HEALTH BASICS

Intravenous

Intravenous means giving fluid, medicine, blood, or nutrition directly into a vein.

WHAT IT IS
A route delivering fluid or medicine into a vein

WHERE IT COMES UP
Hospital care, scans, infusions, surgery, and home treatments

WHY IT MATTERS
Direct bloodstream delivery with rapid effects and close monitoring

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
Nurse, pharmacist, or prescribing clinician

HOW IT IS CHECKED
IV site checks and treatment-specific monitoring

Overview

Intravenous means "within a vein." It is often shortened to IV . The term describes a route for giving fluids, medicines, blood products, contrast dye for some scans, or liquid nutrition. It is not a disease or diagnosis.

A short, thin plastic tube called a cannula may be placed in a vein in your hand or arm. A needle helps insert the cannula, but the needle is then removed. The flexible tube stays in the vein for as long as it is needed.

This is called a peripheral IV because it goes into a smaller vein away from the centre of the body. Treatment that lasts longer, or certain medicines that can irritate small veins, may require a central venous catheter . This is a longer tube whose tip sits in a large vein. Examples include a PICC line, a tunneled line, and an implanted port.

Not every injection is intravenous. Medicines may also be injected under the skin or into a muscle. These routes work differently and may use different doses.

How it works

An IV places a substance directly into your bloodstream. It does not first pass through your stomach and intestines as a swallowed medicine would.

Treatment may be given as:

An infusion pump controls how quickly fluid enters the vein. The correct rate matters. Some treatments need to run slowly to reduce reactions, while others must be delivered at a carefully controlled rate.

Clinicians choose an IV route for specific reasons. You may be unable to swallow, need fluid replacement, require a medicine that is not absorbed well by mouth, or need treatment with a predictable effect. IV access is also used for blood transfusions and contrast material during some imaging tests.

Monitoring depends on what you receive. It may include checks of the IV site, blood pressure, pulse, breathing, urine output, or blood test results. IV fluid treatment should be based on your fluid and electrolyte needs rather than given automatically [1].

- A single injection over a short period
- An infusion from a bag or syringe
- A continuous infusion controlled by a pump
- Repeated treatment through a central line or port

Why it matters for your health

An IV can deliver treatment without waiting for it to be absorbed through the digestive system. This can be useful during surgery, serious illness, dehydration, or treatment that cannot be taken by mouth.

Direct delivery also means that errors or unwanted reactions can take effect quickly. Staff therefore confirm details such as your identity, allergies, the prescribed substance, the dose, and the infusion rate. They also inspect the line and the skin around it.

An IV is not automatically stronger or better than a tablet. If an oral medicine works safely and you can take it, it may be simpler and avoids problems related to a line. The best route is based on the treatment, your condition, how quickly an effect is needed, and how long treatment will continue.

Central lines can make repeated or long-term treatment easier. However, they need specific care because they extend into a large vein. Infection-prevention measures include hand hygiene, skin cleaning, sterile insertion practices, secure dressings, and removing a catheter when it is no longer needed [2].

What can go wrong

Most IV treatments are completed without a serious problem, but the line and the substance being given can both cause complications.

Infiltration happens when IV fluid leaks from the vein into nearby tissue. The area may become swollen, cool, uncomfortable, or wet, and the infusion may slow down.

Extravasation is leakage of a medicine that can damage tissue. Possible signs include burning, increasing pain, swelling, blistering, or a change in skin colour. The risk and treatment depend on the medicine involved. Tell staff immediately so they can stop the infusion and assess the site.

Phlebitis means inflammation of a vein. It can cause redness, warmth, tenderness, or a firm area along the vein.

A catheter can also introduce an infection . Infection may remain around the insertion site or enter the bloodstream. Central lines generally require more structured care because catheter-related bloodstream infections can be serious [2].

Other possible problems include bruising or bleeding, a blocked or displaced catheter, and a blood clot in the vein. The fluid or medicine itself may also cause an allergic reaction, an infusion reaction, changes in body salts, or too much fluid in the circulation. The risks are different for each treatment. Contrast material used for imaging has its own reaction and kidney-related considerations [3].

Tell staff promptly during an infusion if you notice pain, burning, swelling, leaking, redness, or a loose dressing. Do not silence a pump alarm or adjust the tubing yourself.

If you are caring for a line at home, contact your line-care service urgently for fever or chills, drainage or spreading redness, new swelling of an arm or neck, or a line that has moved, cracked, or become disconnected.

Call emergency services for trouble breathing, swelling of the face or throat, fainting, sudden chest pain, severe breathlessness, or confusion. If you are already in a clinic or hospital, alert staff immediately.

Mild bruising after a peripheral cannula is removed can usually be discussed at routine follow-up if it is not improving or is causing concern.

What you can do

Before treatment, you can ask:

Tell staff about medicine, latex, adhesive, or contrast reactions you have had. Describe what happened rather than reporting only that you have an "allergy." Also mention previous problems with IV access and any implanted port or central line.

Heart or kidney problems can affect how IV fluids are planned. Make sure the prescribing team knows your health history and current medicines. Do not change your usual medicines unless you have been given specific instructions.

Avoid touching the catheter connection or lifting the edge of its dressing. Keep the dressing as directed by your care team. For a central line at home, follow the supplied instructions for bathing, dressing care, flushing, and what to do if the line is damaged. These details are specific to the type of catheter.

Keep a record of any significant infusion or contrast reaction. Include the name of the substance, when it was given, what happened, and what treatment you received. This can help clinicians plan future care.

There is no single test that confirms every IV is working correctly. Staff examine the site and check whether the infusion runs as expected. Blood tests or other measurements are used only when required for the treatment.

- What will be given through the IV and why
- How long the infusion or line is expected to be needed
- Whether another route is suitable
- What monitoring will be used
- Which changes at the IV site you should report

Common questions

Does the needle stay in my vein?

Usually not. For a peripheral IV, a needle guides a soft plastic cannula into the vein and is then removed. Some special devices work differently, so ask if you are unsure what has been placed.

Why does an IV pump make an alarm sound?

A pump may detect an empty bag, pressure in the tubing, a closed clamp, or another interruption. An alarm does not always mean something dangerous, but staff should check it. Do not change the settings yourself.

Can I eat and drink while receiving an IV?

An IV does not by itself determine whether you can eat or drink. Restrictions may be related to surgery, a test, swallowing safety, nausea, or your medical condition. Ask the team responsible for your procedure or treatment.

Can I move my arm?

Gentle movement is often possible, but bending near a cannula may slow the infusion or trigger a pump alarm. Follow the instructions you are given, especially if the line is near a joint.

When should the IV be removed?

A peripheral or central catheter should be reviewed regularly and removed when it is no longer needed. Central lines intended for longer use require planned dressing changes and other maintenance rather than routine removal after each treatment [2,4].

Sources

- National Institute for Health and Care Excellence. Intravenous fluid therapy in adults in hospital (CG174). Published 2013; updated 2017.
- Centers for Disease Control and Prevention. Summary of Recommendations: Guidelines for the Prevention of Intravascular Catheter-Related Infections. Updated 2024.
- American College of Radiology Committee on Drugs and Contrast Media. ACR Manual on Contrast Media. 2024.
- Gorski LA, Hadaway L, Hagle ME, et al. Infusion Therapy Standards of Practice, 9th Edition. Journal of Infusion Nursing. 2024;47(1S Suppl 1):S1-S285.