PROCEDURE

Peripheral intravenous line - infants

A peripheral intravenous line is a small tube placed in an infant's vein to give fluids, medicines, blood products, or contrast dye.

PURPOSE
Deliver fluids, medicines, blood products, or contrast into a vein

PROCEDURE TYPE
Therapeutic, bedside

WHERE IT IS DONE
At the bedside or in an outpatient clinic

ANAESTHESIA
None or local numbing medicine

HOW LONG IT TAKES
About 5 to 15 minutes

PREPARATION
Usually no fasting or medicine changes

RECOVERY
Immediate; no driving restriction applies to the infant

MAIN RISKS
Bruising, infection, blockage, infiltration, or medicine leakage

RESULTS
Successful placement confirmed immediately

Overview

A peripheral intravenous line, often called a peripheral IV, PIV, or IV cannula, is a short, flexible plastic tube placed into a vein. In infants, it is usually inserted into a vein in the hand, arm, foot, or lower leg. Scalp veins may sometimes be used because they can be easier to see and keep still.

A needle helps guide the plastic tube into the vein. The needle is then removed, so no needle remains under your baby's skin. The tube is secured with a clear dressing and connected to tubing or a capped access port.

A peripheral IV is intended for short-term access to the bloodstream. It may remain in place for hours or several days if it is still needed and the site remains healthy.

Why the procedure is performed

Your baby may need a peripheral IV to receive treatment that cannot be given safely or effectively by mouth. It can be used to:

Blood may sometimes be collected when the IV is first inserted. However, a peripheral IV is mainly used to give treatment rather than to take repeated blood samples.

- Give fluids if your baby cannot drink enough
- Deliver medicines, including antibiotics like amoxicillin or doxycycline
- Give glucose or other nutrients for short-term support
- Transfuse blood or blood products
- Inject contrast dye for certain imaging tests
- Provide rapid access during an urgent illness or procedure

Who should and should not have it

A peripheral IV may be appropriate when your baby needs treatment directly into the bloodstream for a limited time. The healthcare team considers what will be given, how urgently it is needed, and how long treatment is expected to continue.

It may not be the right option for medicines or nutrition that can irritate or damage small veins. Longer treatment may also require a different type of access, such as a central venous line.

The team will usually avoid placing an IV through skin that is infected, burned, badly bruised, or injured. A limb with poor circulation, significant swelling, a blood vessel abnormality, or another medical device may also be unsuitable.

Insertion may be delayed if the treatment can safely wait and numbing medicine or a clinician with specialized IV skills is needed. In an emergency, the need for rapid access may outweigh the benefit of waiting.

If attempts are unsuccessful or suitable veins cannot be found, the team may use ultrasound guidance or discuss another access method.

How to prepare

Follow the treating facility's instructions first, because they take priority over general information.

A peripheral IV alone does not usually require fasting. Your baby may need to stop feeding if the IV is being placed for surgery, sedation, or another procedure that requires an empty stomach. Do not withhold feeds or medicines unless the healthcare team tells you to.

Tell the team about:

Comfort measures can make insertion easier. Depending on your baby's age and condition, these may include breastfeeding, skin-to-skin contact, swaddling, a pacifier, a small amount of sucrose given by staff, distraction, or topical numbing medicine. Numbing creams need time to work and may not be practical when access is urgent.

- Previous difficulty placing an IV
- Allergies or reactions to antiseptics, adhesives, or latex
- Bleeding problems or medicines that affect blood clotting
- Skin infection, injury, swelling, or circulation problems
- Any IV, central line, or other device already in place

What happens during the procedure

A healthcare professional chooses a vein by looking at and gently feeling the skin. A light or ultrasound device may help locate veins that are difficult to see.

Your baby is positioned securely to prevent sudden movement. You may be able to hold or comfort your baby, although this is not possible in every situation. Another staff member may support the limb.

The clinician cleans the skin with an antiseptic and allows it to dry. A tourniquet may be placed around the limb to make the vein easier to find.

The needle and plastic cannula are inserted through the skin and into the vein. Once blood appears in the device, the plastic tube is advanced and the needle is removed. The IV may be flushed with sterile salt water to confirm that fluid flows easily without swelling or leakage.

A clear dressing holds the cannula in place. Soft tape, a protective cover, or a small support board may be used to limit movement. Staff should still be able to see or regularly inspect the site.

Sometimes more than one attempt is needed. If placement is difficult, another clinician or a specialist vascular-access team may take over.

Recovery and what to expect afterward

Your baby may cry during insertion and may have mild tenderness or bruising afterward. Pain should settle once the procedure is complete. Ongoing pain, especially while fluid or medicine is running, needs prompt assessment.

Your baby can usually feed normally after IV placement. Feeding restrictions related to surgery, sedation, illness, or testing still apply.

Normal gentle movement is usually safe, but the IV should not be pulled, bent sharply, submerged in water, or covered so tightly that the site cannot be checked. Ask staff how to hold, dress, bathe, and position your baby without disturbing the line.

An infant cannot drive, and the IV does not restrict the adult caregiver from driving. If you received a sedating medicine yourself, follow the facility's driving instructions.

The IV itself does not determine when your baby can return to childcare or when you can return to work. That timing is based on the underlying illness, any other procedure, and the care your baby needs.

Removal is usually quick. A clinician takes off the dressing, slides out the tube, and applies pressure until bleeding stops. A small dressing may be placed over the site.

Risks and possible complications

Peripheral IV insertion is common, but problems can occur. These include:

Infants cannot explain what they feel, so regular inspection is important. Swelling, firmness, redness, cool or pale skin, leaking, or distress during an infusion may indicate a problem. Staff may stop using the IV and remove or replace it.

- Pain, bruising, or minor bleeding
- Several insertion attempts
- Blockage, leaking, or accidental dislodgement
- Irritation or inflammation of the vein, called phlebitis
- Infection at the insertion site or, less commonly, in the bloodstream
- Infiltration, when IV fluid leaks into nearby tissue
- Extravasation, when a medicine that can injure tissue leaks outside the vein
- Rare injury to a nearby artery, nerve, or other tissue

Results and follow up

There is no separate test result from IV insertion. Successful placement is usually confirmed immediately by blood return, easy flushing, and the absence of swelling or leaking.

The healthcare team checks whether the IV is still needed and examines the site during treatment. It should be removed if it is no longer required or if there are signs that it is blocked, displaced, infected, or irritating the vein.

If blood was collected during insertion, those test results follow their own timetable. Some may be available quickly, while cultures and specialized tests can take longer. Ask when and how results will be shared.

Alternatives

The alternatives depend on what your baby needs and how quickly treatment must work.

Oral medicine or fluids avoid a needle and are usually easier, but they may be absorbed more slowly or may not be suitable if your baby cannot feed, is vomiting, or needs urgent treatment.

A feeding tube can deliver milk, fluids, or some medicines into the stomach. It cannot replace IV access for medicines that must enter the bloodstream directly.

An injection into muscle or under the skin may be suitable for certain medicines. It can be painful, offers limited fluid volume, and cannot be used for every treatment.

A central venous line reaches a large vein and can support longer treatment or more irritating medicines. Placement is more involved and carries different risks, including serious infection, bleeding, and complications related to the insertion site.

In a life-threatening emergency, an intraosseous line may be placed into the bone to provide rapid access when a vein cannot be reached. It is intended for urgent, short-term use.

When to call your healthcare team

While your baby is in a healthcare facility, tell a nurse immediately if the IV site becomes swollen, red, hard, pale, cool, wet, or painful, or if your baby suddenly becomes distressed during an infusion.

If your baby goes home with a peripheral IV, contact the treating team urgently for:

Do not push the tube back in. Follow the team's instructions about stopping an infusion or clamping the tubing.

Call emergency services for trouble breathing, blue or grey coloring, collapse, marked unresponsiveness, or rapidly developing swelling of the face or mouth. Also seek emergency help for bleeding that does not stop with firm, continuous pressure.

- Increasing swelling, redness, warmth, tenderness, or discharge
- Blistering, unusual skin color, or skin that feels cool
- Fluid or blood leaking around the dressing
- A loose, damaged, blocked, or partly pulled-out IV
- Fever or unusual sleepiness, especially with changes at the IV site

Common questions

Will my baby be asleep?

Usually not. General anaesthesia and sedation are not normally needed for a peripheral IV. Comfort holding, feeding, sucrose, distraction, or local numbing medicine may be used.

Can I hold my baby during insertion?

Often, yes. The team may use a supported hold or swaddling to keep your baby safe and still. In urgent or technically difficult situations, you may be asked to stand nearby instead.

How painful is it?

There is a brief sharp pain when the skin is pierced. Your baby may also dislike being held still. Once correctly positioned, the IV should not keep hurting. New distress during an infusion should be reported immediately.

Can I drive my baby home?

Yes, if your baby is otherwise ready for discharge and you have not received a sedating medicine. The peripheral IV itself does not prevent driving.

How long can the IV stay in?

It can remain while it is needed and continues to work without signs of irritation, leaking, blockage, or infection. Staff assess the site regularly rather than relying only on a fixed number of days.

When will I know whether it worked?

The clinician usually knows immediately whether the IV is in the vein and can be used. Blood test or imaging results, if any were obtained, follow a separate timeline.

Sources

- Australian Commission on Safety and Quality in Health Care. Management of Peripheral Intravenous Catheters Clinical Care Standard . 2021
- Royal Children's Hospital Melbourne. Clinical Practice Guidelines: Intravenous access-Peripheral
- Royal Children's Hospital Melbourne. Nursing guideline: Peripheral intravenous devices management
- Centers for Disease Control and Prevention. Guidelines for the Prevention of Intravascular Catheter-Related Infections . 2011
- World Health Organization. WHO Guidelines on Drawing Blood: Best Practices in Phlebotomy . 2010