HEALTH BASICS

Umbilical catheters

Umbilical catheters are temporary tubes placed through a newborn's cord stump for treatment and monitoring.

WHAT IT IS
Temporary blood-vessel access through a newborn's umbilical cord

WHERE IT COMES UP
Neonatal intensive care and emergency care after birth

WHY IT MATTERS
Allows treatment, blood sampling, and close monitoring

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
The neonatal or newborn care team

HOW IT IS CHECKED
X-ray or ultrasound, line function, and blood-flow checks

Overview

An umbilical catheter is a thin, flexible tube placed into a blood vessel in a newborn baby's umbilical cord stump. It provides short-term access to the bloodstream during the first days of life.

These catheters are most often used in a neonatal intensive care unit, also called a NICU. They may be needed when a baby is premature, seriously unwell, needs frequent blood tests, or requires fluids, nutrition, or medicines through a vein. They can also provide rapid access during emergency care after birth.

There are two main types:

The arteries carried blood from the baby toward the placenta before birth. The vein carried oxygen-rich blood back to the baby. After the cord is cut, these vessels can remain open for a short time and can be used to place a catheter.

An umbilical catheter is a medical device, not a disease or diagnosis. It is normally removed as soon as it is no longer needed.

- An umbilical arterial catheter , or UAC, enters one of the two umbilical arteries

- An umbilical venous catheter , or UVC, enters the single umbilical vein

How it works

A trained clinician places the catheter through the cut surface of the cord stump using sterile equipment. The cord itself does not contain pain-sensing nerves, although a baby may react to being handled, positioned, or having other procedures at the same time.

A UAC is advanced into the aorta, the body's main artery. It can be connected to a monitor that continuously measures blood pressure. It can also be used to collect blood for tests, including blood gases. A blood gas shows information such as oxygen, carbon dioxide, and the blood's acid balance.

A UVC is advanced through the umbilical vein toward a large vein near the heart. Depending on its position and the unit's procedures, it may be used to give fluids, medicines, blood products, or intravenous nutrition. Intravenous nutrition supplies nutrients directly into the bloodstream when feeding through the stomach is not yet possible or sufficient.

The care team estimates how far to insert the catheter using the baby's measurements. Position is then checked, commonly with an X-ray or ultrasound. The team may also assess blood return, pressure readings, and the shape of the pressure tracing on a monitor.

Correct tip position matters. A catheter that is too deep, too shallow, or directed into the wrong blood vessel may not be safe for its intended use. Catheters can also shift after placement, so another position check may be needed if the line moves, stops working properly, or causes concern.

The catheter is secured to reduce movement. Staff inspect the cord, nearby skin, connected tubing, and the baby's circulation while the line remains in place.

Why it matters for your health

Umbilical catheters can reduce the need for repeated needle sticks. A UAC allows frequent blood sampling and continuous blood pressure measurement without repeatedly puncturing an artery. A UVC can provide reliable access when veins in the hands, arms, feet, or legs are difficult to use.

This access can be important when treatment needs to begin quickly. It also allows staff to give carefully measured fluids and medicines.

The benefit of keeping a catheter is weighed against the risks each day. A line that was

important shortly after birth may no longer be needed once a baby is stable, requires fewer blood tests, or has another suitable form of access.

Removal usually takes place in the hospital. Staff withdraw the tube and apply pressure to limit bleeding. The area is then observed. In most cases, there is no umbilical catheter care for families to perform at home.

What can go wrong

Complications are possible, although careful placement and monitoring are intended to reduce them.

A catheter can introduce germs into the bloodstream. This can cause a catheter-related bloodstream infection . The risk is one reason staff use sterile technique, handle connections carefully, and remove the catheter when it is no longer needed.

A blood clot, called a thrombus , can form around a catheter. A UAC may also cause an artery to tighten temporarily, known as arterial spasm. Either problem can reduce blood flow. Staff therefore check the colour, warmth, pulses, and circulation of the legs and feet. Clots can sometimes affect blood flow to nearby organs or contribute to high blood pressure.

A UVC that enters a liver blood vessel or another incorrect location can allow infused fluid to leak into surrounding tissue. This may injure the liver or abdomen. A catheter positioned too close to or inside the heart can disturb the heartbeat. Rarely, fluid can collect around the heart and interfere with its pumping.

Other possible problems include bleeding, catheter blockage, breakage, movement, or accidental disconnection. A misplaced UAC may affect blood flow to an organ supplied by the aorta.

While your baby has an umbilical catheter, tell the bedside team immediately about:

Sudden breathing difficulty, marked colour change, heavy bleeding, or collapse requires emergency assessment. In a NICU, use the call button or alert staff at once rather than waiting for routine rounds.

Questions about why the line is still needed, when it may be removed, or what a planned position check showed are appropriate for routine discussions with the neonatal team.

- Bleeding, leaking, or disconnected tubing
- New swelling, redness, drainage, or abdominal enlargement
- A leg or foot becoming unusually pale, blue, cool, or swollen

- A sudden change in breathing, colour, responsiveness, or monitor readings

What you can do

You are not expected to inspect, flush, adjust, or clean an umbilical catheter yourself. Avoid touching the catheter, dressing, clamps, or connected tubing unless staff specifically guide you.

Useful questions for the care team include:

You may want to record when each line was placed and removed. Before discharge, check whether any catheter-related complication should appear in the discharge summary.

Most babies need no special tests after an uncomplicated catheter has been removed. Planned follow-up may be needed if the team identified a bloodstream infection, blood clot, liver injury, circulation problem, or abnormal blood pressure. Ask what was found, which test showed it, and whether another blood test, ultrasound, or blood pressure check is planned.

If the cord area has healed normally and the care team has not given special instructions, there is usually nothing specific you need to do at home because of the previous catheter.

- Is this a UAC, a UVC, or both?
- What is each catheter being used for?
- How was the tip position confirmed?
- Is the line still needed today?
- What would allow it to be removed?
- Has there been any concern about infection, clotting, or circulation?

Common questions

Why use the umbilical cord instead of a vein in the hand?

The cord vessels may provide faster and more reliable access, especially in a very small or unwell newborn. A UAC also provides continuous blood pressure readings and access for arterial blood tests, which a standard hand vein cannot provide.

Can my baby be held with the catheter in place?

Sometimes. This depends on your baby's condition, the type and security of the catheter, and the other equipment being used. Ask the bedside nurse before moving or holding your baby so the tubing can be protected.

Does a UVC always reach the heart?

Its tip is usually intended to sit in a large vein near the heart, not deep inside the heart. The acceptable position depends on how the line will be used. Imaging helps the team decide whether it can be used safely.

How long does an umbilical catheter stay in?

It is intended for temporary use. The timing of removal is based on the catheter type, why it is needed, whether another form of access is available, and whether any complication is suspected. The team should review the need for it regularly.

Will the catheter affect the belly button?

The catheter passes through the cord stump rather than normal abdominal skin. After removal, the stump continues to dry and separate. If there has been no complication, the catheter does not usually require long-term belly-button care.

Sources

- Centers for Disease Control and Prevention. Recommendations for preventing central line-associated bloodstream infections in neonatal intensive care unit patients
- British Association of Perinatal Medicine. Use of central venous catheters in neonates: a framework for practice, revised 2018
- MSD Manual Professional Edition. How to do umbilical artery catheterization
- MSD Manual Professional Edition. How to do umbilical vein catheterization
- Gordon A, Greenhalgh M, McGuire W. Early planned removal of umbilical venous catheters to prevent infection in newborn infants. Cochrane Database of Systematic Reviews. 2017