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Strong Medication Reconciliation Effort Lowers ADE Readmissions

Strategy bridges inpatient-to-outpatient care gap

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Rosemont, Ill.—Intensive pharmacist-provided postdischarge medication follow-up dramatically lowered the rate of readmissions for adverse drug events (ADEs) in a large health care system's hospitals, according to presentations at the American Society of Health-System Pharmacists (ASHP) Summer Meeting.

Pharmacists at Novant Health found that patients enrolled in the health system's SafeMed medication reconcilation program were 4.19 times more likely to be readmitted within 60 days and 1.74 times more likely to be readmitted within 30 days with an ADE than a control group not participating in the outreach program, reported Terri B. Cardwell, PharmD, clinical pharmacist and SafeMed team leader.

In addition to reducing ADE-related readmissions at 30 (2.0% vs. 3.4%; P<0.0074) and 60 days (0.6% vs. 2.5%; P<0.0001) during the evaluation period between January 2007 and October 2008, Novant's pharmacist-led SafeMed team reduced overall readmissions at 30 (6.0% vs 13.1%; P<0.0001) and 60 days (2.7% vs 7.7%; P<0.0001).

These results garnered Novant Health, which serves more than 5 million people in North and South Carolina and Virginia, a great deal of positive attention, including the ASHP Research and Education Foundation's 2008 Award for Excellence in Medication-Use Safety. Congratulating the Novant pharmacists on the program during the question-and-answer session, Anne M. Bobb, RPh, clinical informatics pharmacist at Northwestern Memorial Hospital, in Chicago, said, "You've probably done more for our profession with this program than all of us have done in a long time."

In an interview with *Pharmacy Practice News*, Ms. Bobb said that one of the things that "jumped out" at her about the Novant program is the success it has had in "bridging from the inpatient to the outpatient setting. Most organizations don't do that very well."

Novant started the SafeMed program in 2006 in response to increasing reports of ADE-related readmissions, particularly in elderly patients. A lack of communication between hospital caregivers, patients and their primary care providers (PCPs) was a major source of the problems, noted Dr. Cardwell. "Physicians often aren't aware of what medications other providers are giving their patients," she said.

Tips To Facilitate a Medication Reconciliation Program

Along the way, Dr. Cardwell and her colleagues picked up some useful knowledge about the best ways to approach medication reconciliation:

- Identify high-risk populations to maximize the benefit of the program.
- Target specific interventions to implement so the program can have immediate practical benefits.
- Get support from key providers.
- Build trust with providers as well as patients.

- Budget for technicians so pharmacists can focus more on direct patient care.

To address this, the team's pharmacists contacted Novant's PCPs and discussed the program's objectives with them. "We wanted to be able to prevent hospitalizations. Ideally, we wanted physicians to refer patients to us before they went into the hospital," but as a start, Novant wanted to try to prevent patients who were released from the hospital from having to be readmitted because of a medication-related problem, such as drug allergies, drug interactions and so on (Figure).

The program now includes six clinical pharmacists, who work with more than 1,000 Novant providers. Pharmacists in the SafeMed program review medically complex patients discharged from all of Novant's hospitals.

The pharmacists obtain a weekly list of discharged patients and review the hospital database for details on inpatient stays, gathering information from admission notes, discharge summaries, etc., according to SafeMed clinical pharmacist Jennifer M. Rief, PharmD.

The pharmacist assesses the patient's medication regimen and compares the discharge medication list with the discharge summary. The pharmacist then reviews all medications for potential problems and reviews the patient's laboratory results. The next step is to hone in on patients with specific factors that might put them at risk for ADEs, such as increased age, number of medications, disease state, increased hospital length of stay, frequent emergency department and/or inpatient visits over the previous 12 months, frequent falls or injuries, cognitive impairments, and cultural and linguistic challenges.

The pharmacist also reviews disease-specific factors that can contribute to ADEs. For example, the hospital pharmacist conducted the ADE Trigger Project, which targeted four areas responsible for a large percentage of ADEs—anticoagulation, potassium homeostasis, sedation and digoxin use. For anticoagulation, the triggers were an international normalized ratio greater than 3.0 or the use of vitamin K; for potassium homeostasis, the triggers were serum potassium levels greater than 6.0 mEq/L or the use of sodium polystyrene sulfonate (Kayexalate, Sanofi-Aventis); for sedation, the triggers were the use of naloxone or flumazenil (Romazicon, Roche); and for digoxin, the trigger was a level greater than 2 ng/mL. These triggers help the SafeMed pharmacist target patients in need of intervention.

Armed with all of that information, the patient is contacted via telephone "within seven days of discharge," said Dr. Cardwell. "The ideal would be two to three days after discharge, because then we could get them on the right track quickly." At this point the system provides patient discharge data on a weekly basis; however, a project is in place to enhance those reports, she noted.

At the outset of the patient phone call, Dr. Rief said, "we work very hard to engage the patient and make them comfortable. This is critical, because if you can't engage the patient, the call might not be very successful."

Once they are successfully interacting with patients, she said, they begin the process of medication reconciliation by having patients gather all their medication to make sure that "what we think they're taking is what they're taking." They then educate patients about each medication's use and action, adverse effects, the timing of administration, drug-drug interactions, renal dosing and laboratory results.

In addition to providing that education, the Novant pharmacists answer any questions patients may have and provide a toll-free phone number for a queue line on which the patient can leave a message if they have any follow-up questions. Pharmacists monitor the queue line every two hours during the week, so patients never have to wait long for a return call. The SafeMed pharmacists also offer information about financial assistance programs in case patients are facing financial

barriers preventing them from obtaining their medications.

"It's a lot easier than I thought initially to communicate with these patients on the phone," said Dr. Cardwell, noting that an added benefit of a pharmacist conducting the medication reconciliation is that patients will "sometimes tell you things they wouldn't or didn't tell their physician. For example, 'well, I don't take that medication because it's too expensive, but my doctor doesn't know.'"

After the encounter, the patient is entered into a clinic database that the pharmacists use to track trends and generate statistics. The database houses information on allergies and details of each encounter with the pharmacist—including an overall patient assessment, the specific patient education topics discussed, interventions and the recommended plan for the physician.

The reconciled medication list, assessment and suggested plan is also detailed in a report sent to the physician, which includes information on potential drug–drug and adverse interactions, therapeutic duplications, renal dosing recommendations, suggestions to add or discontinue medications, and laboratory findings.

The length of the reconciliation process varies, but Dr. Cardwell noted that while the process times varies from 20-90 minutes, on average it takes about 60 minutes to discuss the assessment and medications with the patient and enter the follow-up information into the database.

Novant's team found this time to be well spent and saw results right away. "At first," Dr. Cardwell said, "we were calling the sickest of the sick," so it was especially encouraging that ADEs also decreased in that population.

When asked by Ms. Bobb whether the results were due to patient education, physician recommendations or both, Dr. Cardwell said, "The contact with the physician does help, but a lot of it is due to the education of the patient." She said that although, in general, they interact with the patient just one time, "we try to empower the patient" to ask questions and follow up with their doctor, and she said that this has lasting effects.

Ms. Bobb pointed out that preventing readmissions is "something the federal government is very interested in now," and changes in reimbursement for readmissions that occur within 30 days are forthcoming. She predicted that a program such as SafeMed, which can prevent those readmissions, will become increasingly valuable to hospitals.

Dr. Cardwell said Novant started out with a simple goal—"to make a difference one patient at a time," but over time, the impact of that can become significant, both clinically and economically.

—Sarah Tilyou

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