Preventable tragedies: Before joining FDCARES in King County, Washington, Daniel Henriquez had worked as an intensive care unit nurse. He regularly saw how poorly managed chronic health conditions, such as hypertension, ended with preventable tragedies, such as a stroke or heart attack.

DOI: 10.1377/hlthaff.2022.00363

A SERIES ON
HEALTH SYSTEM TRANSFORMATION

A Different Kind Of First Responder

A Washington State fire department dispatches nurses and social workers to address the underlying health and social needs of repeat 911 callers.

BY BRIAN RINKER

Dana Bray remembered September 8, 2019, as the unforgettable day her seizures began. It started with what she thought was a bad reaction to a medication that left her unconscious and not breathing on her condo floor in Renton, a Seattle suburb in King County, Washington. Her downstairs neighbor found her purple and almost dead. The neighbor called 911, and Bray was admitted to the intensive care unit for ten days.

Later, Bray, 65, was diagnosed with functional neurological disorder, a broad category of motion disorders caused by problems with how the brain functions.[1] (After speaking with the author for this article, Bray died in March 2022.)

After that first near-death experience, Bray's neurological problems affected her ability to move around—she had to relearn how to walk, and getting around required a walker or wheelchair. More troubling, though, were the continued seizures, which snuck up without warning, randomly and frequently. Bray would go stiff, start shaking, and then fall.

"The worst part about it was that I had no control where I fell," Bray said.

During the next two years, Bray estimated that she had fallen close to 150 times from the seizures. Sometimes she collapsed three times in a single day. There was hardly a spot in her modest condo where she hadn't fallen and hurt herself. There was the time she knocked her chin on the nightstand, or when she rolled under the dresser, violently shaking, and got stuck; she also dislocated her ankle, severed a finger, and had countless blue and purple bruises all over her body. She must have called 911 at least once a month over the years, she said. On a particularly rough week, she remembered dialing 911 four days in a row.

Had Bray lived in some other community across the United States, each of those of 911 calls likely would have resulted in a maximalist response: paramedics, ambulance with lights ablaze, and maybe even a million-dollar ladder truck from the local fire station. Fortunately, Bray said, her community is served by a fire department that instead sent a nonemergency unit known as FDCARES, which stands for Fire Department Community Assistance, Referrals, and Education Services.

FDCARES is a specialized unit in which registered nurses and social workers work alongside firefighters to address the underlying causes contributing to repeat callers like Bray. It was created by Puget Sound Regional Fire Authority and is available in the southern region of King County.

Photographs by Caean Couto

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911 follow-up: Daniel Henriquez's FDCARES unit proactively follows up with past 911 callers, helping them navigate the health care system and ensuring that they have been connected to the right resources, from medical equipment to rental assistance.

For Bray, from their first contact in 2019 until her death, FDCARES became a mainstay in her life. During that time, FDCARES connected her with a fall prevention program that installed grab bars and a shower seat in her bathroom. The unit stopped by her condo so many times, whether to drop off a new walker or a wheelchair or just to check in, that Bray considered one of the nurses a good friend.

"I didn't call and ask them to come see me, they just came and knocked on my door, you know, out of kindness," she said. That meant a lot to Bray, who lived alone and didn't have family nearby. "It was nice to have somebody with professional medical training visit me, and it was nice to know that somebody cared about me," she said.

'Costly And Overcrowded'

Bray was what emergency service professionals refer to as a 911 high utilizer—a small subset of the population that uses a large portion of fire department, police, and emergency department resources. Every community has them. Many high utilizers have complex medical and psychosocial needs and call 911 for nonmedical emergencies. Cities and health systems across the country are incentivized to address these so-called high or "super" utilizers to divert them from costly and overcrowded emergency departments, drive down health costs, and free up limited resources for people experiencing true medical emergencies.

Shifting trends during the past decades toward value-based and whole-person care—addressing an individual's health, behavioral, and social services needs in concert—have led to a growing number of efforts nationwide to reduce hospital readmissions, divert nonemergency cases away from emergency departments, and provide resources to tackle any environmental conditions that may affect a person's health. Although hospitals and accountable care organizations have a keen interest in coordinating care to improve health and wellness for high utilizers, some lack the resources and staff to meet this tough subset of patients.[2]

Mobile integrated health programs such as FDCARES are well suited and strategically better positioned than hospitals or physician groups to provide care and social services to people in the community. These mobile health programs, also called community paramedicine, harness local emergency services, which have the existing infrastructure to respond to community members' needs. One 2014 survey[3] identified well over 100 EMS agencies in thirty-three states that are implementing some version of a mobile integrated model, with dozens more agencies in the process of launching their own units.

With the COVID-19 pandemic, experts say that mobile integrated health units are now more important than ever before, as they have skill sets, resources, and infrastructure to quickly pivot and be flexible. When the pandemic hit and hospital systems were overwhelmed, the area's public hospital district, UW Medicine Valley Medical Center, and the King County public health agency called on FDCARES to run community COVID-19 testing and vaccination efforts.

FDCARES, however, is unlike other mobile integrated health units, as it is one of the only fire departments in the country to hire nurses and social workers to work alongside firefighters.

'The Potential'

The concept for FDCARES dates back to 2010 and was born out of the recognition that the King County fire departments were spending a lot of money, resources, and time to respond to repeat 911 callers.

In general, fire departments assume the brunt of high utilizers' impact, responding to upward of 80 percent of 911 calls for medical services. Of those calls, about 40 percent are considered nonemergencies, such as falls, complications arising from chronic health conditions, mental health episodes, and intoxication.

For Puget Sound Regional Fire Authority, which serves several cities in southern King County, departmental estimates indicate that slightly more than 1 percent of the community accounts for roughly 40 percent of 911 calls.

As envisioned, FDCARES not only helps people navigate the complicated world of health and mental health care but also connects them to social services, such as food banks, rental assistance, fall prevention, therapy, and substance use treatment. The idea is that by addressing the root causes of super utilizers' super utilization, the program will save fire departments, hospitals, and taxpayers tons of money.

Has that vision been fulfilled? As the public health field has learned, it's hard to quantify prevention. However, a 2017 evaluation[4] estimated that FDCARES had the potential for annual savings of

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$600,000 for the fire department, as well as $1 million a year for the area's health care system, and that it could reduce emergency department visits by up to 200 a year.

In the eyes of many regional officials, the program has been such a success that it has expanded to the nearby Renton Regional Fire Authority. At this time, FDCARES covers seven King County cities and receives roughly 2,600 calls a year. The program has continued to evolve since it formally launched in 2015 and is on track to grow bigger and take on more responsibilities.

"I expect over the next fifteen to twenty years, mobile integrated health and... FDCARES-type units will be as common as fire suppression is at a fire station," said Puget Sound Regional Fire Authority Deputy Chief Aaron Tyerman, who oversees FDCARES's strategic direction.

'It Doesn't End There'

The standard fire department model is straightforward. A 911 call for medical assistance comes in, and dispatch triggers a rapid response deployment of fire department emergency medical technicians (EMTs) and paramedics, who arrive on scene in four to seven minutes. The job of the first responders is to quickly assess the situation, deliver appropriate interventions, and then transport anyone who needs it to a hospital emergency department.

But with close to half of all calls being nonemergency, said Captain Matthew Madlem, from Puget Sound, ten years ago they were essentially "sending very expensive ladder trucks to go help people who have just simply fallen."

A big chunk of 911 calls, according to Madlem, were from those who had fallen, in fact, and these callers didn't need the emergency department, they needed someone to figure out why they were falling all the time. Perhaps it was a medication problem, an adverse consequence of a chronic health condition, intoxication, or a mental health issue. Yet back then the fire department, similar to many emergency medical services agencies, didn't have a process for closing the loop on care or managing continuity of care for patients they saw repeatedly, Madlem noted.

"Firefighters are trained to do a lot of things, from fighting fires to river rescues, confined space rescues, hazardous material responses, basic life support for people that have medical issues," Madlem explained, "but we're not trained to be social workers, and we're not trained in transition care management or care coordination."

The idea is that by addressing the root causes of super utilizers' super utilization, the program will save fire departments, hospitals, and taxpayers tons of money.

In fact, the department's past approach to recording data was so arcane, it couldn't even identify high utilizers. The first thing they had to do when implementing FDCARES was create a database that could identify repeat callers. The database also uses predictive analytics, a technique commonly called hot spotting, to identify areas and callers at higher risk for complex medical and psychosocial needs.

Today, under the FDCARES model, when someone calls 911, dispatch uses updated criteria-based dispatch guidelines developed in house by King County Emergency Medical Services to identify nonemergency callers; in those cases, it's the FDCARES unit that goes to the scene. Because the call is not an emergency, FDCARES has twenty-five minutes to get there, instead of only a few minutes. Nor does it need a large fire engine or state-of-the-art ladder truck.

Instead, the firefighter and nurse duo drive a red pickup truck with "FD CARES" written on the side of the truck, which carries fall prevention equipment and lift devices. Altogether, their truck costs a fraction of the price of purchasing and maintaining a fully equipped fire engine. Once there, the responders can spend a much longer time working with the person to figure out what is going on and how they can help.

But it doesn't end there. The unit also proactively checks up on patients to make sure their needs are being met and whether the initial assistance is helping them navigate health care. This may include bringing a wheelchair or walker over, as they did in Bray's case, or connecting them with a social worker.

In 2015 the Puget Sound Regional Fire Authority launched FDCARES as an eighteen-month pilot program, hiring a social worker and three registered nurses. Reaching that point alone was a considerable lift for the department and local officials, as fire departments are funded with tax dollars and don't have very much flexibility.

To make sure FDCARES didn't step on any toes, the program enlisted support from the Washington State Nurses Association and was able to obtain medical oversight from the medical director of the UW Valley Medical emergency department, Cameron Buck, who helped define the scope of practices.

The partnerships supported the fire department's case that it was in the community's best interest to spend its tax dollars on nurses and a social worker. The buzz around FDCARES spread across the state and inspired the state legislature to pass a bill[5] in 2013 allowing fire departments to hire nurses, social workers, and other nonfire personnel.

'Worth The Risk'

Back in November 2015, Sara Hardin was one of the first nurses hired. Hardin's family thought it was odd that she left a stable job in the intensive care unit (ICU), taking a hefty pay cut, to join an experimental pilot program with the fire department. But for Hardin it was worth the risk. She said that it was "heartbreaking" to see the same people admitted to the ICU over and over again and not being able to prevent it.

"Trying to offer a solution was really appealing," she said about joining FDCARES.

When FDCARES first went into action, the team got some pushback. The nurses didn't exactly fit in at first. Initially, they weren't a part of the firefighters' union, which left them feeling that they were not on equal footing. Plus, they didn't accrue any vacation or sick time, Hardin recalled.

Some fire crews were concerned the nurses might replace firefighters, and their integration at the station went against decades of tradition. The county's paramedic squad also com-

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plained, worried that the fire department was encroaching on their medical domain. When it eventually became clear that the nurses handled only nonemergency and high-utilizer calls, Madlem said, they agreed that FDCARES would make everyone's jobs easier. Over time, the nurses blended in. Two years later the union accepted Hardin and her nurse colleagues into their ranks, further cementing their role as a core service of the fire department. Today, if the department canceled the FDCARES program, Hardin said, there would be an uproar.

The other big challenge was getting nurses prepared to work in the station and up to speed on all the firehouse lingo and culture, as well as training them on the radio, computers, and operational procedures. Training them was Madlem's job. Basically, the gist was "how to exist in the fire department culture as somebody who's not a firefighter," he said.

Much of the learning is picked up over time by living with the crews, whether it's working twenty-four- or forty-eight-hour shifts. They learn words such as "beanery," firefighter talk for the living room, where there is always a pot of coffee ready, and "spike the bag," meaning to start an intravenous drip. Then there are the little things, such as bringing doughnuts, making coffee, and racing to always be the first to answer the telephone.

Hardin was surprised by just how much time the firefighters spend together, especially all of the group meals—wake up; drink coffee in the "beanery;" and eat breakfast, lunch, and dinner together. When bedtime arrived, they were all walking around with toothbrushes in hand. It was like a big family, Hardin said. And similar to what happens in big families, there was a lot of joshing around and poking fun at each other.

"You have to be able to take a joke," Hardin cautioned. "The fire department jokes a lot."

'Culture Shock'

When Daniel Henriquez joined FDCARES, he didn't know what he was getting himself into. Henriquez, similar to Hardin, was an ICU nurse. But he had longed to work in the community, helping vulnerable and marginalized people get better. In his decade of ICU experience, he had seen how often poorly managed chronic health conditions, such as hypertension, ended with preventable tragedies, such as a stroke or heart attack.

Coming from health care, Henriquez said, entering the fire department was a complete culture shock.

Henriquez envisioned that working for FDCARES would be similar to providing home health care. Instead of the health care happening in the hospital, he'd address patients' day-to-day health issues in their homes. It turned out to be kind of like home health care, but on steroids.

FDCARES units are dispatched to multiple 911 calls each day—for example, responding to an intoxicated person experiencing homelessness, or an elderly person who has fallen—and they proactively follow up with past callers, helping them navigate the health care system and ensuring that they have been connected to the right resources, from medical equipment to rental assistance, and even assisting family caregivers struggling to care for a loved one.

In addition, coming from health care, Henriquez said, entering the fire department was a complete culture shock. Many firefighters have military or law enforcement backgrounds, and the fire department is structured with ranks similar to a military chain of command.

Henriquez was roughly three months in with FDCARES when he went out on a 911 call that ended with him finally feeling like part of the team. It's an unpleasant and terribly sad story, but it does have a happy ending.

Henriquez and his firefighter partner got a call requesting help for a man who had been living in his car for several months. Approaching the vehicle, they were hit with a smell that Henriquez likened to the inside of a septic tank. The man told them to go and wouldn't get out of the car, but after some cajoling, he rolled down the window.

Henriquez started talking with the person—really talking, he said—and in that moment, "we were level, human-to-human," he said.

That's when the man started bawling. He told them he had lost his job, been divorced, and was forced to live in his car, which was parked in front of his old home. He'd run out of money and gas. At some point, about six months prior, he lost the will to get out of the car. Henriquez looked inside the car and saw feces and urine piled all the way up to the man's knees. Hoping to shield his legs from the mess, the man had wrapped plastic garbage bags around them, but the ties on the bags cut deep into the skin and muscle, all the way down to the bone; maggots covered the wounds.

"If we try to move this patient out of here, his legs might fall off, and he will just bleed out and die," Henriquez thought at the time.

But they had to move him. They cut his clothes off and pulled him through the window and put him on a stretcher. His vital signs were OK, surprisingly. Paramedics transported the man to the hospital, and miraculously, they were able to save his legs.

"Thank God for the maggots," Henriquez said, noting their antimicrobial effects. "He had no infection whatsoever—those maggots saved his life."

Several months later the man walked into the fire station and left a message thanking the firefighter and Henriquez for taking care of him. He was grateful that they didn't make fun of him, choosing compassion instead. Henriquez later heard that the man got an apartment and began volunteering at a homeless resource center.

'It's Evolving'

Last year the fire chief asked Henriquez what he wanted for the FDCARES program. If you could have anything, the chief inquired, what would it be? "The first thing I said," Henriquez recalled, was, "I need my partner to be a social worker instead of a firefighter."

During the four previous years, Henriquez had felt as if something was missing. Many of the calls he went on, although dispatch had classified them as nonemergency, still resulted in the patient being transported to the emergency department. When that happens, FDCARES units don't have much

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of a role to play. Henriquez said that these calls are best handled by EMTs. In his view, having to spend all that time dealing with medical emergency calls prevented him and the other crews from doing the upstream work that FDCARES was created to do in the first place.

Part of the challenge is that the county's emergency dispatch service has a tough time understanding the severity of a call in that moment, said Nancy Valencia, FDCARES's lone social worker. The call may come across as not that intense, but once first responders are on the scene, the patient may still need emergency medical care.

Valencia, an army reservist, was deployed last year, and in her absence FDCARES turned to UW Valley Medical Center's health facilitators to cover her social work duties, which did not entail going out on calls. With the pandemic strengthening their long-standing relationship, FDCARES is increasingly becoming UW Valley Medical Center's boots on the ground in the community. The two organizations are currently ironing out the details on a project in which FDCARES will perform follow-up medical visits and welfare checks on patients recently released from the hospital.

This summer Henriquez will get what he asked for: FDCARES has adjusted its model again. A nurse will team up with a social worker and go on calls only after a firefighter has determined them to be true nonemergency events. The department has a potential grant for $185,000 pending from the One Medic Foundation. If approved, the grant will go toward hiring three more social workers. As to an evaluation plan, Henriquez said that they don't have one now. They are studying outcomes, such as how many patients get connected to resources, but with the pandemic and staffing shortages, they have struggled to keep up on these efforts.

"We've been doing this for basically seven years, and it's evolving," Valencia said. "We're continuing to try to meet the patients where we need to meet them and do that in the most efficient and effective way we can for our community." ■

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