

# As pandemic disrupts research, scientists look for new ways forward

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Amid the coronavirus crisis, closed classrooms are the most visible blow

universities have taken to their core mission to acquire and share knowledge. But interruptions in clinical trials and lab research also are hampering that mission, administrators say.

As authorities issued shut-down orders and "safe-at-home" guidance in the spring, universities limited their on-campus research. Experts say that could have long-term repercussions on when lifesaving therapies make it through the pipeline and take a toll on both scientific and career progress.

At Boston University Medical Center, for instance, most on-campus, in-person research activities were ramped down, said Andrew W. Taylor, associate dean for research at Boston University School of Medicine. "While some of the activities can be done remotely, new data generation by lab bench activity as well as projects that require testing and samples for [clinical research](#) have been hurt."

The research delays also may have caused gaps in data, he said, and since recruitment for clinical trials was halted, investigators will have to make up time. "This is delaying new studies and publications."

Currently, BU Medical Center research is "rightfully" focused on finding lifesaving COVID-19 therapies and a vaccine, Taylor said. But the delay in so many other studies "means that it may take longer for new effective therapies for other diseases, like for cancer, hypertension and diabetes, to be brought into the clinic. Since it can take decades for the pipeline of research discovery to therapy (in people), delays mean more years of preventable suffering and additional loss of life."

At the University of Wisconsin-Madison, research still conducted on campus after the stay-at-home orders were issued included studies crucial to participants' health and work involving long-running or time-sensitive data or critical organisms such as cell cultures or bacteria that

would be in jeopardy, said Steve Ackerman, vice chancellor for research and graduate education.

How much individual research projects have slowed depends on the techniques involved, he said. "Some work, such as theoretical modeling or data analysis, can occur remotely, and while it is slower and more cumbersome, they are achieving research objectives. Other research requires lab equipment that is only available on campus. ... That has slowed down progress."

Some campus research facilities are now re-opening, said Ackerman, a professor of atmospheric and oceanic sciences.

Like other universities, UW-Madison also has pivoted to projects addressing COVID-19. For instance, a team investigating transmissibility of avian flu in ferrets now has shifted its focus to COVID-19 in hamsters to determine whether previous infection might provide future protection against the coronavirus.

At BU's National Emerging Infectious Diseases Laboratories, a state-of-the-art biosafety research facility, scientists have pared back their normal research projects to understand how the coronavirus impacts infected cells and organs. The goals are to search for and test potential vaccines and treatments for COVID-19.

Betsy Nugent, chief clinical research officer for UW-Madison, said wherever possible, researchers have been using telemedicine and other alternatives to face-to-face encounters to conduct clinical trials.

"COVID has necessitated the delay of some research visits, and study teams are working hard to start to resume some of those visits if deemed safe and appropriate." Infection control specialists are helping apply safety guidelines for in-person encounters in [clinical trials](#), she said.

"Going forward, we'll continue to need to be creative and thoughtful in our methods of interacting with research participants to keep everyone involved safe," Nugent said.

Ramping down scientific studies can take a toll not just on scientific progress, but career progress as well, Taylor said. Postdoctoral fellows and students might need specific projects completed to graduate, complete a doctoral thesis or earn a certification. Medical students and some faculty also might be affected.

"There is a real concern that this has had an impact on faculty development, especially for junior faculty," said Taylor. "For the medical students, it's still not clear how changes in clinical rotations and activity will affect their training.

"Over the next year, and possibly longer, we will have to consider and understand the toll that the pandemic has had when considering faculty advancement and student achievements."

Both Ackerman and Taylor believe the research challenges at universities will be ongoing.

"I think this pandemic is with us for at least a year, and all researchers will have to learn to operate their professional careers in a manner that reduces the risk of transmitting the virus," Ackerman said.

Taylor expects it will be months before research returns to a normal level of productivity.

"As long as the possibility of an increase in viral infection remains, there will be limits on how many persons can be on the campus and (we will) remain ready to ramp down quickly if needed."

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