

Implications of Medication (Drug) Therapy and the Elderly

Demographics

In the United States currently only 12% of the population is over the age of 65 yet they take 30-40% of all prescription medications.

It is estimated that only 60% of older adults take their prescribed medications properly and that approximately 30% of all medications they take are nonprescription (or over-the-counter) preparations.

Many older adults stop taking a medication when their symptoms subside even though the medication has been prescribed for long-term use. They may also suspect that anything that happens after they take the medication was caused by it.

As our population ages, it experiences normal age-related physical changes which alters the way our bodies react to medications. These age-related changes also tend to increase the number of chronic diseases and increases the severity of the diseases. It is estimated that four out of five people over the age of 65 have *at least* one chronic disease process. Often our older adults experience multiple diseases causing multiple medication therapies thus increasing the risk of adverse drug reactions.

Also, older adults are more susceptible to drug-induced illnesses and adverse drug effects than younger adults. The incidence of drug interactions increases with age and the number of drugs prescribed.

Basics

A **drug** is any chemical that can affect living processes.

Effectiveness, safety and selectivity are the three most important characteristics that any drug can have.

Effectiveness is the most important property of a drug. If it is not effective, it is not useful or justified.

There is no such thing as a safe drug. All drugs have the ability to cause injury or harm. The risk of adverse effects can never be eliminated. A drug's **safety** is relative to the need for treatment. That is, what is the trade off? Take insulin for instance. Insulin can have adverse effects, but the insulin dependent diabetic has no chance at a normal life without insulin. In this case the possibility of adverse effects are preferable to the certain outcome of the disease without treatment with insulin.

A **selective** drug is one that elicits only those responses for which it is given. Selective drugs should produce no side effects. There is no such thing as a selective drug. All medications have side effects. Some examples of side effects would be drowsiness that comes with antihistamines or constipation that goes hand in hand with opiate pain medications.

Other important characteristics of drugs are predictability, ease of administration, freedom from drug interactions, low cost, and chemical stability.

Predictability is helpful but since each patient is unique, the accuracy of prediction cannot be guaranteed. Each therapy must be individualized, that is tailored to the individual.

Ease of administration can directly effect compliance and possible errors in dosing. The simplest route and the least amount of daily doses the better. Once a day is easier than four, oral is easier than injection.

Older adults tend to have multiple complex chronic diseases requiring treatment with multiple drugs. **Freedom from drug interactions** is especially important with the older adult. For example the degree of respiratory depression experienced while taking Valium (diazepam) is usually minimal and acceptable. But it can be greatly exacerbated, and dangerous when alcohol is added. Or the antibacterial effects of tetracycline can be dramatically reduced if taken along with iron or calcium supplements. Very few medications are without significant drug interactions.

The cost of a drug can directly affect compliance. Older adults are generally on fixed incomes, more susceptible to multiple chronic disease processes and tend to take drugs chronically. That is they require drug therapy for life. With older adults **low cost is imperative**. People with diseases such as hypertension, arthritis, diabetes, or hypothyroidism need to take medications for these diseases for the remainder of their lives. If one person had all of these disease processes and costs were estimated at \$120/month, another \$20/month, another \$25/month and the other only \$5/month for just the prescription medications, they would represent \$170/mo. just to obtain medications. Some older adults in the United States are trying to survive on less than \$700 a month. In this case \$530 is left for food, rent, utilities and transportation.

The **chemical stability** of a drug is important to how it needs to be stored (i.e., refrigerated insulin has a longer shelf life than if stored at room temperature) and its shelf life that is how long it may be kept before having to be replaced (i.e., it is recommended that sublingual nitroglycerine be replaced every six months to maintain maximum effectiveness).