Renal sonography has become integral to the evaluation and management of patients with renal disease. In this modality, the body is probed with high-frequency sound and a 2-dimensional image is created based on the time interval and intensity of the sound returning to the probe (B-mode sonography). Sonography is particularly good at identifying fluid and thus is very useful in detecting cysts, hydronephrosis, and fluid collections. It can also supply a rough, but useful, measurement of renal size, provide other evidence of parenchymal disease, and is the method of choice for guiding percutaneous renal biopsy. It is safe, inexpensive, and a feasible procedure for physician provided that they receive appropriate training. Disadvantages include dependence on the operator, interference from overlying structures, and inability to visualize most of the ureter. Doppler sonography provides information on the direction and magnitude of blood flow but, unless vascular abnormalities are suspected, is of little clinical utility in most settings. In particular, measurement of resistive index adds no useful information on routine studies. Because of the importance of sonography, all physicians should be familiar with its interpretation. Parameters that are routinely evaluated are size, echogenicity, cortical thickness, and the caliber of the collecting system. Size is best evaluated as length, which should be 10 to 12 cm in adults. This varies with height so that extremely small or large individuals will lie outside this range. The echogenicity (brightness) of the renal cortex should be less than that of the liver or spleen (provided they are normal). There are no established normal ranges for cortical thickness, which is difficult to measure accurately. A thickness below 7 mm and certainly below 5 mm is probably abnormal. A visible collecting system (calyces, pelvis, ureter) is abnormal and indicates dilation. However, this does not necessarily imply obstruction as it can occur with large diuresis, pregnancy, papillary necrosis, or hemorrhage. Sonography is also applied in detecting vascular access lesions in dialysis patients.