



# DRUG FORMULARY R • E • V • I • E • W™

Utilization, Criteria and Outcomes

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## IN THIS ISSUE

Health care reform bill discusses medication therapy management . . . . .	63
Fall prevention program developed by pharmacists wins national awards . . . . .	64
Here's a pharmacy fall prevention policy . . . . .	65
Mercy Health Center has 12-point guidelines to preventing falls . . . . .	66
Hospitals improve safety, outcomes when they hire emergency pharmacists . . . . .	67
ED pharmacist can have positive impact on variety of emergency medicine outcomes . . . . .	69
ED pharmacy program has safety, quality, and cost savings benefits . . . . .	70
Hospital pharmacists helped create bariatric surgery education program . . . . .	71

## Pharmacists' role in hospitals might be enhanced under health care reform

*New bill creates openings for PharmDs*

**T**he key to the new health care reform bill is understanding how it attempts to reform the way health care is delivered, pharmacist experts say.

The 906-page Patient Protection and Affordable Care Act, signed by President Barack Obama in March 2010 will move the nation toward greater health care transition continuity. And this will create more opportunities for pharmacists.

"Throughout the discussion of health care reform, you would hear the president talk about having a coordinated effort in providing care," says **Joseph Hill**, director of federal legislative affairs for the American Society of Health-System Pharmacists in Bethesda, MD.

"We saw several delivery models in the bill where pharmacists could play a role as a member of a care team in providing medication therapy services," Hill says.

The reform bill recognizes that medication use is an important issue to address, says **Kristina E. Lunner**, vice president of government affairs for the American Pharmacists Association of Washington, DC.

"The bill recognizes that pharmacist services are a way to address this issue, so, in general, the profession was well recognized in the bill," Lunner says.

The subtitle C provisions section, which discusses Medicare Advantage payments, focuses on medication therapy management services in the treatment of chronic disease. At page H.R. 3590-398, the

medication management services section states that a new Patient Safety Research Center will establish a grants program for the purpose implementing medication therapy management (MTM) services provided by licensed pharmacists. (*See story with key points about MTM in bill, p. 63.*)

### SUMMARY POINTS

- Health care reform bill's focus on care continuity creates opportunities for pharmacists.
- Medication use is a common theme in bill's discussion of pilot programs.
- Next step is to ask for compensation for pharmacist services.

These MTM services will be designed as a collaborative, multidisciplinary approach to treating chronic diseases for targeted individuals, the bill states.

"The bill uses the definition of MTM that pharmacy organizations developed in 2005 when it became part of Medicare Part D," Hill adds. "We were happy to see that was included in the bill."

Patient safety is a big focus of the new bill. There are incentives that will result in hospitals focusing more intently on patient safety and care coordination, potentially with more clinical pharmacists, says **Caroline Steinberg**, vice president for trends analysis at the American Hospital Association in Washington, DC.

The legislation's emphasis on information technology solutions to quality and safety issues could spur hospitals to more quickly adopt elec-

tronic health records, Steinberg notes.

"A lot of the benefits of electronic health records accrue to patients and insurers, but there are some cost advantages to hospitals, including fewer duplicated tests, less cost for transcriptions, and quality improvement," Steinberg explains. "In the private sectors there are provisions that promote administrative simplification between providers, and that, hopefully, will result in lower costs for hospitals."

The new bill also provides funding for medical home model pilot programs, he notes.

"This is an attempt to coordinate care among all caregivers with the primary care provider as the point person," he explains. "We see that as a model in which pharmacists could play a role."

Pharmacists could play an important part in this model because of their skill at medication reconciliation and providing MTM services, he adds.

"One recurring theme throughout the health care bill is how it's a big problem and cost-driver to have people who are discharged in the hospital return within 30 days," Hill says.

The bill looks to reduce preventable hospital readmissions through a focus on transitions of care, Lunner says.

"One of the elements they suggest is that they conduct a comprehensive medication review and management and provide appropriate counseling in self-management support," Lunner adds. "We read that as providing access to medication management services."

It's important to the hospital pharmacy profession that this provision was included.

"We're happy that provision is in there because data show people often are readmitted for medication misuse," Lunner explains. "So it makes a lot of sense to include medication-related services, and we're working to make sure of that."

The next step would be for the government to provide compensation for pharmacist services in this area, she notes.

"This is something the profession will need to continue to advocate for," Lunner says. "We're happy the need for the services is recognized, but, obviously, in order to better ensure pharmacists can play a part in providing those services, you need some kind of compensation for them, and the bill is silent on this."

MTM also makes an appearance in the bill's Centers for Medicare & Medicaid Services (CMS) innovation center provision.

"There's a recognition by members of Congress

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### Editorial Questions

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that a new delivery model probably is worth testing,” Lunner says. “And they’ve established this new center in CMS to test those various new models of care with the goal of reducing overall costs and including quality outcomes.”

MTM is one of the models the center may test.

“There’s wonderful recognition that there already are data showing there is value, and they want to test it a little bit further to see what’s the best way to deliver it,” Lunner says. “Similarly, and sort of a star program from our perspective, is a grant program that is a stand-alone medication management therapy grant program that is specific to pharmacists.”

This MTM grant program is unrelated to Medicare Part D, and it would allow pharmacists to provide a robust set of services to a broad population of people suffering from chronic disease, Lunner explains.

“It’s intended to provide some funding to develop an infrastructure, and so it’s an attempt to study and evaluate the best way to deliver MTM,” she says. “This is specific to licensed pharmacists and looks at what sort of infrastructure pharmacists need, what the patient population will look like, and what are the best practices for delivering MTM.”

There also is funding for hospitals to provide transitional care plans, Hill says.

“We think medication reconciliation should be an essential component of this,” he adds. “We’ve seen things like bundling payments to hospitals to include these plans.”

Hospitals will receive financial incentives if they meet certain performance thresholds, including having lower hospital readmissions in a year, he says.

“We want our [ASHP] members to know that in a lot of these care delivery models, the other thing they’ll test is looking at different ways to reimburse health care professionals,” Hill says.

For example, there are different models for reimbursement. One is a national pilot program on payment bundling. This is for integrated care during an episode of care that includes hospitalization.

Another model is the accountable care organization (ACO), which is set up as a coordinated care approach where providers coordinate services, Hill says.

The bill refers to shared savings programs in which groups of providers and suppliers manage and coordinate care for Medicare fee-for-service beneficiaries through ACOs.

“Any savings would be shared among members of the group,” he explains. “We’ll have to look at these and see how pharmacists could be paid for their clinical services under these models and look to make it meaningful as a care model.”

The bill’s focus on these different payment models suggests that a goal is to move more health providers into an integrated delivery system with the goal of finding the highest quality and more cost-effective care, says **Jason A. Scull**, program officer for clinical affairs at the Infectious Diseases Society of America in Arlington, VA.

Overall, the health care reform bill would appear to be a positive force for hospital pharmacists, Hill says.

“We were very pleased to see we were mentioned in some of these sections, and we think a corner has been turned in recognition that medication use is a problem, and pharmacists can be part of that solution,” Hill says.

The chief concern involves the continued lack of funding for second-year pharmacy residency programs, he adds.

“That’s something we think is a great value to patient care,” Hill says. “But that, unfortunately, wasn’t included in the bill, and so we’ll still work on that.”

## Health care reform bill discusses medication therapy management

*How will MTM improvements play out?*

If hospital pharmacy directors come away with one important point from the new health care reform bill, it should be this: Develop medication therapy management (MTM) services as soon as possible.

The Patient Protection and Affordable Care

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### SUMMARY POINTS

- Medication therapy management is part of many proposed new care delivery models.
- Licensed pharmacists have to be part of MTM, bill states.
- Hospital pharmacists have role to play too.

Act devotes a significant amount of space to discussing MTM in conjunction with Medicare services

and new health care delivery models that will be piloted. While these services often can be provided by community pharmacists, hospital pharmacies also can play a leading role.

“These medication therapy management services are specific to licensed pharmacists,” says **Kristina E. Lunner**, vice president of government affairs for the American Pharmacists Association of Washington, DC.

“These include proposals to develop integrated delivery models, like an accountable care organization, a community health team, and they include references to including pharmacists on the team,” Lunner says. “Then there’s also an independence at home demonstration program, and that includes a recommendation of having pharmacists on the care team.”

So the new bill recognizes the importance of addressing medication use through MTM and that pharmacists should play a role whenever medications are utilized, she adds.

Take the bill’s section 3503, for example. This section, which was begun May 1, 2010, is about medication management services in the treatment of chronic disease. It directs the Secretary of the Department of Health and Human Services (HHS), through the Patient Safety Research Center, to establish a program to provide grants to eligible entities to implement medication management or MTM services provided by licensed pharmacists.

These services would be “a collaborative, multidisciplinary, interprofessional approach to the treatment of chronic diseases for targeted individuals, to improve the quality of care and reduce overall cost in the treatment of such diseases,” the bill states.

Some of the specific MTM services that will be provided are described as follows:

- Performing or obtaining necessary assessments of the health and functional status of each patient receiving such MTM services;
- Formulating a medication treatment plan according to therapeutic goals agreed upon by the prescriber and the patient or caregiver or authorized representative of the patient;
- Selecting, initiating, modifying, recommending changes to, or administering medication therapy;
- Monitoring, which may include access to, ordering, or performing laboratory assessments, and evaluating the response of the patient to therapy, including safety and effectiveness;
- Performing an initial comprehensive medica-

tion review to identify, resolve, and prevent medication-related problems, including adverse drug events, quarterly targeted medication reviews for ongoing monitoring, and additional follow-up interventions on a schedule developed collaboratively with the prescriber.

“My initial read is that most of the MTM would be delivered in an integrated care model, in an outpatient setting,” Lunner says.

“However, there are provisions to reduce hospital readmissions and these address medication use,” she adds. “In these provisions there are opportunities for pharmacists working in the hospital inpatient setting to participate.”

## Pharmacists help develop nationally recognized fall prevention program

*Falls decrease by nearly half*

**P**harmacists involved in a falls prevention program at Mercy Health Center in Oklahoma City, OK, have developed a falls risk assessment tool that is being used by hospitals around the country.

The program has resulted in a 48% reduction in falls injuries, and a 30% reduction in overall falls, says **Burl Beasley**, RPh, MPH, medication safety coordinator at Mercy Health Center. Beasley and the health system have received several national awards for the program, including a medication use safety award in 2007 from the American Society of Health-System Pharmacists (ASHP), a 2007 CHEERS award from the Institute for Safe Medication Practices, and a 2008 ASHP best practice award.

In an economic analysis, Beasley found that the program has saved \$516,000 in health care spending on patients at risk for falls over a 2-year period.

This estimate is based on research showing that each patient fall adds \$25,000 or more to the

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### SUMMARY POINTS

- Falls prevention program that pharmacists helped develop resulted in 48% reduction in falls injuries.
- One bathroom fall can add \$87,000 to patient’s health care bill.
- Fall risk medication tool is handy checklist for assessing patient’s risk.

cost of the patient's hospital stay, he says.

Some falls are even more costly. A patient who falls in the bathroom of the hospital has an average of \$87,000 more in medical claims, he adds.

For hospitals, including a clinical pharmacist in a falls prevention strategy is an economical and easy decision to make.

Beasley estimates that such a program might add one-half full-time equivalent (FTE) pharmacist position, although this work can be incorporated into pharmacists' existing workflow, which is how Mercy Health has handled it.

The 300-bed hospital has an average of 45 patients who are targeted as at-risk for falls. Four pharmacists take about 10-15 minutes to review this list each day. Also, the hospital recently has given this task to pharmacy students as part of their work rotation, Beasley says.

"The students do a lot of the legwork, looking at lab results and reviewing patient profiles," Beasley says.

The key to a hospital pharmacy achieving these results is to be involved in the falls preven-

tion process from the beginning.

Mercy Health had asked that pharmacy be represented on a new, multidisciplinary falls prevention committee five years ago. (*See pharmacist policy, below.*)

"The committee talked about whether there was a way to look at patients' medications and identify those who were at risk for falls," Beasley recalls. "I did a literature search and couldn't find anything about a way to score patients based on their medications."

So Beasley developed a tool, using an online literature review, the American Hospital Formulary System, and other data.

Common themes emerged. For example, Beasley found that analgesics, antipsychotics, anticonvulsants, and benzodiazepines were the classes of drugs most commonly associated with falls.

Classes of drugs in a medium-risk category are antihypertensives, cardiac medications, antiarrhythmic agents, and antidepressants. And diuretics place patients at a low risk for falls.

## Pharmacy Fall Prevention Policy

**M**ercy Health Center of Oklahoma City, OK, uses this pharmacy fall prevention policy as part of its successful falls prevention program. The policy is reprinted with permission from **Burl Beasley, RPh, MPH**, medication safety coordinator for the health center.

### Pharmacy Fall Prevention Strategy

*Purpose:* To provide an ongoing service for the review and monitoring of medications or hospitalized patients as related to risk for fall. This is a requirement of the Joint Commission of Oakbrook Terrace, IL, patient safety goal to reduce risk of harm resulting from falls. The Medication Fall Scale will be implemented to meet this requirement and will be reviewed on a quarterly basis.

*Background:* Falls are among the most common serious problems in elderly persons. Falls account for > 5% of hospital visits and > 10% of emergency department visits. Falls result from an interaction of multiple intrinsic and extrinsic risk factors. Intrinsic factors include: lower extremity weakness, poor grip strength, balance disorder, visual and cognitive impairment. Extrinsic factors include: polypharmacy (> 4 medications) and environmental factors. The Medication Fall Score was developed using multiple resources and references to summarize patient medications into a single numeric value. Based on this value, the Pharmacy Department

will review patient medication records and make recommendations per policy. By implementing this policy the goal is to reduce falls as related to medications, thereby improving quality of care.

### Policy

1. Medication Fall Risk Scale will be administered by a team of trained clinical pharmacists.
2. The team will review the Medication Fall Risk Scale Report on a daily basis.
3. Patients that score 6 points or greater will be further evaluated for medication review.
4. The assessment team (clinical pharmacists) will use available references to review and recommend modifications to medication regimens.
5. The assessment team will consider multifactorial etiologies of falls, and medication adjustment will not be used as a sole intervention for fall prevention.
6. Recommendations will be made in writing and placed in the pink communication record of the patient's chart for physician review.
7. Documentation will take place in the Meditech computer system by reviewing pharmacist for each patient reviewed under the Patient Care Notes section.
8. On Saturday and Sunday, the clinical pharmacist for each area will be responsible for monitoring the Medication Fall Risk Scale and completing the duties of the specialized team. These pharmacists will gather and maintain information for review on Monday.

The tool assigns risk values to the nine different classes on a 3-point scale. Drugs that have no associated risk for falls receive a score of 0.

The health system's electronic system has incorporated the tool so that all drugs that fall within the nine classes are given the falls risk score associated with each class. When the system has new drugs added, the scores automatically are determined.

Beasley has shared this tool with hospitals around the country.

"We also developed a policy for the pharmacist to follow, and I have a rounding tool that I use and train students how to use," Beasley says. "That checks for patients who are 65 years old or older and are new admissions."

Pharmacists check for medications that should be discontinued based on Beers Criteria and

check for medications that need to be monitored. Also, they make certain that sleep agents are at the lowest possible dose, and they look for medication duplications or conflicts between home prescriptions and hospital medications, he says.

The short checklist, titled "Fall Risk Medication Evaluation," has 13 check boxes and leaves space for the pharmacist to sign and date. It is printed four to a page and can be attached to charts.

The checklist leaves space to list drugs that are discontinued or where dosages are decreased. It also has a check box for when a pain medication is duplicated and discontinued and when a specific drug is changed to reduce the fall risk.

Other check boxes are for discontinuing propoxyphene (Darvocet®), discontinuing meperidine (Demerol®), and monitoring labs for digoxin

## Mercy Health Center has 12-point guideline to prevent falls

**M**ercy Health Center of Oklahoma City, OK, has an award-winning falls prevention program that was developed with extensive assistance from the hospital's pharmacy. The health center's fall prevention tools include guidelines for assessing fall risk.

The guidelines can be useful in training pharmacists in falls risk assessment and in training pharmacy students, says **Burl Beasley**, RPh, MPH, medication safety coordinator at Mercy Health Center.

Beasley shares the guidelines below.

### Pharmacy Fall Prevention Program Fall Risk Rounds

1. Check patient age (60-65 years old and older).
2. Check admit date (generally only within the last 2 days).
3. Compare pharmacy and nursing scores:
  - a. Pharmacy: 6 = high
  - b. Nursing: 8 = high (depends on nursing fall scale used)
    - i. Morse, CPG, etc.
4. Check list of meds for those that need to be discontinued:
  - a. Darvocet®
  - b. Meperidine
5. Check list for meds that require monitoring:
  - a. Digoxin
  - b. Phenytoin
  - c. Fosphenytoin
6. Check that sleeping agents are at lowest possible dose:

- a. Recommend change to HS PRN (not scheduled every HS)
- b. Without therapeutic duplication:
  - i. Zolpidem, Zolpidem CR
  - ii. Temazepam
  - iii. Trazodone
7. Review patient's home meds for those agents that may be discontinued or dose reductions (sleeping agents, pain meds, and antidepressants) as you may not want to adjust home medications.
8. Review all medications for appropriate dose for age and renal function, and make recommendations to decrease medication doses based on dosing guidelines for geriatrics, etc.
9. Complete Interdisciplinary Team Request for Consideration of Additional Services (ITRCAS, or pink sheet) on those medications that need recommendations.
  - a. Include any supportive material that may be available:
    - i. Beers Criteria
    - ii. FDA MedWatch
    - iii. Micromedex info
10. Place the ITRCAS form in Progress Notes section of patient chart (this is NOT a permanent part of the patient record).
11. Locate nurses of those patients whose nursing scores may be low to inform them of any discrepancies with pharmacy so that you may obtain a reassessment or confirmation that the patient truly is not at great risk of fall.
12. Log all interventions made for the day and follow up on any previous interventions possible.

level, INR, Hg/Hct, and dilantin (Phenytoin®) level.

The rounding guide is a tip sheet that can be used in training pharmacy students. (*See fall prevention rounds guidelines, p. 66.*)

Each medication on a patient's list contributes to the patient's overall medication falls risk. So if a patient has two drugs that are scored 3 points each, then the patient's overall score is 6. The same is true with a patient who has three drugs that are scored 2 points each. Six is the cutoff score, Beasley says.

The screening tool also weeds out patients who, despite their medication scores, are not at a high risk for falls.

Any patient whose medication risk is 6 points or greater is placed on the pharmacist's daily review list, and an intervention is initiated.

Typically about 15% of the hospital's patients are included on the falls risk each day. If all 300 beds are full, then this means 45 patients will be monitored as part of the intervention.

The intervention includes a closer medication review to see if specific drugs or dosages could be omitted or adjusted. Pharmacists also review the patient's lab results to check renal function.

Nurses assess each patient for the potential of falling based on a nursing assessment tool, and pharmacists also might take this into account as they make recommendations.

"We use the medication score in conjunction with the nursing falls score," Beasley says.

Pharmacists communicate the medication falls score and interventions on the patient's chart. Physicians have the option of accepting the pharmacist's recommended changes or making some other change.

"Most of the time physicians accept our recommendations, and we keep track of that too," Beasley says.

Then pharmacists will meet with patients to discuss their potential risk of falling and to offer them counseling.

"We say, 'You're at risk of falling because of your medication, and I just wanted to let you know that you need to be careful when you get up to go to the bathroom,'" Beasley says. "Then we give them a booklet on preventing falls for patients from the University of Pittsburgh."

Another intervention strategy might include asking patients to call nurses when they need to get out of bed.

There have been additional benefits to the program. For instance, pharmacists have discovered

potential adverse events and drug-drug interactions as they've reviewed these at-risk patients' charts. Also, the program's emphasis on pharmacist involvement has raised pharmacy's profile in the hospital, Beasley says.

"As we do the rounds, nurses will say, 'What are you looking at this chart for?' and pharmacists say the patient is on their list because the patient is at high risk for falls," Beasley explains.

Nurses then realize that their own falls risk assessment, which may include a previous fall as a chief risk category, didn't include these patients. So they see the benefit of the pharmacy risk assessment in finding patients before falls occur.

## Hospitals increasingly are hiring ED pharmacists to improve safety, outcomes

*Model works well for all*

Five or 10 years ago, few pharmacists would have been able to gain experience as an emergency department pharmacist, even if they had thought about that field as a specialty. But times are changing.

There are increasing numbers of emergency pharmacy residency programs. And the National College of Clinical Pharmacy (NCCP) has an emergency practice program that quickly grew from 20 members to more than 200 members in the first year of its existence.

"What we're seeing right now, and what we'll continue to see is one of the biggest growth areas for acute care pharmacy, which is a specialty in emergency medicine," says **Curtis E. Haas**, PharmD, FCCP, BCPS, director of pharmacy at the University of Rochester Medical Center in Rochester,

NY. The medical center created the emergency pharmacist position in 2000. It also has one of the nation's earliest phar-

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### SUMMARY POINTS

- There's been rapid national growth in emergency pharmacy services and programs.
- A focus on reducing medication errors has helped fuel the growth.
- Pilot program shows that pharmacist involvement in ED helps move cardiac patients through care more quickly.

macy emergency residency programs. Its ED has 95,000-100,000 visits each year.

"It wasn't that long ago that it was rare to have pharmacists working in the emergency department, and when you did it was as a dispensing satellite," Haas says. "What we're seeing across the country now are more and more organizations adding emergency pharmacy programs."

Emergency pharmacy residents are in very high demand when they graduate, and they have their pick of where to go in the country, Haas says.

Hospitals are scrambling to add emergency pharmacy programs, and this specialty will continue to grow rapidly, he predicts.

Emergency pharmacy medicine was such a new area a decade ago, that one emergency pharmacist says he was unfamiliar with what such a job involved when he began his hospital career as a clinical staff pharmacist, says **James Jensen**, BS, PharmD, emergency department clinical coordinator at Advocate Christ Medical Center in Oak Lawn, IL.

Jensen moved into emergency pharmacy as soon as the opportunity arose. (*See story on hospital improving outcomes and cutting costs with ED pharmacy program, p. 69.*)

"I think it's a great area for pharmacy," he says. "It's exciting to be in the ER, and it's challenging on a day-by-day basis."

One of the chief factors pushing the increasing demand for emergency pharmacists is evidence that this can prevent medication errors, increase ED team satisfaction, and improve patient outcomes.

A recent study that observed emergency department pharmacists found that they identified 7.8 recovered medication errors per 100 patients and 2.9 per 100 medications. Most of these recovered errors involved potential adverse drug events, which were averted by the pharmacists' review of medication orders. And most of the errors were serious or significant.<sup>1</sup>

Some hospitals and studies also find cost savings with having this program.<sup>2</sup>

The use of an emergency pharmacist undoubtedly prevents some unnecessary patient care and extended lengths of stay.

But putting a dollar amount to that utilization impact is difficult, Haas notes.

"I have trouble selling those soft numbers to my administrators," he says. "They want a hard number based on actual costs and outcomes."

And the ED typically uses less expensive drugs

than those used in other areas of the hospital, so showing significant hard cost improvements in drug use is challenging, he adds.

Instead, Haas focuses on how the hospital can use an emergency pharmacist to impact some of the quality markers that are important to the Centers for Medicare & Medicaid Services (CMS).

"Can we work with the ED folks to improve quality measures that we're scored publicly on?" he says. (*See story on other improved outcomes with ED pharmacist, p. 70.*)

For instance, one quality measure is how quickly the ED can move an acute myocardial infarction (MI) patient from entering the door to diagnosis and to being taken to the cardiac catheterization laboratory, says **Nicole M. Acquisto**, PharmD, BCPS, clinical pharmacist specialist in emergency medicine at the University of Rochester Medical Center.

Acquisto led a study into acute MI outcomes with a pharmacist present.

"What they found was that when a pharmacist is present and involved in care, then it results in patients moving through the system more quickly," Haas says. "It shortens the time from diagnosis to cath lab and from door to balloon [angioplasty] time."

The study found that when an emergency pharmacist is present, it took an average of 11 minutes less for the patient to be taken to the cardiac catheterization laboratory.

In another measure of how fast an acute MI patient receives a balloon angioplasty, the mean difference from door-to-balloon angioplasty when a pharmacist is present is 14 minutes less time, she adds.

For acute MI, 90 minutes is considered a marker for significant mortality risk. Acquisto and co-investigators found that when an emergency pharmacist was present, these patients were 3.8 times more likely to meet an adjusted door/electrocardiogram to balloon angioplasty time of less than 90 minutes. They also were three times more likely to meet an adjusted door/ECG to cardiac catheterization laboratory time of less than 30 minutes.<sup>3</sup>

The study found that having a pharmacist present was one of three factors that independently impacted the time factor for acute MI patients. The other factors were whether the hospital had catheterization lab staff present and whether the patient arrived by ambulance, as opposed to walking into the ED, Acquisto says.

“At the time we did this study, an acute MI was a very medication-dependent emergency,” Acquisto notes. “We ran heparin infusions and got the patient aspirin and beta blockers.”

Now patients are moved more quickly from the ED to the cath lab, bypassing some of the interim drugs, she adds.

“The idea is to find out how to further shorten the time to get patients to the cath lab,” Haas says.

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# ED pharmacist can have positive impact on variety of ED outcomes

*Like odd work hours, action-packed days?*

**A**n emergency department (ED) pharmacist can help improve patient safety and improve an ED's performance on quality measures.

Emergency department pharmacists are actively involved in managing the care of trauma patients, facilitating medication administration, evaluating medications, and preventing adverse drug events.

It's an interesting role for pharmacists, partly because it entails a different workflow.

“Emergency medicine is challenging because emergency rooms don't get busy until around noon, and they stay busy through midnight,” says **Curtis E. Haas**, PharmD, FCCP, BCPS, director of pharmacy at the University of Rochester Medical Center in Rochester, NY.

“When we interview and recruit people for

an emergency pharmacist position, we look for people who don't mind an eccentric schedule,” he adds.

One of the areas in which an ED pharmacist can play an important role involves antimicrobial stewardship.

When the University of Rochester Medical Center had an ED pharmacist involved in antimicrobial stewardship, the percentage of patients who received the most appropriate therapy increased from about mid-80% to 100%, Haas says.

Another role for the ED pharmacist is to follow-up with patients when their lab results arrive after they've left the hospital.

Previously, the University of Rochester Medical Center had mid-level providers, including nurse practitioners and physician assistants, in charge of obtaining ED patients' cultures and contacting patients' physicians with follow-up information, says **Nicole M. Acquisto**, PharmD, BCPS, clinical pharmacist specialist in emergency medicine at the University of Rochester Medical Center.

“We contact patients, primary care providers, and the department of health if that's necessary,” she says.

Physicians might need to make a new prescription based on the results, so it's important the information is reported in a timely manner.

The median time for this follow-up when mid-level providers were given this responsibility was four days with a range of one to 15 days, Acquisto says.

Now that the ED pharmacist is in charge of collecting the culture results and calling patients' primary care providers with the results, the median time for follow-up is three days with a range of one to four days, she says.

“There are better results with our involvement,” Acquisto says.

The follow-up time would be even shorter if it weren't for weekend culture results. When lab results return on a Friday evening or

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## SUMMARY POINTS

- ED pharmacy jobs are not 9-to-5 or for the faint-hearted.
- Antimicrobial stewardship can be key focus for ED pharmacist.
- Emergency pharmacists also can follow-up on discharged patients' lab results.

Saturday morning, the ED pharmacist cannot call the provider until the following Monday morning.

# ED pharmacy program has safety, quality, and cost savings benefits

*Reduction in drug use saves \$3 million*

An Illinois hospital has shown that it can save considerable money and improve safety and quality outcomes by having pharmacists cover its emergency department (ED).

The program has helped reduce medication errors by 70% and improve clinical outcomes for patients with congestive heart failure (CHF), says **James Jensen**, BS, PharmD, emergency department clinical coordinator for Advocate Christ Medical Center in Oak Lawn, IL.

For example, the improved safety largely is the result of pharmacists' involvement in implementing safety initiatives, including using smart pump technology and putting alerts in the automated dispensing cabinets.

"We have a drug cabinet called Omnicell, and when nurses pull certain medications, we have a how-to pop-up on the computer screen that they have to read before they can take out the medications," Jensen explains.

Pharmacists can program these messages and add new alerts as needed.

The main goal for CHF patients was to achieve a 20% drop in their arterial blood pressure through correct titration of nitroglycerin. Once the pharmacist got involved, the ED reached this goal, Jensen says.

Another positive outcome involved improved antibiotic administration. Prior to having an ED pharmacist, it was not uncommon to have pneumonia patients who were not given antibiotic treatment for more than 6 hours after presenting in the ED, he says.

An ED clinician might have missed a chest X-ray, or nurses were backed up with difficult cases and hadn't gotten back to the patient to administer antibiotics. Once phar-

## SUMMARY POINTS

- One ED pharmacy program reduced medication errors by 70%.
- Program has improved antibiotic administration in the emergency department.
- Pharmacy residents rotate through ED pharmacy program.

macists began to work in the ED, all pneumonia patients received antibiotic treatment within 6 hours of presentation in the ED, Jensen says.

There also has been cost avoidance for the hospital since the ED's use of drugs has decreased with pharmacist participation.

In 2005 and 2006 when the first pharmacist began to work in the ED, the cost avoidance was more than \$1 million. In 2007, the hospital added a second pharmacist position, which increased the total cost avoidance to more than \$3 million.

Now the ED has three pharmacists who provide 16-hour coverage from Monday through Friday and 10-hour coverage on Saturdays and Sundays. And there are plans to add another pharmacist to cover a midnight shift, Jensen says.

Also, the ED pharmacy program includes a pharmacist residency for first-year and second-year residents. And there's an elective, 2-week rotation available to medical residents who might be interested in learning more about pharmacy and drug interactions, he says.

"They can work with me for 2 weeks and see the pharmacy side of things," he adds. "We probably get a couple medical residents who rotate with us each year."

Pharmacists in the ED also have developed and annually review protocols for handling patients with CHF, ischemic and hemorrhagic stroke, acute coronary syndrome, diabetic ketoacidosis, and sepsis.

Physicians and nurses use the protocols when these patients are admitted and follow the protocol guidelines for drug administration and dosing. The protocols are in paper format, but they'll soon be in electronic format, Jensen says.

The forms are kept at the nurses station where they're pulled and then filled out and signed by physicians. Nurses and doctors check the forms to note any potential medication contraindica-

## COMING IN FUTURE ISSUES

Pharmacy services work well in telemedicine ICU

Adverse drug event alert system helps reduce pharmacy department codes

Hospital pharmacies could play role in new medical home model

Community hospital makes good use of an admitting pharmacist

tions, and they use these to verify recommended dosing levels.

"We help carry out the medication orders from the protocols," Jensen says. "And we check lab results."

Jensen describes how a typical day in the ED might unfold for a clinical pharmacist:

• **Review cases where patients who have been waiting for a long time:** "Usually when I come in there are patients who have been waiting in the ED for results," Jensen says. "On bad days they might be waiting for beds for 20 hours or so."

Jensen reviews why these patients are in the ED, what they're being treated for, and he sees if there are any treatment adjustments that should be made. For instance, patients who have been in the ED for a long time might need another administration of their medication.

"I discuss with the doctor their dosing — whether it's antibiotics, steroids, asthma drugs, or medication for chronic obstructive pulmonary disease exacerbations," Jensen explains. "And I make sure they receive the medication they need."

Pharmacists also check to see if these patients have any daily medications that need to be taken.

• **Review medication histories:** "We try to obtain a medication history from all patients who are admitted," Jensen says.

Nurses assist with this process of asking patients for their list of medications and calling community pharmacies to fill in the blanks.

• **Help where needed:** As patients arrive, ED pharmacists will help as needed in intubating patients in respiratory distress, dosing medications for sedation, and recommending appropriate therapies.

"We'll be at the bedside, helping nurses with any patients who have full or traumatic arrest, and we help with any code situations," Jensen says. "We help with resuscitating patients and cardiac stability."

ED physicians have liked having pharmacists at the bedside to serve as medication double-checks to minimize or eliminate errors, he notes.

"Doctors ask us all kinds of questions about patient's symptoms and whether these could be from medications," he says.

• **Provide antibiotic therapy:** ED pharmacists assist with antibiotic dosing and monitoring patients' antimicrobial medication, such as vancomycin therapy.

"We make sure these patients have an appro-

priate renal function for the drugs they're given, and we look at their complete blood count," Jensen says.

• **Assist with transitions:** "When patients are discharged from the emergency room, we help with medication education, home prescriptions, medication counseling, as well as diabetes education for patients who are discharged with insulin or a glucose meter for the first time," Jensen says.

Pharmacists also educate patients who were prescribed injectable anticoagulants and are returning home.

## Hospital pharmacists helped create bariatric surgery education program

*Pharmacists help prevent pill-taking problems*

As increasing numbers of hospitals add bariatric surgery to their services, it's an opportunity for hospital pharmacists to become point people in developing patient education processes and materials.

"The primary reason for having pharmacists involved is that after people undergo the surgery they have a very small opening in which they can get drugs through — it's the size of a pencil," says **Jill Strykowski**, RPh, MS, director of pharmacy for Mercy Hospital in Coon Rapids, MN, and Unity Hospital in Fridley, MN.

"Pharmacists are experts at changing the tablet dosage to some sort of liquid, and that's how we got involved," she adds.

Unity Hospital has involved hospital pharmacists in patient education for gastric bypass surgery for nearly 15 years. Its program has been refined with a formal, one-on-one education session involving a pharmacist as educator,

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### SUMMARY POINTS

- Hospital pharmacists consult with bariatric patients for 15-30 minutes.
- The goal is to be sure patients do not take pills too large to pass through narrowed stomach/intestinal opening.
- Pharmacists developed a bariatric surgery patient education booklet.

and patients receive a small booklet that explains their medication changes and some general post-surgery medication issues.

“Bariatric patients have a pharmacy consult on the first day after surgery,” says **Phyllis Ehlers**, RPh, a staff pharmacist at Unity.

“We go over their medications and tell them which ones would be likely to be continued and which were likely to be discontinued because of the surgery,” she adds. “They have to have chewable tablets or liquids, so a pharmacist would recommend that an immediate release tablet is broken up or that a medication is switched to a liquid form or to a form that dissolves in the mouth.”

In a poster analysis of the program’s results, Ehlers and Strykowski found there were no re-admissions due to gastrointestinal blockage or medication misuse, and all recommendations made by pharmacists were accepted.

When a pharmacist works with a patient whose medication list includes a drug that is not available except as a tablet, the pharmacist will call the patient’s primary care doctor to see if he or she could prescribe a similar drug in a different class, Ehlers says.

Pharmacists also advise patients about how their medication list will change because of the surgery.

For instance, diabetic patients who suddenly are eating very small portions of food might not have to take any or as many antidiabetic medications, Ehlers says.

Likewise, patients with hypertension, high cholesterol, and high triglycerides also might not need drugs to manage these conditions.

Pharmacists also discuss drug-drug interactions and how patients might change the way they take their multiple medications.

“We tell them that instead of taking all their pills and medications in the morning they should separate them into 15-minute increments, so the drug will be absorbed as much as it could be before they add another medication,” Ehlers says.

Hospital pharmacists developed a bariatric surgery patient education booklet to reinforce the one-on-one teaching.

The booklet has bold-faced, sections, including:

- How to swallow your medicine;
- How to tell what type of medicine you have;
- When to start taking your medicine;
- How to take tablets;
- How to take caplets;
- How to take liquid medicine;

The booklet also has a chart in which a pharmacist can write the patient’s medications and instructions for use.

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