

kidneys metabolize and excrete medications, and the heart may change how quickly and effectively a medication is distributed throughout the circulatory system.

Because the liver metabolizes drugs, poor functioning of this organ leads to an accumulation of drugs and to toxic effects. Patients who abuse alcohol on a long-term basis may have destroyed much of their liver's ability to function. Decreased serum protein levels can alter the capacity of a drug to bond. More unbound medication is therefore available, and this can lead to side effects. Unfortunately, no laboratory test adequately predicts appropriate doses when the liver is not working properly.



### CRITICAL THINKING

**How does liver disease affect the accumulation of drugs in the body?**

Drugs that have passed unmetabolized through the liver put patients with kidney disease at risk for accumulating toxic amounts of drugs. These drugs can also destroy the kidneys. To determine proper doses of drugs in patients with kidney disease, blood specimens are drawn for laboratory tests, such as blood urea nitrogen (BUN) and creatinine clearance (CrCl).

In patients with heart failure, the heart fails to pump blood adequately. This condition can cause congestion of blood vessels in the gastrointestinal tract that decreases drug absorption and drug delivery to the liver. Kidney function is also compromised by the congestion, with resulting delayed excretion and thus drug accumulation in the patient. For these reasons, patients with heart failure usually take lower doses of medications.

## ■ PROTECTING THE PATIENT: ETHICAL AND SAFETY CONSIDERATIONS

As a health-care professional, it is your responsibility to see that medications are administered safely and ensure that the patient's rights, consent, and privacy are equally protected. You also have the responsibility of responding quickly, safely, and ethically should a patient have a medication emergency such as accidental ingestion of too much medication or an acute allergic reaction.

### Patient Information

Patients have a right to participate in their treatment. Thus, it is important to teach patients about their medications in terms they can understand. Although you may understand medical terminology, the patient most likely does not. Misunderstandings can lead to injury, overdose, or subtherapeutic treatment. For example, patients may believe that taking more pain medication will relieve pain better or faster. If a patient is told to take a narcotic every 6 hours as needed for pain, he or she may take it more often and may not know that this could cause confusion, respiratory depression, or death. It is your responsibility as a health-care professional to educate the patient about the risks associated with taking more than the prescribed dose. All adults are vulnerable to making mistakes, such as combining over-the-counter medications with prescription drugs and not realizing that both contain the same or similar drug. A frequent example of this is a person suffering from a cold or flu taking a combination cold medication containing ibuprofen, and then taking a prescribed medication for arthritis containing another NSAID. Therefore, it is very important for the patient to tell the physician about any over-the-counter medication he or she is taking. Conversely, it is important to educate patients about the prescriptions they are taking and what over-the-counter drugs they should avoid. In addition, encourage patients to talk with the pharmacist about warning labels to make sure they understand the precautions of a new medication.

One way to ensure that patients receive enough information is to teach them to ask the questions in Box 3-1 whenever they start a new medication.

### Patient Consent

Patients have the right to refuse treatment, including medications. If patients do not understand why they are required to take a medication, you should first give them the appropriate information. If they are still reluctant to take a medication, inform the prescriber. Giving a medication to someone who refuses to take it can be considered assault and battery.