



# SENIORS AT RISK:

DESIGNING THE SYSTEM  
TO PROTECT AMERICA'S  
MOST VULNERABLE  
CITIZENS FROM  
MEDICATION-RELATED  
PROBLEMS



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MILLIONS OF SENIORS ARE UNKNOWINGLY AT HIGH RISK FOR ILLNESS, DISABILITY, AND DEATH. THE CAUSE?

## Medication-Related Problems

Medications are probably the single most important technology in preventing illness, disability, and death in the senior population. Appropriate use of a medication saves more than it costs in terms of reduced overall health care expenditures, lower incidence of disease, and greater productivity and functionality. However, if not properly dispensed and monitored medicines can hurt instead of help.

Today there are more than 38 million individuals aged 65 and older in the United States. By 2030, that number will nearly double to 75 million. Among seniors, who take more medications than any other age group, the risks of medication-related problems are greatly magnified. More than 200,000 people die each year from medication-related problems. Adverse drug reactions alone are between the fourth and sixth leading cause of death (Ernst and Grizzle 2001; Lazarou et al. 1998).

### Senior Care Pharmacy Facts

- Seniors have more chronic diseases and multiple conditions, so they use more prescription and over-the-counter drugs. More than 77% of seniors between the ages of 65 and 79 suffer from one or more chronic diseases. The number rises to 85% for those over age 80. (Hwang et al., Health Affairs 2001)
- Seniors represent just over 13% of the population, but consume 40% of prescription drugs and 35% of all over the counter drugs
- On average, individuals 65 to 69 years old take nearly 14 prescriptions per year, individuals aged 80 to 84 take an average of 18 prescriptions per year
- 15% to 25% of drug use in seniors is considered unnecessary or otherwise inappropriate
- Adverse drug reactions and noncompliance are responsible for 28% of hospitalizations of the elderly
- 36% of all reported adverse drug reactions involve an elderly individual
- Each year 32,000 seniors suffer hip fractures caused by medication-related problems (FDA, 1996)

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## Millions of seniors are unknowingly at risk for illness, disability, and death.

### References

Ernst F. R., Grizzle A.J. Drug-related morbidity and mortality: updating the cost-of-illness model. *J Am Pharm Assoc* 2001;41:192–9.

FDA, 1996

Hwang W., Weller W, Ireys H., Anderson G. Out of pocket medical spending for care of chronic conditions. *Health Affairs* 2001;6: 267–78.

Lazarou J., Pomeranz B.H., Corey P.W. Incidence of adverse drug reactions in hospitalized patients: a meta-analysis of prospective studies. *JAMA* 1998;279:1200–5.



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## WHAT IS A MEDICATION-RELATED PROBLEM?

**An event or situation involving drug therapy that  
actually or potentially interferes  
with an optimum outcome for a specific patient.**

Medication-related problems can be categorized EIGHT ways:

**1. Untreated conditions**

The patient has a medical condition that requires drug therapy but is not receiving a drug for that condition.

**2. Drug use without indication**

The patient is taking a medication for no medically valid condition or reason.

**3. Improper drug selection**

The patient's medical condition is being treated with the wrong drug or a drug that is not the most appropriate for the special needs of the patient.

**4. Subtherapeutic dosage**

The patient has a medical condition that is being treated with too little of the correct medication.

**5. Overdosage**

The patient has a medical problem that is being treated with too much of the correct medication.

**6. Adverse drug reactions (ADRs)**

The patient has a medical condition that is the result of an adverse drug reaction or adverse effect. In the case of older adults, ADRs contribute to already existing geriatric problems such as falls, urinary incontinence, constipation, and weight loss.



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## 7. Drug interactions

The patient has a medical condition that is the result of a drug interacting negatively with another drug, a food, or a laboratory.

## 8. Failure to receive medication

The patient has a medical condition that is the result of not receiving a medication due to economic, psychological, sociological, or pharmaceutical reasons.

## Consultant Pharmacists Taking Care of Older Adults Have a Positive Effect.

- Mrs. GT is an 85-year old white widowed female who lives alone in her home in a small town in North Carolina. Her daughter, who felt that she had become lethargic, belligerent, verbally abusive, and overweight from eating junk food and lying in bed all day, referred her mother to a consultant pharmacist. Mrs. GT recently had back surgery, but refused to participate in physical therapy because she was in pain and had no energy. She was unkempt, very uncooperative, and did not want to be bothered. Her medication, which she had taken for many years, included pain medicine, blood pressure/heart medicine, and a "nerve" pill. She felt that her physician knew what was best for her, so she was not interested in having anything changed.

The consultant pharmacist referred the daughter to a geriatrician and recommended to the physician that all of the above medications be discontinued gradually. The consultant pharmacist suggested replacing them with a routine pain medication/anti-inflammatory for her back pain, adding a narcotic one hour prior to physical therapy, an ACE-Inhibitor for her blood pressure, and an SSRI for her depression. The geriatrician agreed with these recommendations, and within two to three weeks, Mrs. GT was a different person. She was now getting up in the mornings to attend physical therapy. She began a walking program and soon lost weight. Best of all, her mood and demeanor changed dramatically. Instead of her sullen and abusive statements to her daughter, she was now talking quite pleasantly and was much happier with her life's circumstances.

- Betsy M., an 80-year-old female resident of a skilled nursing facility, has had four urinary tract infections (UTIs) over four consecutive months. She was treated with four different, progressively more expensive antibiotics and was at significant risk for a serious blood infection (urosepsis) and hospitalization. After reviewing her medical record, the pharmacist recognized that she was taking four drugs that could lead to urinary retention and increase the risk of UTIs. The physician was consulted about this risk resulting in discontinuation of two of these medications and dose reduction for the other two medications. Over the next 12 months, she experienced only one UTI, which was easily treated. Potential savings were approximately \$300-\$500 in avoided antibiotic costs and \$3,000-\$5,000 in avoided hospitalization costs.



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## THE HUMAN TOLL

### How are seniors affected by medication-related problems?

Medication-related problems (MPRs) can cause, aggravate, or contribute to common and costly geriatric problems, including:

- Confusion
- Delirium/hallucinations
- Depression
- Dizziness
- Drowsiness
- Falls
- Incontinence
- Insomnia
- Loss of coordination
- Malnutrition/dehydration
- Memory loss
- Other psychiatric problems

"Any symptom in an elderly patient should be considered a drug side effect until proved otherwise."

(Gurwitz et al. 1995)

### Which can lead to:

- Decreased quality of life
- Emergency room visits
- Hip fractures and other physical disabilities
- Hospitalization
- Loss of functional ability
- Loss of independence
- Nursing facility placement
- Physician visits
- Death

"Too often, illness in older people is misdiagnosed, overlooked, or dismissed as the normal process of aging, simply because health professionals are not trained to recognize how diseases and drugs affect older people."

(Murphy 1999)



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## The human toll

### References

Gurwitz J., Monane M., Monane S., Avorn J. *Long-Term Care Quality Letter*. Brown University. 1995.  
Murphy J. Senate Special Committee on Aging. quoted in *The Washington Post*, May 30, 1999.



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## WHAT WILL ONE OF EVERY THREE SENIORS SUFFER THIS YEAR?

### A Fall

- More than 11 million seniors—one of every three—will fall this year (Sattin 1992; Tinetti, Speechley, and Ginter 1988), and approximately one in 10 of those falls will result in a serious injury such as hip fracture or head injury (Tinetti 2003). More than 500,000 seniors will suffer hip fractures annually by 2040 (Cummings, Rubin, and Black 1990).
- Each year, 35% to 40% of generally healthy seniors living in the community fall (Campbell, Spears, and Borrie 1990). Because nursing facility residents are older, more frail, and more cognitively impaired, approximately 50% fall each year (Rubinstein, Josephson, and Robbins 1994).
- About 20% of hip fracture patients will die within five years of the fracture (Cooper 1997), yet thousands of those deaths are **PREVENTABLE**.
- Most people do not realize that falls can be a medication-related problem.
- Risk factors for falls include medication use, advanced age, decreased mobility and strength, balance impairment, neurological disease, cardiovascular disease, incontinence, visual impairment, and cognitive impairment.
- Certain medications—such as high blood pressure medications, antidepressants, sleep aids, antiseizure medications, and heart antiarrhythmic medications—can contribute to falls in the elderly for a variety of different reasons. Perhaps a drug causes dizziness in an elderly patient, and that patient has not been properly instructed on how to rise and walk while on the medication. Standing up too quickly could result in a fall. Or, perhaps a drug causes frequent urination, and a patient constantly gets up during the night. One of those bathroom trips could cause a fall, and possibly a hip fracture.

“No risk factor for falls is as potentially preventable or reversible as medication use.”

(Leipzig, Cumming, and Tinetti 1999)

### Medication-related falls and hip fractures are preventable

- Consultant pharmacists can assess seniors' drug regimens for exposure to risks that may contribute to falls, recommend drug therapy changes, and educate the patient and caregiver on how to avoid dangerous situations. Medication management is an effective fall prevention measure (Cooper 1997).



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## What will one of every three seniors suffer this year?—A FALL

### References

- Campbell A. J., Spears G.F., Borrie M.J. Examination by logistic regression modeling of the variables which increase the relative risk of elderly women falling compared to elderly men. *J Clin Epidemiol* 1990;43:1415–20.
- Cooper J. W. Reducing falls among patients in nursing homes. *JAMA* 1997;278:1742.
- Cummings S. R., Rubin S.M., Black D. The future of hip fractures in the United States. Numbers, costs, and potential effects of postmenopausal estrogen. *Clinical Orthopaedics and Related Research* 1990;252:163–6.
- Leipzig R. M., Cumming R. G., Tinetti M. E. Drugs and falls in older people: a systematic review and meta-analysis: I. Psychotropic drugs. *J Am Geriatr Soc* 1999;47:30–39.
- Rubinstein L. Z., Josephson K. R., Robbins A. Falls in the nursing home. *Ann Int Med* 1994;121:442–51.
- Sattin R. W. Falls among older persons: A public health perspective. *Annual Review of Public Health* 1992;13:489–508.
- Tinetti M. E., Speechley M., Ginter S. F. Risk factors for falls among elderly persons living in the community. *N Eng J Med* 1988;319(26):1701–7.
- Tinetti M.E., Preventing falls in elderly persons. *N.Eng J Med* 2003; 348(1):42–9.



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## A PUBLIC HEALTH PROBLEM

**More than 200,000 people die and another 2.2 million are injured each year because of medication-related problems—and seniors are the most susceptible.**

(Ernst and Grizzle 2001; Lazarou, Pomeranz, and Corey 1998).

### WHY?

- **Seniors take more medications than any other age group.** In 2000, seniors filled an average of 28.5 prescriptions per year, and it is projected they will fill an average of 38.5 prescriptions per year in 2010. (Families USA 2000).
- **The physiological changes of aging can alter how a body processes and reacts to a certain medication.**  
In the aging body, the liver and kidneys may not as easily metabolize medications. In addition, changes in the distribution of fat and muscle can make seniors more susceptible to adverse drug events.
- **Seniors have more chronic diseases and multiple conditions, so they use more prescription and over-the-counter drugs.**  
More than 77% of seniors between the ages of 65 and 79 suffer from one or more chronic diseases. The number rises to 85% for those over age 80 (Hwang et al. 2001).
- Compounding the public health problem, **seniors may not be taking the medications they need because they cannot afford them.** The elderly account for 42% of total annual drug spending in the U.S.: \$43 billion of the \$102 billion total (Families USA, 2000). Millions of seniors cannot afford the medicines they need to stay healthy. Seniors spend nearly four times as much on prescription medications than those under age 65 (Cohen et al. 2000).

In 1998, Medicare beneficiaries who did not have drug coverage filled 31% fewer prescriptions than those with drug coverage.

(Murphy 1999)



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## A public health problem

### References

- Cohen J. W., Machlin S. R., Zuvekas S. H. et al. Health care expenses in the United States, 1996. MEPS Research Findings 12. Rockville, Maryland: U.S. Agency for Healthcare Research and Quality Pub. No.01-0009. 2000.
- Ernst F. R., Grizzle A. J. Drug-related morbidity and mortality: updating the cost-of-illness model. *J Am Pharm Assoc* 2001;41:192–9.
- Families USA. Cost overdose: growth in drug spending for the elderly, 1992–2010. A report. 2000.
- Hwang W., Weller W, Ireys H., Anderson G. Out of pocket medical spending for care of chronic conditions. *Health Affairs* 2001;6: 267–78.
- Lazarou J., Pomeranz B. H., Corey P. W. Incidence of adverse drug reactions in hospitalized patients: a meta-analysis of prospective studies. *JAMA* 1998;279:1200–5.
- Murphy J. Senate Special Committee on Aging. quoted in *The Washington Post*, May 30, 1999.



# SENIORS AT RISK:

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## THE NATION'S \$200 BILLION "DISEASE"

**More money is spent to treat medication-related problems than is spent on the cost of medications.**

### The \$200 Billion Price Tag:

- In the community population, medication-related problems cost \$177.4 billion a year, a 57% increase in only five years (Ernst and Grizzle 2001):
  - Hospital admissions cost \$121.5 billion (69%)
  - Long-term care admissions cost \$32.8 billion (18%)
  - Physician visits cost \$13.8 billion (8%)
  - Emergency department visits cost \$5.8 billion (3%)
  - Additional treatments cost \$3.5 billion (2%)
- An additional \$24 billion is spent on medication-related problems in other settings:
  - \$20 billion in acute care facilities, such as hospitals (Bates et al. 1997)
  - \$4 billion in nursing homes (Bootman, Harrison, and Cox 1997)

### How do these costs compare to the amount spent on prescription drugs?

Outpatient prescription drugs cost more than \$154 billion a year, and that number is rising fast. (NIHCM 2002).



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## The nation's \$200 billion "disease"

### References

- Bates D. W., Spell N., Cullen D. J. et al. The costs of adverse drug events in hospitalized patients. *JAMA* 1997;277:307–11.
- Bootman J. L., Harrison D. L., Cox E.. The health care cost of drug-related morbidity and mortality in nursing facilities. *Arch Int Med* 1997;157:2089–96.
- Ernst F. R., A. J. Grizzle. Drug-related morbidity and mortality: updating the cost-of-illness model. *J Am Pharm Assoc* 2001;41:192–9.
- National Institute for Health Care Management (NIHCM) Research and Educational Foundation. Prescription drug expenditures in 2001: another year of escalating costs. A report. 2002.



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## HOW DO WE PREVENT MEDICATION-RELATED PROBLEMS?

**Consultant and Senior Care Pharmacists are the answer.**

Consultant and senior care pharmacists are specialists in geriatrics, geriatric pharmacotherapy, and the unique medication-related needs of the geriatric population. These experts are uniquely qualified to identify individuals who are at high risk for medication-related problems that interfere with the goals of therapy. By applying expert knowledge to seniors wherever they reside, consultant and senior care pharmacists can identify, resolve, and prevent more medication-related problems. As many as 50% of medication-related problems are preventable (Gurwitz JH et al., Am J Med, 2000).

The most important and fastest growing component of consultant pharmacy practice is **senior care pharmacy**—the delivery of high quality pharmaceutical care to at-risk seniors in home and community settings.

### Consultant and Senior Care Pharmacists:

- Ensure that a patient's drug therapy is appropriate, effective, safe, and used correctly
- Determine whether a sign, symptom, syndrome, or decline in function is medication-related
- Identify medications that may cause or aggravate common geriatric problem areas
- Serve as essential members of the interdisciplinary team

Consultant pharmacists identify and prevent medication-related problems through evaluation of patients' drug regimens, increasing the frequency of optimal therapeutic outcomes by 43%, and saving \$3.6 billion annually in costs from avoided medication-related problems.

(Bootman et al. 1997)



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## Consultant and senior care pharmacists save lives and money—and they can save more.

Unless America's seniors have regular access to a consultant or senior pharmacist to manage their medications, they will continue to suffer from medication-related problems. The current system does not provide incentives to gain positive health outcomes. As a first step, however, medication management, including pharmacists' drug therapy monitoring, has been marked as a national priority in a report by the National Institute of Medicine (Frey D., Rahman A. 2003).

Although federal legislation requires that consultant pharmacists review the drug regimens of nursing facility residents at least once a month, **no**

**such federally mandated medication management regulations exist for assisted living facilities.** Yet both the average nursing facility resident and average assisted living facility resident take approximately eight medications each day, so each faces the same risks for suffering from medication-related problems (Briesacher et al. [http:// aspe.hhs.gov/daltcp/home.htm](http://aspe.hhs.gov/daltcp/home.htm)).

Today, more than 10,000 consultant pharmacists provide services to more than 1.45 million skilled nursing facility residents, 800,000 assisted living residents, and hundreds of thousands of others in a wide variety of care environments such as community-based care, adult day care, correctional facilities, and individuals living in their own homes.

(Poisal and Murray, 2001; NCAL Data, 2001)

## How do we prevent medication-related problems?

### References

- Bootman J. L., Harrison D. L., Cox E. The health care cost of drug-related morbidity and mortality in nursing facilities. *Arch Internal Med* 1997;157:2089–96.
- Briesacher et al. [http:// aspe.hhs.gov/daltcp/home.htm](http://aspe.hhs.gov/daltcp/home.htm).
- Frey D., Rahman A. Medication management—an evidence-based model that decreases adverse events. *Home Healthcare Nurse* 2003; 21:404–12.
- Gurwitz JH et al., *Am J Med*, 2000.
- Levy H. Self-administered medication-risk questionnaire in an elderly population. *Ann Pharmacother* 2003; 37:982–7.
- Poibal J.A., Murray L., Growing differences between Medicare beneficiaries with and without drug coverage. *Health Affairs* 2001;20:74-85.
- National Center for Assisted Living. Facts and Trends 2001: The Assisted Living Source Book, Washington, DC: National Center for Assisted Living; 2001.



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## THE AMERICAN SOCIETY OF CONSULTANT PHARMACISTS

### Protecting Older Adults From Medication-Related Problems

#### Who Are America's Consultant and Senior Care Pharmacists?

The American Society of Consultant Pharmacists (ASCP) was founded in 1969 to represent the interests of its members who ensure safe and effective medication therapy for the residents of nursing facilities, mostly frail elderly patients. The term "consultant pharmacist" is rooted in federal regulations that require the services of such a pharmacist for nursing facility residents.

The over-65 age group is the fastest-growing segment of the United States population. While medications are probably the single most important factor in improving the quality of life for older Americans, the nation's seniors are especially at risk for medication-related problems due to physiological changes of aging, higher incidence of multiple chronic diseases and conditions, and greater consumption of prescription and over-the-counter medications.

Over the past 30 years, ASCP has grown dramatically, and its members have diversified and expanded their services to people who need them most—today's seniors. ASCP's members have specialized knowledge in geriatrics, geriatric pharmacotherapy, and the unique medication-related needs of the senior population. And today, ASCP members—America's Senior Care Pharmacists®—are patient advocates for all of our nation's seniors, wherever they reside.

#### Consultant and Senior Care Pharmacist's Creed

- I hold my patients' interests above all others.
- I take responsibility for my patients' medication-related needs.
- I ensure that my patients' medications are the most appropriate, the most effective available, the safest possible, and are used correctly.
- I identify, resolve, and prevent medication-related problems that may interfere with the goals of therapy.



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# THE AMERICAN SOCIETY OF CONSULTANT PHARMACISTS

## Vision, and Mission and Goals

### Vision

ASCP envisions a future in which:

- The senior population realizes improved quality of care and quality of life through the provision of pharmaceutical care.
- Senior care pharmacists are recognized and valued for their care of patients, and are essential in health care systems.
- ASCP is the acknowledged leader in senior care pharmacy practice.

### Mission and Goals

ASCP is the international professional association that provides leadership, education, advocacy, and resources enabling consultant and senior care pharmacists to enhance quality of care and quality of life for older individuals through the provision of pharmaceutical care and the promotion of healthy aging.

To fulfill this purpose, ASCP's members continuously pursue excellence as:

- **LEADERS**, defining and promoting the highest standards of practice for the senior care pharmacist
- **ADVOCATES**, working in the best interests of seniors and their pharmacists
- **EXPERTS**, providing a source for accurate information, technical expertise, and practical knowledge
- **EDUCATORS**, stimulating the professional growth and development of the senior care pharmacist
- **INNOVATORS**, providing practical, cutting-edge solutions to issues and challenges in the provision of quality pharmaceutical care
- **PARTNERS**, valued and respected by other organizations in the joint pursuit of mutual interests and common goals
- **MENTORS**, bringing together people and ideas, and providing an environment for fellowship within the profession



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