



Central lines and arterial lines

This information sheet from Great Ormond Street Hospital (GOSH) explains about central lines and arterial lines and why they might be needed. Children having certain surgical procedures, for example, heart or brain surgery, major abdominal or orthopaedic surgery, may have a central line or arterial line inserted as part of their anaesthetic. These lines are also used on intensive care units.

Central lines

A central line is a narrow, flexible, hollow tube inserted into a large vein in the neck, upper chest or groin. It can remain in place for up to a week if necessary.

Why does my child need a central line?

A central line is an important part of the anaesthetic for some major surgery. It is very helpful to the anaesthetist looking after your child. It allows us to measure the pressure of blood in the vein, which helps us to know how much fluid to give your child. Blood samples can be taken from a central line without having to use a needle. Certain drugs that can irritate the small veins of the hands and feet need to be given through a large vein.

How is a central line inserted?

The anaesthetist will insert the central line while your child is asleep, but before the surgery starts. We use sterile

conditions and normally look with ultrasound to see the vein in which the line will be placed. After insertion we stitch the line in place and cover it with a sterile transparent dressing.

What are the risks?

- **Infection** – we use full sterile precautions in an operating theatre to insert central lines, and the line is closely monitored for any sign of infection. It is removed as soon as it is not needed, and will not usually stay in for more than a week. Lines inserted in the groin have a slightly higher rate of infection than those in the neck or upper chest.
- **Accidental removal or blockage** – central lines are stitched in place and covered with a dressing. The nurses looking after a child with a central line are trained in how to use it and flush it to minimise the risk of it blocking.
- **Bleeding** – we use ultrasound so we can see where the vein is but if the line is difficult to insert or if your child's



blood does not clot normally there may be bleeding or bruising around the site of insertion.

- **Lung damage** – if the central line is inserted in the neck or upper chest, the lung may be damaged and may collapse. We use ultrasound to see the vein and minimise this risk but if this happens your child may need a tube in the chest in between the ribs to re-inflate the lung. This is very rare.
- **Blood clot** – the central line may cause a blood clot in the vein. If this happens, the line will be removed and your child may need blood thinning medication to break down the clot.

- **Changes to the heart rhythm** – The tip of the central line can stimulate the pacemaker cells in the heart to change the rhythm of the heart. This can be a sign that the line is in too far and usually responds to withdrawal by a short distance.

Line removal

Once the line is no longer required it can be removed on the ward by a nurse. The insertion site will need some gentle pressure applied to it for a few minutes to ensure there is no bleeding. It is no more uncomfortable than having a peripheral drip removed.

Arterial lines

An arterial line is a small, plastic tube that we put into an artery in the wrist, arm or groin.

Why does my child need an arterial line?

An arterial line is considered essential for certain operations such as heart surgery and very helpful for many other operations. It helps the anaesthetist to look after your child through very accurate blood pressure measurement (beat by beat) via a monitor and in taking blood samples both during and after surgery. This allows us to adjust the fluids and drugs as needed for your child. The arterial line may be removed in recovery or may be left in place.

What are the risks of an arterial line?

- **Blockage/stops working** – if this happens and your child still needs an arterial line, a doctor will insert another one. The lines are normally kept open with a continuous trickle of fluid.
- **Accidental removal** – occasionally, the line can be dislodged or accidentally removed. It may need to be re-sited if it is deemed to still be needed.
- **Infection** – arterial lines are inserted after careful cleaning of the skin and are covered with a sterile dressing. The nurses looking after your child will regularly examine the arterial line for any sign of infection and remove it if needed.



- **Bleeding** – there may be bruising or bleeding around the insertion site
- **Blood clot** – a blood clot may form in the artery around the arterial line. This is a rare but serious complication as the part of the body supplied by that artery, such as the hand or leg, may not receive enough blood. The line will be removed and your child may need blood thinning medication or an operation to try to remove the clot.
- **Limb growth** – A very rare complication, later in life, can be slow growth of the limb, in which the line was sited. It should be stressed that this is an extremely rare complication and rarer still is the need for an operation to help correct the limb length.

Line removal

Once the line is no longer required it can be removed on the ward by a nurse. The insertion site will need some firm pressure applied to it for a few minutes to ensure there is no bleeding. It is no more uncomfortable than having a peripheral cannula removed.

Any other questions

The anaesthetist who will look after your child will visit you before the operation. They will tell you if they are planning to insert a central line or an arterial line and you can ask them any questions you have.

Notes

Compiled by the Department of Anaesthetics in collaboration with the Child and Family Information Group
Great Ormond Street Hospital for Children NHS Foundation Trust, Great Ormond Street, London WC1N 3JH
www.gosh.nhs.uk