

# One Dose at a Time



It took a village to plan from scratch and move with Herculean speed to open the UVM Health Network's vaccination clinic at the Champlain Valley Expo in Essex in December of 2020. In its seven months of existence, more than 80,000 vaccines were administered there, helping Vermont become the first state in the nation to vaccinate 80 percent of its population with at least one dose.

## Building a Team of Allies

ONE DAY IN LATE APRIL, HOWARD SCHAPIRO, M.D.'80, gathered with a group of about 50 nurses, vaccinators, pharmacists and support staff to pose for a group photo (at right). He stood toward the back, cracking a wide smile behind his mask.

The photo was a tribute to the people who had worked to set up the COVID-19 vaccination clinic at the Champlain Valley Expo in Essex. Schapiro,

UVM Health Network Chief Population and Quality Officer, remembered all too well how overwhelming it had seemed when they first began setting up the clinic four months earlier.

Months before the Centers for Disease Control and Prevention (CDC) rolled out a system for patients to self-schedule appointments, before anyone even really understood how a mass vaccination system was going to work, the State of Vermont put out calls to health care organizations asking them to create high-capacity vaccination centers as fast as possible. The UVM Medical Center responded, administering the first COVID-19 vaccines in the state at a small clinic set up at the hospital.

But more was needed, and soon the most urgent and profound public health challenge of our lifetime fell onto Schapiro's desk: How to vaccinate tens of thousands of people as quickly as possible.

"Today, sitting here, I think of that as a privilege," he says. "But I didn't think that on that day."

Understanding what was at stake, he started building an army of allies, the vaccine their only weapon. He called in experts from UVM Medical Center's pharmacy department and technology team, as well as the Network's Critical Care Transport Team, who had experience setting up the UVM Health Network's first mobile COVID-19 testing site. Next, the Expo, for help with the site and facilities; Green Mountain Messenger, for assistance shuttling vaccines back and forth every day from UVM Medical Center to the Expo, following exacting temperature protocols. The lineup of partners was long, but time was short. →

Photos by Ryan Mercer



The staff of the University of Vermont Health Network's COVID-19 vaccination clinic at the Champlain Valley Exposition in Essex Junction on April 26, 2021. Howard Schapiro, M.D.'80, stands in the back row, far right.

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At times, there were significant hurdles, especially at the beginning. While the state had provided a list of first responders to contact—those in Tier 1A, eligible for the first vaccinations—the list was incomplete; fire departments, police departments, EMTs and other first responders in Chittenden County didn't have complete contact information themselves. So, it was left to Schapiro's team to track down thousands of people.

"We started making hundreds and hundreds of phone calls every day," said Scott O'Neil, head of UVM Health Network's Patient Service Access Center.

Schapiro tapped Todd Young, head of the UVM Health Network's Telehealth program, to help things move faster. Young worked with people like senior project manager Roberta Mitchell, to come up with a patient self-schedule model ahead of the CDC's rollout, allowing the number of vaccine doses administered to rise from a few dozen a day to hundreds.

By the end of January, the UVM Medical Center and the vaccine clinic at the Expo had administered more than 10,000 COVID-19 vaccine doses to frontline and community health workers.

From there, Schapiro, a former chair of the Department of Anesthesiology, put together a team of what he calls "very good thinkers." People like Nurse Manager Nicole Courtois, of UVM Medical Center's process improvement department, who took over from Mike Conti from the Critical Care Transport Team. Her mission: scale up operations as much as vaccine supply would allow.

By late May, about 120,000 COVID-19 vaccine doses had been administered by Network COVID-19 clinics throughout the region, at least 65,000 at the Expo alone.

"To a person, the team's commitment, their willingness to give their time, to think outside the box... to do whatever it took to get it done, has been just amazing," says Schapiro, who clearly enjoys talking about the whole experience... now. He credits his team for making the clinic what he refers to as "the happiest place on earth."

"During my entire anesthesia career, I could probably say I contributed to saving a few lives," says Schapiro. "Today I can say that I've been lucky to be part of a phenomenal team that has so far put more than 80,000 doses of a lifesaving vaccine in people's arms."

On that photo-op day in late April, the whole group was giddy. They knew they had saved many lives and given hope to thousands more. \*\*\*

## Six Hours and Counting

### CELSIUS AND FAHRENHEIT WERE

Kevin Smith's steadfast companions when ushering the COVID-19 vaccines from UVM Medical Center's loading docks to the COVID-19 vaccine clinic at the Champlain Valley Expo in Essex.

The process began on Thursday evenings, when Smith, the Pharmacy Operations Manager at UVM Medical Center, received an email from the Vermont Department of Health detailing how many doses of vaccine the hospital would expect the following week, and what type. The list was split by dose (first or second) and where it was coming from (the vaccine manufacturer or Vermont Department of Health).

In this case, the vaccine arrived from Pfizer. The timer started ticking right away: Smith and his team quickly unpacked it,

moved it to a special freezer, verified that the shipping container maintained the appropriate temperature during transport, and logged in the inventory.

"I'm mostly behind-the-scenes," Smith said, "but, like the rest of our pharmacy team, I'm thrilled to be able to use my expertise for this effort."

Part of that expertise was knowing how critical it was to keep the vaccine at the right temperature: The Pfizer vaccine must be kept between minus 112 degrees Fahrenheit and minus 76 degrees Fahrenheit for long-term storage. Fortunately, it didn't need to be kept nearly as cold for the short trip to the Expo.

There, the painstaking process of compounding—or creating the vaccine mixture—began, a process dictated by temperature and time. Different vaccines require different temperature limits to remain effective, and the clock starts ticking the second a vial is opened; if they aren't used within a given amount of time, they aren't effective.

The trick is to prepare vaccine doses in advance of patient arrival, but not too far in advance, explained Michele Corriveau, the UVM Medical Center

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Kevin Smith, Manager of Pharmacy Operations at the University of Vermont Medical Center.

Pharmacy Oncology Manager. The number of appointments each day had to be closely calibrated with the time it took a pharmacist to prepare each dose.

"We figured out it takes one minute per dose," says Corriveau. "That, along with the fact that we have six hours once the vial is opened before we have to get each dose in a patient's arm."

The process began when the pharmacist or pharmacy tech inverted the vial exactly 10 times to ensure that the suspension in the vial was well mixed. It was then inspected for color and clarity, the cap removed, the stopper swabbed with an alcohol wipe, saline added and air removed. Again, the suspension was gently inverted 10 times and again inspected, an onerous process that only a chemist could love.

"No waste," said Smith. "That's our daily challenge."

To help ensure that goal, each syringe was labeled: type of vaccine, volume, manufacturer's lot number and the "beyond use" date, the time after which the vaccine could no longer be administered.

A pharmacist can compound between 8 to 10 vials per hour, so these calculations dictated the workflow each day at the vaccine clinic. One key technique to ensure that every bit of vaccine was extracted involved using a needle with a small 'hub' (the plastic end that attaches to the syringe tip). Needles with larger hubs tend to have 'dead' space, in which small volumes of vaccine can pool after the injection, potentially wasting vaccine.

Promptly at 4:30 p.m., the unopened vaccine vials were transported back to the UVM Medical Center loading dock where the unopened vials were returned to refrigerators and freezers. Smith set about the work of preparing to start all over again in 12 hours.

"To be able to help people feel like they're going to get through this?" he said. "It's just such a privilege. \*\*\*"



Michele Corriveau



READ MORE STORIES ABOUT THE VACCINE CLINIC AT THE CHAMPLAIN VALLEY EXPO AND VIEW A VIDEO: [MED.UVM.EDU/VTMEDICINE/WEB-EXTRAS](https://www.med.uvm.edu/vtmedicine/web-extras)



Todd Young, Director of Telehealth for the UVM Health Network

## Scaling Up

### IT MIGHT SEEM LIKE A BIG LEAP—

from milking cows to leading the University of Vermont Health Network's Telehealth Services—but Todd Young says working on his grandfather's farm taught him one important lesson: how to work hard. Over the past year, he's brought his work ethic to an unprecedented array of challenges: A pandemic, a cyberattack and, most recently, the mission of setting up complex IT systems to support the COVID-19 vaccination clinic at the Champlain Valley Expo in Essex.

As the pandemic descended upon Vermont, seemingly overnight video visits became the primary means for people to see their health care providers. Young and his team from IT oversaw the UVM Medical Center's transformation from conducting 1,000 telehealth visits per year to 1,000 video visits each day during the height of the pandemic.

Then a cyberattack hit, and Young's team had to build systems—some digital, some so manual they involved sorting papers into cardboard boxes—to get the UVM Medical Center through the worst days. Still reeling from that effort, Young was asked to help with the Essex vaccination effort.

One of their first assignments was to help

build a system that would allow patients to schedule their vaccination appointments themselves.

"Initially, the team had to consider varying timeframes for different vaccines, and Pfizer requires three weeks between doses; Moderna requires four," explains Young. "They had to build processes to not only address this factor, but to make sure that the Expo staff could document the timing easily and efficiently. "It was all about building quality and efficiency into the systems we developed," he says.

Next, rather than a paper sign-in processes, the team provided the technology that allowed the staff to be sure that patients' vaccinations were properly documented. "It's an important patient safety and quality issue," Young says.

Ultimately, the many systems the team put in place allowed a rapid increase in vaccinations. "For the people who work here it's amazing to know we went from a few dozen doses to more than 1,000 per day," says Stephyne Burke, R.N., the manager of the clinic. "I don't think the patients coming in even realize it, because the process is so smooth."

"This work proved we can change the experience for our patients and our people when we unite around a common cause," Young says. "It connected me to the community more than anything else I've ever done." VM

*These stories were originally published by the UVM Health Network. To see the complete series, visit: <https://www.uvmhealth.org/coronavirus/staying-healthy/champlain-valley-expo-vaccination-clinic>*