TechLink

VA | U.S. Department of Veterans Affairs

CASE STUDY: XENEX

VA Lab Collaboration Improves Disinfection Practices

The impact of tech transfer is profound. TechLink, the national partner for technology transfer for the U.S. Department of Veterans Affairs (VA) and Department of Defense (DOD), has brokered over 2,000 tech transfer agreements between businesses and federal labs at no cost to companies.

Through technology transfer, federal inventors can collaborate with business executives to solve common problems and objectives. For example, Xenex's partnership with the VA began as an effort to improve the lives of veterans while making hospitals safer for patients.

Combating Healthcare Infections

Dr. Chetan Jinadatha, Chief of Infectious Diseases at Central Texas Veterans Health Care System, developed the Disinfection Tracking System (DTS) at the Olin E. Teague Veterans' Center in Temple, Texas in 2012. He was seeking researchers pursuing similar disinfection methods when he met with Dr. Mark Stibich, founder and Chief Scientific Officer at Xenex Disinfection Services Inc.

"I met Chetan in 2010 or 2011 at an infections-control conference," says Stibich. Xenex was a young company then, with a display at the conference.

"We had a great conversation about some ideas, especially around how we can track hospital-acquired infections and how we can better monitor the situation so that we can measure interventions. I've known him since then, and we've done a couple of projects together. We had a Cooperative Research and Development Agreement at the Temple VA where he works, and we've done a number of studies together and have been collaborators ever since."

Xenex was selected for a partnership project and the 2014 CRADA because of the company's track record in commercializing infection control technology — and its evidence-based approach to developing products.

The VA and Xenex partnership focused on the transmission of dangerous pathogens between healthcare rooms by portable medical equipment (PME) such as IV pumps, workstations on wheels, and vitals machines. The parties set out to track how PMEs were cleaned and disinfected.

In 2015, Xenex exclusively licensed the DTS technology — naming it TrackMate — and won SBIR funding to continue researching the disinfection device's impact on microbiology, cleaning behaviors, and other factors.

During this time, Xenex explored research development questions related to commercial application:

- What feature sets – like affordability and simplicity – would be best?
- What would the reception be among healthcare workers (i.e., ease of use)?
- How does cleaning affect equipment?

Xenex also created and studied 250 beta devices, publishing four peer-reviewed papers on behavioral and worker acceptance of the technology. The Xenex team modified TrackMate based on feedback from healthcare workers, and then formally launched it as a commercial product in 2023.

"TrackMate is really there to give our healthcare workers more information about the environment they're in," says Dr. Sarah Simmons, Xenex Senior Science Director.

"When we're looking at portable medical equipment, we don't know if it's clean or dirty because we can't see the bacteria that's getting left behind on the equipment. TrackMate attaches to the portable medical equipment and it gets treated like a part of the device. So when a staff member is wiping down, say an IV pump, they're wiping down TrackMate, too. It logs this event."

Smaller than an index card, TrackMate senses and tracks liquid chemical or ultraviolet cleaning events. As the PME it is attached to is disinfected, TrackMate captures data:

- Compliance — Every cleaning event is logged and registered to a portal.
- Training — Management tracks trends in disinfection and troubleshoots gaps and problems, such as when one department believes that another is responsible for disinfection. This information allows supervisors to identify retraining needs.
- Clinical — The disinfection status of a device is known at the point and time of care. Hospital staff immediately know if the PME is ready for use.

Monitoring disinfection limits the spread of infection and allows medical professionals across departments to identify when an area was last sanitized. A study by the National Institues of Health found TrackMate prompted twice as many cleanings without the need for additional training, and compliance tracking occurred 100% of the time. This means that TrackMate helps to prevent the spread of dangerous infections from pathogens such a MRSA, Staph, or Enterococcus — protecting the health of the more than 9 million veterans enrolled in the VA health system, as well as millions more patients in civilian hospitals.

For the invention and process that brought TrackMate to market, the Federal Lab Consortium awarded the inventors and related tech transfer specialists with its Excellence in Technology Transfer Award.

"Working with the tech transfer program has been really great," says Dr. Stibich. "We got through the licensing agreement, and that wasn't too burdensome. The annual reporting and everything we've done has been a little more formal than an email, but not much."

"There wasn't a lot of reporting burden and the [tech transfer] process provided a lot of flexibility for us as the product took different directions during development."

Further development and features are planned for TrackMate as the collaboration between Xenex and Dr. Jinadatha continues. The need for disinfection practices and compliance across industries will likely spur the use of TrackMate beyond healthcare. Dr. Simmons, for example, previously worked as a municipal health inspector. In reviewing restaurant safety, Simmons had to rely on manual documents to track disinfection practices in food prep areas. "It would be much more robust to log that with TrackMate," she says. "As you're wiping down equipment, you wipe down TrackMate and you have a lot more accountability in your disinfection processes."

She also sees TrackMate's potential in other settings like public restrooms and play spaces in daycare centers.

Researchers and executives in virtually every industry can leverage the innovation power of government laboratories by working with TechLink. What problems is your industry trying to solve, and which federal researchers can help to address those needs? Let TechLink help you bring life-changing innovations to market via its technology marketplace.

TECHLINKCENTER.ORG