For pharmacists, nothing is more important than providing the correct medicines at the correct dosage. That's why the highest award given by the American Society of Health-System Pharmacists (ASHP) is for Excellence in Medication-Use Safety. Last year the award went to Yale-New Haven Hospital for an innovative telepharmacy program that uses audio, video, and digital photography to deliver safe treatment to cancer patients receiving IV chemotherapy in Smilow Cancer Hospital’s 11 locations outside of New Haven. No other cancer hospital offers anything like it.

This year the hospital submitted an application for another ASHP award focused on oral chemotherapy: It’s a program aimed at improving the safety, compliance, and monitoring of patients who receive their cancer chemotherapy through oral medicines taken at home.

Both programs are unique to Smilow, where the department of Oncology Pharmacy Services is establishing itself as a trailblazer in the field.

The telepharmacy program came about when Smilow decided to extend its reach in 2011 by integrating a group of private oncology practices with offices throughout the state. The goal was to bring first-rate cancer treatment to patients at Smilow Cancer Hospital Care Centers near their homes instead of requiring them to drive to New Haven. The immediate issue was how to ensure that patients at the new care centers received the same quality of treatment given at Smilow, while also keeping the treatments convenient and seamless for patients, with minimal wait times.

“So we were challenged with a lot of things,” said Howard Cohen, RPh, MS, FASHP, Director of Yale-New Haven’s Oncology Pharmacy Services. “We had to introduce pharmacy and pharmacists into these centers in a very short timeframe, there was a shortage of available pharmacists to hire, and they also needed to be oncology-trained, which made it that much harder.”

Even if such pharmacists could be found, Cohen didn’t want them tied to computers all day, invisible to everyone in the care centers while they compounded drugs. He wanted them available to physicians, nurses, and patients to answer questions and confer about the drugs being used. Not all the new centers were busy enough to need a full-time pharmacist, which added another wrinkle to the issue of personnel.

Cohen and a multidisciplinary committee designed a telepharmacy model. It would allow pharmacists to oversee the mixing of drugs by pharmacy technicians in multiple places, would free pharmacists to interact with providers and patients, and would allow staffing flexibility. But when they asked the state of Connecticut for permission to run a pilot study, they ran into a wall: state law required a supervising pharmacist and pharmacy technician to be located in the same building. Nevertheless the Smilow team convinced the state to allow the pilot. It worked so well that in April 2012 the state legislature passed a new law permitting hospitals to use telepharmacy, under strict conditions.

“I wasn’t sure we could pull it off,” said Catherine A. Lyons, RN, MS, executive director of patient care services at Smilow. “Number one, we had to figure out a way to provide the service given our resource and time limitations, so I wasn’t sure we could meet the commitment to provide the same standard of care to patients in the centers. Pharmacy came up with an incredibly creative way to meet that expectation. And number two; we had to change state law. It’s extraordinary we were able to do that. It’s a ground-breaking program.”
It’s also very safe. Here’s how it works: a physician writes a chemotherapy prescription, which is entered into Smilow’s electronic medical records system. A nurse reviews the script for accuracy, and then sends it to a pharmacist, who reviews it against the patient’s labs for both accuracy and appropriateness. Any pharmacist can do this verification on-site or via computer. Next the order goes to a pharmacy technician at the location where the patient receives therapy.

There, in a sterile “clean room,” the technician mixes the prescription’s drugs, using menu-driven software that requires a step-by-step procedure. The software asks the tech to show the name of the drug, the lot number, and the expiration date, all of which get photographed. If the software says to put five milliliters of a drug into a syringe, the tech must take a photo of the syringe with that exact amount in it before being allowed to continue. The digital photos provide a record of everything done.

A second level of safety comes from bar coding. The tech must scan every drug before mixing it into a prescription. If the drug is incorrect, the software halts the process. This eliminates errors due to what pharmacists call “look-alike-sound-alike” drugs. If the tech skips any instruction or ignores any stop sign, a large X appears on the screen.

In addition, a wide-angle camera in the clean room allows a pharmacist anywhere in the system to observe the tech via computer. If the pharmacist or tech needs to speak, they can do so through a hands-free phone system.

Once the prescription is mixed, the tech puts it in a bag, labels it, and sends it to an area called the sorting cube. A second pharmacist reviews the photos to make sure the prescription was mixed correctly and no steps were missed. Once the prescription is approved, a second label is applied and the medicine is ready to go.

Though most of the care centers now have a pharmacist on site, a pharmacist can do many of these steps remotely. This frees the resident pharmacist to interact with the rest of the team at the care center. “The pharmacist becomes visible,” said Cohen. If a pharmacist at a care center needs to be part of the morning huddle to discuss patients, or to consult on medications, or to answer questions from patients, another pharmacist can step in remotely.

“Patients, pharmacists, and technicians all benefit from telepharmacy,” said Nancy Beaulieu, RPh, BCOP, Manager of Oncology Pharmacy Services. “Particularly at the cancer care centers. For the patients, it provides the same level of safety, scrutiny, and oversight as in the hospital, and for the staff, it provides a lot of flexibility and support.” For instance, if a care center has a heavy flow of patients scheduled for a certain day, telepharmacy allows another pharmacist to help, even from 40 miles away. “It’s like having 10 pharmacists at every site,” said Beaulieu.

These days not all cancer patients come into a center for IV chemotherapy. Many cancer medications can now be taken orally at home. For physicians and pharmacists, that’s worrisome. “We didn’t know anything about what was happening to patients,” said Osama Abdelghany, PharmD, BCOP, Manager of Oncology Pharmacy Services. “The physician wrote a prescription, but we didn’t know if the prescription was filled, or if the patient could afford the medication, or if patient took it correctly or did well on it, or if they took it all or stopped because of side effects. All of that was a black hole because none of it was documented in our records.”

Another multidisciplinary team began developing a program to provide better care to patients using oral chemotherapy. The goals were to standardize the process of prescriptions, to make sure the patient actually filled the prescription, to educate the patient about the medication, and to monitor the patient for toxic side effects and compliance. “Even if they’re not in the hospital or our infusion centers,” said Cohen, “they’re still our patients.” The pilot program began in March and has quickly expanded to the care centers. About 200 patients are now participating.

To help track whether patients filled their prescriptions, Smilow opened a specialty pharmacy. So far, about half of the oral chemotherapy patients are using it. Regardless of where the prescription is filled, someone from Smilow calls the patient twice a month to make sure the drug is being taken and taken correctly, and to ask about side effects.

“Other specialty pharmacies just fill the prescription,” said Abdelghany, “but we are following every single patient, even if they filled it outside our pharmacy. From a business perspective it’s crazy, but it’s the right thing to do.” All the information goes into the patient’s electronic record. “This information was not known before,” added Beaulieu, “and now it’s documented in a systematic way.”