

News Release

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Bridging the Distance*Testing Flying Drones to Pave the Way to Accessible Medical Services in Remote, Rural Areas*

Drive across West Texas and one might think the roads go on forever. Eventually, after cutting through breathtaking views of desert mountains and canyons and taking several turns, the road ends at one of the oldest communities in the United States – Presidio, Texas. The community also is one of the most remote places in the country, which is perfect for peace and quiet and stargazing, but challenging in the best of circumstances for accessing health care services, which can be devastating in the case of a medical emergency.

“We’re at the southern terminus of US 67, a very isolated community of about 5,000 to 6,000 residents with very limited access to health care services,” Adrian Billings, M.D., Ph.D., Texas Tech University Health Sciences Center (TTUHSC) School of Medicine associate academic dean of rural and community engagement, said. “From Presidio, residents are 90 miles away to the nearest emergency room in the United States and two miles to the Mexican health care system, which has a lot more health care resources to offer than on this side of the Rio Grande. We are literally at the end of the road.”

Rather than give up, move or hope for the best, area residents are, to paraphrase an old song, looking to the clear skies and putting on a smile. Last week, testing began on a new way to improve health care accessibility to Texas residents living in remote and rural areas by using drones, also known as Uncrewed Aerial Systems (UAS).

“When you’re so remote, everything’s a drive,” Linda Molinar, Presidio County Medical Clinic (PCMC) CEO, said. “When COVID-19 hit, I had to pick up the vaccines in Midland. From Alpine; that’s a three-hour drive. I had to drive back to Alpine to drop off some medications, drop some in Marfa and then drop some off all the way to Presidio. That was almost a 12-hour shift for me.”

PCMC is a federally qualified health center (FQHC). Because demand for the vaccine exceeded supply three to one, that was not the first or last day-long drive for Molinar.

“If I would have had a drone like this, it could have gone back and picked up more,” Molinar said. “We were number one in the state for vaccinations for several months, but that required that I or someone from my staff drive for more than 10 hours.”

While a circuit system might work for rodeos or for saddlebag preachers and judges in the past, patients do better when they have timely and convenient access to health care.

“Anything we can do to reduce that burden to get health care is going to be an advantage for the patient,” Phil Sizer, Ph.D., Office of Research and Innovation associate vice president, said. “And it’s going to help the clinician because now they can come up with a more effective and efficient way to meet their needs.”

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During the COVID-19 pandemic, the use of telemedicine increased significantly, but it still didn't solve all access to health care challenges for patients in remote areas.

“If you have a patient who lives several hours away from their clinician who is trying to deliver optimal service to them, or if they have to travel to get a test or to receive support care such as pharmaceuticals, critical supplies or a device that's going to help them in their recovery, they will have a lot of challenges to make that happen,” Sizer said.

Those challenges also could include a lack of transportation, ability to take time off work, access to childcare or the financial means required to travel. Drone use will significantly reduce those challenges and close the gap between the rural patient and their health care providers.

“There's a huge number of our patients in our country that are considered medically underserved,” Sizer said. “We needed a really great place that has some of the most extreme, most challenging conditions to test this. If we can do it in Presidio, we can do it anywhere. It's the perfect laboratory, and we're starting with these simple flights so that we can scale it to a much better solution; not only here but in other rural settings so that we can learn more from the experience.”

TTUHSC, a part of the Matador UAS Consortium, is spearheading the research initiative focused on developing and integrating drone technology for health care delivery in rural areas. The Matador UAS Consortium was co-developed by TTUHSC and 2THEDGE, LLC.

The eight-foot by nine-foot drone took its first test flight last week. It traveled round-trip several times between Alpine to Presidio, a total of 74 miles each way. This was the first and longest medical mission in the U.S. by Australian-based company Swoop Aero, which provided the drone technology, technical support and pilot training.

Future tests will measure the impact on the materials the drone carries, such as vaccines, medications, medical supplies and blood and tissue samples, and the drone itself, including maintenance, programming and flying it.

“We are physically on the frontier and we're pioneering this new drone technology to attempt to improve access to care for these very remote patients,” Billings said. “We don't have any physicians who live in Presidio, a community that economically should be able to support three or four family physicians full time. In the United States, our rural patients live several years less than their urban peers. Having a rural ZIP code is a risk factor to one's life. We know from data that rural residents do not live as long. They also live less of a quality of life because of the pain and suffering that happens as a consequence when there is little to no access to health care. The gap in the rural-to-urban-age adjust mortality disparity has been increasing since 2000 and that's a consequence of not having a robust rural health care system for our rural communities.”

Each year, millions of U.S. residents travel to another country for medical care, also known as medical tourism. If Presidio residents are minutes away from more health care resources in another country, what's stopping them from crossing the border?

Molinar, who experienced a medical emergency years ago explained, “I didn't even think about it because I'm proud of where I live. I'm a U.S. citizen and I live in this country. We have to work smarter and drones are a way of working smarter. I think health care is full of challenges and we need to make it easier. Why do we go to other countries with better health care? Why can't we have it here?”

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Molinar, a Presidio native, is passionate about her community’s access to health care and about using the latest technology to help them get healthy. In an area with no same-day delivery service, it could take a week to receive lifesaving medical supplies.

“Now we have telehealth so people can come to our clinics and get a checkup,” Molinar said. “But it’s no good if we don’t have medications. We need the drone technology to get medications in a time when they need it. Someone asked me for a glucometer and I took three days to find one.”

“Drones present with amazing technological breakthroughs, but we need to learn how they can best serve the rural health care space,” Sizer said. “Everyone is talking about how drones can help them, but we are doing something about it!”