Midterm Week 4

1. What is the most significant clinical pharmacokinetic age-related change seen in older adults?

Pharmacokinetic Changes in Older Adults
The aging process can affect all phases of pharmacokinetics. From early adulthood on, there is a gradual, progressive decline in organ function. This decline can alter the absorption, distribution, metabolism, and excretion of drugs. As a rule, these pharmacokinetic changes increase drug sensitivity (largely from reduced hepatic and renal drug elimination). However, it should be noted that the extent of change varies greatly among patients: pharmacokinetic changes may be minimal in patients who have remained physically fit, whereas they may be dramatic in patients who have aged less fortunately. Accordingly, you should keep in mind that age-related changes in pharmacokinetics are not only a potential source of increased sensitivity to drugs but also a potential source of increased variability. The physiologic changes that underlie alterations in pharmacokinetics are summarized in Table 10.1.
TABLE 10.1

Physiologic Changes That Can Affect Pharmacokinetics in Older Adults

Absorption of Drugs
Increased gastric pH Decreased absorptive surface area Decreased splanchnic blood flow Decreased gastrointestinal motility Delayed gastric emptying
Distribution of Drugs
Increased body fat Decreased lean body mass Decreased total body water Decreased serum albumin Decreased cardiac output
Metabolism of Drugs
Decreased hepatic blood flow Decreased hepatic mass Decreased activity of hepatic enzymes
Excretion of Drugs
Decreased renal blood flow Decreased glomerular filtration rate Decreased tubular secretion Decreased number of nephrons

2. What age group does we use Beer's Criteria for prescriptive guidance?

Drug use among older adults (those 65 years and older) is disproportionately high. While older adults constitute only 12.8% of the US population, they consume 33% of the nation's prescribed drugs. The reasons for this intensive use of drugs include increased severity of illness, multiple pathologies, and excessive prescribing.

Drug therapy in older adults represents a special therapeutic challenge. As a rule, older patients are more sensitive to drugs and they show wider individual variation. In addition, older adults experience more adverse drug reactions (ADRs) and drug–drug interactions. The principal factors underlying these complications are (1) altered pharmacokinetics (secondary to organ system degeneration), (2) multiple and severe illnesses, (3) multidrug therapy, and (4) poor adherence. To help ensure that drug therapy is as safe and effective as