Chronic peritoneal dialysis is most often performed at home. The two types of peritoneal dialysis are **continuous ambulatory peritoneal dialysis** and **continuous cycling peritoneal dialysis**. In both methods, commercially available sterile dialysis solution is instilled into the peritoneal cavity through a surgically implanted indwelling catheter tunneled subcutaneously and sutured into place. The warmed solution is allowed to enter the peritoneal cavity by gravity and remains a variable length of time according to the rate of solute removal and glucose absorption in individual patients. The care and management of the procedure are the responsibility of the parents of young children. Some centers have initiated use of home health nurses to give parents respite from care. Older children and adolescents can carry out the procedure themselves, which provides them with some control and less dependency. This is especially important for adolescents.

Nursing Alert

Observe for changes in the color of the dialysate draining from the child. The spent solution should be clear. If the color is cloudy, notify the practitioner immediately.

Hemodialysis requires the creation of a vascular access and the use of special dialysis equipment—the hemodialyzer, or so-called artificial kidney. Vascular access may be one of three types: fistulas, grafts, or external vascular access devices. An **arteriovenous fistula** is an access in which a vein and artery are connected surgically. The preferred site is the radial artery and a forearm vein that produces dilation and thickening of the superficial vessels of the forearm to provide easy access for repeated venipuncture. An alternative is the creation of a subcutaneous (internal) **arteriovenous graft** by anastomosing artery and vein, with a synthetic prosthetic graft for circulatory access. The most commonly used material is expanded polytetrafluoroethylene (ePTFE). Both the graft and the fistula require needle insertions with each dialysis treatment.

For external vascular access devices, percutaneous catheters are inserted in the femoral, subclavian, or internal jugular veins, even in very small children. A more permanent form of external access is available via a central catheter inserted surgically into the internal