

# A Systematic Approach to Drug Regimen Review

## INTRODUCTION

This article is the third in a three-part series exploring drug regimen review (DRR) over the last 30 years. In the first part, we explored the early history and evolution of DRR, including the introduction and refinement of federal guidelines and the goals of systematic DRR in nursing facilities.<sup>1</sup>

Part two presented a framework for DRR.<sup>2</sup> With the framework in place, the consultant pharmacist still requires a systematic approach to the comprehensive DRR process. Where does one begin? How does one ensure that important issues are identified and addressed? One tool that may be helpful is a checklist. Table 1 provides such a checklist in the form of a series of questions that may be used to conduct a DRR.

These questions are in a specific order. The first two relate to the indications for drug therapy. If a drug is not indicated or needed by the resident, it should be called into question or discontinued. In that event,

the rest of the questions are not applicable.

If the medication is indicated, the next two questions address its effectiveness. Is this the right medication for the problem and for the patient, and is the dose adequate? If not, a consultant pharmacist should recommend a change in the medication or dose.

If the medication is indicated and is achieving the desired therapeutic objective, the next issue is the safety of the drug or drug regimen. Does the long-term care resident show signs of adverse drug effects or toxicity from the medication? Are there significant drug interactions that need to be addressed? Again, the pharmacist may need to recommend a change in medication or dose.

The next issue to address is moni-

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REVISITING  
D R U G  
REGIMEN  
REVIEW  
PART III

**TABLE 1. DRUG REGIMEN REVIEW CHECKLIST**

**Drug Indications**

- Does each prescribed medication have a current and valid indication?
- Does the resident have conditions or indications for which medications would be appropriate but are not being used?

**Medication Effectiveness**

- Is the medication appropriate for the indication being treated?
- Is the dose of medication adequate?

**Medication Safety**

- Is the dose of medication excessive?
- Is the resident experiencing signs or symptoms of adverse medication effects?
- Is the resident experiencing a problem resulting from a drug-drug, drug-food, or drug-laboratory test interaction?

**Medication Monitoring**

- Are monitoring parameters in place to evaluate medication effectiveness and safety?
- Do results of medication monitoring indicate a need for intervention?

**Medication Errors**

- Is there evidence of a medication error?

**Medication Cost**

- Do any issues related to medication cost need to be addressed?

toring of the medication. Are appropriate monitoring parameters in place to evaluate effectiveness of the drug regimen or any adverse effects? If not, monitoring parameters, such as laboratory tests, may need to be recommended. Do the results of existing monitoring parameters indicate a need for reevaluation of therapy or dose? If so, the consultant pharmacist should notify the prescriber or the appropriate facility staff.

The DRR process also provides an opportunity to identify potential errors in prescribing or transcribing drug names. Because of similarity of some drug names, or breakdowns in communication, errors may occur in the process of prescribing or transcribing medication orders. Consultant pharmacists should investigate possible discrepancies.

The final issue that may need to be addressed is the cost of the medication. In the next section, each of these areas will be discussed in more detail, with examples to illustrate key points.

**How DRR Works**

**UNNEEDED MEDICATIONS**

One of the most common recommendations of the consultant pharmacist is to discontinue unneeded medications. In geriatrics, it is not uncommon to see patients receiving medications that have no currently valid indication or reason for use. Medications may be continued past the time when they are needed or may have been

started without adequate justification. Prescribers are sometimes reluctant to discontinue medications that were started by another physician, even if they do not see a current need for the medicine.

An important role of the consultant pharmacist is to evaluate the need for medications. The greater the number of medications used, the greater the likelihood of adverse drug reactions and drug interactions—and the higher the cost of the drug therapy. Unneeded medications also can result in extra physician or emergency room visits or hospitalization. It is important to ensure that residents receive no more medications than are needed for treatment.

*Example 1: A. C. is an 86-year-old nursing facility resident who has an indwelling urinary catheter. While conducting a review of the drug regimen, the consultant pharmacist noted that A. C. was receiving oxybutynin, a medication for urinary incontinence. The oxybutynin had been started prior to placement of the urinary catheter, but had not been discontinued when the catheter was initiated. The prescriber was contacted and the medication was discontinued.*

#### UNTREATED INDICATIONS

A number of conditions have been found to be undertreated in nursing home residents, including depression, pain, and osteoporosis. Pharmacists can help identify residents for whom treatment may be indicated and suggest treatment options to the pre-

scriber. Two important caveats must be mentioned, however. First, pharmacists are generally not trained in diagnosis. Before specific treatment is initiated, a diagnostic evaluation by the physician or other trained health professional is needed to confirm the diagnosis.

Second, in geriatrics, the presence of an indication does not automatically mean that treatment is desirable or appropriate. In the frail elderly, the potential for adverse effects from the treatment may be greater than the benefit received. For residents near the end of life, even mild side effects may outweigh the benefit of a treatment that is designed to prevent long-term complications or problems. Treatments that improve one condition may worsen a co-existing condition. Sometimes, the most appropriate course of action is not to treat a particular diagnosis or condition. When dealing with untreated indications, the pharmacist should be particularly cautious about treatment recommendations.

*Example 2: B. D. is a 69-year-old resident of a nursing facility. While reviewing the medications, the consultant pharmacist notes the absence of any documentation that the resident has received, or been offered, pneumococcal vaccine. This vaccine is recommended for all persons aged 65 and over. The pharmacist notifies the physician and the resident is immunized soon afterwards.*

Unneeded medications also can result in extra physician or emergency room visits or hospitalization. It is important to ensure that residents receive no more medications than are needed for treatment.

### USE OF INAPPROPRIATE MEDICATION

Selection of a medication for an older adult must be done carefully. In addition to the diagnosis, a number of other factors need consideration, such as renal and hepatic function, co-morbidities, concomitant medications, age, and body weight.

Medications may be inappropriate for the elderly, either because they are unlikely to be effective for a specified condition or problem, or because the potential for harm is greater than the potential for benefit from the particular medicine. An example would be using an antibiotic to which an organism has demonstrated resistance.

Since older adults are often more sensitive to medication effects, they may be more likely to manifest certain types of adverse reactions. A panel of experts, led by geriatrician Mark Beers, developed a list of medications that are generally considered inappropriate for use in the elderly.<sup>3</sup> These “Beers list” medications generally are considered to have greater risks than benefits in the elderly. Two articles in *The Consultant Pharmacist* have explored these drugs in more depth.<sup>4,5</sup> An update to the Beers list medications is expected to be published later this year.

*Example 3: D. G. is an 81-year-old nursing facility resident receiving amitriptyline for depression. She is taking two different laxatives for chronic constipation. The consultant pharmacist realizes that amitriptyline is very constipating and is*

*on a list of drugs (Beers list) that is generally considered inappropriate for use in the elderly. After discussion with the physician, the medication is changed to a different class of antidepressant.*

The use of these Beers list medications is not always inappropriate. If the medication is producing benefit to the resident without significant adverse effects, it may be appropriate to continue the therapy. The pharmacist can document the rationale in the medical record on these occasions. Consider the following example:

*Example 4: M. S. is a 73-year-old nursing facility resident admitted with diagnoses of depression and diabetic neuropathy and is receiving amitriptyline for these conditions. Facility assessments indicate M. S. is no longer depressed, and the painful, burning sensations of her lower extremities have been greatly reduced. The consultant pharmacist recognizes the potential for amitriptyline to be inappropriate in the elderly. However, in this situation the pharmacist recommends the continued use of this medication and documents that rationale in the health record.*

### UNDERDOSING OF MEDICATIONS

Underdosing is when the patient has a medical problem that is being treated with too little of the correct medication. Some medications are subject to underdosing in the elderly. Pain medications are one example. An important role of the consultant pharmacist is to identify this underdosing and

intervene to help achieve the desired therapeutic response.

*Example 5: C. W. is an 83-year-old resident with osteoarthritis. She has an order for a routine pain medicine, but frequently has moderate to severe pain a few hours before her next dose is due. The pharmacist contacts the prescriber and arranges for the medication to be given more frequently.*

### EXCESSIVE DOSING

Excessive dosing occurs when the patient has a medical problem that is being treated with too much of the correct medication. Due to low body mass, impaired or diminished renal or hepatic function, and increased sensitivity to many medications, doses may need to be adjusted downward to avoid toxicity in the frail elderly. However, prescribers often overlook the need for reduced medication doses in the elderly. An important function of the consultant pharmacist is to identify these potential excessive doses and intervene to help prevent toxicity or undue adverse effects.

*Example 6: M. R. is a 79-year-old male resident who is receiving digoxin 0.25 mg daily for heart failure. During the DRR the pharmacist notes that the patient has recently experienced weight loss associated with loss of appetite. Since these are possible symptoms of digoxin toxicity, the pharmacist contacts the physician to suggest that the digoxin be held until a serum level can be done to check for digoxin toxicity. The dose of digoxin is ultimately reduced to 0.125 mg daily.*

### **ADVERSE DRUG REACTIONS**

The frail elderly are at high risk for adverse effects from medications. In addition to the typical adverse effects (e.g., nausea, constipation), medications can cause or contribute to a variety of common geriatric problems, such as falls, urinary incontinence, and dementia or mental confusion. In the elderly, adverse effects of medications are often not recognized. Instead, these symptoms may be attributed to underlying medical conditions or "old age." An important function of the consultant pharmacist is to assist in recognizing medication adverse effects and intervening to prevent or reduce them.

*Example 7: N. J. is an 88-year-old female resident who has fallen twice in the past two weeks, fortunately without serious injury. In reviewing the medications, the consultant pharmacist finds that this resident is taking several medications that can increase the risk of falls. The pharmacist suggests changes to the medication regimen to decrease the fall risk.*

### **DRUG INTERACTIONS**

As the number of prescribed medications increases, the risk of drug-drug and drug-food interactions multiplies. The consultant pharmacist can help prevent drug interactions by educating facility staff about common drug interactions, as well as identifying drug interactions during the drug regimen review process.

*Example 8: L. L. is a 90-year-old resident with congestive heart failure. Therapy was initiated recently with an ACE inhibitor. The resident had previously been taking furosemide and potassium chloride, which were both continued. During the DRR the pharmacist notes that the resident's serum potassium has been increasing in recent months and is now slightly above the upper limit of the normal range. Since ACE inhibitors can cause or contribute to hyperkalemia, the pharmacist suggests that the potassium chloride supplement be reduced or discontinued.*

#### **MEDICATION MONITORING**

Medication monitoring includes the assessments necessary to determine achievement of the medication's therapeutic objectives and to minimize the likelihood of adverse effects. This can include laboratory assessments, physical assessments (e.g., vital signs), depression scales, mental-status exams, abnormal movement scales, or other evaluations. Consultant pharmacists frequently recommend laboratory or other monitoring to help ensure safety of medications or to determine whether the therapeutic objective is being achieved with the drug therapy.

Consultant pharmacists also should review results of medication monitoring and intervene if these results indicate a need for action that has not already taken place. Depending upon individual states' professional practice regulations, pharmacists (in collaboration with the physician)

may order laboratory tests or conduct specialized services such as anti-coagulation clinics or pharmacokinetic dosing of aminoglycosides or other medications.

*Example 9: R. B. is a 78-year-old female resident who is receiving insulin for diabetes. Although blood sugars are being monitored frequently, no glycosylated hemoglobin test results are in the medical record and the test has not been ordered. The consultant pharmacist requests that this test be conducted.*

#### **MEDICATION ERRORS**

In the nursing facility environment, consultant pharmacists are alert to signs of medication errors during the medication reviews. Working with the staff of the facility to identify problems and improve the medication use system is an important part of the pharmacist's responsibility.

The National Coordinating Council on Medication Error Reporting and Prevention has defined medication error as "Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging, and nomenclature; compounding, dispensing, distribution, administration, education; monitoring; and use."<sup>6</sup>

Prescribers often overlook the need for reduced medication doses in the elderly. An important function of the consultant pharmacist is to identify these potential excessive doses and intervene to help prevent toxicity or undue adverse effects.

*Example 10: During a DRR, the consultant pharmacist noted that M. M. was receiving Lispro insulin 10 units subcutaneously daily. Lispro insulin is rapidly acting and is usually given 15 minutes before a meal. Upon checking with the prescriber, the pharmacist found that the physician intended to order Lantus insulin. Lantus insulin is long-acting and is usually given once daily.*

*Example 11: P. G. is an 85-year-old female who was recently admitted to the nursing facility. While reviewing a medication administration record on a resident, the pharmacist observes a note written next to a new medication order: "Medication not given because not received from the pharmacy." The new medication was not started until four days after it was ordered. The pharmacist contacts the director of nursing to help develop strategies to prevent this problem from occurring in the future.*

### **DRUG REGIMEN REVIEW— RAISING THE BAR**

ASCP has been actively working to demonstrate the value of DRR through the Fleetwood Project, conducted by the ASCP Research and Education Foundation. Phase III of the Fleetwood Project is now under way, evaluating a model for prospective DRR. Many problems related to medication use in the elderly can be detected at the point of prescribing (or admission to the long-term care facility). Early intervention can help prevent or minimize the impact of medication-related problems in older adults.

With this series of articles, a framework has been presented for DRR. The goal of consultant pharmacists should be to work with prescribers and facility staff to optimize drug therapy for residents. To achieve this result, a systematic approach to DRR is important. Understanding the context of DRR, the care process, and the elements of DRR provided in Table 1 will provide the pharmacist with a sound foundation for success.

To build on this foundation, ASCP has undertaken a project to support the critical DRR function of consultant pharmacists. The plan is to develop a variety of new DRR "indicators." These indicators will be posted on the ASCP Web site this summer. The new ASCP DRR indicators will be located at: [www.ascp.com/drr](http://www.ascp.com/drr).

These new indicators will be based on the DRR framework in part 2 of this series.<sup>2</sup> Any ASCP member may suggest DRR indicators in any category. ASCP also is establishing an expert panel of consultant pharmacists to review submissions and finalize indicators for posting on the ASCP Web site. More details will be available on the ASCP Web page noted above.

With this project, ASCP hopes to "raise the bar" on pharmacy consulting and provide practical guidance to consultant pharmacists on optimizing drug therapy for long-term care residents. This also provides an opportunity for ASCP members to share problems they have identified with their colleagues, so that the same or similar problems can be identified

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and corrected in other facilities.

With this series of articles in *The Consultant Pharmacist* and the new Web-based initiative, consultant pharmacists have additional tools to enhance the DRR process and help long-term care residents achieve optimal results from their medications. ☞

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