dairy, at poultry plant or at a meat packing facility, are at risk of exposure to disease-causing bacterium such as E. coli, salmonella, and campylobacter. These germs not only cause disease in the exposed worker, but can also be carried home unknowingly by workers on their skin, or on soiled boots or clothing. This comic book, offered in both Spanish and English, focuses on hygiene as a key strategy for protecting workers and their family members.

MCN has a long history of using comic books as means to educate, because it allows health education messaging to bridge literacy gaps while keeping the interest of a diverse audience of readers. This particular comic book was pilot tested with a group of dairy workers to ensure that the images and language used were culturally appropriate for the target audience.

This newly released comic book is now available for download at the MCN website at <https://goo.gl/ZpR0kB>. MCN also has a limited number of printed copies available free of charge on a first-come, first-serve basis. The order form is on the website on MCN's Environmental and Occupational Health section. For more information, please contact Juliana Simmons, MSPH, CHES, Environmental and Occupational Health Program Manager for MCN, at jsimmons@migrantclinician.org.





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calendar

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**30th Annual Camden Conference –
Refugees and Migration:
Humanity’s Crisis**
Camden Opera House
Camden, ME
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February 22-24, 2017
**2017 Western Forum for Migrant
and Community Health**
San Francisco, CA
<http://www.nwrpca.org>

March 1-3, 2017
**Migrant Labor and
Global Health Conference**
University of California, Davis
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migrant-labor-and-global-health-conference-
march-2017](http://johnmuir.ucdavis.edu/register-now-migrant-labor-and-global-health-conference-march-2017)

April 28-30, 2017
**5th Annual National
LGBTQ Health Conference:
Bridging Research and Practice**
Chicago, IL
<http://isgmh.northwestern.edu/conference/>

May 3-6, 2017
**10th Annual National Conference
on Health Disparities**
JW Marriot
New Orleans, LA
<http://www.nationalhealthdisparities.com/2017/>

May 9, 2017
NRHA’s Health Equity Conference
Sheraton San Diego Hotel & Marina
San Diego, CA
<http://www.ruralhealthweb.org/mm>

May 22-24, 2017
**2017 Conference for
Agricultural Worker Health**
Savannah Marriot Riverfront
Savannah, GA
[http://meetings.nachc.com/register/
farmworker-registration-form/](http://meetings.nachc.com/register/farmworker-registration-form/)

June 16-18, 2017
**North American Refugee
Health Conference**
Sheraton Centre Toronto Hotel
Toronto, Canada
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