

IV Therapy Plays an Important Role in Patient Care

“In the past, patients receiving infusion therapy often had to remain in the hospital for the duration of their therapy,” said Mary Jane Meyers, RN, PICC Certified Specialist. “However, new technologies and an increased emphasis on cost containment, coupled with developments in the clinical administration of infusion therapy, now permits patients to receive infusion therapy in alternative settings.”

Why infusion therapy?

Patients receive medications and treatments in several different ways: By pill or liquid, a topical application, injection through a syringe, or through infusion therapy. The choice of administration depends on the patient, the diagnosis and appropriate treatment, and the most effective means of administering the treatment. When patients must receive fluid, blood, or medication quickly, or sometimes, very slowly, an IV may be the best option.

What is infusion therapy?

Infusion therapy, also known as intravenous or IV therapy, delivers medication and/or nutritional substances into the blood stream. It is typically prescribed by a physician when a patient's condition is so severe that it cannot be treated through the use of oral medications. In infusion therapy, a needle or catheter is inserted into a blood vein, and a substance travels through that device into the vein. Typically, a needle is inserted into a vein in the back of the hand, at the wrist, or in the elbow. Catheters may be inserted in a number of locations, such as in a vein above the elbow, near the collarbone, in the chest, or in the neck. Site selection depends on patient comfort, the availability of a viable blood vein, and the delivery system required.

What diseases or illnesses are treated with infusion therapy?

Infusion therapy is used in a variety of ways. It may be used to minimize pain related to disease progression or surgery, or it may be used to treat diseases or illnesses that are unresponsive to oral antibiotics, such as gastrointestinal (GI) diseases or disorders that prevent the normal functioning of the GI system, multiple sclerosis, hemophilia, immune deficiencies, congestive heart failure, Crohn's Disease, or rheumatoid arthritis. In addition, infusion therapy may be used to provide nutrition to a patient who cannot or will not eat.

How is infusion therapy delivered?

IV therapy may be delivered in several ways. The method of delivery depends on physician preference, the type of medication used, the speed in which it must be delivered, and the frequency with which it will be

administered. Discuss with your physician which delivery approach would work best for you. Unless otherwise noted, needles or catheters are secured in place using a transparent, tape-like dressing. Among the options that are used:

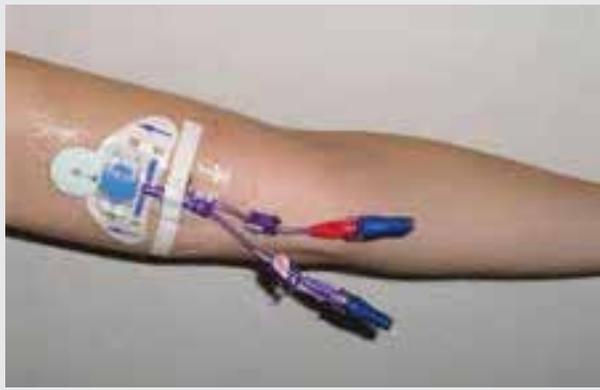
Peripheral IV Usually, a peripheral IV delivers a substance into the blood stream through a thin, short tube, called a catheter, which is inserted through the skin into a blood vein. A peripheral IV is used short-term: As long as a vein remains viable or up to 72 hours. If continued therapy is warranted, the site of the infusion is rotated after 72 hours. A peripheral IV is used to deliver substances that do not irritate or damage the walls of the blood veins. This method allows for delivery of a consistent amount of medication within a predetermined time frame. The majority of infusion treatments in the United States are done with a peripheral IV.



A peripheral IV uses a catheter, which is inserted through the skin into a blood vein.

Peripherally inserted central catheter (PICC) Depending on the medication used, and the duration of infusion therapy, a Peripherally Inserted Central Catheter, or PICC line, may be used. Generally, PICC lines are employed for extended antibiotic therapy, total parenteral (other than by mouth) nutrition, or for substances that may cause harm or irritation to the wall of the blood veins. A PICC is a long, thin, flexible tube or catheter. It enters the body through the skin and is inserted into the superior vena cava, or a vein that carries blood from the head, arms, or upper body. The line may remain in place for several weeks.* During infusion therapy, the IV tubing is hooked up to external connectors. Upon completion of therapy, the IV tubing is disconnected and the PICC is flushed.

* Patients may expect to have a chest xray, intraoperative fluoroscopy or ultrasound performed before the device is used.



The peripherally inserted central catheter (PICC) often has several external connectors.

Implantable Ports One alternative to a PICC line is an implanted port. The patient is put under local anesthesia, and a disk-like port is surgically placed under the skin near the collarbone, arm, leg, or abdomen. A small catheter is attached to the port, with the tip extending into a large vein leading to the heart.* To access the port, a small needle is inserted through the skin into the port. After infusion therapy, the port is flushed and the needle removed. Implantable ports are used to infuse medicine, fluid, nutrition, or to take repeated blood samples. The port is intended for long-term use. Once infusion therapy is completed, it is surgically removed.



An implantable port is placed under the skin and a small catheter is attached to a large vein leading to the heart.

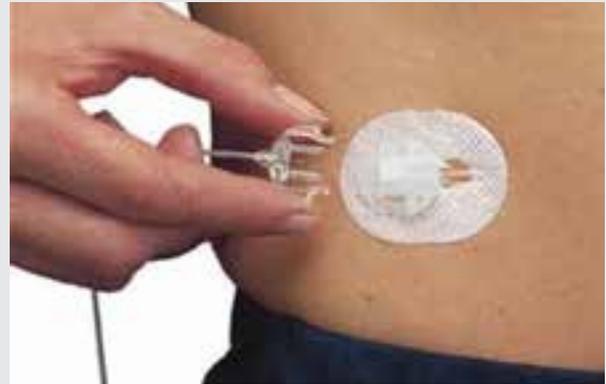
Hickman Catheter Also called a tunneled venous catheter, the Hickman catheter is surgically placed under the skin near the collarbone. It provides access to the vein in the neck. An external connector tip is usually placed on the upper chest. A local anesthetic or conscious sedation is used during the procedure.* Infusion therapy and care is much like that of the PICC and port methods.



The Hickman catheter is placed under the skin near the collarbone.

* Patients may expect to have a chest xray, intraoperative fluoroscopy or ultrasound performed before the device is used.

Subcutaneous Infusion Also known as hypodermoclysis or interstitial infusion, this technique involves inserting a needle under the skin, typically the abdomen, chest, thigh, or upper arm. The needle is connected to an infusion pump. This allows the fluid to slowly enter the injection site. The site must be rotated every two to three days. This approach can be used to deliver hydration, anti-nausea medications, insulin, and painkillers. Infusion pumps have the ability to deliver substances in very small amounts, at pre-determined rates, or at set intervals. Some pumps are designed for stationary use at a patient's bedside. Others are designed to be portable or wearable.



In a subcutaneous infusion, a needle is inserted under the skin and connected to an infusion pump.

Where is infusion therapy administered?

Infusion therapy may be administered in a medical setting, such as a hospital, clinic or medical practice, or at a patient's home. The setting typically depends on cost of delivery, insurance, the patient's mobility, the nature of the treatment, and the type of medication. For example, while in-home infusion therapy has proven to be cost-efficient and more comfortable for patients in many cases, Medicare's fee-for-service plan (parts A, B, and D), may not provide coverage. This will require a patient to pay out-of-pocket for that service. In such cases, seniors and disabled patients insured by Medicare may prefer to receive their infusion therapy at a covered location.

"IMG offers multiple infusion therapy locations," said Shari Bellinger, RN BSN. "To minimize hospital stays, and contain medical costs, more options are available on a short-term stay basis. This permits patients to spend less time in the hospital, and more time with friends and family."

What complications can occur with infusion therapy?

Clinically-trained nurses work in an appropriately sanitized environment, using sterile techniques, to execute infusion therapy. The patient and equipment are monitored throughout the infusion process.

At the conclusion of IV therapy, nurses will assess the outcome of the infusion therapy and discuss possible complications with patients. In addition, patients will be

alerted to warning signs of complications and when immediate contact with a physician is required. Among the complications that may occur:

Injection-site Infection Infection is possible at the injection site, though every effort is made to ensure that the site remains free from infection. Sterile equipment is used in all infusion therapy, and all staff are required adhere to aseptic, or sterile, techniques. Though extremely rare, bacteria from an IV or injection site may enter the bloodstream. Blood toxicity or septicemia may result. This could lead to sepsis, which can be life-threatening if left untreated.

Infiltration When fluid from an IV catheter line leaks into surrounding tissue, rather than flowing into the blood stream, damage to the tissue may occur at the entry site. This most often results from improper placement of the catheter or the dislodging of the catheter through movement by the patient during the infusion.

Air Embolisms On rare occasions, air bubbles may enter the bloodstream through an IV line. This occurs when air is in the IV tubing, a pump is not properly primed, a saline lock is not fastened, or an infusion bag runs dry. Lower doses of air (up to 50 ml) may cause low blood pressure or an irregular heart rhythm, but significant amounts of air may result in wheezing, difficulty breathing, or cardiovascular collapse, and be fatal.

Superficial Thrombophlebitis Sometimes, a blood clot forms due to infusion therapy, and a vein located beneath the skin's surface becomes inflamed. However, Superficial Thrombophlebitis is usually a short-term condition, without health complications. Symptoms often go away within one to two weeks. Possible complications may include infection and deep vein thrombosis (the formation of a blood clot in a vein located deep inside the body).

"While complications from IV therapy are possible, no patients have experienced problems within our facility," said Pam Jones, RN, Director of Nursing, Madison Health Care and Rehab. "Our clinical team strictly adheres to infusion therapy protocol and engages in continued training to ensure our high standards are maintained."



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