Treating Older Adults:
Age-Related Changes Affecting Drug Disposition

**Absorption and Distribution**

Gastrointestinal absorption per se is not significantly affected by aging. The volume of drug distribution is altered due to decreases in lean body weight, total body water, and alterations in body mass (i.e., increase in adipose tissue). The volume of distribution for water-soluble analgesics, such as morphine, decreases in older patients resulting in increased plasma concentrations and effects from a standard loading dose compared with younger patients.

**Renal Excretion**

A clinically significant age-related consideration relates to renal function decline. Renal size, number of functioning glomeruli, glomerular filtration rate, and renal blood flow are generally all decreased in older patients, reducing the elimination rate and increasing the potential toxicity of drugs that are renally-excreted.

**Hepatic Elimination**

A decrease in liver mass and hepatic blood flow often modifies drug metabolism. Drugs most significantly affected in older adults are those that are characterized by high hepatic clearance in younger patients. If a drug is normally converted to an active metabolite by hepatic metabolism (e.g., codeine, tramadol, hydrocodone) then this conversion may be diminished; otherwise such drugs will be eliminated more slowly in older adults. Drugs normally inefficiently cleared by the liver in younger adults (low hepatic clearance) are not affected as much by changes accompanying aging, and elimination rates may be comparable in older patients.