WE'RE IN THE BIGGEST PUBLIC HEALTH EMERGENCY most living people have faced. Since March, campus researchers have had to pivot — to serve our most vulnerable, to seek answers to scientific questions generated by the pandemic, and to design new ways to carry out their research in a new world.

Pivot Point

Since March, campus researchers have had to pivot — to serve our most vulnerable, to seek answers to scientific questions generated by the pandemic, and to design new ways to carry out their research in a new world.

Researchers test toenails of North Carolinians who have battled COVID-19.

RAPID RESPONSE

Dr. Diya Abdo calls COVID-19 “anything but the great equalizer.” As the pandemic unfolded in the United States, many people bemoaned quarantine and self-isolation, but as the director of the UNC Greensboro Center for New North Carolinians points out, those are luxuries that many others can’t afford.

Immigrants, refugees, those in substandard housing, and low-paid and uninsured workers were among the groups most impacted by necessary closures. They were also more vulnerable to the illness due to employment and living conditions, and lack of health care and health care supplies.

As infrastructures stalled or failed, it became clear that communities served by UNC Greensboro centers were in the middle of Guilford County’s COVID-19 “hot spots.” Directors and their staff had to move quickly, in ways outside of their usual “accompaniment model” of service.

In collaboration with Dr. Stephen Sills, director of the UNCG Center for Housing and Community Studies, Abdo secured several grants. But they weren’t the typical grants, which might go toward case management and research. Instead, they were for helping clients meet their most basic needs: housing, food, and health services.

With support from the United Way’s Virus Relief Fund, Guilford County, and the North Carolina Healthcare Association, their two centers — known as the CNNC and CHCS — have been able to offer food assistance, rent support, cleaning supplies, masks, hand sanitizer, and school supplies to more than 100 families.

They’ve also provided educational materials, employment services, public health services, and interpretation services. The pandemic has been particularly devastating for residents at risk for eviction. In response, the Greensboro Housing Coalition has established a rental assistance program and Eviction Resolution Project. The CHCS and Legal Aid of NC are collaborators on the project, which received $90,000 in funding from the City of Greensboro and the Guilford County Homeless Continuum of Care.

In August, Sills says, courts were backlogged in North Carolina, with over 10,000 eviction cases. He expects even more massive numbers in January as the CDC moratoriums on evictions expire.

“They will attempt to negotiate between the tenant and the landlord, creating a payback plan but keeping people in place, so that they’re not displaced during these times,” Sills explains.

Meanwhile, Abdo and her staff, many from refugee and immigrant communities themselves, continue efforts to meet basic needs.

“I think this is a test to our responsiveness,” she says. “This kind of direct service is hard. But to stretch and do that, despite the challenges, shows we have a great infrastructure for supporting refugees and immigrants in this city.”

Public health graduate student Tiarra Brown works as an after-school program coordinator at the CHCS Cottage Gardens Resource Center, located in an apartment complex in east Greensboro.

While the in-person program is on hold, Brown is doing food drop-offs and has organized virtual tutoring, in addition to coordinating the provision of educational supplies, food gift cards, and rental assistance checks provided by grants.

“It’s frustrating not being able to do in-person programming,” she says, “but I am incredibly proud to be a part of CHCS and the Greensboro community right now. We noticed a need, especially during the pandemic, and came up with ways to address it in a very short amount of time.”

The CNNC’s Natacha Nikokeza distributes tablets — donated by UNCG’s Lloyd International Honors College — to kids at Glen Haven Community Center, to support distance learning during the pandemic. Story photos were taken between July and October 2020.

Researchers test toenails of North Carolinians who have battled COVID-19.
PIVOT
PINT

With community spread of the novel coronavirus occurring in nearly every country, preymysymptomatic transmission is perhaps the most intense challenge in public health worldwide.

A recent study in Nature Medicine posited that preymysymptomatic disease stages accounted for 45% of secondary case infections. There’s a critical need for simple and reliable methods to detect the virus early during the incubation period and in asymptomatic patients.

Sensing the virus at such a stage – when viral particles are at very low concentrations – is a challenging task.

Current methods require nucleic acid amplification, explains UNCG assistant professor Tetyana Ignatova in the Joint School of Nanoscience and Nanotechnology. “They’re expensive, time consuming, require advanced expertise, and can’t be made widely available at points of care – where patients are tested. But what if we could do it in a different way: quickly, cheaply, and with high accuracy? Dr. Ignatova is trying just that, through a new NSF-funded collaboration with Penn State University and the National Institute of Standards and Technology.

The team – comprised of nanoscientists, engineers, and virologists – is working on a device that uses magnetic nanoparticles to bind live virus molecules.

“A magnetic field will be used to concentrate the nanoparticles that have bound the virus,” Ignatova explains. “And they’ll be designed to fluoresce or glow. Those steps, which the doctoral student Kirby Schmidt are developing, will allow detection of the virus at very low concentrations.

“If we can manage this,” says Ignatova, “we can make the detection process much, much more efficient.” Because the test only senses live molecules, it could also reduce false positives from patients tested after the disease has run its course.

“The nanoparticles can attach to any type of coronavirus, not only the novel SARS-CoV-2,” Schmidt adds. “And it may be possible to detect other viruses this way. I am hopeful that this research will drive future detection methods.”

EARLY DETECTION

and zinc levels tested. Instead of doing blood samples, Aramh and Perri are using toothal samples that participants submit by mail. With the interviews performed remotely, they are carrying out their research in a completely contact-free manner.

The study should be complete by the end of the year. “Currently we have a lot of people who have put their lives on the line, doing what can to fight this battle,” says Aramh (top right). “We are not medical professionals, so we cannot work at the front lines. But there is something that we can do, and to be able to help fight this virus is very rewarding for us.”

Avatar activated

Kinesiologist professor Jennifer Etnier is engaged in a $4.3 million National Institutes of Health clinical trial on physical activity and Alzheimer’s disease – a continuation of a 2013 study that showed exercise correlated with improvements in memory.

Her team is currently looking at the effect of exercise on middle-aged and older adults with a genetic risk of Alzheimer’s disease. “If we could delay Alzheimer’s by one to two years, the impact would be enormous from a public health perspective,” Etnier says.

The COVID-19 pandemic interrupted two crucial parts of the study: regular, guided exercise for participants and fitness and cognitive testing at regular intervals. To reinstate the first, they converted their exercise program from face-to-face YMCA sessions to a virtual format, which Etnier says has worked well, especially for new recruits.

Since researchers gained approval to resume sessions to a Zoom format, which Etnier says has worked well, especially for new recruits.

The avatar provides all necessary verbal instructions, so

But perhaps the biggest difference is how the four-hour cognitive test is conducted. Dr. Shiri Park, a postdoc on the study, has an interest in AI technology. After experimenting with Google’s text-to-speech generation technique, he decided to create an avatar who can function as a director for the test, decreasing contact between the researchers and subjects.

The avatar provides all necessary verbal instructions, so the researcher speaks far less, lowering the risk of transmission through expedited droplets.

With the avatar leading, the testing is more standardized and can now be carried out by a student or staff member with less training. It’s an unexpected silver lining. Both Park and Etnier foresee using the avatar in the future, even after the pandemic ends.

But Etnier’s favorite thing about the avatar is its approach. “Things will get better,” the avatar tells study participants. “So stay strong during this tough time. Although I don’t produce respiratory droplets, I’m going to put on my mask because it’s a rule at UNCG.”

And then, he puts on his mask.

But perhaps the biggest difference is how the four-hour cognitive test is conducted. Dr. Shiri Park, a postdoc on the study, has an interest in AI technology. After experimenting with Google’s text-to-speech generation technique, he decided to create an avatar who can function as a director for the test, decreasing contact between the researchers and subjects.

The avatar provides all necessary verbal instructions, so the researcher speaks far less, lowering the risk of transmission through expedited droplets.

With the avatar leading, the testing is more standardized and can now be carried out by a student or staff member with less training. It’s an unexpected silver lining. Both Park and Etnier foresee using the avatar in the future, even after the pandemic ends.

But Etnier’s favorite thing about the avatar is its approach. “Things will get better,” the avatar tells study participants. “So stay strong during this tough time. Although I don’t produce respiratory droplets, I’m going to put on my mask because it’s a rule at UNCG.”

And then, he puts on his mask.