



Managing A Complex Drug Regimen

The elderly are more susceptible to adverse drug reactions than younger people, especially when they are taking multiple medications.

WHILE INDIVIDUALS AGE 65 and older comprise just 13 percent of the U.S. population, analysts estimate they consume nearly 30 percent of all prescription medications dispensed, with about six in 10 elders taking one or more prescription drugs, according to the National Institute on Drug Abuse (NIDA).

Such statistics illustrate the obvious fact that appropriate drug therapies have become a common and necessary adjunct for the prevention of illness and management of disease.

But medications can sometimes result in adverse reactions, especially in the elderly, and the probability of such reactions is vastly increased when an older individual uses multiple medications as part of a complex drug regimen (polypharmacy). With each drug co-administered, the likelihood of an adverse interaction increases exponentially, experts agree.

Most elderly individuals are prescribed an average of three to five medications, says NIDA, and nearly 46 percent of all elderly individuals admitted to U.S. hospitals may be taking at least seven medications.

NIDA has issued a new research report that states about 17 percent of adults aged 60 or older may be affected by prescription drug abuse.

The report notes that elderly persons use prescription medications three

that the body's ability to metabolize many medications decreases with age.

Side Effects, Interactions

Even when careful attention is paid in advance, however, medication side effects or interactions that are secondary to advanced age or various illnesses may occur in the elderly. Those who care for the elderly must closely monitor any changes in a patient's condition with the full knowledge that older people are particularly sensitive to adverse effects, toxic reactions, and interactions of many drugs.

Pharmacokinetic alterations may be caused by changes in absorption, distribution, or elimination via metabolism in the liver or in excretion by the kidneys, according to Hughes and Pollock. Renal function weakens with aging, but hepatic function is not reduced as much, unless the liver is diseased, the authors say.

The sites of drug action include cell surface and intracellular receptors, enzymes, and membrane ion channels,



times as frequently as those in the general population and have the poorest compliance rates with regard to following directions when taking their medications.

Other data suggest that elderly patients may be inappropriately prescribed high doses of some medications—often for longer durations than for younger adults—despite the fact

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say Cusack *et al.* Receptors control the quality of the drug's influence and its biological activity. Drugs may block receptors (antagonists) or activate them (agonists).

Medications tend to accumulate if multiple drugs are used concurrently, resulting in an overload of the metabolic pathways, says Casey, and if several drugs use the enzyme pathways in hepatic metabolism, for example, inhibition or induction of the enzyme results in adverse effects and drug-drug interactions. For example, fluoxetine inhibits the metoprolol-metabolizing enzyme, and the metoprolol concentration may consequently increase and cause bradycardia (slow heartbeat), says Pollock (1998). The pharmacodynamic (the ways drugs affect the body) changes induced by aging are not nearly as clear-cut as the pharmacokinetic (drug action) changes.

Pharmacodynamics reflect an organ-specific response and a homeostatic counter-relation (postural hypotension—a sharp drop in blood pressure in position changes), which is altered by aging. Nerve degeneration as a result of aging or disease and psychotropic medications, for example, can cause disorders in neurotransmission in the receptors responsible for memory and learning (Gray, 2002).

Absorption is usually minimally changed in advancing age. The distribution of medications is altered because of the increasing fat-to-muscle ratio and the decrease in total body water.

Many drugs, including many psychotropics, are highly lipophilic (fat-binding), causing prolonged half-life and drug accumulation in the elderly, Pollock says. The half-life of diazepam, for example, increases from 35 hours in a younger individual to as much as 100 hours in an older individual, according to Klotz *et al.* The half-lives of benzodiazepines increase upon aging, and even short-acting drugs have a prolonged effect in the body.

Because drug interactions are dose-



KEY QUESTIONS

The following are important questions that elderly patients and their caregivers should consider carefully prior to a physician prescribing new medications:

- Does the patient take herbs, vitamins, or over-the-counter products?
- Does the patient need to take medicine(s) more than once a day?
- Does the patient suffer from arthritis, and, if so, what medications are taken for relief?
- Does the patient use different pharmacies to fill his or her prescriptions?
- Does the patient have poor eyesight or hearing?
- Does the patient sometimes forget to take his or her medications?

sensitive in the majority of cases (some drugs produce no adverse interactions below a threshold level), such alterations in drug action significantly increase the likelihood of an adverse outcome in a patient taking several medications.

Digitalis, excreted via the kidneys primarily as an unchanged drug, may accumulate in patients with advanced age and result in toxicity. Cardiac output and pulmonary actions deteriorate and may also influence the pharmacokinetics of drugs. In all cases, the dictum, "start low and go slow," should be followed, with the goal being to administer the lowest possible dose that achieves the desired therapeutic response.

Therapeutic Polypharmacy

While polypharmacy is usually considered a negative course of treatment, it is sometimes necessary and may be therapeutic in the treatment of certain medical conditions. Therapeutic polypharmacy occurs when multiple drugs are prescribed and managed by clinicians for achieving a therapeutic goal. One example of therapeutic polypharmacy is the use of a multidrug regimen for the management of congestive heart failure. This approach includes using drugs such as digoxin, angiotensin-converting enzyme inhibitors, and diuretics.

At the opposite end of the spectrum, contratherapeutic polypharmacy occurs when a patient experiences unanticipated adverse effects while on a multiple, unmonitored drug regimen.

Polypharmacy is particularly detrimental when an individual takes multiple medications for an extended period of time, especially at high doses, without provider follow-up, say Resnick and Marcantonio.

Follow The Guidelines

A variety of guidelines is available for health care professionals to help assess which pharmacologic agents may be considered inappropriate for use in the elderly population.

The criteria are based on the possible risk and benefits of certain pharmacologic agents. The most commonly known criteria are the Beers Criteria (Beers List). This list was developed by Mark Beers, MD, in 1991 and was revised in 1997 to include medications that should be avoided (disease-independent or because of a patient's pre-existing medical condition).

Investigation has shown that more than 75 percent of adverse drug reactions that result in hospitalization are related to known pharmacologic agents. They are at least partially due to inadequate monitoring, inappropriate prescribing, and lack of patient education and compliance. Research also suggests that the potential for an

adverse drug reaction to occur is 6 percent when an individual takes two medications. It increases to 50 percent when five medications are taken concomitantly. And, it rises to 100 percent when eight medications are prescribed, according to NIDA.

Screening Is Critical

Screening in cases of polypharmacy, particularly in the elderly, is critical because adverse drug events can often imitate other geriatric disease processes or may result in confusion, falls, incontinence, urinary retention, and malaise. These side effects in turn may lead the physician to prescribe another medication to treat them, warns Colley.

Medication profiles should be reviewed at each clinic appointment and all active medications identified. A pharmacy consult may also be useful in determining the indication for each to medication and identifying potentially inappropriate dosages, drug to drug interactions, and excessive durations of therapy.

The adequacy of therapeutic drug monitoring should be assessed during the pharmacy review, along with the refill history, to determine compliance. Patients should be asked to bring all medications to their appointments, including medications prescribed by other providers, nonprescription medications, herbal products, vitamins, and home remedies.

These all must be considered so as to help determine the possibilities of any contraindications. ■

For More Information

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- For information on Trinity Hospice, visit www.trinityhospice.com.

- An updated version of the Beers List can be found at www.dcri.duke.edu/ccge/curtis/beers.html.

New Scale Offers More Precise Behavioral Measurement

Researchers have developed a new tool for assessing the intensity, frequency, and duration of dysfunctional behaviors among long term care patients, according to an article published in the September-October 2005 issue of the *Journal of the American Medical Directors Association*.

The Geriatric Level of Dysfunction Scale (GLDS) assesses behaviors such as physical combativeness, verbal aggression, and distressing repetitive behaviors commonly manifested by patients of long term care facilities.

The prevalence of behavioral disturbances in U.S. nursing facilities, which ranges between 64 percent and 83 percent of patients, can potentially interfere with the delivery of long term care. To mitigate the effects of dysfunctional behaviors in nursing facilities and other long term care settings, researchers designed the GLDS to measure these types of behaviors more appropriately and precisely.

“The GLDS appears to have potential clinical utility, especially when used as a treatment outcomes measure in long term care,” the authors noted. “Since dysfunctional behaviors can interfere with quality care, addressing behavioral dysfunctions is likely to improve a resident’s functional capacity and quality of life.”

The study’s authors noted the inclusion of the “intensity ratings,” with frequency and duration ratings as “an important contribution of the GLDS to interdisciplinary care and consultation in long term care.”

These ratings are a key component

in assessing what forms of pharmacological and cognitive-behavioral therapy may be necessary, the authors said, noting that physicians; psychologists; nurses; social workers; and speech-language, physical, and occupational therapists “can use the GLDS and its components to establish the need for specific interventions, as well as the efficacy of these interventions over time.”

Long term care professionals fre-

quently use instruments such as the Cohen-Mansfield Agitation Inventory (CMAI) to measure behavioral disturbances, but the researchers pointed out that the CMAI only assesses the frequency of behavioral disturbances and not

intensity or duration of the behavior. Moreover, it contains no items for measuring depression-related behaviors, such as withdrawal, loss of weight and appetite, or low activity levels.

The minimum data set 2.0 measures only dysfunctional behavioral items, such as wandering, verbal abuse, physical abuse, socially inappropriate behaviors, and resisting care. However, the researchers noted that these behavioral items are generally acknowledged to have low reliability and validity.

To measure the reliability and validity of GLDS, researchers examined its internal psychometric properties and its association with cognitive impairment, depression, activities of daily living, and pain levels. The results revealed that the GLDS displayed good internal consistency and test-retest reliability.

—Meg LaPorte

■ The prevalence of many behavioral disturbances can potentially interfere with the delivery of long term care.

An Alternative View Of Restraints

“We are restraint free” is often proudly announced at long term care facilities, yet a walk through reveals a number of side rails in use. But aren’t side rails considered restraints?

Maybe not. Since the side rails are used by a patient for turning in bed or for transfer, they should not be considered restraints. After all, a restraint is a bad thing, right?

Well, the answer is not so simple. Not that long ago, seatbelts and lap trays were considered to be good for patients. They prevented falls and helped keep patients safe. Then, the push to reduce restraint use across the board began, often confusing facility staff who thought all along that some so-called restraints were helpful to patients.

Then, as is often typical, restraint reduction evolved into “restraint-free.” The pendulum swung from “restraints for safety are good” to “all restraints are bad” in a very short time. Surveyors had a field day, and facilities started buying bed and chair alarms and lowering side rails by the score.

But were they really helping the patients? After all, sometimes restraint use can prove beneficial, as is certainly the case where side rails are used for bed mobility. Nevertheless—and here is the sticky point—the side rail can still be classified as a restraint.

The Centers for Medicare & Medicaid Services defines physical restraints as “any manual method, physical or mechanical device, material, or equipment attached or adjacent to the resident’s body that the individual cannot remove easily and that restricts freedom of movement or normal access to one’s body.”

The minimum data set (MDS) manual notes that, “In classifying any device as a restraint, the assessor must consider the effect the device has on

THINGS TO CONSIDER WHEN DETERMINING USE OF SIDE RAILS

When considering whether or not to use side rails for a particular patient, providers should take the following into account:

- Always consider a less-restrictive alternative, regardless of the purpose for which the side rails are being used or considered;
- Make the decision to use or to discontinue the use of a side rail in the context of an individualized patient assessment using an interdisciplinary team with input from the patient and patient’s family or legal guardian; and
- Clearly document side rail use, with an ongoing care plan designed for the patient’s condition.

The assessment process by an interdisciplinary team should include:

- Consideration of the patient’s physical and psychosocial needs;
- Consideration of the physical environment for safety issues, appropriateness of the bed, convenience of bathroom, and access to personal items;
- Assessment of benefit vs. risks in side rail use;
- Consideration of the level of staff support needed to accommodate for possible limitations from side rail use—lowering rail for toileting, for example;
- Continuing assessment for less restrictive interventions; and
- Full documentation of all assessments and considerations.

Source: LTCQ

■ While it is generally a goal worth pursuing, creating a restraint-free environment may not always serve a patient’s best interests.

the individual, not the purpose or intent of its use. It is possible for a device to improve the patient’s mobility and also have the effect of restraining the individual.”

So, if the patient cannot raise and lower the side rail independently to get in and out of bed, the side rail is meeting the criteria of a restraint and needs to be coded as such.

Still, there is something missing in that logic. When medications are prescribed for treatment, nurses monitor for possible side effects. Often there are some serious ones.

However, when the decision is made to treat a disease or condition with a medication, the benefits are weighed against the risks. If the “restraint-is-bad” logic were applied to medications, chances are no one would ever get aspirin.

The purpose of assessing side rail use and the decision whether to document it in Section P of the MDS is to weigh the “good” effects against the “bad” ones. Therefore, it may be okay to use restraints (side rails), when the treatment is based on the patient’s condition and needs. Really.

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