HEALTH BASICS

Vascular access device

A vascular access device is a tube placed in a blood vessel for treatment, blood sampling, or monitoring.

WHAT IT IS
A tube providing direct access to a blood vessel

WHERE IT COMES UP
IV treatment, blood sampling, chemotherapy, nutrition, or dialysis

WHY IT MATTERS
It allows reliable delivery of treatment into the bloodstream

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
Your vascular access, infusion, or treatment team

HOW IT IS CHECKED
Site inspection and device-specific position or flow checks

Overview

A vascular access device is a small, flexible tube placed into a vein or, less often, an artery. It gives healthcare teams a route into your bloodstream without using a new needle for every treatment or test.

"Vascular" means related to blood vessels. "Access" means a way to reach them. The device may stay in place for minutes, days, months, or years, depending on why it is needed.

Common types include:

The best device is not simply the largest or longest-lasting one. Selection is based on the treatment, expected length of use, condition of your veins, care setting, and risks linked to each option.

- Peripheral IV cannula: a short tube, usually placed in a vein in the hand or arm
- Midline catheter: a longer tube placed through an arm vein, with its tip remaining outside the central chest veins
- PICC: a peripherally inserted central catheter placed through the arm, with its tip in a large vein near the heart

- Central venous catheter: a tube entering a large vein in the neck, chest, or groin
- Implanted port: a small chamber placed under the skin and connected to a central catheter
- Dialysis catheter: a large central catheter designed for haemodialysis
- Arterial line: a catheter in an artery, mainly used for close blood pressure monitoring and blood sampling

How it works

The device creates a controlled route between your bloodstream and medical equipment. Medicines, fluids, blood products, contrast dye, or liquid nutrition can travel through the tube. Some devices can also be used to collect blood.

A peripheral IV ends in a smaller vein. It is often suitable for short-term fluids and medicines that are safe for smaller veins.

A central device ends in a large vein with rapid blood flow. This quickly dilutes certain concentrated or vein-irritating treatments. Central devices may also support longer treatment courses or repeated access.

An implanted port sits completely under the skin when it is not being used. A specially designed needle passes through the skin into the port chamber during treatment. After the needle is removed, there is no external tubing.

Some devices have more than one internal channel, called a lumen . Separate lumens can allow different treatments to be given, but they also create more parts that must be handled and maintained.

Placement methods differ. A clinician may use ultrasound to identify a suitable vessel. Central catheter tip position may be confirmed using an imaging or electrical guidance method. The checks needed depend on the device, how it was inserted, and local practice.

Why it matters for your health

Reliable vascular access can make repeated treatment more practical. It may reduce the number of separate needle insertions and allow treatments that cannot safely be delivered through a small peripheral vein.

The device type affects daily care. An external catheter usually needs a clean dressing and secure connection. A port normally needs little care between treatment periods once the skin

has healed, although it requires access with a special needle when used.

The choice also affects risk. A device that reaches a central vein can support complex treatment, but it may carry risks such as a serious bloodstream infection or a blood clot. A short peripheral IV has different concerns, including leakage into nearby tissue and irritation of the vein.

A device should generally remain in place only while it has a clinical purpose. Your team should review whether it is still needed, especially when treatment plans change.

What can go wrong

Problems are not inevitable, but knowing what they are can help you report changes early.

Local infection can develop where the device enters the skin. A catheter-related bloodstream infection occurs when microorganisms reach the blood through or around the device. Possible warning signs include increasing redness, warmth, swelling, pain, pus, fever, or chills.

A blood clot , also called thrombosis, may form in the vein around a catheter. This can cause swelling, pain, heaviness, or colour change in the affected arm, shoulder, neck, or leg.

An occlusion is a blockage that stops fluid or blood moving through the device. It may result from a clot, a medicine deposit, a closed clamp, or a bend in the tubing. Do not try to clear a blocked device yourself.

Infiltration means IV fluid has leaked from a vein into nearby tissue. Extravasation is leakage of a medicine that can damage tissue. Pain, burning, swelling, tightness, cool skin, blistering, or fluid leaking near a peripheral IV should be reported promptly. Stop using the device and alert staff if you are receiving treatment.

Phlebitis is inflammation of a vein. The area may become painful, red, warm, or firm along the vein.

A catheter may move, break, leak, or become disconnected. Central catheter placement can also be associated with bleeding, an abnormal heart rhythm during insertion, or a collapsed lung. These insertion-related problems are usually monitored for at the time of placement.

Seek urgent clinical advice for new swelling, increasing pain, spreading redness, drainage, fever, chills, device leakage, or a noticeable change in the external catheter length.

Call emergency services for severe trouble breathing, chest pain, fainting, confusion, uncontrolled bleeding, or sudden swelling accompanied by breathing difficulty. Clamp an external line if you have been taught to do so and it breaks or disconnects, but do not delay emergency help.

What you can do

Know which device you have and why it was placed. Ask for its name, insertion date, expected period of use, and contact details for the service responsible for it. Keep any device card you receive.

Ask these practical questions:

Follow the care instructions for your specific device. There is no single flushing schedule or dressing routine that is right for every vascular access device.

Keep external connections clean, dry, closed, and secured as instructed. Do not remove a dressing, open a cap, or push fluid into the device unless you have been trained and supplied with the correct equipment. Avoid pulling, twisting, or using scissors near external tubing.

Look at and feel around the site each day if it is visible. Record unusual pain, redness, swelling, leakage, fever, or a change in catheter length. A simple written or phone record can help you describe when a change began.

Before anyone uses the device, you can ask whether they have cleaned their hands and disinfected the connection. You can also ask whether the device is still necessary. Removal should be carried out by an appropriately trained clinician.

- Which activities, bathing methods, and arm movements are safe?
- How should the dressing, cap, or port needle be protected?
- Who will flush the device, and when?
- Which changes should I report the same day?
- When will the need for the device be reviewed?

Common questions

Is every vascular access device a central line?

No. Peripheral IV cannulas and midlines do not end in a central chest vein. PICCs, many central venous catheters, implanted ports, and dialysis catheters are central devices.

Can blood always be taken from it?

No. Blood sampling depends on the device type, its condition, the required test, and local policy. Some small peripheral devices are not suitable for routine sampling.

Does insertion hurt?

You may feel a needle prick, pressure, or pulling. Local anaesthetic is often used for longer

devices or ports. Sedation may be offered for some procedures, but it is not required for every insertion.

Can I shower or swim?

This depends on the device and whether it has an external part. External dressings and connections generally need protection from water. Swimming and soaking may not be advised. Ask your device team for specific instructions.

Can I exercise or lift weights?

Many people can remain active, but restrictions may apply soon after insertion or with certain external lines. Avoid activities that pull, crush, or repeatedly strain the device area until your team confirms what is safe.

Will it set off airport security equipment?

An implanted port or catheter may appear on medical imaging, but airport procedures differ. Carrying your device identification card can help explain what has been implanted.

When is a device removed?

It may be removed when treatment ends, it is no longer needed, it stops working safely, or a complication requires removal. The decision is based on the device and your clinical situation.

Sources

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