Medication Therapy Management (MTM) Programs and Services for Older Adults

“Drug therapies, when appropriately administered and properly managed, prove to be one of the most cost-effective and least invasive forms of treatment in the medical field that improves the well-being of older adults.”


Introduction: This module has been developed to provide a brief overview of the topic of Medication Therapy Management (MTM) programs and services for older adults. While prescription drugs and other medications have tremendous benefits, they can be considered inappropriate when their risk outweighs their benefit. Considering that roughly 30% of elder hospitalizations are due to preventable medication-related problems, programs designed to prevent these errors are essential to the health and well-being of Nevada’s elders. The intended audience for this training module are seniors, caregivers (informal and formal), and aging services providers (staff and volunteers).

Learning Objectives:

• Discuss the scope of medication-related problems in the United States and in the senior population.
• Identify the risk factors associated with inappropriate medication use in late life.
• Describe Medication Therapy Management (MTM) programs and services.
• Recognize the importance of Medication Therapy Management (MTM) programs and services.

Unit Objectives: Trainees will learn about the impact of medication mismanagement and polypharmacy among older adults. Trainees will be able to identify risk factors for medication-related problems and make referrals to programs designed to ensure safety and efficacy of drug regimens.

Anticipated Outcomes:

• Heightened awareness of medication-related issues affecting seniors.
• Increased knowledge of programs and services available to reduce the risks associated with medication use among elders.

Materials:

• Lesson Plan
• Power Point Presentation
• MTM Acronyms and Definitions
• A Sample Medication List (tool) for identifying all prescription drugs, nonprescription drugs (over-the-counter medications), and dietary supplements, also referred to as complementary and alternative medications (vitamins/minerals and herbal supplements) in an older adult’s drug regimen. The tool is important for listing all medications and supplements including name, strength, dose, frequency, side effects/adverse reactions when taken, reason for use, prescriber (when appropriate), and start date
• A Sanford Center for Aging (SCA) informational flyer on the Medication Therapy Management (MTM) program available to at risk Nevada seniors age 60 and older
• Reference List

Note: The terms senior, older adult, and elder are used interchangeably within the training module to describe an individual age 60 and older.

Overview of Information

Health Impact

According to The National Academies Institute of Medicine (IOM) preventable medication errors harm an estimated 1.5 million Americans each year (2007). The Federal Drug Administration (2009) reported that medication errors occur for a variety of reasons:

• Incomplete patient information
• Lack of knowledge about the drug being prescribed
• Miscommunication of drug orders
• Lack of appropriate labeling
• Confusion between drugs of similar names:
  o Acetazolamide, a glaucoma medication with Acetohexamide, used to treat type 2 diabetes
  o Prilosec, for heartburn treatment and relief with Prozac, an antidepressant
• Environmental factors such as adherence and compliance issues

The IOM (2007, 2000) defined a medication error “as any error occurring in the medication use process” (p. 37). Examples of these errors are mistakes in prescribing such as wrong strength or dosage, and prescribing a drug to a patient with a known allergy to the medication. Medication errors also include mistakes in documentation, dispensing, and delivering a medication such as a wrong dosage administered, or a monitoring error. Not all medication errors reach the patient. Adverse drug events (ADEs) are preventable injuries related to a medication error that cause physical harm (such as a hemorrhage) or mental harm (such as delirium or confusion), or loss of function (inability to walk or drive a car). ADEs increase hospital admissions, emergency department use, and fall risk especially among seniors.
If adverse reactions to medications were classified as a distinct disease, they would rank as the fifth-leading cause of death in the U.S. behind heart disease, cancer, stroke, and chronic lower respiratory diseases (Alliance for Aging Research, 1998). An estimated 30% of elder hospitalizations are due to preventable medication-related problems (Fick et al., 2003; Hanlon et al., 1997). The American Society of Consultant Pharmacists (ASCP) (2008) estimated that over 200,000 people die each year from medication-related problems (MRPs). A medication-related problem is an event or situation involving a medication that negatively affects or has the potential to negatively affect health outcomes. There are eight categories of MRPs: 1) untreated conditions, 2) drug use without indication, 3) improper drug selection, 4) subtherapeutic dosage, 5) overdosage, 6) adverse drug reactions, 7) drug interactions, and 8) failure to receive a medication (ASCP, 2004).

Inappropriate drug use is associated with a decrease in self-reported health status and an increase in adverse health outcomes (Field et. al., 2007; Fu, Liu, and Christensen, 2004). Some of the most common types of ADEs among seniors include gastrointestinal tract events, hemorrhagic events, dry mouth, urinary retention, dizziness or lightheadedness, and hypotonia or low muscle tone which can lead to falls resulting in injury (Gurwitz et. al., 2003; Lampela, Hartikainen, Sulkava and Huulponen, 2007). In fact, an estimated 32,000 seniors suffer hip fractures each year caused by medication-related problems. Other side effects include depression, confusion, general malaise, balance difficulties, sedation, skin rashes, sleep changes, diarrhea, constipation, blurry vision, and headaches.

**Economic Impact**

Beyond the negative health impacts, the costs associated with treating preventable medication-related problems in the United States have been estimated at $201 billion per year. The estimated costs added to our nation’s burgeoning health care bill per annum are: 1) $177 billion spent in ambulatory care, $20 billion in acute care, and another $4 billion in skilled nursing facilities (Ernst and Grizzle, 2001; Bates et al., 1997; Bootman, Harrison, and Cox, 1997).

**Medications and Older Adults**

Overall, seniors represent approximately 12.6% of the population, yet consume 40% of all prescription drugs and 35% of all nonprescription medications. On average, an older adult takes four prescription drugs and two nonprescription drugs (FDA, 2003). Eighty-five percent of seniors take one or more medications and 73% of seniors with three chronic health conditions consume five or more medications on a regular basis (Skufca and Torrisi, 2007). Of all the medications used by seniors, approximately 15-25% is considered unnecessary or otherwise inappropriate.

The United States Food and Drug Administration (FDA) have an Adverse Event Reporting System that collects information on adverse drug events (ADEs). Researchers Moore, Cohen and Furberg (2007) reviewed this data over an eight year period (1998-2005) and found a total of 467,809 adverse drug events. Alarmingly, serious and fatal ADEs had almost a three-fold increase from 34,966 in 1998 to 89,842 in 2005. During the same time period, fatal ADEs increased from 5,519 to 15,107. Over 17% of the cases reported a death outcome and 7% of the cases resulted in permanent disability or other serious outcome. Over 33% or one-third of the ADEs was reported among patients age 65 and older.
This data is voluntarily reported to the FDA by drug manufacturers and others; therefore, the true impact of these ADEs is potentially much greater.

**Supplements and Older Adults**

When examining an elder’s entire drug regimen for safety and effectiveness, nutritional supplements (vitamins/minerals and herbal supplements) must be considered in the analysis. “There are approximately 30,000 supplements available on the U.S. market, many of which have not undergone testing to ensure security and effectiveness” (Dorner, 2008, p. 14). Physicians and others are concerned with:

- Contamination
- Effectiveness
- Taking supplements over eating food
- Interference with the metabolism of medications, and
- Toxicity

Dorner (2008) examined data from the Framingham Heart and Offspring Studies and found that an estimated 59% of older women and 43% of older men age 67-96 reported taking complementary and alternative medications (nutritional supplements). 10-14% of these supplements were herbs. In a recent survey, researchers found that an estimated 69% of older adults using complementary and alternative medicines do not tell their physicians. When researchers asked why, the survey respondents reported that their physician never asked (AARP, 2007).

**Why are Seniors at an Increased Risk for Medication-Related Problems?**

Seniors have an aging physiology and may:

- Consume multiple medications and sometimes inappropriately (Hanlon et al., 1997; Gandhi et al., 2003). Polypharmacy occurs when an individual has been prescribed more medications than is clinically indicated. That is, there are taking medications that are unnecessary.
- Not assimilate (digest) medications the way they did when they were middle-aged or younger.
- Have multiple chronic health conditions and diagnoses (FDA, 2003; Atkin, Veitch, Veitch and Ogle, 1999; Chrischilles et al., 2007; Green, Hawley and Rask, 2007).
- See multiple health care providers (Green, Hawley and Rask, 2007).
- Have prescription drugs filled at multiple pharmacies (Oladimeji, Farris, Urmie and Doucett, 2008).
- Be reluctant to questions their physician(s) about the medications they are taking (Atkin, Veitch, Veitch and Ogle, 1999; Tangalos and Zarowitz, 2006).
- Have no one person or provider managing their medications or reviewing their entire drug regimen (FDA, 2003; Atkin, Veitch, Veitch and Ogle, 1999; Chrischilles et al., 2007).
Medication Therapy Management (MTM) Services for Seniors

MTM programs have demonstrated effectiveness in optimizing therapeutic outcomes and preventing the risks associated with medication use in late life. MTM program and services are effective in:

- Educating seniors about the medications they are taking
- Detecting and prevent harmful drug interactions or adverse drug events
- Encouraging communication and strong partnership between the older adult and their physician(s)
- Empowering seniors to advocate on their own behalf
- Increasing health literacy and improve health outcomes
- Providing physicians and other health care providers with a tool for providing the best patient care
- Informing caregivers on how to best care for their care recipient especially those with complex drug regimens

In 2006, a consensus definition was developed by the Academy of Managed Care Pharmacy (AMCP) and their partner stakeholders (AMCP, 2006). The full report, Sound Medication Therapy Management Programs, and supplement (2008) can be accessed at http://www.amcp.org/amcp.ark?p=AA8CD7EC.

Examples of MTM Programs and Services

1) Wise Use Campaign, AARP (2007) – an example of a research study utilizing brown bag medication reviews and surveys of participants and volunteer pharmacists who conducted the medication reviews.

2) A joint initiative of the National Council on Aging (NCOA) and CVS Pharmacy (2008), “Pack Your Bag: Free Medication Consultation” program:
   - Nationwide program where local CVS pharmacists visit senior centers in selected communities
   - Conduct educational sessions discussing drug interactions and effective medication management techniques
   - One-on-one counseling with seniors to review medications and respond to questions

3) Research study translated to clinical service program (see MTM in Nevada below)
   - Sanford Center for Aging (2001 – 2005)

4) The Medicare Prescription Drug, Improvement and Modernization Act of 2003 established the Medicare Prescription Drug Program otherwise known as Medicare Part D. The program was implemented in 2006 and includes the availability of Medication Therapy Management (MTM) services to beneficiaries enrolled in Part D.
5) Computer-based pharmacy software systems utilized by retail drug chains, the Department of Veterans Affairs (VA) or Catalyst Rx, a pharmacy benefit manager. However, alerts prompted by these systems are dependent on the medications recorded and may not include over-the-counter (nonprescription drugs) or supplements.

**MTM in Nevada**

In 2005, the Sanford Center for Aging’s (SCA) Medication Therapy Management (MTM) program was translated from a research study to a clinical service program. The goal of the program is to identify potential medication-related problems and recommend geriatric-specific solutions before problems result in an emergency or unnecessary hospitalization. The program aims to:

1. Educate seniors and their physicians about polypharmacy and medication mismanagement
2. Provide MTM review services to Nevada’s most in need seniors age 60 and older taking five prescription drugs or more
3. Decrease the number of medications seniors consume while maintaining the same level of care
4. Reduce the potential for medication-related errors, and
5. Reduce the cost of medications (when appropriate) for seniors by recommending therapeutically equivalent, less expensive medications based on the senior’s prescription drug benefit

Clinical Certified Geriatric Pharmacists (CGP) review an elder’s entire drug regimen for Rx/Rx interactions, Rx/OTC interactions, Rx/Supplement interactions, OTC/Supplement interactions, Rx/disease state interactions, duplications, high risk or inappropriate drug use, untreated medical conditions, dosage amount, strength, administration schedule, cost, etc. and makes recommendations in the form of a report that is provided to the senior and their primary care physician. Copies of the MTM Client Report are also provided for each of the senior’s specialists.

An informational flyer has been included with the training materials. For more information on this program, please visit: [http://www.unr.edu/sanford/programs/medtherapy.html](http://www.unr.edu/sanford/programs/medtherapy.html)

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**Importance of Family Members and Caregivers**

The vast majority of caregiving in the United States is informal and provided by family members, friends, or neighbors. According to the Family Caregiver Alliance (2010), there are over 44 million Americans age 18 and older providing unpaid assistance to seniors and adults with disabilities. These individuals are truly the unsung heroes in elder care. They can also be instrumental in ensuring that an elder is taking medications appropriately and according to the directions on the label.
Caregivers have specific knowledge of the care recipient and can:

- Monitor changes and identify when an actual or potential medication-related problem is occurring
- Help prevent unnecessary hospitalizations, nursing home or assisted living admission due to an adverse drug event
- Maintain a complete list of ALL medications and complementary and alternative medications (see the Medication List tool that accompanies this training)
- Help manage or assist a care recipient with self-administering their medications so they receive the proper medication according to label
- Advocate for the care recipient (where appropriate)
- Share information with the senior’s health care team

**Conclusion**

More medication is not necessarily better. As new prescription drugs are added to a senior’s drug regimen, seniors need to be clear about what the medication is for, how and when to take the medication, and whether or not a new prescription drug is one that has been added to treat a side effect of another primary medication. This is often referred to as cascading. Seniors should ask their health care professional if the first drug can be re-evaluated and either stopped, adjusted, or replaced with another medication.

Medications are designed to be taken according to the instructions on the label. While this training module does not discuss the issues of non-adherence per se, older adults must take extra care and due diligence when taking (administering) their medications especially those with complex drug regimens.

Annual medication therapy management reviews by qualified health care professionals and certified geriatric pharmacists are an important way to ensure that everything in a senior’s drug regimen is safe, effective, appropriate, and therapeutically sound (IOM, 2007).

Vitamins/minerals and herbal supplements are not regulated by the United States Food and Drug Administration. Oftentimes, these complementary and alternative medicines are marketed as “natural.” However, just because they are labeled “natural” does not mean they cannot be toxic at certain levels or negatively interact with a prescription drug or over-the-counter medication. When in doubt, seniors should seek consultation with their physician(s), health care provider, or pharmacist.

Seniors need to ask questions and inform their physician(s) about all the prescription drugs, non-prescription drugs (over-the-counter medications) and complementary and alternative medications they are taking on a regular basis including those taken only when needed. When making doctor’s appointments, seniors can ask for an extended office visit specifically for a drug consultation. These appointments will provide extra time during the office visit (please check with your provider or insurance company first).
When at all possible, a senior should purchase their prescription drugs from one pharmacy. When all the elder’s prescription drugs are entered into one computer system, it allows for detection of potentially harmful interactions or duplications. The pharmacist can then notify the prescribing health care professional.

Older adults should not misinterpret drug side effects as “normal signs of aging,” because in many instances they are not! Even prescription drugs that have been tolerated for many years (often referred to as maintenance medications); can begin to cause negative side effects when other medications are introduced into the senior’s drug regimen. An important question is, “When was the last time the medication was re-evaluated?” Further, our bodies change as we age. A medication that was easily tolerated as a young adult, may not be tolerated at age 60, 70, or older.

“Conversation is the best medicine.”

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