PROCEDURE

Percutaneously inserted central catheter - infants

A thin tube placed through an infant's small vein to deliver longer-term intravenous treatment.

PURPOSE
Provide reliable access for medicines, fluids, or intravenous nutrition

PROCEDURE TYPE
Therapeutic, minimally invasive; bedside or interventional radiology

WHERE IT IS DONE
NICU bedside or interventional radiology suite

ANAESTHESIA
Local anaesthesia or comfort measures; sedation sometimes used

HOW LONG IT TAKES
About 30 to 90 minutes

PREPARATION
Usually no fasting; follow feeding instructions if sedation planned

RECOVERY
Usually inpatient; caregivers have no procedure-related driving restriction

MAIN RISKS
Infection, blockage, blood clot, catheter movement

RESULTS
Tip position confirmed before the catheter is used

Overview

A percutaneously inserted central catheter is a very thin, flexible tube placed into a small vein through the skin. It is often called a PICC, PICC line, or long line.

The catheter enters through a vein in the arm, leg, hand, foot, or sometimes the scalp. It is gently advanced until its tip reaches a large vein near the heart. The tip should not sit inside the heart.

A PICC can remain in place longer than a standard intravenous, or IV, cannula. It allows an infant to receive treatment without repeated needle insertions. It is commonly used in neonatal intensive care units and other hospital settings.

Why the procedure is performed

A PICC provides reliable access to the bloodstream when an infant needs intravenous treatment for more than a short time. It may also be used when a medicine or fluid should not be given through a small peripheral vein.

Reasons for placing one include:

The healthcare team should explain what treatment the catheter will deliver and how long they expect it to be needed.

- Intravenous nutrition when milk feeding is not yet enough
- Antibiotics or other medicines needed over several days
- Concentrated fluids or medicines that could irritate a small vein
- Ongoing fluid treatment when ordinary IV lines repeatedly fail
- Limited access to suitable veins

Who should and should not have it

A PICC may be suitable when its benefits are greater than the risks of placement and continued use. This often applies to premature or unwell infants who need dependable intravenous treatment.

It may not be the right choice when treatment can be safely given by mouth, through a feeding tube, or through a short IV. A PICC is also unnecessary when intravenous treatment is likely to end very soon.

Placement may be avoided or delayed if:

These issues do not always rule out central access. The team may choose another vein, another type of catheter, or a different time for the procedure.

- The skin at the proposed insertion site is infected or badly damaged
- The chosen vein contains a known blood clot
- Blood flow to the limb is already reduced
- The vein is too small or does not provide a safe path
- A bleeding problem needs to be assessed or corrected first
- The infant is too unstable for non-urgent positioning or handling

How to prepare

The treating facility's own instructions take priority because preparation is based on your infant's condition, feeding plan, medicines, and whether sedation is planned.

Most infants do not need to stop feeding when only local anaesthetic and comfort measures are used. If sedation or general anaesthesia is planned, you will receive specific instructions about when breast milk, formula, or other feeds must stop.

Tell the team about known allergies, bleeding problems, previous central lines, and any swelling or circulation problems in the limbs. The team will review medicines that affect bleeding, but you should not stop any medicine unless instructed.

You may be asked to provide consent after the benefits, alternatives, and important risks have been explained. Depending on local practice and your infant's condition, you may stay nearby or be asked to leave the procedure area.

What happens during the procedure

Your infant is positioned so the chosen vein can be reached safely. Monitoring may include heart rate, breathing, and oxygen level.

Pain control may include local anaesthetic, swaddling, a pacifier, skin-to-skin care, or a small amount of sucrose solution. Some infants need sedation. General anaesthesia is not routinely required but may be used for particular clinical reasons.

The clinician identifies a vein by examining the skin, using a vein light, or using ultrasound. The skin is cleaned with an antiseptic, and sterile drapes are placed around the area.

A small needle or cannula enters the vein. The thin catheter is then threaded through the vein toward a large central vein. The needle is removed, leaving the flexible catheter in place.

The catheter is secured with a dressing and sometimes an additional securement device. An X-ray, ultrasound, or another approved positioning method checks where the tip lies. The catheter may be adjusted if the tip is too high, too low, or has entered another vein.

It is not normally used for central treatment until the position has been confirmed.

Recovery and what to expect afterward

Your infant may have mild tenderness or a small bruise at the insertion site. Pain should be limited and usually settles without prolonged treatment. Staff can provide appropriate pain

relief if needed.

Feeding can usually continue or restart after the procedure. If sedation or anaesthesia was used, the team will decide when feeding is safe based on alertness, breathing, and the facility's feeding instructions.

Normal gentle handling is usually allowed. The dressing and tubing must be protected from pulling, moisture, and pressure. Staff may position the limb to keep the line secure, but prolonged movement restriction is not usually needed.

The catheter itself creates no driving restriction for a caregiver. Many infants remain in hospital because of the condition requiring treatment. If your infant is discharged, you may drive when staff confirm discharge is safe and you have not received medication that affects driving.

A parent's return to work depends mainly on the infant's illness, hospital stay, and home-care needs rather than PICC placement itself.

Risks and possible complications

The team checks the catheter regularly because complications can occur during placement or while it remains in use.

Possible risks include:

A catheter placed through an upper-body vein can rarely contribute to air or fluid around a lung. Imaging and tip-position checks help reduce placement-related problems.

The line should be removed when it is no longer needed or when a complication cannot be managed safely.

- Bleeding, bruising, or pain at the insertion site
- Infection at the skin or in the bloodstream
- A blood clot in the vein
- Blockage that prevents fluid passing through the catheter
- Leakage into nearby tissue
- Catheter movement, breakage, or accidental removal
- An abnormal heart rhythm if the tip temporarily enters the heart
- Injury to a nearby artery, nerve, or other structure

Results and follow up

There is no laboratory result from PICC placement. The immediate result is whether the catheter reaches a suitable position and can be used safely.

The tip position is usually checked shortly after insertion. You can ask whether placement was successful, where the tip lies, and when treatment will begin.

While the line remains in place, staff inspect the site, dressing, exposed tubing, and nearby limb. They also watch for signs of infection, blockage, leakage, or movement. The dressing and access connections are handled using infection-control precautions.

If your infant goes home with a PICC, you should receive written instructions about keeping it dry, protecting the tubing, arranging dressing care, and knowing whom to contact. Do not flush, reconnect, reposition, or remove the catheter unless you have been specifically trained and instructed to do so.

Alternatives

The realistic alternatives depend on what treatment your infant needs and for how long.

A standard peripheral IV is quicker and does not extend into a central vein. However, it may fail frequently and is not suitable for some concentrated medicines or intravenous nutrition.

A midline catheter can last longer than a short IV, but its tip remains outside the central veins. This limits which fluids and medicines can safely pass through it.

An umbilical venous catheter can provide rapid central access soon after birth. It is mainly a short-term option for newborns and has limits on how long and when it can be used.

A tunneled central catheter or implanted port may be considered for very long treatment. These devices can provide durable access but require a more invasive procedure and often anaesthesia.

Medicines, fluids, or nutrition may sometimes be given by mouth or through a feeding tube. This avoids a central line but is not suitable when the digestive system cannot absorb enough or when treatment must enter the bloodstream directly.

When to call your healthcare team

While your infant is in hospital, tell a nurse promptly about any concern involving the line or nearby limb.

After discharge, contact the PICC or neonatal team urgently for:

Clamp the catheter if you were trained to do so and it breaks or disconnects. Do not push an exposed section back under the skin.

Call emergency services if your infant has severe breathing difficulty, becomes unresponsive, or develops sudden blue or grey colouring. These are emergency symptoms rather than routine line-care concerns.

- Fever, unusual temperature changes, marked sleepiness, or poor feeding
- Redness, warmth, swelling, pain, or drainage near the insertion site
- Swelling, coolness, paleness, or bluish colour in the affected limb
- Fluid leaking from the line or under the dressing
- A wet, loose, dirty, or lifting dressing
- A visible change in the catheter's external length
- Resistance, repeated pump alarms, or treatment that will not run
- A cracked, disconnected, or accidentally pulled catheter

Common questions

Will my baby be asleep?

Usually not. Many infants receive local anaesthetic and comfort measures while remaining awake. Sedation or general anaesthesia may be used when clinically necessary.

Can I drive my baby home?

The PICC does not prevent a caregiver from driving. However, many infants remain admitted for treatment. Follow discharge advice, and do not drive if medication or fatigue makes driving unsafe.

How painful is it?

Needle insertion can cause brief pain. Local anaesthetic and comfort measures help. Mild soreness or bruising may remain afterward, but ongoing or increasing pain should be reported.

When will I know if it worked?

The team usually knows after checking the catheter tip with imaging or another approved method. The line is used once its position and function are considered safe.

How long can the line stay in?

It can remain while central access is needed and the catheter is functioning without

complications. Staff reassess the need for it regularly and remove it as soon as it is no longer required.

Can my baby pull it out?

Movement can loosen or displace a catheter, but securement devices and dressings reduce this risk. Keep the tubing protected and report any change in its visible length.

Sources

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