# Leveraging Technology for Medication Administration Accuracy

**Rohan Coelho**

In January 2006, the records room at Salem Senior Housing was almost entirely dedicated to storing paper medication administration records (MARs) for its long-term care (LTC) residents, housed in 60 apartment complexes with 2400 units each in North Carolina, Pennsylvania, Virginia, and West Virginia. Today, that records room is nearly empty.

The organization now uses an electronic medication management system that makes voluminous paper records obsolete, improves accuracy and efficiency, and brings the possibility of error- and omission-free MARs closer to reality.

According to Salem's Dr. Saundra Spillman, vice president and director of operations, the search for a means to increase accuracy in MARs and to improve the efficiency of the whole process of ordering and administering medications had been ongoing. Spillman was interested in a system that could also provide an end-of-shift record for each staff member, detailing any missed medication tasks.

The answer Spillman found was a system called TOCCARÉ™, developed by Daverci Solutions. A pilot program was begun in 14 of Salem's LTC facilities in North Carolina.

The TOCCARÉ system is a complete supply-chain management loop between a facility and pharmacy. It provides electronic MARs to the facility and ensures that each



**Figure 1.** The electronic MARs produced by Daverci's TOCCARÉ system support several security features to reduce medication errors, such as use of resident's photos and familiar yellow highlights for discontinued orders, warning users not to give a medication.

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scheduled medication administration task for residents, sometimes called a *med pass*, is accurate.

Medication orders and refills are generated electronically at a central computer in the facility and submitted electronically to the pharmacy. At the pharmacy these orders are reviewed and corrected as necessary. Approved orders are shipped back to the facility. The facility completes the loop by receiving the orders on the computers. Any corrections made at the pharmacy are automatically reflected on the resident's electronic MAR at the facility, eliminating the need for end-of-month MAR reviews.

Staff perform med passes using hand-held computers (Figure 1). Each medication cart is assigned a device on which staff can download medication administration orders from the central computer. All scheduled medications, treatments, and supplements are loaded onto the device, including medications each resident takes as needed. The downloaded medication orders include only those of residents and medications scheduled for the particular time med pass. Staff report that they save time and are more accurate when using electronic MARs. At the end of the scheduled medication administration, the results of administration are transferred back to the central computer, updating the electronic MAR. The data document not just the administration of routine medications, but last treatments, supplements, and drugs taken PRN, helping to eliminate MAR errors. As a security pre-

caution, Dr. Spillman has all of her facilities print hard-copy MARs at the beginning of the month. "But we've only had to consult those printouts 3 or 4 times since last September," she reports.

The Daverci TOCCARÉ system has been deployed in phases at the Salem Senior Housing residence network, starting with the electronic MAR system. As with any new system, different facilities have had different experiences. The smoothest transition occurred at Salem's newly built residence in Wadesboro, North Carolina. The staff were very open to change, especially to an electronic alternative to paper MARs. Since there was no history of paper MAR use at this new facility, the staff were able to start paperless. System installation and adoption was quick, easy, and smooth, starting with admission of the first resident at the facility.

For other facilities, ones that have established paper-based MAR systems, the company recommends a 2-week changeover period during which paper and electronic MAR records are maintained simultaneously before the continuous use of paper records is discontinued. For example, one residence in the Salem network resisted making the switch. Its resident care director, Cynthia Petree, anticipated a great deal of stress for herself and her staff from a paperless MAR computer system. Because her priority was making relationships with residents, she worried that the computer system would be a disruption, but agreed to implement the system on a trial basis.

Skeptical staff members worried about glitches. And indeed, a physician prescribed a medication that was not in the system. But the staff were able to get answers from Daverci's 24/7 live support, which gave them and the director confidence in the system and services.

As the staff learned to use the system, they came to like it. "When we were able to cut 30 to 45 minutes out of every 1 to 1½ hour med pass, that got my attention," says Petree. "It has given us time to do what we do best, interact more with residents and provide more care, give more showers, and take someone for a walk."

As Petree and her staff gained more knowledge, they gained more control over the system. "We really like the NOT NOW button," Petree says. "The hand-held computer may prompt us to take a weight or blood pressure, but if the resident is finishing lunch, we can press the NOT NOW button. Of course, that's just common sense. The difference is that while

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the system lets you defer a step, it doesn't let you forget it. You can't sign off until you've completed every step of your med pass." The hand-held devices also provide an extra level of error-prevention because residents' photos are displayed with their medication needs, and the system forces the user to read the instructions for administering the medication.

Training newly hired medical technicians to use the electronic system has become easier too. "The new system really is as easy to use as an ATM," relates Petree. "When they see the resident's picture pop up, they say, 'That's very cool.' Plus the system forces you to read the instructions for administering the medication. With the old paper system, people sometimes cut corners, which is when errors can occur."

North Carolina state surveyors, in an effort to improve care in assisted living (AL) centers and nursing homes, use MAR accuracy as an indicator of the overall quality of care provided by a given facility. In the past, medication errors were a key factor when problems surfaced. Very little formal training is given to nursing assistants and medication technicians or aides. Knowledge is gained from experience, but procedures vary. "The state views the accuracy with which MAR records are managed as a key indicator of quality operations management overall. If a facility can get that part right, most likely the other bases are covered as well," Salem's Spillman explains.

"The state asked for all our information and we didn't have any discrepancies," Petree reports. "Knowing that they've made a perfect med pass gives my staff the satisfaction of having done everything right, but also relieves them of the worry of having missed something."

The next step for Salem Senior Housing is finalizing the electronic connection to its pharmacy, BrookCare. This will be accomplished by installing the integration component to BrookCare's pharmacy billing system. The supply chain loop for the electronic ordering of medications will be completed along with barcode scanning for receiving, administering, and inventorying medications.

Salem's Spillman notes that once MAR data are available in electronic files, they can be easily analyzed and reports generated. "With paper, you would have had to count everything manually. We never would have done that," admits Spillman. For more information, see www.daverci.com.            ALC

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