Since its initial development in the late 1960s, drug regimen review has been established as an essential component of nursing facility-based pharmacy practice and pharmacotherapy quality assurance. More than three decades later, the concepts and tools of DRR continue to evolve.

Although it has been a core component of consultant pharmacy practice for more than 30 years, drug regimen review (DRR) continues to evolve to accommodate many new additions to the increasingly complex medication armamentarium, and the changing needs of long-term care patient populations.

In the first article in this three-part series, we explored the early history and evolution of DRR, including the introduction and refinement of federal interpretive guidelines and survey indicators, the various forms of medication review developed over the past three decades, and the goals of systematic DRR in nursing facilities.1

This article will focus on the conceptual underpinnings and methods of DRR within the broader context of the overall patient care process, how DRR fits in with the pioneering work of Charles Hepler and Linda Strand to define pharmaceutical care and major categories of medication-related problems (MRPs), and a framework for performing DRR to reduce MRPs and optimize...

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REVISITING DRUG REGIMEN REVIEW PART II
pharmacotherapy and overall patient care outcomes.

The Care Process
First of all, conducting an effective review of a nursing facility resident’s drug regimen requires an understanding of the process of patient care. Understanding this process will enable the pharmacist to better collaborate with other members of the multidisciplinary team. The care process can be summarized as consisting of four distinct components or steps:

1. Identification and assessment
2. Diagnosis
3. Treatment
4. Monitoring

To illustrate the care process, consider the hypothetical example of an elderly nursing home resident who develops a cough. In the first step, someone must recognize that a cough exists and conduct an initial assessment. Is the cough productive or non-productive? How frequent is the coughing? Is there fever or other symptoms associated with the cough? The results of this initial identification and assessment must then be communicated to the attending physician (or equivalent, such as a nurse practitioner).

In the second step of the patient care process, the practitioner must make a diagnosis of the patient, identifying the underlying cause of the identified problem. In our hypothetical case, a number of key questions must be answered: Is the cough due to a common cold, influenza, or pneumonia, or is it a symptom of emergent congestive heart failure? Could the cough be a side effect of a medication, such as an angiotensin-converting enzyme inhibitor (e.g., captopril, lisinopril)? The answers to these and other pertinent questions will largely dictate the best approach to treatment.

During treatment, the patient should be monitored to determine if the treatment is working (effectiveness) and to determine if treatment is producing undue adverse effects.

In the care of older adults, the care process often breaks down due to poor communication among various caregivers. With poor adherence to the care process, medications may be used inappropriately. Here are some issues to consider in each of the steps.

Identification and Assessment
In a seminal article published in 1997, a team of prominent geriatricians concluded, “Any symptom in an elderly patient should be considered a drug side effect until proved otherwise.” Unfortunately, medication use is often the last factor to be considered when an older adult develops a newly emergent symptom. Medications often cause or contribute to many geriatric syndromes, such as falls, urinary incontinence, delirium, and mental status changes.

This initial step may be even more difficult to perform in the assisted living setting, where services are often provided by caregivers without formal training in patient assessment. Significant changes in the status of the resident may go undetected, or be erroneously attributed to “the aging process” or existing medical conditions. For those and other reasons, involvement by a nurse is extremely helpful in recognizing and assessing resident symptoms or changes.

Diagnosis
In the long-term care setting, the second step in the patient care process—diagnosis—is often conducted without a personal visit by the practitioner. In that scenario, the information provided to the practitioner by the nurse or other direct caregiver becomes especially critical to successful diagnosis and determination of the underlying cause of the condition. When the symptom is treated without the crucial step of diagnosis, the treatment will often be inappropriate. Patients may receive unneeded medications, and underlying conditions may go undiagnosed and untreated.
To be effective, the nurse or caregiver needs keen observational skills, familiarity with the resident, and good communication skills to assist in diagnosing the problem. With an accurate diagnosis, an appropriate treatment can then be selected.

**TREATMENT**

The treatment phase of the patient-care process should be based on the diagnosis, rather than designed to simply address presenting symptoms. Questions that should be asked before initiating treatment include the following:

- Does the problem or condition require treatment?
- What goal or objective is to be accomplished by treatment?
- Do the expected benefits of treatment outweigh the expected risks?

In the frail elderly patient, it is important to recognize that not every symptom or problem that occurs will warrant treatment. The side effects of a treatment may sometimes be worse than the condition being treated, or treatment of one condition may cause worsening of a coexisting condition.

**MONITORING**

Monitoring of drug therapy for effectiveness and potential adverse effects is a critical step—but one that is often not performed effectively. Monitoring of vital signs,
laboratory test results, or other parameters may be necessary, depending on the properties of the medication being used. In the assisted living environment, prescribers need to be especially careful to clarify expectations regarding the monitoring of medications, as unskilled caregivers may not know to conduct monitoring of a pulse or blood pressure with certain medications.

Consultant pharmacists have a critical role in effective monitoring of the resident. The consultant pharmacist may recommend monitoring parameters for use in the resident, and also review results of monitoring to help evaluate the results of therapy and recommend any needed changes.

The DRR Framework
In 1990, pharmacists Charles Hepler and Linda Strand published a seminal article advocating pharmaceutical care as the mission for pharmacists. In an article published in 1997, Strand further developed the concept of pharmaceutical care by not only defining it as a process, but also incorporating a role for pharmacy practitioners to act as advocates, using the process of pharmaceutical care to improve patient care outcomes:
Pharmaceutical care is a practice in which the practitioner takes responsibility for a patient’s drug-related needs and holds himself or herself accountable for meeting these needs.

A 1996 ASCP policy statement based on those concepts states:

Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life. These outcomes are: cure of a disease, elimination or reduction of a patient’s symptomatology, arresting or slowing of a disease process, or preventing a disease or symptomatology.

Pharmaceutical care involves the process through which a pharmacist, in cooperation with a patient and other health professionals, designs, implements, and monitors a pharmaceutical care plan that will produce specific therapeutic outcomes for the patient. This in turn involves three major functions performed by the pharmacist: identifying potential and actual drug-related problems, resolving actual drug-related problems, and preventing potential drug-related problems.

In their much-referenced 1990 article, Hepler and Strand identified eight types of medication-related problems (see Table 1 for detailed descriptions):

- Untreated indication
- Drug use without indication
- Improper drug selection
- Subtherapeutic dosage
- Overdosage

**A Drug Regimen Review Glossary**

**Adverse drug event**: An injury resulting from use of a medicine (or lack of use of a prescribed medicine)

**Adverse drug reaction**: Any unexpected, unintended, undesired, or excessive response to a medicine that:
- Requires discontinuing the medicine
- Requires changing the medication therapy
- Requires modifying the dose (except for minor dosage adjustments)
- Necessitates admission to a hospital
- Prolongs stay in a health care facility
- Necessitates supportive treatment
- Significantly complicates diagnosis
- Negatively affects prognosis, or
- Results in temporary or permanent harm, disability, or death

**Medication error**: 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.

**Medication-related problem**: An event or situation involving drug therapy that actually or potentially interferes with an optimum outcome for a specific patient (see Table 1 for descriptions).

**References**:
Adverse drug reactions
- Drug interactions
- Failure to receive medication

The framework provided by Hepler and Strand is focused on the ambulatory care of all patients, and it provides a starting point for understanding the DRR process. The first seven of the MRP categories listed above are focused on the patient or nursing facility resident. In the institutional setting, failure to receive a needed medication constitutes a failure of the facility’s medication use process. As the consultant pharmacist is responsible for advising the facility on all aspects of the medication use process, DRR provides an opportunity to identify system deficiencies and recommend improvements. So the focus of the eighth item on the Hepler and Strand list could be broadened to encompass medication errors when reviewing residents of an institutional setting, such as a nursing facility or of an assisted living facility.

The issue of medication monitoring is not specifically recognized in the Hepler and Strand framework, although it is an essential component of pharmaceutical care. Medication monitoring is particularly important in geriatrics. Medications are monitored both for evaluation of effectiveness and for the presence of toxicity or adverse effects. For purposes of conducting a DRR, it may be helpful to consider medication monitoring as a separate category.

**Closing Notes**

A final issue that bears at least brief mention with regard to DRR is medication cost. When the nursing facility or assisted living facility resident is paying for medications directly, or when third-party programs impose barriers to medication access (e.g., formulary lists, prior approval requirements), consultant pharmacists may be called upon to provide assistance in dealing with cost issues. Because nursing facilities are responsible for care of the residents, the consultant pharmacist can work with facility staff and prescribers to identify suitable alternatives to certain medications or help overcome other medication access barriers. With these points in mind, a framework can be assembled to help guide and focus the DRR process (see Table 1, page 510).

The final article in this three-part series will describe the DRR framework in greater detail and provide examples of each category of MRP to be addressed, as well as a checklist tool to help systematize and organize the medication review process. ☞

**References**