	to check line patency *or* heparin 1 to 2 units/ml to run continuously at ordered rate
Totally implanted central line (TIVAS, implanted port)	Heparin 10 units/ml; 5 ml after medications or once daily if dormant and accessed; if not accessed, heparin 100 units/ml; 5 ml every month
Arterial and central venous pressure continuous monitored lines	Heparin 2 units/ml in 55-ml syringe to run continuously at 1 ml/hr

*Use 5% dextrose in water when medication is incompatible with saline.

†Smaller syringes may be used when flush is delivered by a pump.

NS, Normal saline; *PICC*, peripherally inserted central catheter; *TIVAS*, totally implantable venous access device.

Children may be discharged with a peripheral lock in place to continue receiving medications without hospitalization; this is usually reserved for children who require medications on a short-term basis and are referred to a home-based infusion company. Those with chronic illnesses who require repeated blood sampling or medications, long-term chemotherapy, or frequent hyperalimentation or antibiotic therapy are best managed with a central venous catheter.

Central Venous Access Device

Central venous access devices (CVADs) have several different characteristics. Factors that can influence the type of CVAD include the reason for placement of the catheter (diagnosis), length of therapy, risk to the patient in placement of the catheter, and availability of resources to assist the family in maintaining the catheter.

Short-term or **nontunneled catheters** are used in acute care, emergency, and intensive care units. These catheters are made of polyurethane and are placed in large veins, such as the subclavian, femoral, or jugular. Insertion is by surgical incision or large percutaneous threading. A chest x-ray film should be taken to verify placement of the catheter tip before administration of fluids or medications.

Peripherally inserted central catheters (PICCs) can be used for short-term to moderate-length therapy. These catheters consist of silicone or polymer material and are placed by specially trained nurses, physicians, or interventional radiologists (Gamulka, Mendoza, and Connolly, 2005). The most common insertion site is above the antecubital area using the median, cephalic, or basilic