
Main Line HealthCare



Prescribing for the Elderly

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Main Line Geriatrics

Prescribing problems among American elders are common and include: adverse drug reactions, medication misuse, extreme polypharmacy, and extreme cost. The elderly account for about 1/3 of all prescription drug use, despite representing only about 13% of the US population. The average elderly American uses 4-5 prescription drugs and 2 over-the-counter medications. Frail elders use relatively more medications, and the average nursing home resident uses at least 7-8 drugs. Appropriate prescribing for the elderly must include several important considerations.

There are several important organ system physiologic changes with aging that affect the pharmacokinetics of drugs—how the body absorbs, distributes, metabolizes, and excretes drugs. Gastrointestinal absorption is affected by an increase in gastric pH and a decline in small intestine surface area. These changes usually have little clinical impact. Far greater changes and impact are seen with body distribution changes. There is a decline in total body water, so that hydrophilic drugs (e.g. digoxin) have a smaller volume of distribution requiring smaller doses. There is an increase in body fat tissue, so that lipophilic drugs (e.g. diazepam) have a larger volume of distribution making use of these drugs undesirable. There is a change in serum albumin with aging that can affect the distribution of highly protein bound drugs (e.g. phenytoin, amiodarone) resulting in the need for lower dosing. An age-related decline in renal function and creatinine clearance affects the clearance of renally excreted medications (e.g. atenolol, digoxin) that results in a longer half-life of these drugs, requiring lower dosing. Hepatic changes affecting hepatically metabolized drugs (e.g. morphine, ibuprofen, propranolol, amlodipine) can effect the dosing requirements of these drugs.

The elderly are at high risk for adverse drug events (ADE). This risk is determined more by the high number of medications taken by elders, than it is by their age alone. As the number of medications a person takes increases, the risk of an ADE increases exponentially. In frail elders, the presentation of adverse drug events can often be atypical, and may be confused with a new medical condition, and not recognized as a reaction to a drug. This can result in additional drugs prescribed in response to treat the symptom of an ADE, instead of stopping the offending drug. This phenomenon has been referred to as the “Prescribing Cascade,” and is felt to be one of the principle drivers of polypharmacy in the elderly. Prescribers need to rely on careful medication

history taking in order to diagnosis ADE's that present in atypical ways.

There are several caveats for safe and effective prescribing for elders that have been established. First, start low, go slow; start treatment with low doses due to lower recommended starting doses in elders based upon pharmacokinetic changes with aging, and the risk of an ADE often being dose related. Advancing the dose slowly over time with careful monitoring of response and watching for side effects is the second element of this rule.

Secondly, use no drug before its time. This principle teaches avoiding starting drug therapy until the diagnosis of the condition is clearly established. Avoiding drug therapy for minor symptoms, and using non-pharmacologic approaches first, are also central to this treatment principle.

Third, use no drug beyond its time. Polypharmacy is also driven by drugs being used longer than the time that they are needed. Careful monitoring of treatment by the prescriber and by the patient's primary care physician can ensure that medications are used only as long as they are still indicated. This is particularly important for frail elders who may have their medications administered by caregivers for compliance, and are unable to stop the medication on their own due to physical or cognitive limitations.

Fourth, avoid the use of new drugs until their safety for use in the elderly has been established. The FDA does not require new medications to have independent safety and efficacy established prior to approval. It has been shown that elders, and especially frail elders, have been systematically excluded from drug treatment trials. Extrapolating treatment evidence from drug trials to extreme elders (over age 85) may be hazardous. When prescribing a new agent is necessary, using new drugs with extreme caution as a true therapeutic trial with careful monitoring is important.

Lastly, the primary care physician (PCP) should be the quarterback of all medication prescribing. Multiple prescribers may be unaware of all of the medications being prescribed concomitantly for the patient by any number of specialists. Lack of oversight in this setting can often result in duplication of therapy, the use of drugs that interact with each other, and the use of drugs that are inappropriate for the elderly. Having the PCP control all prescribing will greatly minimize these risks. Regular review of the entire medication regimen by the PCP can be accomplished by maintaining an active drug list, and review of all current medications by specialists by having the patient bring all medications to office visits (the brown bag review).

Following these principles can greatly improve the appropriateness of prescribing for the elderly, especially in an era when medication regimens are becoming increasingly complex in the management of many common chronic conditions.