



Planning the Content of Your Journal

As the editorial team plans each issue of *The Consultant Pharmacist*, we select content from a number of sources. Most of our academic articles—Research and Reports, Clinical Reviews, and Clinical Notes—are sent to us by outstanding pharmacy researchers and educators. When the need arises, we solicit experts to write papers for us on specific issues. Such articles often come about when a significant change in the evidence or treatment of disease condition becomes available. It is our responsibility to keep you informed as swiftly as possible while, at the same time, ensuring that this information goes through scrupulous peer review. Our peer-review process uses experts to evaluate and make suggestions on articles to help authors improve their contributions. We are fortunate to have a strong contingent of reviewers who volunteer their time and expertise.

In other instances, when we believe new content is needed, we take the initiative. For example, the journal recently launched a case study series aimed at addressing problem-solving skills for complex therapeutic situations, skills that we all need to possess to provide optimal care for our patients. This idea has now blossomed into a regular column. Authors are academicians at U.S. schools of pharmacy who have agreed to develop a case each month on contemporary medication-related problems in the elderly.

The journal also carries a literature review column that brings you abstracts of literature from core clinical journals that address issues of geriatric pharmacotherapy. The commentaries are provided primarily by members of the Editorial Advisory Board and, on occasion, from selected outside experts who possess additional, unique knowledge to put the issue in perspective for you.

The ideas for feature articles are developed from semi-annual editorial planning sessions, educational meetings—both from ASCP and other pharmacy education groups—suggestions from educational advisory panels, and our contributing editors. We select contemporary topics of interest to those practicing in the field of senior care in a wide variety of practice settings.

Finally, we have begun an editorial dialogue on the protection of human subjects in research. For many journals, including ours, this is an area where we need to enhance the education of our authors and

researchers. This is particularly true in the area of observational research where many are misinformed about research and the role of Institutional Review Boards.

What role do you play in this schema? You are experts in geriatric pharmacotherapy and can address the needs of others practicing in this field. I am in the fortunate position to be able to speak with many of you about your ideas for future content for the journal. Potential authors often query me about the desirability or acceptability of research content for the journal. Often, I can give prospective writers guidance before they begin writing to help them focus their manuscript to meet the requirements of the journal. We take your interest seriously and are grateful for your unsolicited manuscripts.

As you can see in this and other issues of the journal, the content we receive is diverse, timely, and valuable to a broad range of individuals. From our “Research and Reports” articles on medication use in patients with dementia by Jennifer M. Carlson and colleagues (page 584), to the forum by Barbara Flynn on her personal experience as a resident in a long-term care facility (page 610), our journal highlights a broad range of knowledge and issues.

We encourage you to contribute to *The Consultant Pharmacist* by submitting your original research and clinical reviews. In this way you help us shape the content to meet your needs and those of your colleagues. We all have special areas of interest and expertise. The process of writing and having an article published is an unselfish endeavor. We hope you are up to the challenge and ready for the individual rewards you achieve through this experience. If you have any questions about the process, I am ready and willing to assist you. Please feel free to contact me at edavidson@inther.com.

H. Edward Davidson, PharmD, MPH
Editor-in-Chief

584 Research and Reports Evaluation of Demographics and Medication Use in Patients with Dementia in Assisted Living and Skilled Nursing Facilities

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Opportunities exist to maximize treatment efficacy by initiating cholinesterase-inhibitor medications and maximizing dose titration.

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Call for Manuscripts

The Consultant Pharmacist

The Consultant Pharmacist welcomes reports of original, well-designed research that is applicable to consultant pharmacy and senior care practice. In addition to original research, the journal encourages submission of literature reviews, case reports, and opinions on important clinical or professional issues. The journal offers an efficient peer-review process, and approved manuscripts generally are published within six to nine months of acceptance. The journal's editorial process is designed not only to select the best articles for peer review and publication, but also to help authors conceive and develop publishable manuscripts. Sharing research findings, clinical innovations, and practice management insights in the journal is an excellent way to expand the knowledge base of the entire profession—and to help improve the lives of seniors. Please write or e-mail me with any questions, suggestions, or manuscript queries: H. Edward Davidson, PharmD, MPH, Editor-in-Chief, *The Consultant Pharmacist*, 740 Duke Street, Suite 120, Norfolk, VA 23510; edavidson@inther.com.

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The Watermark Design Office
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About the artist: Julia Sosa, 88, started drawing in elementary school. She began taking formal classes when, as an adult, she moved to the United States from Peru. She paints in oils, as is shown in her picture, "Tropical Water Plant." She signs her pictures "Tata," a name used by her 10 grandchildren. She lives in Alexandria, Virginia.



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Vitamin D and Calcium Supplements Do Not Prevent Bone Fractures

Giving elderly people regular supplements of vitamin D and calcium to prevent secondary bone fractures is ineffective, according to an article published online by *The Lancet* (Lancet 2005;365:1621–8). Vitamin D and calcium, alone or in combination, often are recommended for the prevention of osteoporotic fractures. In the study, researchers recruited approximately 5,300 people aged 70 years or older from 21 hospitals in the United Kingdom who had suffered a fracture over a 10-year period. Participants were randomly assigned to take a daily supplement of vitamin D₃, calcium, both, or a placebo. They were followed up for between 24 and 62 months.

Overall, 698 participants had a new fracture. The incidence of fractures did not differ among the groups. The trial did not address whether supplementation should be used for primary prevention or for those who live in a nursing home. The authors note that clarification of the role of supplementation in these settings needs more research and say that secondary prevention should consider other strategies. “The main pharmacological intervention is antiresorptive drugs, such as bisphosphonates, which have rarely been assessed in patients who have not been taking calcium or vitamin D,” they conclude.

Risks May Outweigh Benefits of Low-Dose Aspirin for Elderly Without Overt Cardiovascular Disease, Study Shows

The benefits of preventing cardiovascular events for elderly patients treated prophylactically with low-dose aspirin may be offset by the risks of serious bleeding, according to research published May 19 online in the *British Medical Journal* (www.BMJ.com). The research involved patients aged 70 years or older without overt cardiovascular disease. “The balance of harm and benefit could tip either way,” they say. Previous research on primary-prevention clinical trials of aspirin was conducted in middle-aged, not older, subjects.

To further investigate these issues, the research team constructed an epidemiological model based on clinical

trial data to compare risks and benefits of aspirin use. The model included a theoretical cohort of 10,000 men and 10,000 women ages 70 to 74 with no history of acute coronary syndrome or stroke, followed until death or age 100.

The investigators then examined outcomes for fatal and nonfatal acute coronary syndromes, ischemic or hemorrhagic stroke, and major gastrointestinal (GI) hemorrhage. The study considered total years of life lived and years of life adjusted for health.

The model suggests that, for men and women, respectively, 389 and 321 myocardial infarctions and 19 and 35 ischemic strokes would be prevented by routine low-dose aspirin therapy. However, this benefit was offset by 499 and 572 excess GI hemorrhages and 76 and 54 incidents of intracranial bleeding.

“On balance, there was no indication of a net benefit or harm in terms of deaths, years of life saved, or years of healthy life saved,” the authors reports.

Their findings highlight the need for a randomized clinical trial of aspirin use in elderly patients.

Removal of Ovaries Increases Risk of Parkinson's Disease, Study Says

Mayo Clinic researchers have found that surgical removal of both ovaries doubles a woman's risk of developing Parkinson's disease and parkinsonism many years later in life. They also discovered that the younger a woman is at the time of the surgery, the higher her risk. The research was conducted at the Mayo Clinic in Rochester, Minnesota (www.mayoclinic.com).

“The risk is higher for women with both ovaries removed; however, it may also be somewhat increased when only one ovary is removed,” says Walter Rocca, MD, Mayo Clinic epidemiologist and lead study investigator. “In addition, there is a suggestion that for women with one ovary removed, removal of the uterus may also increase the risk.”

Rocca emphasizes that his study's findings must be viewed by women contemplating an elective or preventive removal of the ovaries and uterus in consultation with their physicians in the context of a woman's medical history, her genetic makeup, and other diseases or risk factors. He also stresses that

physicians must carefully consider the age of the woman at the time of the surgery and the option of treating the woman after surgery with estrogen therapy.

“Like any medical or surgical decision, there is a trade between risk and benefit,” says Rocca. “Our findings are important for situations where the removal of the ovaries is ‘elective,’ i.e., conducted to reduce the risk of ovarian cancer” or other conditions. Reduced estrogen during a woman’s fertile life is linked to the risk of parkinsonism.

Even in women who received estrogen treatment after the surgery, they received doses that were generally lower than what is produced naturally by the ovaries and for a shorter number of years, the researchers note.

Mayo Clinic investigators studied 1,202 women who had both ovaries surgically removed and 1,283 women who had one ovary surgically removed. All women were recruited from the general population of Olmsted County, Minnesota, from 1950 through 1987. For each woman who underwent ovarian surgery, the researchers selected a woman of the same age who did not undergo ovarian surgery. All the women studied were followed through the onset of parkinsonism or Parkinson’s disease, death, loss to follow-up, or the time the study was conducted.

Observers point out that this preliminary research will need to be re-evaluated overtime.

Chest X-Rays May Help Detect Osteoporosis in the Elderly

Undetected osteoporosis in the elderly might be discovered if chest X-rays—those done for other reasons—were examined for fractures of the vertebrae, according to an article in the *Archives of Internal Medicine* (Arch Intern Med 2005;165:905-9).

Previous studies estimate that 12% to 25% of people aged 50 to 60 years have one or more osteoporosis-related vertebral fracture, the most common fracture associated with osteoporosis. While only 30% of these fractures come to medical attention, the other 70% are associated with illness, death, decreased quality of life, and increased risk of future fractures. The authors suggest that the many chest X-rays that elderly patients undergo for other health reasons might be examined

to determine the presence of vertebral fractures.

Researchers selected a random sample of about 10% of patients older than 60 years who had been evaluated in the emergency department of a large teaching hospital and had a chest X-ray done for any reason. The medical charts and X-rays were then reviewed in detail to determine whether the patient had a moderate-to-severe vertebral fracture.

Seventy-two (16%) of the 459 patients had a moderate-to-severe vertebral fracture on the basis of their X-ray. Forty-three (60%) of the fractures were documented in the original X-ray reports. Of the 72 patients with fractures, only 18 (25%) had histories of osteoporosis. “Even among the patients admitted to the hospital (198) who also had a vertebral fracture (32), there was no documented addition of osteoporosis medications during hospitalization or at discharge,” the authors report.

“One in six elderly patients who underwent chest radiography in our emergency department had clinically important vertebral fractures,” the study concludes. Nevertheless, only 43 (60%) of these fractures were reported, and only 25% of patients with fractures received a diagnosis of or treatment for osteoporosis.”

Lipid-Lowering Agents Are Associated with Decreased Risk of Dementia

The findings from a new study indicate that treatment with statins and other lipid-lowering agents (LLAs) may cut the risk of dementia. The study, which is reported in the journal *Neurology* (Neurology 2005;64:531-8), involved 9,294 subjects selected from the electoral rolls of three French cities. Baseline examination included extensive assessment of exposure to vascular risk factors (including cholesterol levels and use of statins or fibrates), and clinical diagnosis of dementia. Two percent of subjects were demented at baseline.

Hyperlipidemic subjects were 43% more likely to have dementia than normolipidemic subjects. Overall, 32.4% of participants had hyperlipidemia, and 15.6% were prescribed statins and 13.7% fibrates. After adjusting for age, gender, education level, and study center, the odds ratio (OR) for dementia was observed to be lower among LLA users (OR = 0.61,

95% CI = 0.41 to 0.91) compared with subjects taking no LLAs. There was no differential effect between statin and fibrate users. The odds for dementia were increased in subjects with hyperlipidemia (OR = 1.43, 95% CI = 1.03 to 1.99).

Subjects treated with LLAs were 39% less likely to have dementia than nonusers. However, only users who achieved normal lipid levels had a decreased dementia risk.

The results suggest that hyperlipidemia increases the risk of dementia and that use of LLAs can decrease this risk, the authors conclude. The current report is one of several that have suggested an antidementia or anti-Alzheimer's effect for these drugs. However, other studies have refuted this apparent benefit

Exercise May Slow Onset or Progress of Alzheimer's Disease

Physical activity appears to inhibit Alzheimer's-like brain changes in mice, slowing the development of a key feature of the disease, according to a new study, published in the *Journal of Neuroscience* (J Neurosci 2005;25:4217-21). The research demonstrates that long-term physical activity enhances the learning ability of mice and decreases the level of plaque-forming, beta-amyloid protein fragments.

In the study, scientists show that in an animal model system one simple behavioral intervention—exercise—can delay, or even prevent, development of Alzheimer's-like pathology by decreasing beta-amyloid levels.

To directly test the possibility that exercise (in the form of voluntary running) may reduce the cognitive decline and brain pathology that characterizes Alzheimer's disease (AD), the study utilized a transgenic-mouse model of AD rather than normal mice. The transgenic mice begin to develop AD-like amyloid plaques at around three months of age. Initially, young mice (six weeks or one month of age) were placed in cages with or without running wheels for periods of either one month or five months, respectively. Mice with access to running wheels had the opportunity to exercise any time, while those without the wheels were classified as "sedentary."

On six consecutive days after the exercise phase,

the researchers placed each mouse in a Morris water maze (a submerged platform) to examine how fast it could learn the location of a hidden platform and how long it retained this information. The animals that exercised learned the task faster. Thus, the mice that used the running wheels for five months took less time than the sedentary animals to find the escape platform. The exercised mice acquired maximal performance after only two days on the task, while it took more than four days for the sedentary mice to reach that same level of performance. This suggests that exercise may help to offset learning/cognitive deficits present in AD patients.

Next, the investigators examined tissues from the brains of mice that had exercised for five months. They compared the levels of plaques, beta-amyloid fragments, and amyloid precursor protein.

Compared with the sedentary animals, mice that had exercised for five months on the running wheels had significantly fewer plaques and fewer beta-amyloid fragments in the cerebral cortex and hippocampus, by approximately 50%.

Marlene Z. Bloom
Managing Editor

Correction

Due to a production error, Figure 1 in the May issue (Consult Pharm 2005;20:392) was corrupted. Readers who wish to have a corrected copy of the figure can view it on ASCP's Website: www.ascp.com/public/pubs/tcp/.

Telehealth Enables Senior Care Pharmacists to Reach Beyond Facility Walls

Telehealth—including telepharmacy—is beginning to play an increasing role in the provision of health care services. Although further study is necessary to document the impact of this technology in senior care and other settings, telehealth has demonstrated the potential to increase patient access to pharmacists and other practitioners. It also can help in monitoring and testing for chronic conditions, reducing costs, and preventing hospitalizations and emergency room use. However, Medicare and Medicaid reimbursement for such services remains low, and the cost for implementing telehealth programs can be prohibitive. Nonetheless, telehealth is an important health care technology tool for senior care pharmacists, particularly as their clinical reach stretches beyond nursing facilities to other senior living settings and the community at large.

Key Words: Telehealth, telemedicine, telepharmacy, technology, video, videoconferencing.

in the community, and to assisted living facilities and other settings.

While promoting telemedicine systems is not without challenges, the result of such efforts can benefit practitioners and patients alike. The key is to carefully match technology with facility or organizational needs, train staff, educate patients and family members to use technology successfully, and document telemedicine's impact on outcomes and costs.

What Is Telehealth and Telemedicine?

Telecommunications enables audio-visual and digital data to be transmitted to and from remote and distant locations, from city to city or state to state, and across state lines. In general, this requires technology such as microwaves, satellite links, long-distance telephone lines, and high-speed switching systems that depend on fiber-optic cable and computer modems. A simple system enables data to be transmitted via computer and/or phone lines. More complex systems allow for real-time multisite videoconferencing.

Telemedicine promotes patient-centered care by allowing practitioners and specialists to connect with medical resources unavailable at

The role of technology—specifically, electronic medical records (EMRs) and E-prescribing—has received much attention from the media in recent years. One technological advance—telehealth, or telemedicine—has received less attention, although studies have documented its potential to enhance outcomes, reduce costs, and increase access.

Telehealth in its various forms

(including telepharmacy) has the potential to reach patients in rural and other remote areas, enable consultations with specialists from across the country, and provide opportunities for active monitoring to detect problems before they result in hospitalizations or emergency room visits. It also can enable senior care pharmacists to reach beyond traditional nursing facilities to seniors and their adult children

their locations. In the United States, “telemedicine also offers the benefit of trimming costs from the already taxed health care system, which cannot afford extended hospital stays, unnecessary clinical services, or excessive use of the ‘self-referral’ emergency room visits,” suggests Pramod Gaur, president and chief executive officer of Viterion Tele-Healthcare, LCC.

“Some argue that the rise in the use of telemedicine technology solutions will result in a loss of personal interactions between patients and providers,” Gaur admits. However, he adds, if telemedicine is applied and utilized correctly, it will increase the quantity and number of face-to-face meetings between patients and physicians, “improving the quality of in-person, patient-to-provider encounters.”

Telehealth and Disease Management: One Example

Telemedicine has been used successfully to address a number of health care conditions in a variety of areas. For example, the Department of Veterans Affairs Center for Practice Management and Outcomes Research and the University of Michigan in Ann Arbor has estab-

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Telemedicine allows practitioners and specialists to connect with medical resources unavailable on their locations.

lished a Web-based telemedicine system for monitoring wounds in patients who do not have immediate access to the services of a consulting physician.¹ The system enables easy transmission and access to digital images of a patient's wound.

The wound-care telemedicine system employs a "store-and-forward" method of data transmission. This is less expensive than real-time videoconferencing, which requires high-end equipment and sophisticated broadband technology. "We wanted to use the least technologically complicated method we could use to achieve our objective," explains Julie Lowery, PhD, Veteran's Affairs, Ann Arbor Health Care System, Michigan.

"Store-and-forward enables you to transmit information and conversations. The physician can save up the consults and view them whenever he or she has the chance.

They really liked this convenience," says Lowery. Nurses also liked the system. "They were at facilities where they didn't have access to wound-care specialists with whom they can consult. They loved having ready access to such a specialist who could confirm their treatment decisions or offer alternative suggestions," Lowery observes. At the same time, she notes, "There were some newer treatments that they either didn't know about or needed a physician to order."

The nurses now had access to these treatments and are able to

use them to improve patient care.

Patients also appreciated the system. "Considering the alternative was traveling many miles to visit a specialist, patients definitely liked this better. Their biggest concern—expressed by about 20% of them—regarded the privacy of their data being transmitted over the Internet," Lowery suggested. To address this, she added, "We took great pains to ensure confidentiality and ease their fears." For the most part, however, "patients are very satisfied with the technology."

Nonetheless, the system was not without barriers or problems. For example, it requires nurses to "double enter" data for the patient's record and for the Web-based study data. "Since this was part of a funded study, we were able to pay nurses for their extra time. However, this isn't an option for everyday practice," Lowery says.

Another challenge involved the photographic technology. "Because the consults are heavily based on digital images, the photography protocol is pretty important. Pictures must be taken precisely with specific lighting, at a particu-

lar distance, and so on," Lowery offered. At the same time, measuring the wounds calls for precision. This requires that the plane of the camera lens be directly parallel to the plane of the wound. She noted, "We used software that corrected for this. Otherwise, the photography could be problematic."

During interviews with several administrators in her region, Lowery uncovered a potential barrier to widespread use of such systems. "These people said that competing priorities for funding is a big issue. Unless they see that there is empirically based proof that telehealth systems will save them money and effectively address patient care issues, they are unlikely to implement or support such systems," she says.

Telemedicine enables patients to ask personal questions of their pharmacists and allows pharmacists to obtain valuable feedback on medication issues.

Telehealth Enables Senior Care Pharmacists to Reach Beyond Facility Walls

This technology presents a tremendous opportunity to get specialized care to patients or providers—including pharmacists—who don't normally have access to it, Lowery notes. However, she emphasized that telehealth should be used to supplement and enhance face-to-face interactions between patients and practitioners, not to replace them.

Telepharmacy Addresses Shortages, Reduces Errors

A pilot program in Turkey, Texas has had an impact on the rural community and has had a positive effect on patients and providers alike. Previously, residents of Turkey had to travel several miles to another town to get their prescriptions filled or to talk to a pharmacist. Now they just stop in at the town's telemedicine clinic, operated by physician Sidney Ontai, MD, who partnered with Texas Tech University's Health Sciences Center (TTUHSC) to provide the pharmacy services.

"This pilot has been great for us. We are one of only two pharmacy schools that require a rural clerkship, and this enables us to educate patients about telepharmacy as well as rural services," said Charles Seifart, regional dean for TTUHSC's Lubbock School of Pharmacy.

Such systems require strong partnerships between participants. For example, Ontai has partnered with emergency medical technicians in the community to assist patients during the telemedicine services and to

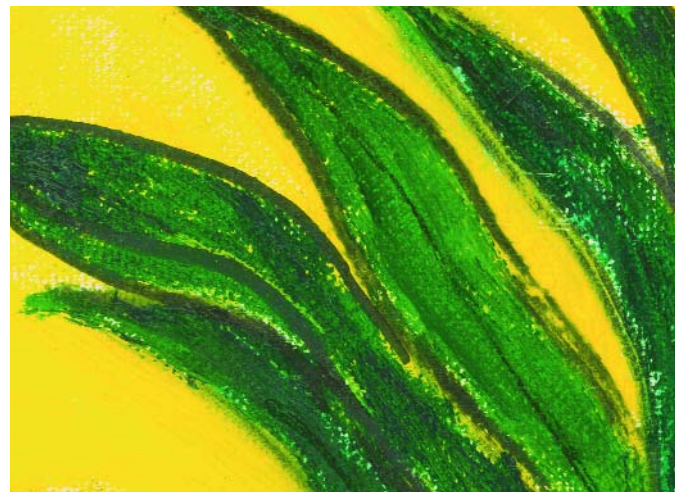
serve as pharmacy technicians for the pharmacy school. "We pay one-fourth of the EMTs' salaries, the physician pays for part, and the rest is paid by the county. This works well in the rural community, but it requires coordination and communication," says Seifart.

His students and school officials are pleased with the project. "We also have done patient satisfaction surveys, and the citizens of Turkey—including many elderly residents—love it," he notes.

"They have no problem with the technology, and they are just so thankful that someone cares about them and is in their community to provide pharmacy services. They like having a pharmacist to whom they can talk."

Nonetheless, the project has not been without its challenges or difficulties. "Equipment is very, very expensive," Seifart observes, costing about \$50,000 just for the software and equipment for the pilot. He noted that his school

received a grant to help with expenses; otherwise, they would have been prohibitive. "If we had to lease the equipment in addition to paying for the drug inventory, it would not have been possible," he explains.



Telemedicine programs, while easy to implement from a technology perspective, require fundamental changes in the way health care is practiced and delivered.

Seifart said that he is reassessing vendors and looking at opportunities to save money. Recently, he has found that “we can get decent video-conferencing software for about \$1,000 and a digital camera for visual documentation for about \$1,500.” He added, “The software isn’t all that sophisticated. We are looking at developing our own.”

Seifart says program leaders have learned a great deal. For one thing, the formulary has changed drastically, and they discovered that they used a lot more chronic care drugs than they thought. “On certain expensive drugs, we mail them prospectively. Our computer is programmed to alert the pharmacy that the drug is getting ready to run out, and it is shipped at that time so it doesn’t have to sit on the shelf,” says Seifart.

Telepharmacy represents an excellent use for telehealth technology, according to Gaur. “One of the beneficial aspects of telemedicine technology is its ability to be customized to best meet patients’ individual needs. The pharmacy setting is a perfect example of the technology’s flexibility and adaptability,” he says. Telemedicine enables patients to ask personal questions of their pharmacists. At the same time, using customized dialogue questions, a pharmacist can proactively conduct drug regimen reviews or medication consultations with patients to obtain valuable feedback on medication issues.

Some telemedicine solutions offer customized “advice messages” for patients and provide voice prompts so patients better adhere to and comply with medication scheduling regimens. Ultimately, Gaur states, “The application of telepharmacy can enable better health care delivery and improve treatment efficacy.”

Telehealth and Long-Term Care

Telehealth already has been used effectively in long-term care settings. For example, one study recently addressed the use of interactive video consultations in a long-term care facility.² Researchers employed interactive video conferencing to provide physician specialty visits to long-term care facility residents and collected data on 76 individual consultations in six clinics. The most common result was a change in treatment plan, which resulted either in the resident staying in the facility or in no placement change. Physicians, nurses, and patients also expressed high levels of satisfaction with the program.

The researchers employed non-video units that enabled users to insert questions that the patients could answer. Professionals can program any questions they choose, says lead author Bonnie Wakefield, PhD, RN, at the Veterans Affairs Medical Center in Iowa City, Iowa. “You can program medication-related questions, listing specific side effects. If positive responses come back, they can be compiled

like a spreadsheet, and practitioners can view these data via a Web-based monitoring site,” she says. The technology is fairly simple, Wakefield explains, involving a unit that looks like a small screen and plugs right into the phone line.

Units such as these can be implemented on a widespread basis in senior living settings where a central unit is located in a common area. Residents have a plastic disk that resembles a credit card and contains all of their health care and/or medication information. They insert it into the machine, and they can have a virtual consultation with a physician or other practitioner.

Most of the benefits of telemedicine in long-term care “are no-brainers,” suggests Wakefield. “You provide more services more easily. You save travel time and travel-associated costs. You enable earlier identification of risk and a quicker response to problems or potential problems. And you decrease emergency room visits and hospitalizations,” she explains. In addition, Wakefield says, “Anything you can do in person, you can accomplish via telehealth.”

Those facilities and practitioners who have had experience with telehealth seem to agree that it has a key role to play in long-term care. In fact, nursing facilities that have received payment for telehealth consults report several benefits, including³:

- Enhancement of onsite primary care
- Enhancement of onsite specialty care
- A significant reduction of transportation costs
- Promotion of a team approach to care as a result of social and counseling services for family and caregivers
- Ready access to professional experts for staff training

Inroads in the Heartland

One of the most popular and successful applications for telehealth has been to increase health care—including pharmaceutical care—access for patients in rural communities and facilities. Studies have shown that telehealth services in rural communities result in delivery of quality care and that may improve outcomes and patient satisfaction.⁴

Telehealth plays an important role in rural health care, emphasizes Adam Darkins, MD, MPH, telemedicine consultant for the Veterans Health Affairs Administration in Washington, D.C. “Often, a catastrophic problem happens, and you need to make sure you have the right diagnosis and treatment. This can be challenging in rural areas. Telemedicine enables rural areas to draw on the input of specialists and make decisions faster,” he explains.

Successful Implementation

“If people come around and say, ‘We have this great technology that we need to use,’ it’s probably

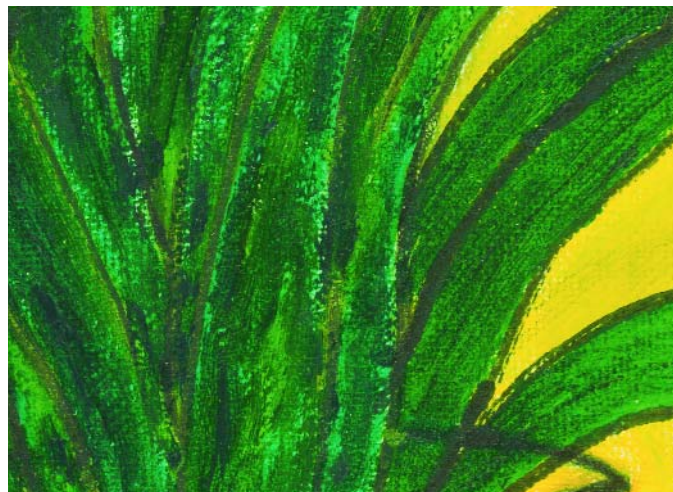
doomed to failure,” cautions Darkins. He stresses the importance of identifying problems and challenges and then determining how telemedicine technology can be applied to address them, rather than embracing the technology first and then trying to determine where and how to use it.

“Don’t rush out and buy the biggest, shiniest piece of equipment you can,” Darkins says. “You don’t need to use something more complex or expensive unless there is a justification for it. Realize that a Dodge Neon generally gets you from point ‘a’ to ‘b’ as well as a BMW.”

It is helpful to start with electronic medical records and build technology such as telehealth on this foundation. However, Darkins notes, “This isn’t necessary. However, you do need information on which you can make decisions. You need to use all of your organization’s or facility’s technological processes, systems, and equipment together and not in isolation.”

Darkins cautioned

practitioners to beware of technological innovators and not let themselves be dazzled by systems with lots of bells and whistles. “Innovators often thrive on complexity. These complex systems are very well for the zealots, but they don’t work



Reimbursement for telehealth and services remains virtually nonexistent, and this continues to discourage broad use of this technology.

when you try to implement them into routine everyday practice,” he observes.

This means training and support once the system is up and running, Darkins says. “We need to build and maintain a workforce that is competent in telehealth. In other words, there cannot be a lapse in services while new people are trained.

Gaur notes that successful implementation of telehealth also means overcoming resistance to change.

“Telemedicine programs, while easy to implement from a technology perspective, require fundamental changes in the way health care is practiced and delivered for both practitioners and patients,” he says.

Pharmacy providers can have a positive influence on this process, he says. They can serve as conduits between patients and physicians, helping implement these changes, Gaur says. “Pharmacists have the opportunity to ensure that telemedicine provides patients seamless delivery of care” because they interact with a wide spectrum of providers.

Concerns About Cost

While expense remains a barrier to widespread implementation of telehealth technology, “costs have come down appreciably in the past 10 years,” says Darkins. The major costs remain equipment and telecommunication lines.

Reimbursement for telehealth

and services provided via telehealth systems remains virtually nonexistent, and this continues to discourage broad use of this technology.

According to the Centers for Medicare and Medicaid Services (CMS) Web site, the agency “has not formally defined telemedicine for the Medicaid program.” Nevertheless, the agency noted, Medicaid reimbursement for services furnished through telemedicine applications are available at the state’s option is a “cost-effective alternative to the more traditional ways of providing medical care (e.g., face-to-face consultations or examinations).”

When deciding the scope of coverage for telemedicine applications, CMS said, states should consider the quality of equipment, type of services to be provided, and location of providers (e.g., remote rural sites). Most states that provide payment for telemedicine services do so in the form of a physician consultation. Nonphysician practitioners also may be covered depending on their scope of practice under state law.

Private insurance companies vary considerably in their payment policies for telemedicine services. If a particular company does not pay for these services currently, an organization may have the leverage to require such payment as a condition before entering into contract with the insurance carrier.

As for Medicare, rules were

issued following the passage of the Balanced Budget Act of 1997 (BBA), which permitted very limited reimbursement for telehealth services. Nonetheless, CMS paid for 235 telemedicine services—accounting for \$15,082^{5,6} in 1999, the latest date for which data are available.

“Reimbursement needs to be done in a way that makes sense,” Darkins says. “There needs to be an approach to reimburse telehealth that provides incentives and allows practitioners and facilities to use this technology. My personal suggestion is that practitioners develop a business plan providing a case for using telehealth services that makes sense and provides cost-effective care.”

Telemedicine Now, Publish Data Later

“If you are going to implement a telemedicine or telepharmacy system, you need to document the results of your findings,” suggests Lowery. “Be prepared to support your claims regarding telehealth with specific data. In fact, the more hard data on the magnitude and value of the program you have, the better,” Lowery offers. “Ultimately, such data will help to encourage more widespread use of telehealth systems and enable pharmacists and other practitioners to gain the buy-in of facility administrators, regulatory officials, and other decisionmakers.”

Telepharmacy and Senior Care

ASCP member David Kazarian, PharmD, believes that telepharmacy is important in senior care because there are times when a pharmacist cannot be at a specific site. "I am out of the office a lot, and I can use this technology to conduct business, check in on the office, make data entries, and converse with patients from wherever I am," he says. "We do a lot of IV medications, and we can use this technology to talk to patients in the hospital, counsel them, and tell them what to expect."

"There is a great need for telehealth, and the only thing to slow it down is regulation," he says. "Unfortunately, we often limit ourselves by prohibiting the use of technology."

At a recent meeting, a Florida Board of Pharmacy member talked about a device that would connect the long-term care facility to the pharmacy, saying that he would object strongly to this use as an inappropriate use of technology. Kazarian noted that some states are looking at the possibility of passing laws to prohibit conducting various interventions (such as blood pressure measurement) via telehealth technology, mainly because they are unfamiliar with technology and worry that practitioners and others will use it to replace face-to-face patient care.

Nonetheless, Kazarian is confident that telehealth—including telepharmacy—will continue to move forward in long-term care settings. The drivers, he suggested, will not

be the government or boards of pharmacy but innovative practitioners. Additionally, need, such as that caused by pharmacist shortages and lack of available services in rural areas, will facilitate the use of telehealth on a broader scale. "When this is the only way that some patients can get access to pharmacy and other health care services, the laws will change and telehealth will become more widely accepted," he concludes. ☞

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Telehealth should be used to supplement and enhance face-to-face interactions between patients and practitioners, not replace them.

Understanding Sarcopenia in the Elderly

The prevalence of sarcopenia, involuntary muscle loss, accelerates after age 60, leading to dependency and disability. Etiology is poorly understood, and numerous theories have been expounded. Resistance weight training is the only agreed upon strategy for altering sarcopenia's progression.

Key Words: Frailty, muscle loss, muscle fibers, sarcopenia, wasting.

Consultant pharmacists may be surprised to find patients and their families utter the word "sarcopenia." But, because of efforts by the National Institute on Aging and other national organizations, many seniors know its meaning and implications. Lay articles on the importance of weight (resistance) training increasingly use and define sarcopenia.

Originally an umbrella concept

encompassing all involuntary age-related muscle loss, today researchers and clinicians recognize sarcopenia as a syndrome distinct from muscle atrophy, cachexia, and frailty. Muscle fiber types affected help differentiate sarcopenia from other conditions (see sidebar, page 576):

■ **Sarcopenia** means muscle-mass fibers and force are reduced and result in a shift toward Type I

muscle fibers. A discussion of the proposed mechanism of this shift appears below.¹

■ **Atrophy** is muscle wasting from disuse. Muscle mass is reduced, but muscle fibers and force are maintained, with a shift toward Type II fibers.¹

■ **Cachexia**, or wasting, is an end-stage syndrome characterized by anorexia, malnutrition, and anemia.^{1,2}

■ **Frailty** is a generic term describing a confluence of factors affecting body composition. A person is defined as frail if three of the following five conditions are met: unintentional weight loss of 10 pounds or more within a year; general weakness (e.g., decreased grip strength); overall feeling of exhaustion; slow walking speed; and very low levels of physical activity.³ While many frail patients are sarcopenic, the reverse is not necessarily true.

Sarcopenia's clinical repercussions and interpretations are unclear: some clinicians and researchers view it as normal age-related decline while others call it a disease state with underlying metabolic dysfunctions. Regardless, a loss of 30% muscle limits normal function, and a 70% loss results in system and metabolic failure.⁴

Sarcopenia might be a biological

marker that is a better indicator for aging than birthdays. Muscle mass in 68-year-old master athletes, for example, is often equivalent to or better than that in 28-year-old adults.^{6,7} As a distinct syndrome, sarcopenia is defined as a muscle-mass index (muscle mass [kg]/height [m²]) that is two standard deviations below that of a healthy 30-year-old.⁴ Multiple techniques exist for measuring muscle mass, but the bioelectrical impedance (BIA) test and the dual-x-ray absorptiometry (DEXA) scan are used most frequently.⁸

Prevalence

Human muscle mass and strength peak in adulthood between ages 20 and 35, and decline 3% to 8% during each decade of middle age.^{5,8,9} Muscle loss accelerates around age 60, with about 15% decline in the sixth and seventh decade, followed by approximately 30% for each decade thereafter.⁹ Total muscle strength decreases 24% to 36% between ages 50 and 70. Type II muscle fiber decline predominates.⁹

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Sarcopenia seriously reins in daily living skills, causing dependency, frailty, walking limitations, and overall disability.

Table 1. Mechanisms Implicated in Sarcopenia's Etiology

- Internal muscle fiber alterations and metabolism changes favoring slow oxidative fibers
- Denervation between nerve and muscle fiber
- Motor unit remodeling
- Mitochondrial DNA mutations
- Altered endocrine function
- Physical inactivity
- Malnutrition or altered tissue response to nutrients

Source: Reference 5.

Using two standard deviations below normal muscle mass index, estimated prevalence is 10% to 25% for those under age 70, and after age 80, 30% for women and 50% for men.^{10,11}

Sarcopenia's insidious course is progressive and asymptomatic. Total body weight belies sarcopenia because weight tends to be stable as people's muscle/fat ratio changes, particularly in elderly men. A longitudinal study of healthy elders, ages 60 and older, have revealed muscle-mass loss with a corresponding increase in total body fat. Both genders maintained stable weights, but men lost more muscle relative to bone mineral during the study's

five-year period. Women's muscle and bone mineral loss proceeded at similar rates.¹² As muscle mass decreases, body fat increases.

Between ages 30 and 60, humans tend to gain one pound of fat for every half pound of muscle loss.⁴ Shifts in body fat are more pronounced in elders. Among 25-year-old men, for example, 20% of body composition is fat, but fat climbs to 35% for 75-year-old men.⁴

Obesity combined with muscle loss is increasing in prevalence. Obesity offers no protection from sarcopenia. Overweight people suffer age-related muscle loss, and like others, maintain weight stability. Obese elders' muscle strength compares to that of frail elders. Sarcopenic obesity is more troublesome than obesity or sarcopenia alone. Increasing fat mass promotes tumor necrosis-alpha, interleukin-6, and other adipokines, which increase insulin-resistance risk and other metabolic disorders. Insulin resistance leads to increased fat weight gain, further compromising health. The current obesity epidemic may give rise to a new epidemic—sarcopenic obesity.¹³

Impact and Costs

Sarcopenia seriously reins in daily living skills, causing dependency, frailty, walking limitations, and overall disability.¹⁰ Sarcopenia can be accompanied by weight loss, which is a predictor of falls and hip fractures.¹⁴ Once injury occurs, muscle regeneration slows,¹⁵ leading

to further disability. Muscle loss correlates with walking speed; as muscle mass decrease, so does walking speed. Among elderly women, for example, leg muscle power is a powerful predictor of functional status and accounts for 86% of walking speed variance.^{16,17}

Sarcopenia's health costs almost equal those for osteoporosis.¹³ In 2001, sarcopenia's direct U.S. health care costs were estimated at \$18.5 billion (\$10.8 billion for men and \$7.7 billion for women), which represented 1.5% of all health care dollars.¹⁸ Sarcopenia's indirect costs (decreased quality of life and dependency) are immeasurable.

Etiology

Age, gender, physical inactivity, decreased hormone levels, and genetic predisposition (several genes have been proposed) have been implicated in sarcopenia's development, but precise etiology is unknown (see Table 1).¹⁹

Several mechanisms maybe involved. Muscle fiber alterations and motor unit remodeling. A motor unit consists of a motor neuron, which controls signals from the brain, and the fibers it innervates. As motor neurons die or age-related malfunctions occur, their associated muscle fibers falter. Adjacent neurons, which are usually slow, switch motor neurons (Type 1), attempt to innervate the faltering fibers. Subsequently, these rescued fibers contract more slowly and with

Muscle Fiber Types

Muscle tissue consists of two categories of fibers (cells), specialized for different activities. Type I fibers, also called slow-twitch or slow-oxidative fibers, are highly aerobic, very efficient energy producers, have slow contraction rates, and are fatigue resistant. These fibers are used mainly for sustained endurance activities. Postural muscles and those around the back, legs, and shoulders have a high Type I muscle content.

Type II fibers, subdivided into several subtypes (fast-twitch or fast-oxidative fibers), are anaerobic, have fast contraction velocities, and fatigue easily. These fibers provide strength or force for short periods of time, such as lifting and are four times more powerful than Type I fibers. All skeletal muscles comprise both fiber types, but muscles used for strenuous activities (e.g., arm muscles) have greater Type II fiber content.

Source: Reference 5

less force. This process is called motor-unit remodeling and may partially explain sarcopenia's shift to Type I fibers.⁴

Nutrients. Nutrients may have a greater role in sarcopenia's etiology than previously thought. Numerous studies document age-related dietary shifts that contribute to nutritional imbalances. For example, elders tend to consume less protein, but compensate calorically with more fat and carbohydrate. Additionally, evidence suggests protein requirements for elders are greater than currently recommended, and inadequate protein leads to muscle protein breakdown and muscle mass loss.^{5,20} Excretion of urinary creatinine, a surrogate marker for muscle mass, drops by 50% between ages 20 and 90.²¹

Mitochondria, the small cytoplasmic organelles responsible for the body's principal energy generation, also decline in efficiency with age, leading to subsequent functional decline. Inadequate nutrients and DNA mutations and deletions can create mitochondrial dysfunction.⁸ Mitochondrial decline is influenced by diet and physical activity, but attenuated by increased physical activity.²²

Hormone and endocrine factors. Age-related hormone decline and muscle mass may be related. Muscle loss, waning strength, and decreased bone mineral content follow testosterone reduction in men.¹ Both oral and

transdermal testosterone administration in older hypogonadal men increase muscle mass and decrease body fat.^{23,24} Among women, menopause is associated with muscle loss. Human growth hormone (HGH) levels also effect muscle mass and these, too, decrease with age.

Several studies have examined the effects of hormone replacement in sarcopenia. While some researchers have observed moderate increases in lean muscle mass and decreases in body fat in adults receiving hormone replacement therapy, others fail to find significance. HGH combined with hormone-replacement therapy has the greatest impact, but studies reporting these findings rarely included elders.^{1,25} Although hormone decline and muscle loss is related, administering HGH to seniors is a questionable intervention that is not approved by the Food and Drug Administration. This costly agent generates a high incidence of adverse effects among elders, including fluid retention, gynecomastia, orthostatic hypotension, carpal tunnel compression, and general malaise.¹

Early developmental factors may predispose individuals to later problems. Muscle fiber development begins between six and eight weeks of gestation, and researchers speculate that prenatal influences contributing to low birth weight have a life-long contribution to sarcopenia.¹⁹ Birth weight is associated with late-life sarcopenia independent of

adult size, and higher birth weight is associated with stronger adult grip strength.¹⁹ Sarcopenia undoubtedly emanates from the combined interplay of several factors that create muscle protein synthesis imbalances. Even minor imbalances eventually diminish muscle mass.⁴

Fishing for Answers: Use the Right Bait

Caenorhabditis elegans is a tiny, transparent, Nobel-prize winning worm. (Actually, the worm didn't win the prize; three researchers did.) The worm is only one millimeter long and consists of a predictable 1,090 cells at its nadir and 959 cells at death. This nematode has been studied for 40 years, from before birth as a fertilized egg, to death two to three weeks later. Elucidation of its biologic pathways has led to significant advancements in human disease, especially cancer.²⁶

Now, a group of researchers has examined this worm's senescence and gathered insights on sarcopenia.²⁷ They found that old worms share many aging characteristics with old people. *C. elegans* starts like a human toddler, with vigor almost tiring to watch, but gradually slows

down. Although Herndon et al. hypothesized that a gradual nervous system degradation causes the slowing, they found the nervous system intact over time in a way again similar to that of humans. Looking further, they found that a form of sarcopenia begins at the worm's midlife, and it, too, resembled human biology. Muscle fibers normally bundled neatly become disorganized over time.

Extrapolating this new work to humans may be difficult, but this research represents a step toward understanding. A mammalian model will be needed to truly understand. Regardless, further study of the aging of *C. elegans* may suggest treatments for sarcopenia and other muscle aberrations.

Sarcopenia's health costs almost equal those for osteoporosis.

In 2001, sarcopenia's direct U.S. health care costs were estimated at \$18.5 billion.

Child May Hold Clues to Muscle Strength

Imagine a five-year-old who can hold seven-pound weights with arms extended, unlike most adults. Such a boy exists, with double the muscle and half the body fat of his contemporaries. The cause of his Herculean strength: a very rare loss-of-function genetic mutation that blocks production of a myostatin (growth/differentiation Factor 8), the cytokine that limits muscle growth. Researchers have protected the boy's identity. They indicate he was extraordinarily muscular at birth, and his 24-year-old mother, a former professional sprinter, was muscular. Several of her close male relatives were unusually strong. They found that one copy of the mother's gene is mutated, but both of the boy's copies were. Information about his father has been withheld. His physicians are closely monitoring the boy's cardiac function for signs of cardiomyopathy or conduction disturbance.²⁸

Earlier, researchers at Johns Hopkins University in Baltimore created burly "mighty mice" by shutting off the gene that directs myostatin production.²⁹ Mutations in the genes responsible for myostatin production also have also been responsible for a "double-muscling" phenotype, a distinct muscular hypertrophy, in cattle.^{30,31} Decreasing myostatin by as little as 20% can profoundly increase muscle bulk.²⁹

Animal models suggest that myostatin blockers also could suppress fat accumulation and thus possibly thwart the development of diabetes.³²

Prevention

Prevention strategies abound in theory; a practical, clinical consensus would be helpful. Currently, only physical exercise combined with resistance weight training is universally recognized as appropriate.⁴ From a nutritional perspective, theoretically increasing protein intake and eliminating carbohydrates may maximize anabolic effects of protein, possibly preventing muscle loss.⁵ In the absence of research, few people advocate such an extreme dietary intervention. In the interim, increasing protein and decreasing carbohydrate intake seems reasonable. Supplementing diets with additional nutrients in the form of supplemental feeding in the absence of exercise may be ineffective. Elders who don't exercise tend to decrease food intake when given supplemental feedings, and consequently the supplement becomes only a dietary substitution.³³

Fiatarone et al. conducted one of the earliest studies demonstrating reversible muscle loss among elderly.³⁴ Study's participants were between ages 86 to 96, and following eight weeks of high-intensity resistance training, leg strength increased 174%, and mid-thigh muscle areas increased 9%. Additionally, activities of daily living (ADL) improved significantly—gait speed increased by 48%. However, once participants returned to an exercise-free lifestyle, a 32% loss of muscle strength occurred in four weeks.³⁴ In 1994, Fiatarone et al. published a similar but larger, randomized study with similar results.³⁵

Resistance training (RT) increases protein synthesis very quickly (see

Currently, only physical exercise combined with resistance weight training is universally recognized as appropriate.

Understanding Sarcopenia in the Elderly

Helpful Ideas, page 618). Cellular mechanisms responsible for exercise-induced changes are only partially understood.³⁶ RT increases motor-neuron firing rates and improves muscle fiber and efficiency of motor units.^{15,36} Research demonstrates that a 12-week, progressive RT program by elders increases muscle mass and strength, and muscle tissue biopsies reveals increases in both Type I and Type II fibers.^{37,38}

Endnote

Limited understanding, poor diagnostic tools, and controversy have left sarcopenia in the gray zone between normal aging and disease state. Prevention remains the

best strategy and, while helpful, physical training rarely reverses sarcopenia fully. Because sarcopenia's early course is masked by weight stability, consultant pharmacists' approach should be similar to that of other asymptomatic disorders—an emphasis on prevention. ☉

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Evaluation of Demographics and Medication Use in Patients with Dementia in Assisted Living and Skilled Nursing Facilities

Jennifer M. Carlson
George Gerding
Michael W. Estoup

Objective: To compare demographics and treatment patterns for dementia patients residing in assisted living facilities (ALF) and skilled-nursing facilities (SNF).

Design: Cross-sectional, retrospective chart review.

Setting: Patients with dementia residing in five assisted living and six skilled-nursing facilities in Western Oregon and Tacoma, Washington.

Patients: 119 assisted living and 190 SNF nursing patients with a diagnosis of dementia.

Main Outcome Measures: Similarities and differences in patient demographics, underlying comorbidity, duration of disease, and treatment characteristics for dementia.

Results: The analysis revealed higher prevalence of non-Alzheimer's dementia, history of cerebral vascular accident, depression, and diabetes in the SNF cohort. There were higher proportions of assisted living patients having dementia of less than one-year's duration. Low proportions of patients in both settings were receiving treatment (44% of assisted living patients and 11% of SNF), despite the finding that 78% and 62% of assisted living and SNF patients had a dementia diagnosis of less than three years. In addition, when cholinesterase inhibitors were ordered, the dosing was not fully titrated in a majority of patients. Reduction in behavioral medication use in treated ALF patients but not in treated SNF patients also was observed.

Conclusion: This analysis revealed opportunities for intervention and improved treatment for patients with dementia in ALFs. There are opportunities to maximize treatment efficacy by initiating cholinesterase inhibitor medications and maximizing dose titration. To adequately quantify potential benefit of dementia treatment in SNF patients, additional studies with larger numbers of treated patients are needed.

Key Words: Alzheimer's disease, Assisted-living facility, Dementia, Skilled-nursing facility.

Abbreviations: AD = Alzheimer's disease; ALF = assisted-living facility; ChEIs = cholinesterase inhibitors; CVA = cerebral vascular accident; DM = diabetes mellitus; SNF = skilled nursing facility.

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Introduction

Alzheimer's disease (AD) affects approximately 4.5 million Americans, doubling in prevalence every four years after age 65.¹ AD frequently goes unrecognized, is misdiagnosed, and may not be addressed until the latter stages of disease.^{2,3} Pharmacologic treatment has been shown to attenuate the functional decline associated with AD, particularly when started in the early stages of disease and is effective when maximal doses of treatment agents are utilized.⁴⁻⁶ Yet, lack of disease recognition or reluctance to initiate treatment in early disease stages may delay intervention until patients are less likely to achieve optimal benefit.^{5,7} Additionally, early discontinuation of treatment has been shown to culminate in a non-recoverable functional decline.⁷ As a result, early disease recognition, in conjunction with institution of therapy at a maximum tolerated dose, is critical in maximizing treatment benefit and optimally delaying disease progression.⁷ Further, to maximize the benefit potential, facilitating disease awareness and managing treatment expectations are critical for patients, family members, caregivers, and providers.⁸

This study was undertaken to assess similarities and differences in baseline demographics and treatment patterns of patients with dementia residing in assisted living facilities (ALF) and skilled nursing facilities (SNFs). The goal of this assessment was to identify potential areas and opportunities for future prospective interventions to optimize treatment and delay disease progression for patients with AD.

Methods

This study was a cross-sectional, retrospective analysis of patients with a diagnosis of dementia who resided in five

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assisted living and six SNFs from August 1, 2002, through October 31, 2002. The patients, located in Western Oregon and Tacoma, Washington, were identified by the facility consultant pharmacists through random, manual screenings of the medical record during the course of their monthly record reviews. Examination of the patient's medical record and analysis of the organization's electronic pharmacy database was conducted in patients with a diagnosis of dementia that was documented in the medical record. Information derived from the patient chart assessment consisted of:

- Patient demographic information (age, gender)
- Nature (type) and duration of dementia based on information provided by the patient's physician and documented in the medical record
- Characterization of underlying comorbidities with the potential to obscure dementia diagnosis and evaluation, or reflect or significantly affect the number of medications that the patients receive on a routine basis

■ Determination and stratification of use of the most commonly accepted therapies for dementia, which at the time of assessment included three cholinesterase inhibitors (ChEIs) (donepezil, rivastigmine, and galantamine) and vitamin E.

Table 1. Demographics of Patients with Dementia in Assisted Living and Skilled Nursing Facilities

	Assisted Living	Skilled Nursing	Significance
Number	119	190	
Age (mean/range)¹	86 (65–105)	92 (47–104)	NS
Gender²	95 female (80%) 24 male (20%)	146 female (77%) 44 male (23%)	NS
Diagnosis²			
Alzheimer's dementia	37	42	<i>P</i> = 0.08
Dementia NOS	47	113	<i>P</i> = 0.001
Other dementia	14	35	NS
Not specified	21	0	
Disease Duration Noted²	40/119 (34%)	175/190 (92%)	
< 1 yr	11 (28%)	19 (11%)	<i>P</i> < 0.01
1–3 yrs	20 (50%)	90 (51%)	NS
> 3 yrs	9 (22%)	66 (38%)	<i>P</i> = 0.07
Dementia unit/facility	16 (13%)	38 (20%)	NS
Comorbidities			
Pain	10 (8%)	19 (10%)	NS
Osteoarthritis	23 (19%)	39 (21%)	NS
Hypothyroidism	29 (24%)	43 (23%)	NS
H/o CVA	5 (4%)	31 (16%)	<i>P</i> = 0.001
DM	7 (6%)	39 (21%)	<i>P</i> < 0.001
Depression	38 (32%)	102 (54%)	<i>P</i> < 0.001

¹ Significance determined by Mann-Whitney test for nonparametric variables.

² Chi-square test for frequency determination.

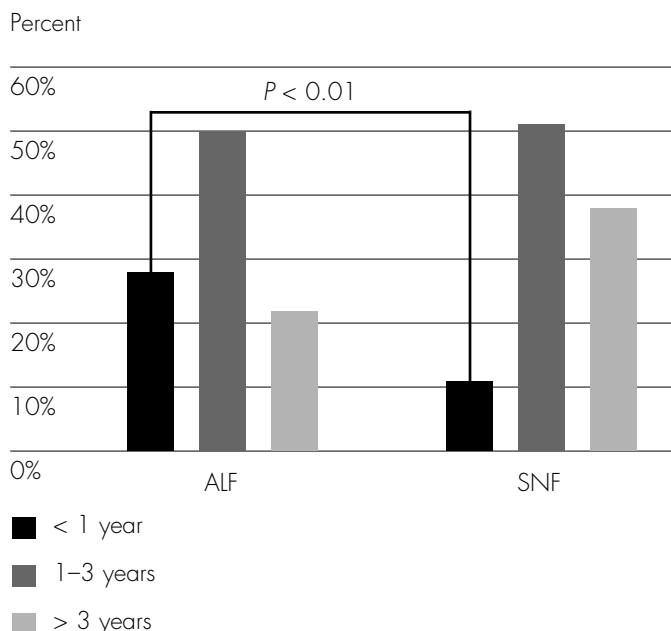
Abbreviations: CVA cerebral vascular accident, DM = diabetes mellitus, NOS = not otherwise specified, NS = not significant.

Data Components

The following information was collected and patients were stratified on the basis of the following:

- Age and gender collected from current physician's orders and the patient information sheet or medical record

Figure 1. Dementia Duration in Assisted Living and Skilled-Nursing Patients



- The presence or absence of the following comorbidities: arthritis, acute or chronic pain syndrome not attributable to arthritis, hypothyroidism, history of a cerebral-vascular accident (CVA), presence of diabetes, or depression

- Estimated disease duration (as noted by the diagnosis date or first date of documentation in medical record) and nature (type) of dementia

- The presence or absence of standard pharmacotherapy for dementia (cholinesterase inhibitor use or vitamin E), along with the type of treatment and dosage utilized

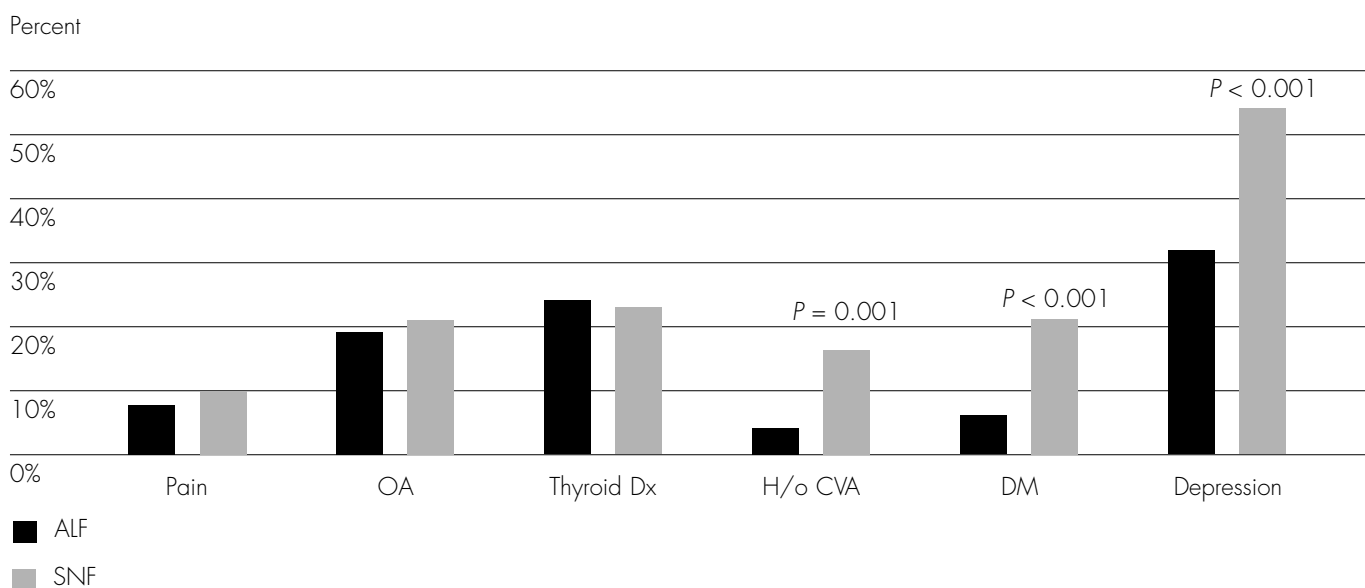
- Presence or absence of use of other behavioral medications (antipsychotics, mood stabilizers, anxiolytics)

Upon completion of data collection, data were entered into an electronic document and de-identified; only aggregate data were kept for analysis. All original data collection materials were destroyed.

Inclusion/Exclusion Criteria

Patients were included in the analysis if they had an established, documented diagnosis for dementia and were 65 years of age or older. Patients were excluded from analysis if any of the primary endpoint information was unobtainable.

Figure 2. Comorbidities in ALF and SNF Patients



Abbreviations: ALF = assisted living facility; DM = Diabetes Mellitus; Dx = diagnosis; H/o CVA = cerebral vascular accident; OA = osteoarthritis; SNF = skilled nursing facility.

Statistical Analysis

Where appropriate, application of statistical assessment was conducted. Prevalence and frequency determinations were assessed using the Chi-square test; continuous, parametric data were assessed using the two-sample t-test; and nonparametric data were assessed using the Mann-Whitney, two-sample rank test.

Results

The charts of 309 patients, 119 from assisted-living facilities and 190 from skilled-nursing facilities, were reviewed. Demographic information for patients with dementia is reported in Table 1. The average patient age was 90, and a majority of patients were female (78%). Assisted living patients had shorter duration of disease compared with SNF patients (28% versus 11% <1 yr duration; *P* < 0.01). More established disease was more common, but was not

significantly different in SNF patients (38% versus 22% with disease >3 yrs; *P* = 0.07) (Figure 1). Comorbidities were evenly distributed with respect to pain, arthritis, and hypothyroidism, while the prevalence of prior CVA, diabetes, and depression was significantly higher for SNF versus ALF patients (Figure 2).

ChEIs were utilized in 34% of ALF patients and 7% of SNF patients, while vitamin E was used in 18% and 5% of ALF and SNF patients (*P* < 0.001). Donepezil was the most frequent ChEI used in both treatment populations, being the agent utilized in 75% of patients receiving a ChEI, followed by rivastigmine at 19% and galantamine at 6%. The majority of patients receiving ChEIs in both ALF and SNFs were not titrated to the maximal dose (60% and 70%). Maximal dose titration was most prevalent for donepezil and least prevalent for rivastigmine. Treatment characteristics

Table 2. Treatment Characteristics in Assisted Living Patients

	Donepezil (Aricept)	Rivastigmine (Exelon)	Galantamine (Reminyl)	Cholinesterase Inhibitors	Vitamin E	Total Treated	Untreated
Number of Patients	30	8	2	40	22*	52 (44%)	67 (56%)
Avg. Dose	7 mg qd	2 mg bid	9 mg bid		660 IU/day		
% on Maximum ChEI Dose	50%	0%	50% (1/2)	40%	—		

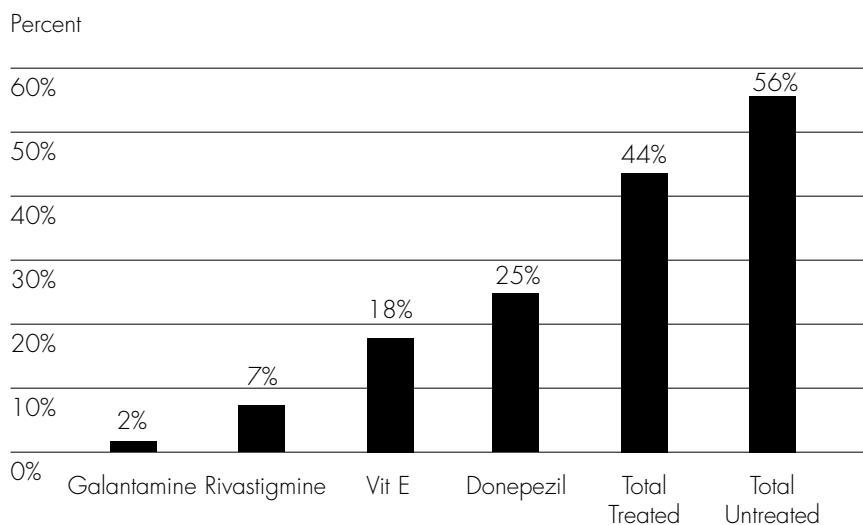
*10 patients receiving vitamin E were also receiving cholinesterase inhibitors.
Abbreviation: ChEI = cholinesterase inhibitor.

Table 3. Treatment Characteristics in Nursing Facility Patients

	Donepezil (Aricept)	Rivastigmine (Exelon)	Galantamine (Reminyl)	Cholinesterase Inhibitors	Vitamin E	Total Treated	Untreated
Number (%)	10	2	1	13	9*	21 (11%)	169 (89%)
Avg. Dose	8 mg qd	5 mg bid	6 mg bid		1,000 IU/day		
% on Maximum ChEI Dose	40%	0%	0%	30%			

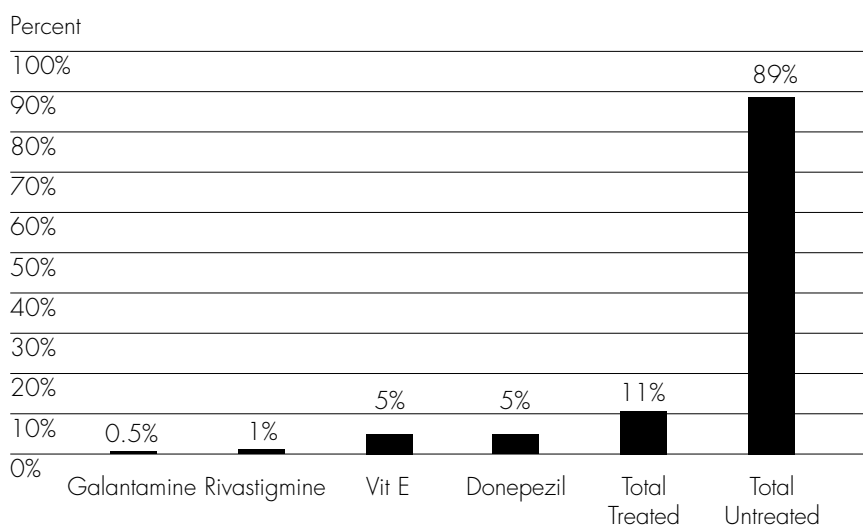
*One patient receiving Vitamin E was also receiving a cholinesterase inhibitor.

Figure 3. Treatment Patterns in ALF Patients



Ten patients receiving cholinesterase inhibitors were concomitantly receiving Vitamin E.
Abbreviation: ALF = assisted living facility.

Figure 4. Treatment Patterns in SNF Patients



One patient receiving a cholinesterase inhibitor was concomitantly receiving Vitamin E.
Abbreviation: SNF = skilled nursing facility.

are further described in Tables 2 and 3 and Figures 3 and 4.

In assisted-living patients, use of behavioral medications was significantly higher ($P < 0.05$) in the untreated cohort of patients not receiving ChEIs or vitamin E (43%), compared with the cohort receiving ChEIs alone (23%), but not significant in vitamin E-only-treated patients (32%). In SNF patients, higher behavioral medication use (62%, $n = 8$) was observed in patients receiving ChEIs compared with those who were not (25%, $n = 43$) ($P < 0.05$). Additional features associated with use of behavioral medications are described in Tables 4 and 5.

Discussion

Assessment of baseline demographic information revealed that patients residing in ALFs and SNFs were evenly matched with regard to age and gender. While patients residing in SNFs tended to be older (92 versus 86 years of age), this difference did not reach statistical significance ($P > 0.05$). A trend toward a higher prevalence of dementia of the Alzheimer's type in ALF patients and other variants of dementia in SNF patients was observed. A greater proportion of ALF patients had new onset of dementia—with diagnosis in the last year—compared with SNF patients ($P < 0.01$). The proportion of patients with a dementia diagnosis \geq three-years' duration was similar for both groups ($P = 0.07$). SNF patients trended toward having dementia for a longer period of time than their ALF counterparts.

The number of patients treated for dementia was relatively small in both groups, but significantly higher in ALF patients compared with SNF patients (44% versus 11%, $P < 0.001$). A contributing factor to lower levels

Table 4. Behavioral Medication Use in Assisted Living Patients

	Donepezil (Aricept)	Rivastigmine (Exelon)	Galantamine (Reminyl)	Cholinesterase Inhibitors	Vitamin E	Total Treated	Untreated
Number	30	8	2	40	22 ^a	52 (44%)	67 (56%)
Mean # Routine Meds	7	10.4	3	7	7.5	7	6
Behavioral Med Use^b	23%	25%	0	23% ^c	32%	25% ^c	43% ^c
Antipsychotics	20%	25%		20%	27%	21%	28%
Mood stabilizers	3%	0		3%	0	2%	5%
Anxiolytics	3%	25%		8%	5%	8%	10%
Routine Behavioral Meds^b	23%	25%	0	23%	32%	29%	34%
Antipsychotics	20%	25%		20%	27%	25%	25%
Mood stabilizers	3%	0		3%	0	2%	4%
Anxiolytics	0	25%		5%	5%	6%	4%
PRN Behavioral Meds^b	3%	0	0	3%	0	2%	9%
Antipsychotics	0			0		0	3%
Mood stabilizers	0			0		0	0
Anxiolytics	3%			3%		2%	6%

^aTen patients receiving vitamin E were also receiving cholinesterase inhibitors.

^bThree patients on cholinesterase inhibitors were receiving multiple behavioral medications.

^cIncreased frequency of behavioral medication use for the untreated cohort was statistically significant ($P < 0.05$) for all treated patients and the cohort receiving cholinesterase inhibitors.

of treatment in SNF patients may have been a higher level of vascular risk (history of CVA and diabetes). The role and benefit of ChEIs in individuals with vascular dementia is more controversial and less-well defined, as in the use in individuals who reside in SNFs or those with more severe disease. Lack of dose titration for ChEIs was noted in both ALF and SNF patients. Often, the initial dose of an agent was ordered with no further titration initiated. In most instances, documentation for lack of titration was absent. This finding may reflect patient receipt of the maximal tolerated dose, physician preference, or oversight. Use of donepezil was most frequently associated with use of the highest relative average dose, along with highest proportion of patients receiving the maximal dose.

Use of routine medications was similar in treated and untreated populations in both ALFs and SNFs. There was a trend favoring higher routine medication use in

SNF patients ($P < 0.05$), perhaps reflecting increased underlying comorbidity in this group.

Increased use of behavioral medications was observed in untreated ALF patients not receiving ChEIs or vitamin E, compared with treated ALF patients and ALF patients receiving ChEIs alone, but not in ALF patients receiving vitamin E alone. These findings were reversed in SNF patients, with higher use of behavioral medications observed in patients treated with ChEIs compared with those patients not receiving medication for dementia. The basis for these findings and the impact of dementia treatment on behavioral medication use require further study. Assessment of behavioral medication use in SNF patients needs to be interpreted cautiously because of the small number of patients treated in this group.

Significant limitations of this observational study include:

- Nonrandomized design and retrospective nature of this analysis

Table 5. Behavioral Medication Use in Nursing Facility Patients

	Donepezil (Aricept)	Rivastigmine (Exelon)	Galantamine (Reminyl)	Cholinesterase Inhibitors	Vitamin E	Total Treated	Untreated
Number	10	2	1	13	9 ^a	21 (11%)	169 (89%)
Mean # Routine Meds	9	5.5	8	8.4	9	8.6	7.2
Behavioral Med Use^b	50%	100%	100%	62% ^c	25%	43%	25% ^c
Antipsychotics	33%	50%	0	38%	12.5%	24%	20%
Mood stabilizers	33%	50%	100%	31%	12.5%	24%	7%
Anxiolytics	10%	0	0	23%	0	14%	11%
Routine Behavioral Meds^b	50%	50%	100%	62%	25%	43%	22%
Antipsychotics	33%	50%	0	31%	12.5%	24%	20%
Mood stabilizers	33%	50%	0	31%	12.5%	24%	7%
Anxiolytics	10%	0	100%	23%	0	5%	5%
PRN Behavioral Meds^b	0	50%	100%	15%	0	10%	5%
Antipsychotics		0	0	0		0	0
Mood stabilizers		0	0	0		0	0
Anxiolytics		50%	100%	15%		10%	5%

a One patient receiving Vitamin E was also receiving a cholinesterase inhibitor.

b Four patients on cholinesterase inhibitors were receiving multiple behavioral medications.

c Statistically significant increased frequency of behavioral medication use ($P < 0.05$) was observed in the cholinesterase inhibitor cohort ($n = 13$) compared with the untreated cohort ($n = 169$).

■ Charting and documentation inconsistencies in ALF patients, which may have limited the interpretability of findings in this patient population

■ The limited use of ChEIs in both patient subsets, but particularly in SNF patients, which may impact the ability to interpret treatment characteristics in this population.

Extraction of data from the patients' medical record in both ALF and SNF settings culminated in inconsistent retrieval of a dependable disease-staging tool, such as Mini-Mental State Examination. As a result, patients were staged based upon disease duration since initial diagnosis, which the authors gauged as the best reliable marker of disease acuity. Finally, inconsistent documentation for measures of functional status in the medical record (particularly in ALF settings) limited the ability to interpret these parameters on a consistent basis.

Conclusion

This analysis highlights several opportunities for intervention. The study revealed that the number of SNF patients with dementia who are not treated significantly outweighs those who are treated. In fact, 89% of patients with dementia in SNFs were left untreated for their dementia. The majority of residents in this study had a documented dementia diagnosis of less than three years, and treatment use was very limited. In addition, when medications were used for patients with dementia, maximal doses were not always achieved. More often than not the starting dose was ordered with no additional dosing titration and no documentation for lack of this dosing adjustment. The data were consistent, even several months after the start of the original order.

Reduced behavioral medication in ALF patients receiving ChEIs further supports treatment in this population. Interpretation of the lack of observed benefit in the SNF

population could reflect that this group is more refractory to the benefits of therapy or simply be a reflection of insufficient number of patients treated to achieve interpretable results.

Based on these results, there is opportunity for intervention and improved treatment for patients with dementia in ALFs. To adequately quantify potential benefit of dementia treatment in SNF patients, additional studies with larger numbers of treated patients are needed.

Consultant pharmacists are in the unique position to facilitate earlier treatment of dementia, ensure proper ChEI-dose titration, maximize dosing for each patient, and screen for development of drug-related side effects. Furthermore, consultant pharmacists should take a patient-centered approach to care, focusing beyond the medication component. The consultant pharmacist should be able to evaluate the patient to assess the level of cognitive, functional, and behavioral improvement, or stabilization while on appropriate dementia drug therapy. The pharmacist can also evaluate a patient's decline, which could reflect a lack of treatment response.

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Donepezil in More Advanced Alzheimer's Disease

W. Nathan Rawls

Objective: Donepezil is currently approved for treatment of patients with mild to moderate Alzheimer's disease (AD). However, since cholinergic activity declines as AD progresses, increasing acetylcholine levels would be expected to provide benefits in severe AD. The primary objective of this article is to review the recent data demonstrating that patients with advanced AD can benefit from treatment with the cholinesterase inhibitor donepezil.

Data Sources: A MEDLINE (PubMed) literature search was performed using the key words "donepezil" and "advanced AD."

Study Selection: The search yielded 13 articles, which were then further screened for the criterion: randomized, double-blind, placebo-controlled clinical study.

Data Extraction and Synthesis: Two studies were found that met these specific study criteria. In the first study, donepezil-treated patients with moderate to severe AD showed significant improvements in cognition and behavior, with preservation of activities of daily living compared with placebo-treated patients. Similar improvements in donepezil-treated patients were seen in the second study involving 27 nursing homes. In this study of older patients, donepezil treatment significantly improved cognition, function, and agitated and aggressive behaviors. Safety and tolerability findings of these two studies are further assessed. Considerations for drug therapy as well as a case study are presented to illustrate the benefits of donepezil treatment in patients with advanced AD.

Conclusion: The decision to continue treating severe AD patients with donepezil is an opportunity for consultant pharmacists to decrease the burden of caregivers and to maximize a patient's quality of life for as long as possible.

Key Words: Alzheimer's disease; Donepezil; Moderate to severe AD; Nursing home.

Abbreviations: AD = Alzheimer's disease; ADL = activities of daily living; AE = adverse event; ALLHAT = Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial; ASCP = American Society of Consultant Pharmacists; CDR-SB = Clinical Dementia Rating-Sum of the Boxes; ChEi = cholinesterase inhibitor; CIBIC-Plus = Clinician's Interview-Based Impression of Change-Plus caregiver input; CMS = Centers for Medicare & Medicaid Services; DAD = Disability Assessment for Dementia; FDA = U.S. Food and Drug Administration; FRS = Functional Rating Scale; HCFA QI = Health Care Financing Administration Quality Indicator; IADL = Instrumental Activities of Daily Living scale; MMSE = Mini-Mental State Examination; MSAD = moderate to severe AD; NPI = Neuropsychiatric Inventory; NPI-NH = NPI-Nursing Home version; PD = Parkinson's disease; PSMS = Physical Self-Maintenance Scale; SIB = Severe Impairment Battery; sMMSE = standardized MMSE.

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Introduction

Donepezil is increasingly being used to treat patients with more advanced dementia. This provides a means to examine the effects of prolonged treatment. Potential benefits include the patient's continued functioning, a less-than-expected decline in function, acceptable patient behavior, or indications of improvement in the patient's overall quality of life. Improving patients' behavior and maintaining function may greatly reduce caregiver burden and also result in reduced prescription of concomitant psychotropic medications.

While Alzheimer's disease (AD) is not considered a normal outcome of aging, the prevalence of AD does increase with age, doubling every year after age 65. An estimated 50% of persons over age 85 have AD.¹ As more people live longer, the elderly population will increase. The number of persons aged 60 years and over is predicted to rise to almost two billion by 2050.² As a result, the numbers of persons with AD and more severe dementia are expected to increase. In a Canadian study of patients 65 years or older with dementia, 55% of the community-dwelling patients and 89% of the institutionalized patients had moderate to severe dementia symptoms.³

Memory decline, poor functional capacity, and behavioral disturbances worsen with disease progression and present considerable challenges to caregivers, often resulting in nursing home placement of AD patients.⁶ In addition, patients placed in nursing homes for reasons other than cognitive impairment also are aging and at risk of developing AD. The treatment of patients with advanced AD and the identification of patients with undiagnosed AD present new challenges for practitioners in the nursing home.

Effective drug therapies for AD are relatively new, beginning with the approval in 1993 of the acetylcholinesterase (AChE) inhibitor tacrine. Although hepatotoxicity has limited the usefulness of tacrine, a number of

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other agents are now available. Donepezil,⁷⁻¹³ rivastigmine,¹⁴⁻¹⁶ and galantamine¹⁷⁻²⁰ have demonstrated efficacy in mild to moderate AD and are currently approved by the U.S. Food and Drug Administration (FDA) for this indication. By inhibiting enzyme activity, these drugs increase levels of acetylcholine, a critical neurotransmitter in areas of the brain essential for memory formation and information processing. In patients with AD, the activity of the enzyme that synthesizes acetylcholine, choline acetyltransferase, may be decreased by as much as 90% in the brain.²¹ Some drugs such as donepezil are selective for acetylcholine, and others, such as tacrine and rivastigmine, inhibit both AchE and butyrylcholinesterase. It has been suggested that the combined inhibition of AchE and butyrylcholinesterase by nonselective agents may contribute to the greater incidence of cholinergic adverse events (AEs) in AD patients treated with nonselective cholinesterase inhibitors (ChEIs) compared with selective AchE inhibitors.²² Memantine, the only agent approved by FDA for the treatment of moderate to severe AD (MSAD), has a different mechanism of action to that of the ChEIs. It is classified as a noncompetitive low to moderate affinity *N*-methyl-D-aspartate-receptor antagonist, which appears to work by regulating the activity of glutamate. While much research exploring other mechanisms for treating AD is under way, increasing central cholinergic function remains the mainstay of treatment.

AD slowly progresses from mild to severe dementia over a period of years. A number of evaluation methods are used to assess symptom severity. The most widely accepted instrument is the Mini-Mental State Examination (MMSE).²³ MMSE scores of 10 to 26 inclusive indicate mild to moderate dementia, while scores of less than 10 indicate severe AD. Because cholinergic activity is known to decline in AD,^{21,24} increasing the levels of acetylcholine would be expected to also provide benefits in severe AD. The purpose of this article is to review the recent data that indicate that the ChEI donepezil provides benefits in advanced AD and to consider how this drug may be used in the frail elderly patient population.

A MEDLINE (PubMed) literature search was performed using the key words "donepezil" and "advanced AD" and yielded 13 articles, which were then further screened for relevance and whether they met the criterion: randomized, double-blind, placebo-controlled clinical study.

Two studies were found that met this criterion: the first evaluated the efficacy of donepezil in advanced AD, and the other evaluated the efficacy of donepezil in patients with AD residing in a nursing home.

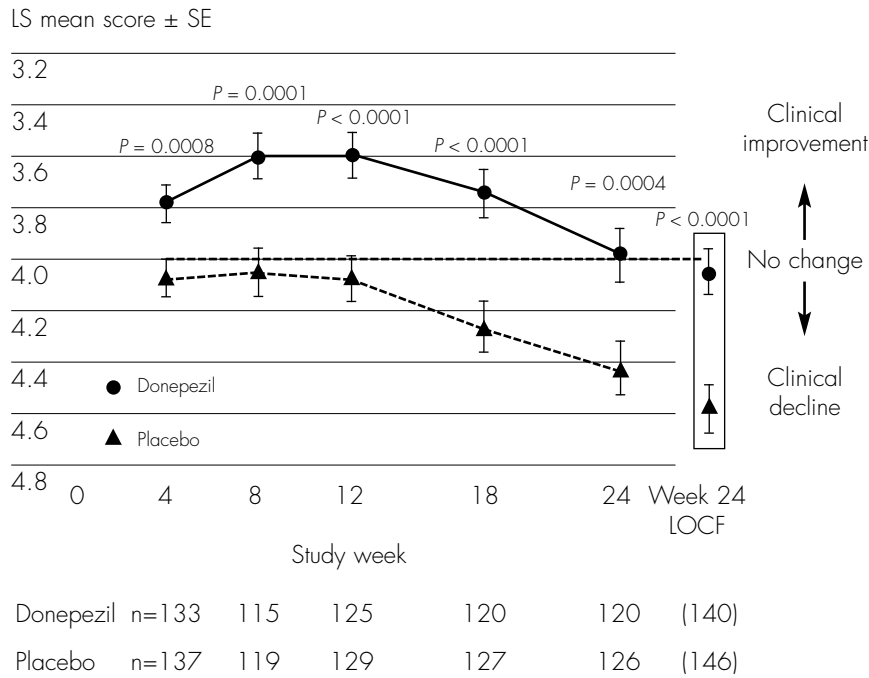
Efficacy of Donepezil in Advanced AD

The efficacy of donepezil in advanced AD has been demonstrated in the first published clinical trial of a ChEI in MSAD.²⁵ A 24-week, randomized, double-blind, placebo-controlled, multicenter study was conducted to assess donepezil's effects on cognition, function, and behavior, as well as its safety and tolerability.²⁵ The study group included 290 AD patients with moderate to severe disease (standardized MMSE [sMMSE] score, 5 to 17; least squares mean 11.72 ± 0.35 for the donepezil group and 11.97 ± 0.34 for the placebo group) who were living in the community or in assisted living settings. Study patients had an average age of 73 years, were ambulatory or ambulated with assistance, and had at least one comorbid medical condition at baseline. Patients received either donepezil 5 mg daily for the first four weeks and 10 mg daily thereafter or placebo.

The primary efficacy measure for this study was the Clinician's Interview-Based Impression of Change-Plus caregiver input (CIBIC-Plus). This semistructured interview provided a global assessment of change over 24 weeks. The CIBIC-Plus uses a seven-point scale ranging from markedly improved to markedly worsened and is based on an interview performed with the patient and caregiver. It is a validated instrument that has demonstrated reliability and sensitivity to change in an AD population similar to the one used in this study.²⁶ Secondary efficacy measures included cognitive scales—the sMMSE and the Severe Impairment Battery (SIB); functional scales—the Disability Assessment for Dementia (DAD), modified versions of the Instrumental Activities of Daily Living Scale (IADL+), and the Physical Self-Maintenance Scale (PSMS+); behavioral assessment—the Neuropsychiatric Inventory (NPI); and global functioning assessment—the Functional Rating Scale (FRS).

There were significant differences in the CIBIC-Plus scores between the donepezil and placebo groups at all visits, with 63% of donepezil-treated patients and 42% of placebo-treated patients rated as improved or no change ($P < 0.0001$).²⁵ Scores for patients receiving active drug remained above baseline through Week 24

Figure 1. Clinician's Interview-Based Impression of Change-Plus Caregiver Input



Abbreviations: (CIBIC-Plus) scores for donepezil-treated and placebo-treated groups at all visits. LS = least squares; SE = standard error; LOCF = last observation carried forward. **Source:** Ref. 25. Reprinted with permission.

(Figure 1). The stabilization near baseline at study end point is consistent with the response seen in patients with mild to moderate AD.^{7,12,18,19} All secondary efficacy measures used in the study of MSAD showed significant improvements of donepezil over placebo at week 24. Mean improvements in cognition on both the SIB and the sMMSE were shown in the patients given donepezil compared with those given placebo.

Assessment of behavioral changes using the NPI showed that the donepezil-treated group had significant improvement in total scores ($P = 0.0005$) (Figure 2).²⁵ When individual behaviors were analyzed, patients treated with donepezil also showed significant improvements in anxiety, depression, and apathy compared with placebo.

It is interesting to note that there was little or no decline in function over the 24-week study in patients taking donepezil. The results of the DAD remained sta-

ble, with a nonsignificant mean decline of only 0.74 points at week 24 for the donepezil-treated group compared with an 8.98-point decline for the placebo-treated group ($P < 0.0001$). Additional measures on the IADL+ and the PSMS+ supported the functional benefit of donepezil treatment (week 24 last observation carried forward mean treatment difference on the IADL+ = 6.83 points [$P < 0.0001$]; and on the PSMS+ = 1.32 points [$P = 0.0015$]).

Efficacy of Donepezil in Patients with AD in Nursing Homes

Because of the progressive decline associated with AD, nursing home placement often becomes necessary when patients are no longer able to perform their activities of daily living (ADL) or when they exhibit pronounced behavioral disturbances. It has been the opinion of some clinicians that nursing home admittance indicates that a ChEI is no longer necessary. This attitude may have been influenced by early drug studies in patients with mild to moderate AD; these studies identified delayed nursing home placement as a positive treatment outcome.

Although controlled clinical trials are limited,^{27,28} most clinicians now recognize that the benefits of ChEIs in patients residing in nursing homes extend to meaningful functional and behavioral outcomes. Currently, families and state survey teams may wish to stop treatment with a ChEI due to the expense, particularly when a patient becomes nonresponsive. It should be noted that in such patients, other medications are also stopped.

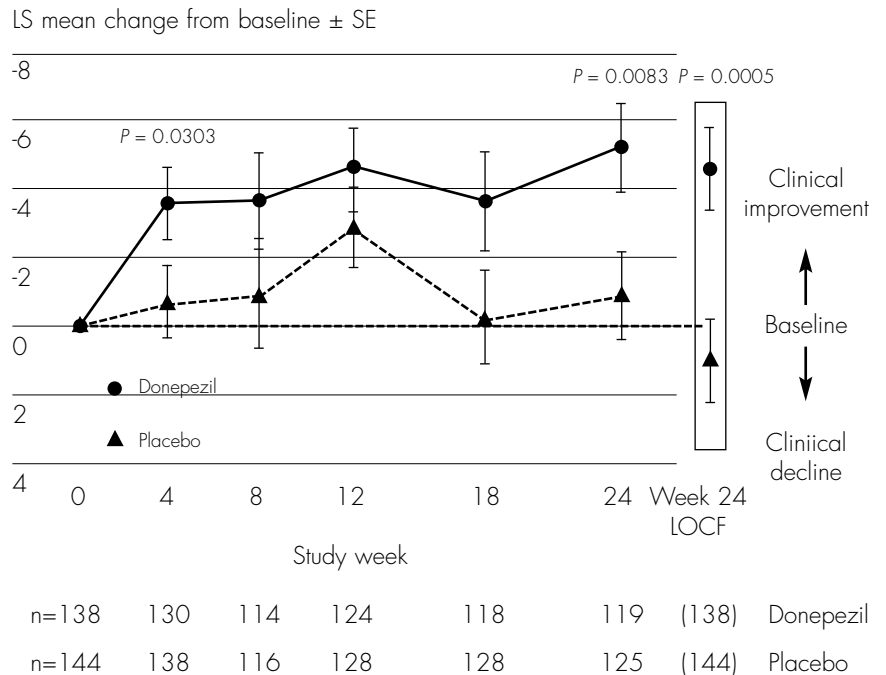
Donepezil has been studied in nursing home patients and has demonstrated efficacy in treating more severe symptoms. A 24-week, randomized, double-blind, placebo-controlled study in 27 nursing homes was conducted to evaluate the efficacy and safety of donepezil in this population.²⁷ Two hundred eight patients, aged 64 to 102 years, were randomly assigned to either placebo or donepezil, receiving an average of 9.5 mg/d by completion of the study. The mean baseline MMSE score was

14.4; 62% of donepezil-treated and 60% of placebo-treated patients had moderate AD, and 26% of donepezil-treated and 22% of placebo-treated patients had severe AD. Nursing home patients in this study were older (average age, 85.7 years) than previously studied patients and had significant comorbid medical conditions. All patients were receiving concomitant drug therapies. Cognitive performance, as evaluated by the MMSE, was improved in donepezil-treated patients compared with placebo-treated patients, with the mean change from baseline scores favoring donepezil at all time points. Significant differences were seen at weeks 8, 16, and 20 ($P < 0.05$). A similar pattern of response was seen in those patients aged 85 years or older, indicating that the cognitive benefits persist regardless of age. During the course of this study more than 50% of donepezil-treated patients showed improvement of three points or more from baseline. This improvement is even more impressive considering that the average decline of MMSE scores for untreated patients is two to three points per year^{29,30} and that the MMSE may be less sensitive with severely impaired patients.³¹

The Clinical Dementia Rating-Sum of the Boxes (CDR-SB) was used in this nursing home study to provide a global measure of cognitive and functional impairment. Changes from baseline CDR-SB scores favored donepezil patients with a significant difference at week 24 ($P < 0.05$). Improvement was also demonstrated in the subgroup of patients who were aged 85 years and older.

The Neuropsychiatric Inventory-Nursing Home version (NPI-NH) identified agitation/aggression at baseline for 61% of patients assigned to placebo and for 67% of those receiving donepezil. Of patients with agitation/aggression at baseline, 46% of those who received placebo and 67% of those who took donepezil had improved symptoms at the completion of this study. Although active drug showed

Figure 2. Neuropsychiatric Inventory (NPI) Scores for the Donepezil-Treated and Placebo-Treated Groups at All Visits



Abbreviations: LS = least squares; SE = standard error; LOCF = last observation carried forward.
Source: Ref. 25. Reprinted with permission.

significant improvement ($P = 0.017$) in agitation/aggression, the observed benefits of placebo on NPI-NH individual items are more difficult to understand. While this response may demonstrate the benefits of increased staff-patient interaction during the course of the study, future studies are needed to help explain this observation. It should be noted that behavioral symptoms have been studied in community-dwelling patients with AD; the frequency of behavioral disturbances was lower for donepezil-treated patients than for placebo-treated patients.⁴ By improving patients' behavior and maintaining ADL, donepezil therapy may reduce nursing home staff and caregiver burden. In addition, improving patients' behavior may also result in fewer concomitant psychotropic medications being prescribed, which will result in patients being less sedated and therefore easier to care for.

Table 1. Safety and Tolerability of Donepezil in Advanced AD

	Nursing Home Study		MSAD Study	
	Donepezil (n = 103)	Placebo (n = 105)	Donepezil (n = 144)	Placebo (n = 146)
Any AE (%)	99 (96)	102 (97)	120 (83)	117 (80)
Serious AEs	10 (10)	17 (16)	19 (13)	18 (12)
Withdrawal due to AEs	11 (11)	19 (18)	12 (8)	9 (6)
Weight loss ^a	9 (9)	6 (6)	10 (7)	12 (8)
Bradycardia ^b	6 (6)	5 (5)	14 (10)	10 (7)

a Decrease >7% of baseline weight.

b Less than 60 beats/minute and reduction from baseline of at least 20% at any assessment.

Abbreviations: AD = Alzheimer's disease; AE = adverse event; MSAD = moderate to severe AD.

Source: Reference 7.

Safety and Tolerability of Donepezil in Advanced AD

The use of any new medication in elderly patients should be undertaken with consideration of toxicity and AEs. Elderly patients often have comorbid medical conditions, take concomitant medications, and may respond with greater sensitivity to drug combinations. Published data on safety and tolerability in the elderly population are limited; therefore, information obtained from clinical trials in the elderly and in nursing home patients can provide extremely useful information for consultant pharmacists when they recommend a medication or evaluate a patient for possible drug-related AEs.

Some interesting conclusions concerning AEs can be made from the clinical trial of donepezil use in nursing home patients.²⁷ While overall reports of AEs were high (donepezil, 96%; placebo, 97%), there was no difference between placebo and donepezil. The majority of both treatment groups experienced events of mild to moderate severity (Table 1). Only 11% of donepezil patients withdrew from the study because of AEs, compared with 18% of placebo-treated patients. Serious AEs were reported in 16% of placebo-treated patients and 10% of donepezil-treated patients. Gastrointestinal AEs were more frequent with donepezil, which is consistent

with increased cholinergic stimulation. Bradycardia (defined as a heart rate less than 60 beats per minute) occurred in 5% of placebo and 6% of donepezil patients. Weight loss of greater than 7% of initial weight occurred in 6% of patients receiving placebo and 9% of patients receiving donepezil.

Reports of AEs in the clinical trial of donepezil in MSAD²⁵ were similar to those in the nursing home trial (Table 1). Eighty-three percent of donepezil-treated patients and 80% of placebo-treated patients experienced at least one AE during this study. For both groups, the majority of AEs were rated as mild in severity, with only 13% of donepezil-treated patients and 12% of placebo-treated patients experiencing a serious AE. During the course of this trial, 6% of patients given placebo and 8% of patients given donepezil withdrew because of an AE. There were no significant differences between members of the donepezil and placebo groups in vital sign changes, bradycardia, or laboratory and electrocardiographic results. Clinically significant weight loss (a decrease of greater than 7% of baseline weight) was reported for 7% of donepezil-treated and 8% of placebo-treated patients. This finding is similar to that in the nursing home trial.

The fact that weight loss is of minimal concern with donepezil use is an important consideration because it

has been shown that weight loss is a predictor of mortality when treating frail elderly patients with AD.³² This differs from the high rate of weight loss reported in two studies of another ChEI, rivastigmine. In one study, 21% of patients receiving 6 to 12 mg/d of rivastigmine were reported to show clinically significant weight loss compared with 7% of placebo-treated patients.¹⁴ Similar results were reported in a second study in which 21% of patients who received 6 to 12 mg/d of rivastigmine and 2% of those who received placebo experienced clinically significant weight loss.¹⁵ In addition, a study involving galantamine showed that galantamine treatment at doses of 24 mg/d resulted in clinically significant weight loss in 11% of patients, compared with 4% of those receiving placebo.¹⁷

Consideration for Drug Therapy on More Advanced AD

The treatment of AD presents a variety of challenges for consultant pharmacists. Unlike diseases such as hypertension and diabetes, AD has symptoms that may be difficult to quantify. Some clinicians are unsure of the need to treat AD, particularly in patients who have more severe symptoms. However, AD is a progressive, degenerative neurologic disease with symptoms that may respond to medications. In this way, it is similar to Parkinson's disease (PD). For patients with PD, withholding or discontinuing treatment would be considered unacceptable. It may be that because the physical symptoms of PD are more obvious than the decline in memory and functioning associated with AD, PD is more readily treated. Benefits from ChEIs, including stabilization of symptoms and less-than-expected decline, are similar to what is achieved with medications used to treat PD. Being able to continue to perform ADL such as bathing, toileting, and feeding oneself represent meaningful outcomes when treating AD. An important contribution of the consultant pharmacist is to educate physicians, nursing home staff, and the patient's family about the benefits to expect from treatment and the best way to manage behavioral and neuropsychiatric disturbances.

The management of many disorders in the elderly is dependent upon proper medication usage. Many disease states require more than one medication to provide adequate treatment and to be consistent with accepted practice guidelines. For instance, results of the Anti-

hypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT) in patients over 55 years of age (mean age, 67 years) indicated that up to one-third of patients required two or more medications to control hypertension.³³ Guidelines for treating heart failure indicate that patients may require up to four medications to achieve adequate control.³⁴ As with other therapies, compliance with the drug regimen is vital to optimizing drug efficacy and outcomes.

In addition to receiving a ChEI, patients with AD may require medications to control behaviors or to treat depression. Elderly nursing home patients are living longer and staying healthier in part because of improved therapies, which often result in a greater number of prescriptions per patient. This can place consultant pharmacists and nursing homes in conflict with the Health Care Financing Administration Quality Indicator (HCFA QI) that recommends a maximum of nine medications for each nursing home patient. (It should be noted that HCFA is now known as the Centers for Medicare & Medicaid Services [CMS].) At present, reimbursement for ChEIs is not dependent upon the severity of the dementia, and therefore these treatments are covered throughout the course of this disease. Reimbursement strategies do, however, change based upon factors other than clinical practice, and this element is more difficult to account for.

Although the concept of limiting the use of medications to reduce drug-related toxicity and unnecessary expense is well accepted by geriatricians and consultant pharmacists, it is sometimes necessary to exceed the use of nine medications for each patient. The American Society of Consultant Pharmacists acknowledges that there may be problems associated with excessive and unnecessary drug use in nursing home patients but believes that the advised HCFA QI limit of nine medications per patient may have a negative impact on the quality of care for these patients.³⁵ The consultant pharmacist is obligated to assist the physician in determining which medications are most appropriate and beneficial to each nursing home patient, a process made more difficult with the existing HCFA QI.

Residing in a nursing home, as a single factor, should not alter treatment goals for an elderly patient. A patient with AD should be allowed to maintain the best quality of life possible, with full benefit from treatment options.

There are significant comorbid illnesses associated with AD that contribute to the overall cost of care and have an impact on how a patient functions.⁵ Complications such as aspiration pneumonia, decubitus ulcers, gangrene, and malnutrition are associated with advanced AD; preventing or delaying the onset of such complications by medication use would reduce the financial burden.³⁶ As donepezil and other ChEIs are used in more advanced dementia, there will be greater opportunity to examine the positive benefits of prolonged treatment.

Consultant pharmacists also must determine if and when any medication is no longer necessary. ChEI use is complicated by difficulties in assessing response in advanced dementia and by the possible negative impact of discontinuation of therapy. There also appears to be a risk of a decline in cognitive functioning to the level of response demonstrated in placebo-assigned patients when ChEIs are discontinued.^{10,16,20} Thus, benefits from drug therapy may become obvious after discontinuation but be difficult to recover with resuming treatment. If ChEI therapy is used in patients with serious medical conditions, including active peptic ulcer disease, pulmonary disease, or heart disease with bradycardia, then additional monitoring is necessary. Discontinuation of therapy is indicated when these conditions are severe. A rapid decline in cognitive functioning would indicate some process other than AD or its treatment, and would require immediate medical evaluation.

The following case illustrates how patients with advanced AD may benefit from drug treatment, including donepezil. The importance of having safe and effective drug therapies for AD cannot be overemphasized when one considers the disease's prevalence and devastating nature. AD results in a progressive decline in cognition and functional capacity that causes great suffering to the patient and family members as well as considerable stress on health care systems. AD is the most common of all the dementias, accounting for approximately two-thirds of dementia cases in persons aged over 65 years³⁷ and may affect up to four million people in the United States.³⁸

Case Study

MJ is an 82-year-old man who resided in an assisted living facility until three years ago when his worsening memory and cognitive decline necessitated nursing home placement. Over the years in the assisted living facility,

his behavior had been occasionally disruptive and uncooperative, but the staff had been able to manage him. His increased confusion and worsening behaviors were factors that resulted in his requiring more skilled care, which a nursing home can provide. Following transfer to the nursing home, he became agitated, resisting the staff and behaving aggressively with other patients. His thinking was illogical and probably delusional. He was unable to locate his room and was not oriented to time or place. Subsequently, he was evaluated and diagnosed with AD. The patient had relatively intact communication skills, which may relate in part to his being a college graduate, and he had an MMSE score of 14/30. A review of his medications found no drugs that could worsen cognitive functioning or cause drug-drug interactions. MJ was prescribed a ChEI, donepezil, 5 mg/d for six weeks, with continued therapy at 10 mg/d. He also received risperidone (1 mg/d) at bedtime. After three months of therapy, his behaviors improved, and he was more cooperative with the nursing home staff. He was able to remember his room location and attended meals on time. Treatment with risperidone was discontinued; treatment with donepezil was maintained at 10 mg/d. After six months of donepezil therapy, the patient began to participate in some recreational activities and the staff noted that his general mood improved. Tests demonstrated that his MMSE score (16/30) had also improved. After three years of treatment with donepezil, MJ shows some signs of decline in memory and requires some assistance with daily activities. However, he has had no further episodes of disruptive or aggressive behaviors, and he has not required any additional medications for behavioral symptoms.

Conclusion

In recent clinical trials, donepezil has been shown to be beneficial to patients with more advanced AD and to those residing in nursing homes. These results indicate that, in addition to being effective, donepezil is well-tolerated and safe to use in patients who are older than 85 years and have significant comorbid medical conditions. The evaluation of patients with MSAD found higher NPI total scores at baseline than had been reported in previous randomized controlled trials of ChEIs in mild to moderate AD, which would indicate greater behavioral symptoms in more advanced disease.²⁴ In this study, the donepezil-treated patients showed significant improve-

ment in total NPI score, supporting the benefits of drug therapy in improving behaviors in patients with advanced AD. Indeed, based upon these studies, it would seem that donepezil could be approved in the future for use in moderate to severe dementia.

Improvement in behaviors can be a factor in reducing the cost of care in nursing home facilities. Indeed, it has been demonstrated that donepezil-treated patients show improvements in their behavior, whereas the other ChEIs currently lack similar supporting data. Another consideration regarding the economic impact of ChEI therapy is the clinical time necessary for the implementation and monitoring of treatment. Donepezil is the most cost-effective ChEI in this regard in that it is given as a once-daily dose and there is only one dosage increase following initiation.³⁹ In addition, donepezil is associated with few AEs that require follow-up care.⁴⁰

Consultant pharmacists have the opportunity to improve the care of patients with AD in several ways. In addition to assisting in the identification of patients appropriate for medication initiation, the consultant pharmacist should review prescribed medications for anticholinergic activity. After identification of any drug that can worsen dementia, the consultant pharmacist should recommend discontinuation or alteration to a safer medication. The patient's condition and potential for AEs should influence the selection of a ChEI. Educational efforts should be directed at nursing home staff and family to ensure a clear understanding of what outcomes to expect. The goal is to provide safe and effective therapy and prolong the patient's quality of life to the maximum extent possible.

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Anticoagulation in Elderly Patients Who Fall Frequently: A Therapeutic Dilemma

Kimberly A. Cappuzzo

There is general agreement that patients with persistent atrial fibrillation, who are at risk of having a stroke, need to be anticoagulated. However, clinicians often are in a difficult dilemma when these patients also are at increased risk of falling. Falls can lead to serious injuries in anticoagulated individuals, including intracranial hemorrhages. This case study describes an 88-year-old patient with a history of falling. She received multiple injuries following a fall, including a subdural hematoma. Warfarin was among the patient's many medications. Upon admission to the hospital this patient had a supratherapeutic INR that most likely contributed to her injuries. A question facing the medical team was should she continue to receive warfarin to prevent stroke after discharge from the hospital? Much controversy exists over whether older patients receiving anticoagulation therapy are at increased risk of major hemorrhagic complications. This article discusses the relationship between anticoagulation, falling, and the risks of hemorrhagic events. It also discusses opinions on when to restart anticoagulation following resolution of the subdural hematoma. In addition, the patient was taking multiple medications that are known to contribute to falls in older people. Recommendations for lowering this patient's fall risks are presented.

The patient is an 88-year-old white female who presented to the emergency room with complaints of a headache and double vision for one day following a fall in her room at a local assisted living facility (ALF). She had been found lying on her back with a bruise and abrasion on her right cheek, and her right elbow was bleeding. Her walker was not found near where she fell—it was on the other side of the room. She had previous falls in the ALF and had fallen two weeks prior with a resulting large hematoma on her left shin, bruising covering the top of her left foot, and multiple bruises elsewhere. The hematoma on her left shin was still visible on this admission. Besides her frequent fall history, she has a history of atrial fibrillation (AF) since at least 1989 for which she has been receiving warfarin therapy. She currently is still in AF. She also had a stroke in 2002 and has a history of hypertension. Additionally, she has a history of vertigo/dizziness and a slight, essential tremor visible in her hands (right > left), both of which she has suffered from “for years.” She is receiving meclizine for the vertigo and primidone for the tremors, neither of which have been effective, according to the patient.

The patient's medications upon hospital admission included lisinopril 10 mg PO QD, fexofenadine 180 mg PO QD, metoprolol (XL) 100 mg PO QD, amitriptyline 25 mg PO QHS, meclizine 12.5 mg PO QID, primidone 50 mg PO QHS, docusate 100 mg PO BID, warfarin 2.5 mg PO QD at 5 p.m., enteric-coated aspirin 81 mg PO

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QD, and digoxin 0.125 mg PO on Sunday, Tuesday, Thursday, and Saturday. She had a documented allergy to codeine with reaction type not known.

The patient weighs 79.4 kg and is 165.1 cm tall. Upon hospital admission, her international normalized ratio (INR) was 3.4, yet she had been therapeutic at an INR of 2.8 two weeks ago when she sustained her leg injuries. Her warfarin had been discontinued after her fall two weeks ago, and her INR fell to 1.4 after warfarin was discontinued for three days. No further INR values were determined after restarting warfarin 2.5 mg PO QD at that point until this current admission. Her complete metabolic panel was within normal limits except for a serum creatinine of 1.4. Her complete blood count and cardiac enzymes (troponin, CK, and CKMB) were all within normal limits. Her creatinine clearance was calculated at 25 mL/min. Her digoxin level was 0.5 ng/mL.

The patient's vital signs were: blood pressure (BP) 200/99 mmHg, pulse 92, respiratory rate 18, and temperature 97.4°F. She was a pleasant, slightly obese white female, with several bruises on her arms, legs, and face, most notably a large reddish, purple hematoma on her left shin and a bruise on her right cheek. She was oriented to person, place, and time. The rest of her neurological exam was normal except for the benign essential tremor in her hands. Her gait was not assessed until later in the hospital course. A CT scan of the head revealed a small subdural hematoma (SDH). Her primary medical team decided to manage her medically rather than perform a surgical intervention. She was admitted to the neurosurgical ICU for two days where she was given fresh frozen plasma to correct her INR to normal. She was also placed on a nitroprusside drip while in the ICU to lower her BP. Once stable (INR 1.2), she was transferred to a medicine bed (two days after hospital admission). There was a note from the neurosurgery team to "wait 10 to 14 days once INR is \leq 1.2 before restarting warfarin."

The Geriatric Consult Service was asked to help manage the patient's BP (once off the nitroprusside) and her other medical problems. Her BP was 190/94 (range 152/74 to 218/94) with a pulse of 88 on clonidine 0.1 mg PO Q8h and PRN, amlodipine 10 mg PO QD, HCTZ 50 mg PO QD, and lisinopril 40 mg PO QD, all of which were started and/or increased since hospital admission within the past three days. Besides the extensive bruising on her face, arms, and left leg, she had 2+

pedal edema bilaterally. Upon further review of her hospital medical record and discussion with the primary medical team, it was confirmed that this edema had been present since hospital admission.

Medication-Related Problems of High Priority

- Atrial fibrillation (with previous stroke)
- Subdural hematoma, anticoagulation, and falls
- Inappropriate medications/polypharmacy and falls
- Hypertension
- Vertigo/Dizziness

Atrial Fibrillation (with previous stroke)

The patient has carried a diagnosis of persistent AF since at least 1989. AF occurs in approximately 10% of people aged 80 and older.¹ One of our biggest concerns with AF is the risk of stroke. Patients with AF are about six times more likely to suffer from an ischemic stroke than

Take Home-Points

- Elderly people who are anticoagulated and fall frequently are at increased risk of sustaining severe bleeding complications. Vigilant monitoring of INR values is critically important in these patients.
- Little information exists to help determine if a patient with atrial fibrillation who falls frequently should continue to receive anticoagulation medication. For most patients, the benefits of treatment outweigh the risk of hemorrhagic complications.
- Pharmacists can perform a fall risk assessment in older people to identify medications that increase the fall risk potential and recommend appropriate medication changes.

age-matched controls.¹ The risk of stroke increases with advancing age and the presence of certain risk factors. She suffered a stroke two years ago, which makes her risk for a subsequent stroke even higher (up to 12%).² She also has a long-standing history of hypertension, which may or may not have been well controlled prior to her hospitalization. Uncontrolled hypertension is an additional risk factor for future stroke. Several clinical practice guidelines recommend warfarin as the treatment of choice in patients with AF, particularly those with advanced age.³ The American College of Chest Physicians⁴ recommends long-term warfarin therapy with an INR goal of 2.0 to 3.0 for all patients with AF and at least one high risk factor. Stroke, age >75 years, and hypertension are all considered high risk factors. Pooled data from five randomized, controlled trials revealed a reduction in the risk of all strokes by 68% in those treated with warfarin, with an absolute annual stroke rate reduction of 3.1% (4.5% in the control group versus 1.4% in the warfarin-treated group).⁵ Hence, treating her long term with warfarin therapy was initially appropriate according to current practice guidelines.

SDH, Anticoagulation, and Falls

Much controversy exists over whether older patients receiving anticoagulant therapy are at increased risk of a major hemorrhagic complication compared with younger patients.^{2,6} Being an octogenarian, the patient's annual risk for major hemorrhage has been estimated at 3% to 4%.⁷ This figure does not take into account risk of injury incurred from falling. It makes sense that patients who experience head trauma such as from a fall are more likely to experience intracranial bleeding, particularly SDHs, and this risk is even higher for patients like her who are using warfarin.² Having a predisposition to falling is not in itself a contraindication to warfarin therapy. Most patients (90%) who fall do not experience a serious injury. The risk of SDH from falling is so small that a person with AF must fall approximately 300 times in a year while on warfarin therapy for the bleeding risk to outweigh the stroke risk.^{2,3}

Other factors that likely contributed to the patient's development of a SDH were her supratherapeutic INR (3.4) and uncontrolled hypertension. Several studies have shown that both of these factors increase a patient's risk of developing a SDH.^{2,3,6}

Now that she has fallen and experienced a SDH, should she still receive warfarin therapy for stroke prevention? There is very little published on the duration of discontinuation or when to restart warfarin therapy following a SDH in a patient with AF. Many studies have reported restarting warfarin in as few as three days after neurosurgical intervention for intracranial hemorrhage in patients who have mechanical heart valves.^{8,9} Wijdicks et al.¹⁰ felt that the risks were small for holding warfarin therapy for up to two weeks in patients with mechanical heart valves and was sufficient for patient stabilization. Gonugunta and Bruyton⁸ recommended resuming warfarin therapy three weeks after surgical intervention of SDH in anticoagulated patients since all recurrences of intracranial bleeding occurred within three weeks of the initial bleed. The patient did not have a surgical intervention, but she was receiving prophylactic doses of unfractionated heparin (5,000 U SC Q12h) following her hospital admission.

Inappropriate Medications/Polypharmacy and Falls

The patient has been prescribed a number of potentially inappropriate medications that are likely increasing her risk for falls and may be contributing to her dizziness.^{11,12} Primidone, meclizine, and amitriptyline are all considered potentially inappropriate and likely contribute to fall risk. In fact, taking four or more drugs of any type has been shown to increase a patient's risk of falling.¹² She is currently prescribed 11 chronic medications. Besides medications, she also has a history of gait abnormalities (uses a walker; recent left leg injury), which is an independent risk factor for falls.^{12,13} In the hospital she has worked with physical and occupational therapy to assess her mobility and required assistance with most of her activities of daily living (ADLs) secondary to dizziness and gait instability. Prior to hospital admission she was independent in most of her ADLs. She requires further rehabilitation with physical and occupational therapy once discharged, probably in a skilled nursing facility (SNF).

Hypertension

The patient's BP on hospital admission was 200/99 and remained relatively high throughout her hospital stay. Keeping her BP under control will help her lower her risk of future strokes and other cardiovascular complica-

tions.^{2,3,14} She was started on clonidine and HCTZ in the hospital to help control her BP. Clonidine is not an optimal choice for BP control in the elderly,¹¹ particularly when given on a “PRN” basis since it can cause orthostatic hypotension (increasing her risk for falls), rebound hypertension (when given PRN), and other undesirable central nervous system effects. Her metoprolol was stopped in the hospital secondary to bradycardia (HR 40s to 50s) while in the ICU. It is possible that metoprolol also contributed to her dizziness and frequent falls. She also was prescribed a number of other new antihypertensives while in the hospital: an increased dose of lisinopril (10 mg to 40 mg QD), amlodipine 10 mg QD, and HCTZ 50 mg QD. She has only received each of these for a few days in the hospital, which may not be sufficient to see their full benefits. Moreover, HCTZ is not an appropriate choice for her since her creatinine clearance is <30 mL/min. Efficacy is questionable with renal insufficiency, and the risks of electrolyte abnormalities are significant, especially at such a high dose.

Vertigo/Dizziness

According to the patient, she has been experiencing vertigo or dizziness “for years,” with no relief from her current regimen of meclizine 12.5 mg QID. Primidone, amitriptyline, and her cardiovascular medications may all be exacerbating her symptoms. Her dizziness is likely contributing to her gait instability and frequent falls. Since the meclizine has not been efficacious for her, we recommended that it be discontinued. Her dizziness also may improve with the discontinuation of primidone and amitriptyline.

Pharmacist’s Recommendations

The patient is at a significant risk of recurrent stroke secondary to her age, history of hypertension, and AF. Some may not agree with restarting warfarin therapy, but she may be someone who could truly benefit from appropriate anticoagulation. However, her INR must be tightly controlled and closely monitored to avoid supratherapeutic levels. Moreover, before restarting warfarin, there are other therapeutic issues that need to be resolved to help ensure her safety and decrease her risk of falls. Primarily, amitriptyline and meclizine should be discontinued since the risks outweigh the benefits. Primidone also should be stopped for the same

reason and because she is deriving no benefit from this drug (tremor has never decreased).

If she requires a medication to help her sleep, trazodone 25 mg to 50 mg PO QHS is recommended. Additionally, clonidine should be tapered over two to four days and discontinued to avoid rebound hypertension. It may take one to two weeks to see the full benefit of the antihypertensives that were started in the hospital. Since the HCTZ also should be discontinued, we recommended furosemide 20 mg PO QD to help with lower-extremity edema and possibly BP. With the addition of furosemide, her serum potassium level should be monitored regularly, particularly in the first few weeks of therapy. Before restarting a lower dose of metoprolol (12.5 mg PO Q12h) than she was on prior to hospital admission, she should have a diagnostic workup to rule out decompensated heart failure, and she should not be bradycardic. Metoprolol may be a good choice to help keep her BP under better control. Also, she must be encouraged to use her walker at all times.

These recommendations were communicated specifically to the attending physician in charge of the patient’s care in the community (via discharge summary write-up and phone call from the pharmacist) and to the SNF medical team (via discharge summary).

Outcomes Following Hospital Discharge

After one week at the SNF, the patient continued to improve. She received physical and occupational therapy five days a week, and her strength, stability, and mobility improved. Primidone, amitriptyline, meclizine, and clonidine were discontinued. She still complains of some dizziness, but her symptoms have improved. Her BP is 150/86 with a pulse of 90. A cardiac workup for heart failure was completed, but results are not available yet. She has no symptoms of heart failure. If she remains stable, metoprolol will be restarted at 12.5 mg PO Q12h. With no residual neurological deficits from the SDH and improved gait and mobility, she will likely restart warfarin 2.5 mg PO QD in another week with daily monitoring of her INR.

Summary

Reinstating warfarin therapy in a patient with a history of SDH and frequent falls is a very complex decision. In many patients with AF and previous stroke, warfarin therapy can significantly reduce the risk of future strokes,

but the benefits of therapy must outweigh the risks. To swing the balance in favor of warfarin therapy for the patient, we need to significantly decrease her risk of falls. More specifically, changes should be made in her drug therapy regimen and improvements in gait stability to make her safer when ambulating. Strict monitoring is absolutely essential to ensure that her INR remains therapeutic; better monitoring and control of her BP also will reduce her risk of future ischemic and hemorrhagic strokes. Pharmacists can not only help play a role in medication therapy management in the hospital setting, but also can help patients like her successfully transition between different patient care settings by directly communicating about important medication therapy issues with practitioners at other care sites.

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Conducting Ethical Research in Long-Term Care

This is the first in a series of articles on conducting research in long-term care. Potential research populations vary and encompass a variety of settings:

- Nursing homes serving the frail elderly
- Assisted living facilities
- Intermediate care facilities for the developmentally disabled
- Prisons
- Hospice programs

We hope to provide individuals practicing in these settings with a fundamental knowledge base in several areas:

- Ethical principles of conducting research in the long-term care setting
- The Institutional Review Board submission and review process
- Criteria for special exemptions for research on preexisting data
- Criteria for waivers of informed consent

This first article discusses the historical background leading to the development of modern ethical standards for the conduct of research in humans. We hope that sharing our thoughts on these issues will stimulate a dialogue—and subsequent commentary—among our readers. We look forward to publishing these comments in this journal.

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Triggering Events

A number of egregious events in biomedical research motivated the development and maturation of human research ethics from 1947 to today. These events will be reviewed briefly to underline the need for continued review and improvements in protection of subjects in human research.

There have been a small number of events that have had significant impact on U.S. federal and international research regulations in the modern era:

- German/Japanese medical research during World War II
- Willowbrook State School hepatitis studies
- Tuskegee Syphilis Study
- U.S. radiation experiments
- Thalidomide experience
- Beecher “exposé” in 1966

The Nuremberg “Nazi Doctors Trial” in 1947 brought the barbarous behavior of Nazi medical personnel to light. This extended far beyond the infamous identical twins autopsy studies of Josef Mengele at Auschwitz/Birkenau. For example, to study safe altitudes for German airmen parachuting from disabled aircraft, the Nazis conducted studies in vacuum chambers simulating conditions at high altitudes. However, these experiments, using prisoners, exceeded those attainable by aircraft of the period by two- to three-fold. Mortality in these Dachau prisoners was exceedingly high, resulting from anoxia or agonizing lung rupture.

Other experiments conducted at Dachau, designed to improve survival of airmen parachuting into the cold North Atlantic, involved survival after cold-water immersion. These studies involved hours of exposure of subjects in tubs of ice water and placing subjects unclothed and unsheltered outside in the wintertime. Further experiments involved treatment of investigator-inflicted injuries and chemical/biological agent exposures. Injuries inflicted on the subjects included gunshot wounds (in the limbs), slashing with sharp objects (again, in the limbs), application of incendiary mixtures to the skin (followed by ignition), and amputations of upper and lower limbs followed by crude transplant procedures.

The Japanese in Manchuria were involved at the same time in creating the world’s first biological

weapons program under ultrasecret conditions. They used Chinese civilians and U.S. prisoners-of-war as subjects to study exposure to a variety of pathogenic microbes. Few survived participation in these studies.

Hepatitis studies were conducted at Willowbrook State School, a New York State school for the “mentally defective.” The subjects, all children, were deliberately infected with the agent causing infectious hepatitis (initially via feeding of extracts of stools from infected individuals, later via injection of more purified viral preparations). Because of overcrowding, the institution closed to new admissions while these studies were in progress. However, the hepatitis program could still admit new patients as new studies began. Parents were forced to enroll their children in these studies to secure their admission to the institution.

In 1932, the “Tuskegee Study of Untreated Syphilis in the Negro Male” began under the supervision of a predecessor of the U.S. Public Health Service. Subjects were not informed that they were infected with syphilis or that the research would not benefit them. In fact, it would harm them since penicillin therapy was later withheld.

The study, which had been conceived as a one-year study followed by treatment when a suitably effective and safe one was discovered, became a multidecade study of a “never-again” scientific opportunity. In 1936, the significant difference in complication rates between the untreated and the control (uninfected) group was uncovered, and in 1946 the two-fold-increased mortality in the untreated group became known by investigators. Subjects were not informed of these results, and the study proceeded without change. Not even the Nazi exposé at Nuremberg made investigators pause and think about their research. Only a public outcry in 1972 put an end to the study after accounts appeared in the press.

U.S. government-sponsored human radiation experiments and intentional radiation releases from nuclear facilities occurred between 1944 and 1974.

Researchers injected subjects with plutonium, subjected prisoners to nontherapeutic testicular irradiation, exposed cancer patients to nontherapeutic, total-body irradiation, and exposed thousands of military personnel to radioactive fallout during atomic bomb testing.

In the 1950s U.S. physicians were paid to conduct

research on thalidomide, which had been used as a sedative in Europe and Canada, but had not been approved by the U.S. Food and Drug Administration. Nevertheless, the manufacturer supplied “samples” to physicians who conducted “research” on the drug’s safety and efficacy in patients. This was a common practice of the time. The teratogenicity of the compound (congenital absence/maldevelopment of limbs) subsequently led to a worldwide ban on the drug.

A concern about research ethics led to publication of a groundbreaking paper in the *New England Journal of Medicine*. Following the initial publication of the Declaration of Helsinki in 1964 (see below), in 1966 Henry Beecher published research on 22 studies having serious ethical problems related to study design and informed consent. This paper significantly spurred the debate on research ethics in the United States.

Current Guidelines for Ethical Human Research

Over time, understanding and interpretation of ethical research principles have evolved. Much of the historical interpretation, as noted above, was influenced by a complex milieu of social and cultural factors. The discussion that follows reviews the historical progression of documents for ethicists and investigators.

More than a hundred years ago, Claude Bernard (1865) and Walter Reed (1900) wrote of the need for balancing risk versus benefit in conducting research. The discussion that follows reviews much more recent documents that have influenced our current system of formal research ethical review, usually performed by an Institutional Review Board (IRB). In future articles, we will be reviewing more current documents and regulations.

The Nuremberg Code

The Nuremberg Code was one of the outcomes of the Nazi war criminal trials discussed earlier. In December 1946, the criminal proceedings against 23 leading German physicians began. After the verdicts were issued in August 1947, two leading American physicians, Andrew Ivy and Leo Alexander, submitted a memorandum outlining “Permissible Medical Experi-

Table 1. Key Documents on Research in Human Subjects

Document/Year	Selected Characteristics
The Nuremberg Code/1947	Consists of 10 items regarding the conduct of human research. Four key principles of the code are: 1) The voluntary consent of the human subject is absolutely essential, 2) Experiments should yield fruitful results for the good of society and not be random or unnecessary, 3) Experiments should avoid all unnecessary physical and mental suffering and injury, 4) The degree of risk taken should never exceed that determined by the humanitarian importance of the problem.
The Declaration of Helsinki/1964 (amended 1975, 1983, 1989, 1996, and 2000)	Building on the Nuremberg Code, the Declaration of Helsinki added recognition of the need for surrogate consent for subjects who lack the capacity or legal competence to render consent themselves.
The Belmont Report/1979	Summarizes the basic ethical principles of respect for persons (individuals are entitled to autonomy, those with diminished autonomy are entitled to protection), beneficence (do not harm, maximize possible benefits, and minimize possible harms), and justice (fair distribution of benefits and burdens of research, fair subject selection, access to therapy validated by research)

ments.” The 10 points outlined in this memorandum, which were part of the final verdict of the proceedings in the Nuremberg trials, have become known as “The Nuremberg Code” (see Table 1). The Nuremberg Code was limited by its focus on criminal transgressions during the conduct of research and research on healthy subjects. However, it is a key document in the development of research ethics. The Nuremberg Code is available at <http://www.hhs.gov/ohrp/references/nurcode.htm>.

The Declaration of Helsinki

The Nuremberg Code was widely criticized for its impracticality because it was considered too stringent to be applied to modern research. It was, in fact, based on findings related to war crimes and torture and contained considerable legal language. The World Medical Association (WMA) began a dialogue in 1953 on the development of a new guidance document for research involving human subjects (http://www.nmrc.navy.mil/ORA/irbee/page_1-2.htm). The Declaration of Helsinki, developed by WMA and “written by physicians for physicians,” was critical in recognizing the need for surrogate consent for those who lack the capacity or legal competence to consent

for themselves. The declaration has evolved over time, with several amendments, most recently in 2000, when it outlined principles for placebo-controlled research. In 2002, a clarification was made on the responsibility of researchers to include in their protocols a plan to allow study participants access to beneficial prophylactic, diagnostic, or therapeutic procedures, or other appropriate treatments after the trial has ended. The Declaration of Helsinki is available at www.wma.net.

The Belmont Report

The Belmont Report is the major result of the 1974 National Research Act, which created the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. The commission was charged with identifying the basic ethical principles that should underlie the conduct of biomedical and behavioral research involving human subjects. In addition, the commission developed guidelines to follow in order for research to meet these principles. The terms—“respect for persons,” “beneficence,” and “justice”—are ones that all researchers who have attended formal training on ethics have heard and should know. Although the commission applies these

terms in a research paradigm, these basic principles extend beyond research to broader bioethical issues. The Belmont Report is available at <http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.htm>.

The Council for International Organizations of Medical Sciences

The Council for International Organizations of Medical Sciences (CIOMS) first published "International Ethical Guidelines for Biomedical Research Involving Human Subjects" in 1983, with the most recent update published in 2002. These guidelines are designed to be international in scope and of use to countries in defining national policies on ethical biomedical research involving human subjects. An

additional aim is to reflect the conditions of a variety of countries, including those with limited resources, and to aid researchers in the nuances of multinational or transnational research. These guidelines can be obtained at http://www.cioms.ch/frame_guidelines_nov_2002.htm.

In this brief article, we have attempted to provide a backdrop of historical events leading to our current understanding of ethical behavior in the conduct of human research. In future articles, we will provide a more contemporary discussion of the conduct of human research, federal regulations, the role of Institutional Review Boards, and the process of determining when research involves human subjects and what procedures should be followed.

Suggested Readings

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What It Is Like to Be a Long-Term Care Resident: A Personal Perspective

Barbara L. Flynn

This article is the result of my personal experience and observations as a long-term care (LTC) facility resident in a facility where I served as their consultant pharmacist for many years. As a result of complications from Menière's disease, I had become severely debilitated and could no longer walk. My medical condition continued to deteriorate, and a fall at home convinced everyone that LTC placement was necessary for my safety and recovery. The challenges, fears, frustrations, and my relationship with the other residents and staff are reviewed in this article. It also details my experience with being confined to a wheelchair and having significant medication-induced, short-term memory loss. At age 35, I was much like an elderly LTC resident—I no longer was the consultant pharmacist. Now, I was in the position of receiving the same care and rehabilitation that the residents on my facility did.

Few consultant pharmacists will ever have the opportunity to be a resident in one of the facilities where they practice. I have had the sense for some time that this information should be shared with fellow consultant pharmacists. It is my greatest hope that something in this tale strikes a chord deep within you, resulting in a more compassionate approach to patient care or instills a better understanding of what being an LTC resident might be like.

There are personal and professional milestones in life one sets out to achieve with full fervor. The longer one lives, the greater the realization that life is full of unanticipated events, both joyful and sorrowful, testing our personal resolve and challenging us as human beings. Very few individuals will have the opportunity to step into the shoes of a frail, wheelchair-bound, cognitively impaired elderly LTC resident and then return to practicing as a young consultant pharmacist, in the prime of his or her life. This story is told through the eyes of those residents in the hope that it might bring a new awareness to consultant pharmacists. This was a personal ordeal, to be certain, but a unique opportunity to live in the world of the LTC facility residents we serve and temporarily

experience some of the burdens life has dealt them.

Life has a way of erecting huge "speed bumps" at the most inopportune times. My personal life goal had been to be in the best physical condition of my entire life. I could not have been further from my goal. I celebrated my 35th birthday as an LTC resident, unable to walk, weighing about 89 pounds, with a botched central line placement knocking out the use of my right arm. I could not even propel my wheelchair on my own volition.

I have suffered from Menière's disease, a disorder of the inner ear affecting balance and hearing, for about 13 years. There were acute attacks and remissions, but during this particular time, it was raging out of control. I lost 50 pounds in one month from unrelenting vomiting. Although notifying my ear, nose, and throat (ENT) specialist, the nurse continued to tell me to take more diazepam (a vestibular suppressant). Unable to take Compazine or Phenergan because of dystonic reactions, at that time, Zofran was only available as a tablet (which one could not keep down if vomiting), and a local pharmacy had to compound suppositories (the Orally Disintegrating Tablets were not yet available). Efficacy with the Zofran suppositories varied. The vomiting continued as I waited for surgery. It would entail the surgical insertion of an endolymphatic shunt, which would facilitate emptying of endolymph fluid from my inner ear into the lymphatic system. Hopefully, this surgery would dramatically improve the Menière's symptoms and stop progression of the disease.

Diuretics, particularly thiazides, are mainstay therapy in Menière's disease. It was not long before I was in the hospital, severely dehydrated from the continuous vomiting, with multiple metabolic problems. As a result of frequent intravenous (IV) line placement over the years, and poor vasculature to begin with, peripheral IV access was almost impossible, even for venipunctures. While attempting to insert a central line, a mistake was made and the line punctured the right internal mammary artery. In practical translation, this meant significant hemorrhaging and an inability to use my right arm. Weakened from lack of nutrition and blood loss, I was confined to bed or the wheelchair, too emaciated to walk unassisted. Without the use of my right arm, I could not propel my wheelchair or get in and out of bed by myself.

I was dependent on everyone else for any need. It was one of the worst feelings I have ever experienced. I felt like a burden to everyone I loved, and hated the feeling of having no control over any aspect of my life. Everyone was now pushing for LTC facility placement.

All of these events, and many others, culminated in my need for intensive physical therapy, artificial nutrition, and hydration, as well as significant nursing care. Once discharged from the hospital, I tried to return to my farm, where I lived alone in a rural area. I truly understand the great reluctance of anyone to be admitted to an LTC facility; it was extremely hard for me to agree to be admitted to a facility I knew quite well.

There were so many fears. Everything was happening so quickly and I didn't have time to make arrangements to leave my home. Who would check my mail? Who would look after my house? What about my finances? Who would take care of the animals? LTC placement seemed like the worst option to me. I would be dissociated from all of my usual support systems. I would, ironically, in the coming months and years, come to realize that LTC placement was one of the most unique gifts of my personal and professional life and continue to benefit from the experience to this day.

After a bad fall, I knocked an antique mirror off of a shelf, severing a large blood vessel on top of my foot, only millimeters from a critical tendon needed to walk. I slipped in the blood, hitting my head on the doorknob, and knocked myself out. A friend was scheduled to stop by and take me to a physician's appointment and what a sight to behold when she arrived. A medical professional herself, she finally convinced me I could not safely stay in my home anymore. Agreeing to go to an LTC facility, however, felt like I had made the decision to let go of my entire life.

Everyone in the facility did his or her best to make me feel welcome and comfortable. I did not have a Living Will upon admission, so one of the nurses took great care in helping me complete mine, in deep detail. It was a troublesome reminder of where I was, not where I wanted to be. I knew, for years, that I needed a Living Will, and recall preaching to my students that they needed to have one, but I somehow just kept pushing it to the side.

All was not gloom and isolation in the facility, however. The nurses and nursing aides threw a surprise

birthday party for me in my room. It was wonderful. Yet as terrific as that was, the greatest gift of all was yet to come. The ultimate treasure was a surprise visit from a friend I have known since I was five years old. My best friend, Ann, drove endless hours to spend a short time with me, than had to begin her long journey back home. "When your father told me you were in a nursing home, I had to come. I was afraid I might never see you again. I saw the desperation in his eyes."

One could say that my stay at the facility was not "typical" because the staff knew me quite well at the time of admission. That may be true, but the feelings and experiences are the same, whether for me or an "unknown" new admission. Embarrassment was the first emotion to hit me hard. A very private person, people that I worked with were looking at me, my body, because they needed to so that they could care for me. I suddenly thought about so many different residents who were combative at bath time. How much of their behavior was attributed to embarrassment or modesty? It was not as if I had not thought of those factors before, when the nursing staff would ask for a recommendation on how to deal with the resident. Now, however, I *was* that person.

As time went on, I began to realize that life as an LTC facility resident revolved around three major events: (1) breakfast, (2) lunch, and (3) dinner. It was a time when you knew *someone* was going to come into your room. No matter how bad (or, surprisingly, good) the food might be, these were precious opportunities to interact with another individual. The real "meal" was the conversation and one so craved the interaction, even if it was for only a few minutes. It was all the more precious because I could not leave my room on my own. Another highlight was the anticipated return of an aide to pick up the tray.

Medication administration was another prospect for conversation. The nursing staff was so busy documenting in the charts, sometimes it seemed like days would go by without direct contact with them. The aides kept the nurses well informed, but I knew the nurses much better than the medication and nursing aides.

Nocturnal activities depended upon your roommate's habits. Privacy was a precious commodity, and modesty a need frequently overlooked. Many times I needed to request the curtain be drawn, or the door

closed. How much we take for granted—the ability to simply close a door and revel in complete, undisturbed privacy. A locked door would be greater still; your own exclusive sanctuary. I closed my eyes and remembered the feeling of smooth, cool metal in the palm of my hand, then quietly turning the lock. In my mind, at least, I had absolute privacy.

Nights seemed eternal. Who could sleep with incessant call lights going off and groaning residents? I pitied those residents and wondered why they were moaning. Was it undermanaged pain? Simple boredom? Loneliness and the desire for companionship? My worst fear was that it was a serious medical problem that a nonverbal resident was not able to express to the staff. There and then, I decided that when I came back to work, I was going to pour over every single resident's chart that had a diagnosis of "pain" or "insomnia" and do the most comprehensive reviews I had ever done. Even in those residents who did not have a written diagnosis of either, I would speak with all three shift charge nurses and ask if they felt if any of the residents were having pain, even though the documentation was lacking. I did these things routinely as a consultant pharmacist, but this experience shone a different light on it. *I heard pain*. I might be able to do something about it, something *more*. The other possibility, of course, was that these were dementia patients for whom there was nothing I could do but vigilantly monitor for any signs of distress.

There—I had done it! I found something positive (renewed motivation) in a "negative" situation. The drone of the call lights wore on, like a metronome. I appreciated their necessity in the facility, but they were a definite hindrance to sleeping. Despite realizing the legitimate need to use it, I hated to turn on my call light. I knew there would be groans, for the most part, on the receiving end. I had witnessed it enough. Words cannot quite articulate the precise feeling of constantly needing others to do the smallest tasks for you. Even though it most certainly is the professional obligation of the nursing aides and nursing staff to answer the call lights in a timely fashion, I could not get over the feeling of "being a burden" or "in the way." The staff did nothing to make me feel like I was inappropriately using the call light, or requesting help too frequently. In fact, most admon-

ished me for not contacting them for more assistance.

I recall reaching for an item on the nightstand next to the bed, and stretched beyond my ability. I fell out of bed, with the call light in the center of the bed, beyond my reach. I lay there for a while, again feeling that sense of "dread" at having to shout for help. No one could hear my soft voice. I finally "slithered" to the doorway, dragging my IV pole with me, and someone saw me laying there. My greatest concern was that I had not done anything detrimental to the central line placement. Despite rationality, it was a feeling I could not stifle. Even though these were paid health care workers, the feelings of "being a bother" and a burden could not be subdued.

The facility appeared to grind to a halt around 9 p.m., and there was little to do until morning. I missed receiving phone calls so much. During evenings at home, I generally spent a lot of time on the phone. Imagine not having a telephone in your home or suddenly disconnecting your cell phone service. Furthermore, consider that anyone in earshot was listening to everything you said. Not having a private telephone made me feel very detached from family and friends. I could not convey the depth of my despair and loneliness. At some time in the future, I would return to my role as the facility's consultant pharmacist and had to remain strong. I could now relate to the residents on yet another level. A telephone really is an instrument of freedom one should never take for granted.

One nurse asked me if there was anything, anything at all, she could do for me. "Please, please, shave my legs?" was my request. And she did. A routine, mundane, daily task took on a whole new light. It felt like part of my "old" life was back again, except even better, like I was in a spa, receiving a "beauty" treatment. I was so grateful to her. I would not have requested that task from anyone else. Another nurse took me out to get a haircut. It was wonderful to leave the facility, as nice as it was, to see "life" again. The things that you do not notice as you drive every day—now it was as though everything was painted in Technicolor, alive and vibrant. I gained a renewed respect for the nursing staff and the compassionate care they rendered.

The time I spent in the facility was definitely a lonely time; with most of my family far away, I had few

visitors. Now my fellow LTC facility residents became my friends. I could go down only one hallway. It had a railing, and I could propel myself in this one spot in the facility. My pharmacy students and I had a "Medications in the News" bulletin board, and I often wondered if anyone ever really read it. Much to my amazement, as I wheeled by in the evening, I saw facility residents, physicians, nurses, maintenance workers, and family members reading it. It was worthwhile!

I developed a close friendship with the restorative aide, Deb, who came back to the facility after her daily shift and worked one-on-one with me. This was in addition to near-daily physical therapy. I was definitely motivated to walk again. But one of the best therapies Deb gave me was humor. Each day she or another staff member would bring a humorous video for me to watch. I realized then that I never thoroughly appreciated the power of laughter until the darkest of times.

My aggressive therapy progressed, and it was now time to return home. It was exciting, but frightening at the same time, to be leaving the security of the facility. Fear prevailed when I knew I needed to be in an LTC facility. That same fear now emerged at the thought of being alone and losing the security of the facility. The NG tube, central line, and Foley catheter came out. I still could not walk unassisted and was concerned about falling out of my wheelchair. It would fit through every doorway in the house, except the door between the bedroom and bathroom. That was the truly frightening time: grabbing the walker, and dragging my limp legs across the cold linoleum. What if my hands slipped? How could I get help? It became very obvious that I literally needed a "life line." I contacted a hospital, which operated a "Life Line" service, and I did subscribe. It truly fostered a sense of security and made me more confident in my vulnerable state.

At home I faced new challenges. The surgeon who placed my endolymphatic shunt liked to put his post-op patients on 30 mg of diazepam daily, for 30 days. Until I returned home, it did not really register how cognitively impaired I was. In the facility, I did not have to really think about anything: I just "existed." Now, I had to answer the phone, take care of bills, and other (very limited) activities of daily living. I would have conversations with my mother, for example, and

not even remember them unless she prompted me at a later time. If she said something key in the conversation, then it came back to me. Frightening: I had no short-term memory.

I vividly recall one episode of sheer panic, shortly after returning to the farm, when I thought I had lost my checkbook. Most of us have, at one time or another, had the experience of misplacing our purse or keys. I always put my checkbook in a particular compartment of my purse. For some reason, I went looking for my checkbook. When I unzipped the side compartment, I was not greeted with the familiar black leather sheen of my checkbook. Absolute terror struck me.

I tore the house apart, frantically searching for my checkbook. I dumped the trash can contents onto the floor, digging through the refuse. I emptied drawers and stripped cupboards. The checkbook still eluded me. I cannot even remember how I made it out to the garage, but I opened sacks of garbage, not yet picked up on the weekly route. My checkbook was nowhere to be found. I finally let go of my mounting frustration. Sobs wracked my body as I resigned myself to its loss. It seemed as though half of my life was in that checkbook. I cried myself to sleep. In the morning, I went back to my purse and opened a different compartment. What should I find but my checkbook, simply placed in the opposite side of my purse. It never even occurred to me to check all of the purse's compartments the night before.

Weeks went by, my therapy continued, and I grew stronger. I shudder to think of it, but I had to drive myself to appointments, at times. My mother would call and ask what I had done that day (obviously I was not working). The only way that I could recall my path was to look at the carbons in my checkbook. They were my short-term memory.

I was like a dementia patient. Sticky notes, plastered everywhere, guided me through the day and served as the construct of my daily life. Eventually, the diazepam dosage was tapered and my memory returned. The greatest physical accomplishment was walking on the treadmill for several minutes, before collapsing into the wheelchair. Gradually, I was able to use the walker more, and use the wheelchair only when I grew fatigued.

No one can comprehend what it is like to be confined to a wheelchair unless you experience it firsthand. One handicapped restroom stall, in a large physician's clinic, no less, was so small that I could not lock the door. The handrests on the back of the wheelchair prohibited it. It was degrading and I prayed no one would enter the women's restroom.

In the same building, there was a set of plate glass doors. I looked for the push plate on the wall, but there wasn't one. I tried to lean forward, out of my wheelchair, to push one door open. The weight of the door was devastating, and I nearly fell out of the wheelchair pushing on it. Somehow my foot became caught between the two glass doors. The weight of the doors was crushing my foot as I struggled to free it and not fall forward out of the chair. I finally wiggled my foot free of the flat shoes I was wearing. A passerby witnessed the entire event and did nothing to help. Finally, a kind soul held the door open, retrieved my crumpled shoe, and pushed me through. An overwhelming sense of appreciation flooded over me, at the smallest of gestures.

Why didn't the other individual offer any assistance? Perhaps he thought I wanted to "do for myself." Many of us are uncomfortable when dealing with an individual who has a disability. We want to be helpful, but are concerned we might inadvertently offend an independent individual. The best approach: simply ask the person if he or she requires any assistance.

Patiently, I bided my time until I was able to return to work. For a short period, my previous lapses of memory followed me there. I started to receive large packages at work and wondered who was sending me such lovely paintings. The enclosed invoice was of little help, and upon receipt of the third piece of artwork, I called the company in an attempt to identify the sender. I had ordered the artwork from a catalog, months earlier, when I was on the high diazepam dosages. I had no recollection of the purchases.

My unique odyssey as a consultant pharmacist, temporarily existing as a frail, cognitively impaired, wheelchair-bound LTC facility resident, then restored to my former life as a (newly enlightened) consultant, indeed, is a road few consultants will ever travel. The fears, frustrations, experiences, and observations I have described to you are nothing in comparison to

what a dementia patient, for example, must experience. What I have shared is certainly but a glimpse into the world of an LTC facility resident.

Consultant pharmacists are highly educated professionals, with great technical skill and knowledge. But sometimes the "optimal therapy" we can offer a patient is a warm smile and "hello," or sitting down for a few moments and talking with a resident. We should endeavor not to let drug regimen review, inservice education, communicating recommendations to all the members of the health care team, and our numerous other responsibilities be our only professional aspirations. The next time you walk into one of your facilities and meet a resident confined to a wheelchair, envision that existence for just a few moments. Imagine how differently your day would have started and ended, if it were you in that wheelchair. Know, with confidence, that a mere "hello," smile, or gentle touch means so much to that individual. You may be the only person who takes the time to even acknowledge that individual that day. I learned, as patient and professional, that such gestures truly do put quality back into life.

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Proposed Rule Reforms Nursing Facility Pay Rates

Nursing facilities would not suffer 10% in cuts in revenue for fiscal year 2006 under the proposed new payment rates released by the Centers for Medicare & Medicaid Services (CMS) in May. Instead, payments would be about equal in fiscal year 2006 to the payments this year.

The proposed rule for the skilled nursing facility (SNF) prospective payment system—published in the *Federal Register* on May 19—would refine the way nursing homes are paid to ensure quality, efficiency, and accuracy of payments without reducing revenue for the industry, according to the agency. Although CMS proposed eliminating a payment of \$1.5 billion, in recent years it has been adding to the daily rates it pays to nursing facilities, CMS said it would increase what it pays for sicker patients, who require rehabilitation services or treatments for multiple conditions. The proposed rule also retains the 128% adjustment for SNF residents with AIDS, which was enacted as part of the Medicare Modernization Act (MMA).

As required by Congress, CMS proposed a refinement to the resource utilization groups (RUGs) by introducing nine new payment categories. These determine the daily payments for Medicare beneficiaries in SNFs. The proposed rule expands the number of RUG-III groups from 44 to 53, adding groups to account for the costs of certain medically complex patients who require rehabilitation services as well as those receiving multiple treatments for several comorbidities.

CMS also proposed increases in the case-mix index for all of the RUGs. The increase in the index is equal to half of the value of the temporary “add-on” payments that end with the refinement of the current system. The increase in payments associated with the RUG-III refinements, together with an annual inflation increase of 3%, would result in virtually no change in overall SNF Medicare payments in fiscal year 2006, the agency said.

Additionally, CMS proposed to increase the case-mix indexes of all 53 RUG groups that reflect variations in nontherapy ancillary costs not fully captured in the RUG refinements. This adjustment increases

the component of the case-mix weight that applies to both nursing and nontherapy costs. This proposed change to the case-mix indexes would increase aggregate payments under the SNF prospective payment system. The proposed increase, as a result of the relative weights, is 8.4%, which amounts to a 3% increase in aggregate spending. This would be a permanent payment increase that would be integrated into the baseline spending levels and would be continued in future years, according to CMS.

Moreover, the proposed rule includes a “market basket” increase of approximately 3% (\$510 million). The update is based on a change in prices of a “market basket” of goods and services included in covered SNF stays. The price of items in the market basket is measured each year, and Medicare payments are adjusted accordingly.

All of the refinements in the RUG payment system would begin on January 1, 2006, to provide sufficient time to upgrade billing systems. The current RUGs and add-on payments established by the Balanced Budget Refinement Act of 1999 would continue in effect for the first quarter of fiscal year 2006. For the remaining nine months of fiscal year 2006, payments would be made under the new policy.

CMS expects refinements in the SNF prospective-payment system to result in approximately a 10% increase in operating margins on Medicare business next year. The regulation also proposes other changes aimed at saving costs while “enhancing accuracy and promoting quality,” the agency said. Those proposals include changes in the way information is collected for the Minimum Data Set, such as limiting the reporting of certain high-intensity services, such as IV medications, that the patient received before being admitted to a nursing facility.

A full copy of the proposed rule is available on the CMS Web site at www.cms.hhs.gov/providers/snfpps.

The Alliance for Quality Nursing Home Care (AQNH) and the American Health Care Association (AHCA) were receptive to the release of the proposal.

“Over the past several months, we have worked closely with the administration, and we appreciate their willingness to listen to our concerns,” said Stephen Guillard, chairman of AQNH. “We also appreciate the many members of Congress who have

fought hard to ensure that nursing homes continue to get the funding they need.”

In its fiscal 2006 budget proposal, the Bush administration said that SNF payments would be reduced by about \$10.1 billion over five years because temporary Medicare add-on payments would be dropped when the SNF payment system is revised. In April, eight House Republicans sent a letter to CMS Administrator Mark McClellan asking that add-on payments be folded into a revised SNF payment system. Additionally, 43 GOP and Democratic House lawmakers sent a letter to Department of Health and Human Services Secretary Michael Leavitt saying that many nursing facilities would be financially endangered if temporary Medicare add-on payments were removed, and that Congress could intervene. In May, a bipartisan group of 32 senators—21 Democrats and 9 Republicans—sent a letter to Leavitt saying nursing facilities are financially dependent on Medicare because Medicaid payments are inadequate.

AHCA’s reaction also was positive. The association said that it appreciates the efforts of the administration to develop a framework within which further constructive discussions could occur to ensure that quality care is not compromised. However, AHCA also pointed out that the “market-basket” annual inflation adjustment “is designed to compensate providers for cost increases unrelated to government reductions,” so the total impact must be considered.

HHS Establishes Commission to Reform Medicaid

Department of Health and Human Services Secretary Mike Leavitt will appoint an advisory commission to help identify the reforms necessary to stabilize and strengthen Medicaid.

In April, the House and Senate passed a \$2.56 trillion federal budget for 2006 that aims to cut Medicaid by \$10 billion over five years. However, the Bush administration has a commitment with Sen. Gordon Smith (R-Ore.), as part of the fiscal year 2006 budget resolution, to establish a bipartisan panel to evaluate both policy changes needed to produce required program savings and to assess the long-range

impact of the reforms on the states. This year is the first time since 1997 that Congress has used the budget to reduce the growth of entitlement programs, such as Medicaid.

The Medicaid commission will consist of 38 members. Fifteen appointees will have voting rights, according to the Medicaid commission charter (<http://www.cms.hhs.gov/faca/mc/default.asp>). The voting members will include at least three representatives of public policy organizations involved in health care policies for families, individuals with disabilities, individuals with limited incomes, and the elderly. The panel also may have former or current governors; former or current state Medicaid directors; and other people with expertise in health, finance, or administration. In addition to the voting members, the commission will have up to 23 nonvoting members including advisors with specific health care expertise or interest in Medicaid and as many as eight policy experts designated by various congressional leaders. At press time, nominations for the agency’s approval were due by June 3, but controversy has developed over naming commission members.

“For generations, Medicaid has served the health care needs of the truly needy in America, but today the program is no longer meeting its potential,” said Leavitt. “The time to reform Medicaid is now, and this commission will help the administration, Congress, and the states create a plan to ensure Medicaid can meet its goal of providing quality health care in a financially sustainable way.”

The Medicaid commission must submit two reports to Leavitt. The first report, due September 1, will outline potential performance goals for Medicaid and provide recommendations for Medicaid to achieve \$10 billion in savings during the next five years as well as for long-term enhancements to better serve beneficiaries. The second report, due December 31, 2006, will provide recommendations to help ensure the long-term sustainability of Medicaid. The second report, which will assume that the basic federal-state match for Medicaid will continue, also will consider how to address the major issues affecting Medicaid under three different scenerios: an assumption that:

- Federal and state spending continues at current paces

■ Congress chooses to lower the rate of growth in the program

■ Congress may increase spending for coverage

All commission meetings will be open to the public unless Leavitt determines otherwise. As many as six meetings will be held each year.

Leavitt's role in the commission has disappointed some lawmakers who wanted a more impartial entity, such as the Institute of Medicine (IOM), to operate the commission and determine its membership. In May, a bipartisan group of 12 senators sent Leavitt a letter requesting the IOM decide who sits on the panel.

Additionally, two ranking Democrats on the Senate Finance Committee and the House Energy and Commerce Committee, who oppose cutting Medicaid, said they believe the congressional committees of jurisdiction over the Medicaid program should decide the \$10 billion in cuts required for budget reconciliation. Instead of the commission or another outside party, said Sen. Max Baucus (D-Mont.) and John Dingell (D-Mich.) in a separate letter to Leavitt in May, the congressional committees should make recommendations on Medicaid's long-term viability.

When Leavitt met with the National Governor's Association (NGA) in March, he presented ways in which Medicaid costs could be controlled, such as by preventing the elderly from transferring their assets to their children to qualify for Medicaid nursing home coverage. Some state officials and lawmakers agree that curbing "Medicaid estate planning" would reduce the medical coverage that states and the federal government pay. NGA is discussing whether it wants to nominate someone to the commission.

The government estimates that an average Medicaid beneficiary's nursing facility care costs about \$33,000 a year; about one million nursing facility residents use Medicaid to pay for all or a portion of their care. Under the current law, the government reviews for three years whether a Medicaid applicant has transferred assets.

However, a recent report from the Georgetown University Long-Term Care Financing Project suggests that there is little evidence that the elderly tend to transfer or hide their wealth. The May 2005 report,

"Medicaid's Coverage of Nursing Home Costs: Asset Shelter for the Wealthy or Essential Safety Net?" (<http://georgetown.edu/pdfs/nursinghomecosts.pdf>), was funded by the Robert Wood Johnson Foundation. It reviews empirical evidence on the prevalence and magnitude of asset transfers to achieve Medicaid eligibility and evaluates the evidence on whether means-testing creates a disincentive to save or purchase private long-term care insurance. The report contends that the fiscal year 2006 budget proposal by the Bush administration to close these Medicaid loopholes would not yield significant savings.

Another proposal is to change the average wholesale-price payments for prescription drugs to reduce Medicaid costs. Rep. Joe Barton (R-Texas), chairman of the House Energy and Commerce Committee, said his criteria for a new pricing system is that it should be easy to understand and fair—by representing what pharmacists actually pay. He invited community pharmacists to meet with him to propose an alternative system.

Diana Duvall
Associate Editor



Helpful Ideas

Put Some Muscle in It: Preventing or Reversing Sarcopenia

Problem: Many of our residents are frail and sarcopenic. They appear unable to exercise. Are there exercises for the elderly that can prevent or reverse sarcopenia, even if they are frail?

Solution: Resistance training (RT) can delay sarcopenia's course and moderately reverse its effects and is a reasonable and appropriate intervention after sarcopenia develops. RT improves the neuromuscular system, hormone concentrations, and protein synthesis rates.¹ Designed correctly, an RT program may increase motor neuron firing rates, improve muscle fiber recruitment, and create a more efficient motor unit. This leads to faster muscle contractions and greater force production.^{1,2}

As little as two weeks of progressive RT can increase protein-synthesis rates. Hasten et al. supervised RT in seven 78- to 84-year-olds; they found protein-synthesis rates increased up to 182% from baseline.³ Yarasheski and colleagues confirmed that result in adults aged 63 to 66 years are seen after two weeks.⁴ They also found that three months of supervised progressive RT increased the muscle protein synthesis rate by approximately 50% in 17 frail 76- to 92-year-old men and women.⁵ Therefore, short- and longer-term RT can increase elders' muscle protein synthesis rate. RT increases the number of satellite cells in the trained muscle, leading to faster muscle regeneration.¹

Guidelines for Increasing Muscle Mass

Muscle mass and strength diminish with age. Physically inactive people lose approximately 3% to 5% of muscle mass and strength per decade after age 30.⁶ The decline in muscle protein synthesis may be genetically



determined or secondary to nutritional, hormonal, or other age-related alterations in body functions. Most of these factors are beyond our control, but inactivity is within our control, and progressive RT is the easiest and possibly the most effective prescription. Two organizations offer guidelines for RT: the American College of Sports Medicine (ACSM) offers general guidelines for RT,⁷ and the National Institute on Aging (NIA) has exercise routines specifically tailored for older adults.⁸ The latter is offered as a video (some clips are available online) as well as a downloadable 86-page PDF file in English and Spanish at <http://www.niapublications.org/exercisebook/bookand-video.asp>.

Individualized Exercise Plans

Elders, and frail elders in particular, need individualized exercise prescriptions based on their unique health and/or fitness status. However, the exercise contraindications for older and frail individuals are similar to those for younger adults. RT can be progressively introduced to individuals with cardiovascular disease, diabetes, dementia, pulmonary disease, chronic renal failure, peripheral vascular disease and arthritis. Clients who have uncontrolled conditions, such as hypertension, chest pain, metabolic disturbances, and acute illnesses, should be medically assessed for appropriate RT participation.

If any of the health-related illnesses are rapidly deteriorating, a health professional needs to be consulted immediately to evaluate if exercise is contraindicated.⁹ Table 1 lists some contraindications to exercise taken from ACSM's guidelines and supplemented with recommendations from disease-specific sources relating to diabetes, cancer, asthma, and cardiovascular, etc.

Earlier in this article, the exercise prescription was mentioned. An exercise prescription summarizes an

Table 1. Contraindications to Physical Exercise in the Elderly

Contraindication	Comment
Hemoglobin level <8.0 g/dL	Avoid activities that require significant oxygen transport (i.e., high intensity)
Absolute neutrophil count $\leq 5 \times 10^3$ per mL in cancer patients	Avoid activities that may increase risk of bacterial infection (e.g., swimming)
Platelet count ≤ 50 per mL	Avoid activities that increase risk of bleeding (e.g., activities like wheelchair bowling or wheelchair dancing that might lead to bump or bruise injuries)
Fever >38°C (100.4°F)	Investigate for possible systemic infection; avoid high-intensity exercise
Ataxia, dizziness	Avoid activities that require significant balance and coordination, like treadmills
Residents with unstable symptoms or conditions	Exercise should be delayed until the resident is stable
Hypertrophic obstructive cardiomyopathy, significant aortic stenosis, acute myocarditis, exercise-induced ventricular arrhythmia.	Absolute contraindications to exercise
Blood sugar >250 mg/dL in patients with diabetes	Exercise can worsen blood sugar control above this glucose level
Blood sugar <80 mg/dL in patients with diabetes	Wait until blood glucose exceeds 120 mg/dL to avoid exercise-induced hypoglycemia
Peripheral neuropathy	Exercise requires specific modifications and should be supervised by a qualified professional.
Retinal detachment	Avoid vigorous exercise for at least six weeks following surgery. Resume other normal activities as soon as they feel able

Source: References 7, 10–12, 14.

exercise plan and sets exercise goals. It should include the frequency, intensity, time, type, and precautions of exercise. Ideally, residents would complete 8 to 15 repetitions of one exercise for all targeted muscle groups. The muscle groups include the pectorals (the large muscles of the chest); the latissimus dorsi (broad triangular muscles along the sides of the back); deltoids (a large triangular muscle covering the shoulder joint that coordinates arm movement); abdominals; gluteals (buttocks); quadriceps (thigh muscle); and hamstrings (tendons at the back of the knee).^{7,8} If you are counting repetitions, that means the goal will be to do six exercises or a total of 48 to 90 sets. Suitable exercises are described in the NIA booklet.

Start Low, Go Slow

Initially, residents may find 10 repetitions too arduous. They, and the clinicians who help them, should expect that adaptation to take time. Elders may start with little or no weight and initially should increase repetitions and then increase resistance (weight).^{7,8} Seniors don't need heavy weights or bulging muscles. Beginning weight training with three-pound weights or intact soup cans (increasing the resistance gradually to five to eight pounds) can confer benefit. It also strengthens the skeleton, which lowers fracture risk. In sarcopenia, it appears that alternating higher-intensity sessions with moderate-intensity sessions is advisable.

ACSM recommends at least one set (8 to 15) repetitions for each major muscle group. Most studies with older adults, however, have used two or three sets. One set may be sufficient for most elderly client goals.⁹ Performing RT as little as twice weekly, separating workout sessions for the same muscle group by 48 hours, is advisable. However, the optimal frequency for the mature and frail adult has not been definitively established. Some researchers believe that strength maintenance in seniors can be achieved with one workout weekly.⁹

Supervise

For obvious safety reasons, many older individuals will need supervision and guidance to exercise well and prevent progressive overload. Often, occupational or physical therapists assume the supervisory role, but other staff members and even volunteers can be trained to do it. Residents should begin an RT program with about two months of minimal resistance loads so joint connective tissues can adjust.⁹ They will need to know the correct lifting mechanics (lift slowly over three seconds, lower over three seconds).

Monitoring how many times they can lift a weight is essential. If they cannot lift a weight eight times, it is too heavy. If they can lift it more than 15 times without feeling the muscle tire, it is too light. They need to be coached to keep breathing patterns normal during RT exercises.^{8,9} If they suspend their program, they should restart with loads that are approximately 50% or less of the previous training intensity.^{7,8} Sessions should be reasonable (always less than an hour, and ideally 20 to 30 minutes).^{8,9}

Endnotes

The attractiveness of RT is that it rarely requires special equipment, can be performed almost anywhere, and takes little time once the technique is mastered. The rewards are potentially great, even with minimal investment of time.

Consultant pharmacists who have an interest in working with their facilities to start an exercise program might consider looking at "A seven-step approach to starting an exercise program for older adults."¹⁴ It clearly delineates necessary steps: education, exercise prescreening, goal setting, exposure to exercise, famil-

iarly with role models, verbal encouragement, and verbal reinforcement and rewards. These successfully increase exercise in the LTC setting.

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September 2005

AARP Annual Meeting

September 29–October 1
New Orleans, Louisiana
Contact: AARP, 601 E. Street NW, Washington, DC 20049; 1-888-687-2277; E-mail: www.aarp.org.

11th Conference on Continuing Pharmacy Education

September 29–October 2
Chicago, Illinois
Contact: Accreditation Council for Pharmacy Education, 20 North Clark Street, Suite 2500, Chicago, IL 60602-5109; 312-664-3575; Fax: 312-664-4652; E-mail: info@acpe-accredit.org.

NAPGCM

September 29–October 2
National Association of Professional Geriatric Care Managers
New Orleans, Louisiana
Contact: National Association of Professional Geriatric Care Managers, 1604 N. Country Club Road, Tucson, AZ 85716-3102; 520-881-8008; Fax: 520-325-7925; E-mail: www.caremanager.org.

October 2005

2005 ACCP Annual Meeting

October 23–26
San Francisco, California
Contact: American College of Clinical Pharmacy, 3101 Broadway, Suite 650, Kansas City, Missouri 64111; Phone: 816.531.2177; Fax: 816-531-4990; Email: accp@accp.com.

White House Conference on Aging

October 23–26
Washington, D.C.
Contact: White House Conference on Aging, 4350 East-West Highway, Bethesda, Maryland 20814; 301-443-9462; Fax: 301-443-2902; Website: www.whcog.gov.

NAHC 24th Annual Meeting

October 16–24
Seattle, Washington
Contact: of the National Association for Home Care and Hospice; 228 Seventh Street, SE, Washington, DC 20003; 202-547-7424; Fax: 202-547-3540.

56th Annual AHCA Annual Meeting and Exposition

October 16–19
Las Vegas, Nevada
Contact: American Health Care Association/National Center for Assisted Living, 1201 L Street, NW, Washington, DC 20005; 202-842-4444; Fax: 202-898-6302.

November 2005

**Senior Care Pharmacy '05
ASCP's 36th Annual Meeting
and Exhibition**

November 9–12, 2005
Boston, Massachusetts
Contact: American Society of Consultant Pharmacists, 1321 Duke Street, Alexandria, VA 22314; 703-739-1300; Fax: 703-739-1500 (www.ascp.com).

CCGP Exam

November 9, 2005
Boston, Massachusetts
Contact: Commission for Certification in Geriatric Pharmacy, 1321 Duke Street, Alexandria, VA 22314; 703-535-3036; Fax 703-739-1500.

CCGP Exam

November 12, 2005
Atlanta, Georgia; Chicago, Illinois; Albany, New York; Philadelphia, Pennsylvania; Toronto, Ontario
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Consultant Pharmacists Are Needed in Renal Dialysis Facilities, ASCP Tells CMS

ASCP recently commented to the Centers for Medicare & Medicaid Services (CMS) on the proposed rule on conditions for coverage of renal dialysis facilities. In its recommendations to the agency, the society pointed out that consultant pharmacists should be required to perform a drug regimen review (DRR) of patients with end-stage renal disease (ESRD).

CMS sought ideas on whether to require that dialysis facilities have a pharmacist involved in the care of patients. In its proposed rule, CMS proposes only that a “medication history” be obtained for renal-dialysis patients. The agency also proposes evaluation of numerous elements—such as nutritional status, psychosocial needs, and current patient physical-activity level—be required, but there is no requirement for evaluation of the medication regimen.

ASCP commented specifically about why patients with ESRD need consultant pharmacist services.

“For the highly medically complex renal patients, who typically take an average of 12 medications, a DRR should be a critical part of the patient assessment,” ASCP says. “This assessment should be performed by a pharmacist because of the complexity of this population and the number and nature of medications used.”

Furthermore, ASCP says that although some renal dialysis facilities are associated with hospitals or nursing facilities, approximately 84% are freestanding. “Thus, the pharmacist who would serve these facilities would most likely be a consultant pharmacist.”

In its recommendations, ASCP also tells CMS that ASCP members have extensive experience providing services in a variety of settings, including dialysis facilities, and provided a list of some of the functions and services that pharmacists provide to improve care for ESRD patients. ASCP explains to CMS that the patient-focused services include:

- Performing a DRR
- Communicating DRR findings and recommendations to the prescriber and other members of the interdisciplinary team
- Reviewing the medication regimen with the patient, evaluating patient comprehension and ability to follow the drug regimen, and assisting the

patient with adherence to prescribed therapy

ASCP also tells CMS that patient-focused services are valuable to this population because of the need to:

- Avoid certain medications that pose a high risk
- Adjust medication dosages based on renal function and dialysis interventions
- Adjust medication dosing schedules in coordination with dialysis interventions

■ Assist in managing drug costs or coordination of drug benefits between Medicare Part B and other payers

Moreover, ASCP points out that facility-focused services provided by the consultant pharmacist also are important in ensuring quality patient care. The Society explains that these benefits include:

- Assisting the facility in developing or revising policies and procedures related to medication acquisition, storage, administration, and disposition
- Overseeing development and implementation of strategies to ensure accountability of controlled substances in the facility
- Providing in-service education to facility staff on issues related to medication administration, such as prevention of medication errors, infection control, and safety
- Observing facility compliance with established procedures and providing input to the medical director and/or nurse manager, as appropriate

ASCP says the DRR provided by the pharmacist should be conducted as part of the initial patient assessment, and periodically thereafter. Even if the pharmacist is not onsite at the time the patient is present, a review of the patient’s medical record by the pharmacist can be valuable.

A 2003 Government Accountability Office (GAO) report, “Dialysis Facilities: Problems Remain in Ensuring Compliance with Medicare Quality Standards,” found medication errors to be a particular concern in dialysis facilities. “With expanded access to their services, consultant pharmacists could play an important part in helping to address these issues in renal dialysis facilities,” ASCP says.

ASCP recommended specific wording for CMS to add to its proposed rule. ASCP’s comments on conditions for coverage of ESRD facilities are available for download at www.ascp.com/public/pr/2005/docs/ASCPCommentESRD.pdf.

Diana Duvall
Associate Editor