

Central Venous Access Devices (CVAD)

(also called CV Lines, CVP Lines)

Aintree University Hospital 

NHS Foundation Trust

Department of Anaesthesia
Lower Lane
Liverpool L9 7AL
Tel:0151-525-5980

Your doctor has recommended a CVAD insertion. The decision is yours as to whether to have it or not.

This leaflet will give you enough information about the aims, risks, benefits and alternatives so you can make an informed decision.

If you have any questions that are not answered by this leaflet, please ask your doctor, nurse or any member of the healthcare team.

What is the blood circulatory system?

- Your heart and blood vessels make sure you have a continuous flow of blood around your body.
- Arteries and veins are the main blood vessels. They act as a transport system to carry important substances for example sugar, protein and oxygen. They also carry waste products to your kidney, for example excess minerals or toxins.

What is a CVAD?

- A CVAD is a flexible narrow plastic tube passed into one of the large veins that feed blood towards the heart.
- It is normally used for a few days (or in some patients a few weeks).
- It can be inserted in various sites: normally into a vein at the bottom of your neck or just by the collar-bone, or into a large vein on the inside of your elbow (see diagram on page 2).

- It can also be done in the groin, at the top of the leg (not shown in diagram).

Why do I need a CVAD?

The CVAD can be used to measure the pressure of blood returning to your heart. This information:

- helps your doctor work out how much fluid and/or blood to give you
- can be needed during or after major surgery or
- can be needed if you are very ill.

It can also be used to give you certain drugs, fluids or nutrition that you may need.

Your doctor can explain this in more detail if you wish.

What will happen if I decide not to have a CVAD?

Without the CVAD it would make it more difficult for us to look after you. For example without one it could be difficult to decide the correct amount of fluid to give you. You may be given too little or too much fluid; this can cause problems.

What are the alternatives to a CVAD?

If you decide not to have a CVAD the doctors and nurses will continue to look after you to the best of their ability. They will need to use simple IV cannulae in your veins (for example the veins in your arms) to give you drugs and fluids.

What does the procedure involve?

The procedure may take place in

- a treatment area of the ward
- the x-ray department or
- the operating theatre

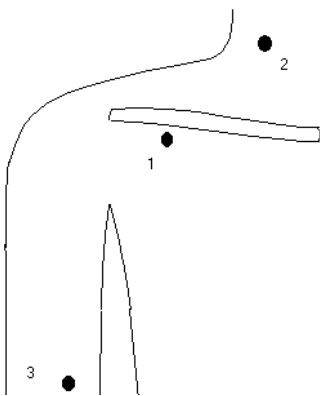
You will be asked to lie down on your back.

To reduce the chance of infection:

- The doctor/nurse will wear a theatre gown and operating gloves.
- Your skin will be cleaned with antiseptic where the CV line will be inserted.
- The area will be covered with a sterile towel. Your face may be covered to try and reduce the risk of infection so please let the doctor or nurse know if you are claustrophobic.

They will inject local anaesthetic into your skin where the CVAD will be inserted. This stings for a moment but will make the area numb, allowing it to be put in more easily.

They usually use one of the following veins [see diagram]



1. Subclavian vein, just underneath your clavicle [collar bone]
2. Internal jugular vein, in the lower part of your neck
3. Brachial vein, near your elbow

Sometimes you will have an ultrasound scan to help your doctor or nurse find the right vein.

If they use your subclavian or internal jugular vein (1 or 2 on the diagram), they will tip the bed slightly head-down. This will make the vein get bigger so it will be easier to insert the line.

The line is inserted using a needle and a soft metal wire [guidewire]. They will usually stitch the line in place and you will have an x-ray to check that it is in the right position.

What happens when I no longer need the CVAD?

When it is no longer needed it will be removed. You may have a small amount of discomfort when the line is removed. Your doctor or nurse will cut any stitches and the line just slides out.

How soon can I return to normal activities after the line is removed?

After a CVAD is removed we recommend you lie in bed for an hour. After an hour if there is:

- no bleeding and
- the dressing is intact

you may get up and move around, provided that you feel well enough.

What are the risks and complications?

We try to make sure your CVAD insertion is safe. However, every procedure has risks and possible complications. Those that can happen following a CVAD insertion are listed below:

Risks during the procedure:

- **Bleeding**, if a blood vessel is damaged [risk: less than 1 in 20]. Sometimes the doctor will need to use another vein to insert the CV line.
- **Pneumothorax**, where air escapes into the space around the lung [risk: less than

3 in 100]. Usually a pneumothorax is small and does not cause any problems.

Risks during the procedure

- If it is large, it can cause the lung to collapse.
- If this happens it can be treated: the air can be sucked out using a needle [aspiration] or a tube can be placed in your chest [chest drain].
- If you suddenly become short of breath or have severe chest pain, tell your doctor straightaway.
- **Failure** of the procedure [risk: 3 in 20]. The doctor will then try to insert the CV line into another vein.
- **CVAD in the wrong place**, [risk: less than 1 in 100] the line may pass into the wrong vein.
- This can sometimes be corrected by moving it while a special x-ray is taken or it may need to be removed and replaced.
- If the CVAD is not in the vein (in an artery or not in a blood vessel at all) it will need to be removed and replaced. This is uncommon now that ultrasound scanners are used to help find the vein.
- **Air embolus**, where air enters the bloodstream. This is rare.
- **Nerve damage**. This is rare.

Risks after the procedure

- **Infection** in the bloodstream or at the place where the CVAD is inserted [risk: less than 3 in 100].
- The heart valves (soft flaps of tissue that control the flow of blood in your heart) can be damaged or you can get seriously ill [risk: 1 in 100].
- It is more common to get an infection where the CVAD is inserted [risk: 1 in 10].

- The risk of infection increases if you have been ill for a few weeks, if the CVAD is left in for more than a few days, or if you are a diabetic.
- **Blood clot in the CVAD** [risk: 1 in 10]. The line may need to be replaced if it cannot be unblocked.
- **Death** is an extremely rare complication of CVADs.

What happens after the procedure?

Once the CVAD has been inserted your doctors and nurses will use it to help look after you. The CVAD may be used to

- measure the pressure of blood returning to your heart to help decide what fluid to give you
- or
- give you certain extra drugs or treatments.

What can I do to make the procedure a success?

- The doctor or nurse inserting the CVAD should explain what they are doing during the procedure.
- You will usually be asked to relax your shoulder and turn your head away from the area where the doctor is working. It will help the doctor if you can do this.
- If you experience any pain please tell the doctor or nurse immediately so that they can try and prevent any further pain. It is easiest to pass a CVAD in a comfortable relaxed patient – so we would ask you to try and relax and lie still.

How soon will I recover following the procedure?

You should be able to return to your normal activities within an hour of the procedure. However patients needing a CVAD often have medical problems which mean that they are generally unwell and are not able to resume normal activities.

Summary

- A CVAD insertion is a safe and effective device to let your doctor to give you the fluid, drugs or nutrition that you need.
- It can also be used to measure the pressure of blood returning to your heart. However, risks and complications can occur. It is your decision whether you want to have the procedure or not.
- For further information about specific types of CV Lines (eg Hickman Lines, Portacaths, PICCs) please ask for the more detailed leaflets that are available (if your nurse or doctor has not already given one to you).

Exclusion

- This leaflet is not intended to provide information on the specialised CVADs used for haemodialysis in patients with Kidney disease.

Further Information

Department of Anaesthesia
0151-529-5152
(9am – 5pm, Mon-Fri)

Dr N P Mercer
Consultant Anaesthetist
contact via Dept of Anaesthesia

IV Access Team
Roy Ventura or Chris O'Loughlin
0151-529-8406/6781

You can get further information from:
NHS Direct on 0845 46 47 [0845 606 46 47
– textphone] or www.nhsdirect.nhs.uk

Acknowledgements

Authors:
Dr N P Mercer, Roy Ventura

This document is intended for information purposes only and you should read it either together with, or depending on, any advice given by your relevant health professional



If you require a special edition of this leaflet

This leaflet is available in large print, Braille, on audio tape or disk and in other languages on request. Please contact:

Tel No: 0151 529 2906

Email: interpretationandtranslation@aintree.nhs.uk