

Insights and Outcomes in Senior Care

INSIDE THIS ISSUE

Editorial 2

Baby Boomers Bring
Policy Re-Examination

Q & A 3

Expert Suggests Steps
to Improve Care

Patient Care 5

Transition Program
Measures Quality

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—Angela Cafiero, PharmD,
University of the Sciences
in Philadelphia

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QI Efforts Designed to Cut Medication Errors

The morbidity and mortality associated with medication errors in long-term care settings costs about \$7.6 billion a year, according to studies, and perhaps hundreds of lives. Many of these errors are preventable, if physicians, nurses, and pharmacists take preemptive measures.

“Older patients are more susceptible to medication errors and are at increased risk of suffering harm from them,” says Angela Cafiero, PharmD, an assistant professor of clinical pharmacy in the Department of Pharmacy Practice and Pharmacy Administration at the University of the Sciences in Philadelphia. She has studied the prevalence of medication errors in long-term care. “That risk is even higher for long-term care patients,” she says. “For one thing, a nursing home resident is prescribed six medications per day. But more than 20% of nursing home residents use 10 or more medications daily, raising the possibility of an error.”

■ Awareness of Side Effects

Many such errors can be prevented, if physicians, nurses, and pharmacists are aware of adverse drug effects and interactions, says Jacob Dimant, MD, former president of the American Medical Directors Association in Columbia, Md. Dimant chaired an AMDA committee that examined the extent, causes, and prevention of medication errors in long-term care.

“There are medications that are often used for younger people but might cause serious side effects in the

elderly,” Dimant says. “Diazepam, for example, should not be used in older people because the drug accumulates and remains in an older person’s body for a longer period of time. And a correlation has been shown between elderly people taking diazepam and falling. And there are medications that can interact with each other in various ways. They can either increase or decrease each other’s levels or effects and might, in the process, cause an adverse reaction.”

A medication error is defined as any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, the patient, or the consumer. This definition is from guidelines on preventing medication errors in long-term care settings published by the American Society of Consultant Pharmacists. Medication errors can lead to adverse drug events (ADE), which are defined as an injury resulting from use of a drug. “A medication error or ADE may be related to professional practice, health care products, procedures, or systems, including prescribing, order communication, product labeling, packaging, nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use,” ASCP guidelines say.

More than a quarter of ADEs among older persons in outpatient settings could be considered preventable,

(Continued on page 6)

Baby Boomers Bring Policy Re-Examination

The number of older adults using paid home care will increase by three-fourths between 2000 and 2040 and the number in nursing homes will increase by two-thirds, according to a new report from the Changes in Healthcare Financing and Organization (HCFO) initiative, a program of the Robert Wood Johnson Foundation. In a findings brief, "Meeting the Future Long-Term Care Needs of the Baby Boomers," HCFO says the baby boom generation is likely to significantly increase the number of people requiring long-term care and because the members of this generation are well practiced in demanding quality services, they are likely to demand a re-examination of public policy. They have done so at every life stage previously, the report says. Their aging is no different.

Writing about new research led by Richard Johnson, PhD, of the Urban Institute, the findings brief examines the effect the changing structure of families will have on paid helpers and LTC institutions. Johnson's research analyzes how demographic and economic trends will affect the number of older people in the future who need care, the availability of family caregivers, and the use of paid care. Demographic, economic, and social trends, such as increasing life expectancy, rising education levels, changing family structures, and shifting socioeconomic status, raise questions about how boomers will receive care in the future, the findings brief says. The report is available online from HCFO (at www.hcfo.net/findingsbriefs.htm).

As medical directors in long-term care facilities prepare to care for more baby boomers in the coming years, they also are concerned about the prospect of further cuts in Medicare reimbursement. "Among the biggest concerns I have as a medical director involves the Medicare Part D program," comments Albert Riddle, MD, CMD, president of the Riddle Medical Group, in Haworth, N.J. "This program threatens to make prescribing for dual eligible residents in nursing homes very difficult. When Medicare Part D was implemented, we had an understanding that the Part D prescription drug plans would provide some protection against excessive fiscal losses.

"But now, this government protection will be eliminated at the end of this year," Riddle explains. "So my fear is that on Jan. 1, 2008, if the prescription drug plans are going to remain fiscally viable they will have to shrink the formularies and make fewer prescription drugs available to seniors."

Riddle is also concerned about the possibility of further cuts in Medicare reimbursement for physicians. "If that happens, it's going to be very hard to keep the good doctors we have and to attract new younger physicians to work in long-term care," he says.

For these reasons, medical directors, consultant pharmacists, nursing directors, and facility administrators face some difficult challenges in the coming years.



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This newsletter is published by Premier Healthcare Resource, Inc., Morristown, N.J.

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Expert Suggests Steps to Improve Care

Dianne Tobias, PharmD, CGP, an expert on quality improvement, is the founder and principal of Tobias Consulting Services in Davis, Calif. She consults to long-term care companies, long-term care pharmacies, and home health agencies on optimal medication management and quality improvement. She has a doctorate in pharmacy from the University of California at San Francisco and has taught at two schools of pharmacy, the State University of New York at Buffalo and the University of Maryland. In an interview with contributing editor Richard L. Reece, MD, she discussed the challenges long-term care facilities face.

Q: *You started your consulting business 10 years ago. How did that evolve?*

A: Previously, I'd worked for a regional long-term care company in its pharmacy, long-term care, and home health divisions. After 17 years, a number of people encouraged me to go off on my own. Until that time, I had some interesting experiences, working as a consultant pharmacist on the clinical side and later on the nursing home side, not associated with a pharmacy. There I saw the perspective of the nursing home as a customer of the pharmacy and learned how the internal processes work in a nursing home chain. And as a result of becoming involved with nursing

home infrastructure, I developed a passion for quality assurance. Quality assurance has evolved into quality improvement, which takes the measurement to standards (QA) farther into process improvement. That work has now led to my efforts in data management, and using aggregate population data to identify opportunities to improve care. I am now looking at medication use in various geriatric situations at the disease and institution level to measure how well a population is cared for, for example diabetes. The common thread in all of this work is quality improvement.

Q: *Are quality improvement efforts catching on?*

A: Yes. They are definitely catching on. For someone who has had an interest and passion in quality management over the past 20 years, it's nice to see that others are now embracing it not only as a way to identify areas that need improvement but also as a way of analyzing how we do things and how we could improve processes and ultimately improve outcomes and quality. Traditionally, in long-term care and in health care in general, we have been in a fix-it mode. But quality improvement reflects an effort to introduce a prevention mode. So rather than fixing a problem, you're trying to determine why there is a problem, what might be causing it and how processes may be changed so that the problem is prevented and outcomes improved.

Q: *How can nursing homes or long-term care facilities make significant improvements in care?*

A: Well, the large elephant in the room that more people are beginning to appreciate is medication safety and medication errors. That is a prime area of concern for anyone whether they are in long-term care, in community care, or treating patients of any age. It is a complex issue, and I would love to see it get more positive attention and results.

In addition, the issues of safety and medication errors relate directly to drug-drug interactions. That issue is under the whole umbrella of medication safety, along with adherence to prescription orders, prescribing and delivery processes, dispensing, and all other aspects of the medication use process. Technology has improved our ability to identify drug-drug interactions. But so far, the technology seems to be perhaps too simplistic to have full practical value. Many of the drug interaction software programs list every drug interaction, whether clinically significant or not. As with most clinical software, it's a great tool but it will always require thoughtful, professional analysis of the data in order to apply it to an individual patient's care.

Q: *Is there currently no practical, comprehensive software program that addresses all of the drug issues that clinicians face when delivering care?*

A: Right. What we have are programs that give the user data, if you will, or information on drugs. But the fact that there may be a drug interaction means the clinician needs to recognize the lab values or drug interaction information that he or she is seeing and

(Continued on page 4)

“Quality management is being used to improve processes and ultimately improve outcomes and quality,” says Tobias.

(Continued from page 3)

consider what's happening in that individual patient before just reacting to the data. The real value comes when clinicians interpret the data.

Q: *Are there any Six Sigma efforts in long-term care?*

A: I don't know of any. But CMS officials, through their efforts to develop quality indicators and quality measures in their quality initiative, have publicly stated that they believe their quality measurement initiative has improved the care of patients across the nation, specifically in the use of physical restraints and the incidence of pressure ulcers.

Q: *Are any companies aggressively pursuing disease management in long-term care facilities?*

A: That depends on how you define disease management. Disease management is somewhat generic and definitions can vary widely. If you mean are certain facilities or companies concentrating on certain diseases and looking at how that population is being cared for, such as patients with diabetes, then there certainly are examples of disease management programs for those patients. Similarly, some long-term care pharmacies have gone forward with disease management initiatives.

For the elderly, however, especially the frail elderly in long-term care, who commonly have several comorbidities, individualized disease management programs do not work as well as they do for younger patients with more isolated

disease such as a pediatric asthmatic patient. But in the frail elderly, we're not usually dealing with just diabetes. We're also dealing with an overlay of heart failure, maybe hypertension, and coronary artery disease. So it becomes rather complex to isolate any one disease you are managing. As a result, I believe algorithms that address how to deal with only one disease are simplistic for use in the elderly. One may find their principles helpful, but we need to take the whole elderly patient into consideration.

Q: *What about one disease as a result of a confluence of multiple chronic diseases, such as people with chronic kidney disease?*

A: Yes, but there are relatively few dialysis patients in long-term care. We certainly have some and they are challenging to care for partly because of the fragmentation of their medical and treatment records. I don't know the statistics but my feeling is that many dialysis patients are cared for outside long-term care facilities.

Q: *What do you find are some of the most important steps that consultant pharmacists, medical directors, administrators, and directors of nursing can take to improve care today?*

A: It may sound simplistic if the individuals involved in delivering care keep both the patient and the goal of quality patient care in mind, then it will just naturally follow that there will be good interdisciplinary interaction among all the professionals

you mentioned. If our goals are the same, then how we get there is easier done together than it is done if we all work separately. And it's more rewarding.

Q: *What would you like to see happen in long-term care that would improve the care of our aging population?*

A: We should put the focus on seeking to increase choice given to the 'baby boomers' who are entering the senior population.

Of course, the baby boom generation has been more assertive than previous generations so it is likely that we will be more assertive as patients of long term care facilities too.

But also we can expect that technology, medications, and perhaps even our understanding of diseases will continue to increase. That means that what we're able to do in the nursing home, technologically, will increase. There will be a kind of double-edged sword in terms of what we're able to do from a medical standpoint in long-term care versus the strong emphasis among patients for choice. It will be a challenge for the long term care industry and the various healthcare professions to accommodate the two.

Similarly, more and more of us will want to remain at home and in lower levels of care such as assisted living. As the acuity increases in those settings, my concern, especially in the medication area, is that there be good consultative services available to optimize medication use and safety no matter where the patient resides. ■

"For the elderly, especially the frail elderly in long-term care, who commonly have several comorbidities, individualized disease management programs do not work as well as they do for younger patients with more isolated disease such as a pediatric asthmatic patient," Tobias says.

Transition Program Measures Quality

To measure quality from the perspective of older adults, researchers at the University of Colorado at Denver and Health Sciences Center have developed the Care Transitions Measure (CTM-15). This 15-item self-report tool measures the quality of preparation for care transitions. The researchers also developed an abbreviated three-item version (CTM-3).

“Given that patients and families are really the only common link across sites of care, they are uniquely positioned to reflect on the quality of the care hand-off,” explains Eric Coleman, MD, MPH, director of the Care Transitions Program.

In the Care Transitions Program (www.caretransitions.org), a specially trained transition coach works with patients and family members over four weeks, teaching self-management skills and providing support so that patients can ensure that the facilities meet their needs during the transition.

Coleman and colleagues at the University of Colorado at Denver and Health Sciences Center developed the program based on their observation of the difficulties patients face when moving to new care settings. The group also developed the Care Transitions Measure, a self-report measure of quality.

The CTM-3 says:

1. The hospital staff took my preferences and those of my family or caregiver into account when deciding what my health care needs would be when I left the hospital.
2. When I left the hospital, I had a good understanding of the things I was responsible for in managing my health.
3. When I left the hospital, I clearly understood the purpose for taking each of my medications. Responders may circle either

Transition Program Components

The Care Transition Program at the University of Colorado at Denver and Health Sciences Center is built around four concepts:

1. Medication self-management: The patient is knowledgeable about his or her medications and has a medication management system to ensure compliance with the prescribed treatment plan.
2. Patient health record: The patient maintains a personal health record to track health-related information and to transfer information to caregivers at new care settings.
3. Timely follow-up care: The patient schedules and completes follow-up visits with primary care and specialist physicians as required and feels empowered to be an active participant in interactions with clinicians.
4. Knowledge of red flags: The patient recognizes indications that a condition is worsening and how to respond.

—DJN

“strongly agree,” “agree,” “disagree,” “strongly disagree,” or “don’t know/don’t remember/not applicable.” Coleman and colleagues published the results of a study in *Medical Care* (March 2005) that showed that patients’ responses accurately predicted whether they would have a subsequent emergency room visit or a readmission for the same condition.

Coleman’s group has fielded about 1,000 requests for permission to use the CTM measures. The measures have been endorsed by the National Quality Forum and adopted by the World Health Organization. In addition, several states have either adopted or are adopting the measures, and a number of health plans have worked with Coleman’s group to develop pay for performance initiatives based on the measures.

The Care Transitions Program has been successfully adopted at 12 institutions, and about two dozen other institutions are expected to adopt the program this year. “The program is very accessible and practical, and therefore is easily incorporated into clin-

ical practice,” Coleman says. In fact, he adds, the program is relevant regardless of type of delivery system or financing mechanism. “The characteristics of the adopting institutions are highly variable,” he says. “Given our study population, we initially anticipated that capitated or Medicare Advantage systems would be most interested. But we are finding interest even in the fee-for-service world, particularly in light of current nursing and bed shortages, and the model is being used in the Canadian health system as well.”

Even though the model itself is largely patient-centered, it has the potential for even greater effectiveness if accompanied by external support mechanisms, Coleman concludes. “These might include clinician training to increase competency levels regarding care transitions, information technology that supports better information transfer at the time of care hand-off, and explicit financial incentives for handling transitions properly,” he says.

—Reported and written by Deborah J. Neveff, in North Potomac, Md.

(Continued from page 1)

according to an article, "Incidents and Preventability of Adverse Drug Events Among Persons in the Ambulatory Setting" (JAMA 2003;289:1107-1116).

Researchers, led by Jerry H. Gurwitz, MD, of the University of Massachusetts Medical School in Worcester, Mass., assessed the incidence and preventability of ADEs among 27,617 Medicare enrollees aged 65 and older in an ambulatory clinical setting. The events were categorized as significant, serious, life-threatening, or fatal, and may have resulted "from medication errors (i.e., errors in prescribing, dispensing, patient adherence, and monitoring) or from adverse drug reactions in which there was no error. Such events were considered preventable," write the authors, "if they were due to an error and were preventable by any means available. The nation's 17,000 nursing homes report about 350,000 adverse drug events, many from medication errors, each year," says Gurwitz. "Adverse drug events, especially those that may have been preventable, are among the most serious concerns about medication use in nursing homes," he says.

Gurwitz and colleagues documented 1,523 ADEs, of which 27.6% (421) were considered preventable. The overall rate of ADEs

Strategies for preventing medication errors should target the prescribing and monitoring stages of pharmaceutical care, researchers say.

was 50.1 per 1,000 person years, and the rate of preventable ADEs was 13.8 per 1,000 person years. Of the adverse drug events, 578 (38%) were categorized as serious, life-threatening, or fatal; 244 (42.2%) of these more severe events were deemed preventable compared with 177 (18.7%) of the 945 significant ADEs. Errors associated with preventable ADEs occurred most often at the stages of prescribing (246, or 58.4%) and monitoring (256, or 60.8%), and errors involving patient adherence (89, or 21.1%) also were common.

"Prevention strategies should target the prescribing and monitoring stages of pharmaceutical care," the authors said. "Interventions focused on improving patient adherence with prescribed regimens and monitoring of prescribed medications also may be beneficial."

■ An Ever Present Threat

Medication errors can occur at any time during the drug use process, say Gurwitz and others. In fact, the

ASCP has determined 86 places in the medication use process in long-term care facilities where errors occur. Studies show that 49% of serious medication errors occur during the prescription stage, 11% when an order is transcribed, 14% when the order is dispensed, and 26% when a drug is administered, ASCP guidelines show.

In fact, some medications may interact adversely in a patient with an existing medical condition, Dimant says. "Certain medications can aggravate an enlarged prostate, others reduce appetite and cause nutritional problems," he adds. "And dosing may be different for younger people and older people. Seniors' kidneys might not dispose of medications as well as the kidneys of younger people, causing the medication to accumulate to dangerous levels."

Sometimes coding errors can occur. Proper diagnosis codes may not be entered when a patient is admitted to a long-term care facility. A chart may list a patient as suffering from anemia rather than

"There are medications that are often used for younger people but might cause serious side effects in the elderly," Dimant says. "Diazepam, for example, should not be used in older people because the drug accumulates and remains in an older person's body for a longer period of time. And a correlation has been shown between elderly people taking diazepam and falling. And there are medications that can interact with each other in various ways. They can either increase or decrease each other's levels or effects and might, in the process, cause an adverse reaction."

from chronic kidney disease-related anemia, for example, says Eric Tangalos, MD, a gerontologist at the Mayo Clinic in Rochester, Minn., who has studied the treatment of patients with anemia in long-term care settings. “Proper coding is a critical part of proper treatment,” he adds. “Improper coding can lead to incorrect or under-dosing, and that can lead to adverse drug events as well as other problems.”

Anemia is present in about 34% to 60% of patients in long term care, the AMDA says, and increases with each decade of life over age 70. “Anemia often goes unevaluated or is inadequately evaluated in the frail elderly,” says Dimant. “Several studies suggest the importance of properly treating anemia to improve patients’ overall health and prevent comorbid conditions.”

■ Addressing Problems

According to T.S. Dharmarajan, MD, a gerontologist in the Department of Medicine at Our Lady of Mercy Medical Center in the Bronx, N.Y., the presence of anemia has been associated with an increase in falls. Dharmarajan has studied the relationship between the undertreatment of anemia and the frequency of falls. “Research demonstrates that there is a potentially important association between anemia and the risk of falls during hospitalization in ambulatory older patients,” says Dharmarajan.

Coding errors are just one example of a potential medication error in long-term care. “There are, in fact, myriad situations that may lead to medication errors,” says Jacqueline Vance, RN, the AMDA’s

Interventions focused on improving patient adherence to prescribed regimens and monitoring of prescribed medications may be beneficial, researchers say.

director of clinical affairs.

Medication errors can result from untreated medical problems, improper medication selections, too little or too much medication, failure to receive medication, an ADE, a drug interaction, and medication use with no indication, Dimant says. “All of these problems merit attention, and none can be addressed in a vacuum,” he says. “Physicians, nurses, and pharmacists are all responsible for quality pharmaceutical care in long-term care, and all must be part of a solution to medication errors and drug therapy related problems. Any workable solution must take a systems approach and avoid finger pointing and punitive elements.”

■ ADEs Among the Elderly

Data suggest medication errors occur more frequently in older patients because they take many drugs. Females also have more ADEs and take more medications than males, says William N. Kelly, PharmD, a professor of pharmacy administration in the Southern School of Pharmacy at Mercer University in Atlanta. “There is no doubt that reduced functioning of the kidney or liver represents a major risk for ADEs,” he adds. “Patients with abnormal complete blood counts also need close

consideration and monitoring. Other possible patient groups at high risk include severely or terminally ill patients and those with comorbidities.”

Polypharmacy is particularly troublesome in long-term care settings. Older patients often require multiple prescriptions because they may have several different medical problems. Researchers have not determined how many drugs are too many, Dimant says. “At one time it was thought that six were too many,” he says. “Today, patients typically may be receiving as many as 12 drugs a day, each one appropriate by itself. But given that number, side effects from medication interactions will occur inevitability, some anticipated and benign, some unanticipated and potentially dangerous.”

As a result of research he’s done, Kelly found that preventable medication errors occur most commonly in the ordering (68%) and monitoring stages of care (70%). Among the most common problems are excessive doses for elderly patients, clinically significant drug interactions, and poor drug selection, he adds. Other common problems include inadequate laboratory monitoring of drug therapies, delayed responses to adverse drug events, and failure

(Continued on page 8)

“Adverse drug events, especially those that may have been preventable, are among the most serious concerns about medication use in nursing homes,” says Jerry H. Gurwitz, MD, of the University of Massachusetts Medical School.

(Continued from page 7)

to respond to signs or symptoms of drug toxicity or laboratory evidence of toxicity. "An awareness of these potential problems is a crucial step in prevention of medication errors," Kelly says.

■ **Seeking Improvement**

The AMDA's Vance says physicians can do more to prevent medication errors and should be open to education and other interventions that would improve clinical practice. Also, facility medical directors should ensure that processes are in place for physicians who assess residents, she adds. Standardized assessment tools such as the Mini-Mental Status exam, Geriatric Depression Scale, and pain assessments are important for obtaining accurate information about a resident's physical, mental, and functional status.

Simply having practitioners repeat verbal orders (called echoing) to confirm what is needed can

help ensure patients' safety, Vance comments. Writing clear orders and prescriptions and knowing which drugs look like other drugs can help as well, she adds. For clarity and safety, physicians should place zero after a decimal point, avoid using "U" to mean units, never use a slash (/) when writing orders, and be generally careful with abbreviations when writing prescriptions, she comments.

Nursing assessment skills are also critical, says Vance, adding that "nurses need to be aware of the common geriatric syndromes associated with an adverse drug event and notify the physician when one occurs."

■ **From Theory to Practice**

Such strategies can improve the prescribing and monitoring of medications, says Vance. "Moreover, the education, information, and process tools physicians in long-term care gain by these efforts will contribute to the improvement of medical care

in all other settings in which physicians practice," she adds.

Theoretically, all medication errors are preventable, Kelly says. The most effective way to solve the problem in long-term care is through team management in which physicians serve as key and active members, he adds. Medical directors should appoint safe-medication-use committees to recommend strategies to reduce errors. "A list of medications considered potentially inappropriate for use in older persons should be developed and used as a screening tool," he comments.


All of these steps can be effective, Dimant says. "The prescribing process in nursing homes must be understood as a continuous process that includes frequent monitoring and reassessment of the efficacy of a drug and the interaction of multiple drugs," he adds.

—Reported and written by Martin Sipkoff, in Gettysburg, Pa.

THE NEWSLETTER OF HEALTHCARE QUALITY IN SENIOR CARE MANAGEMENT

DECEMBER 2007
Insights and Outcomes
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