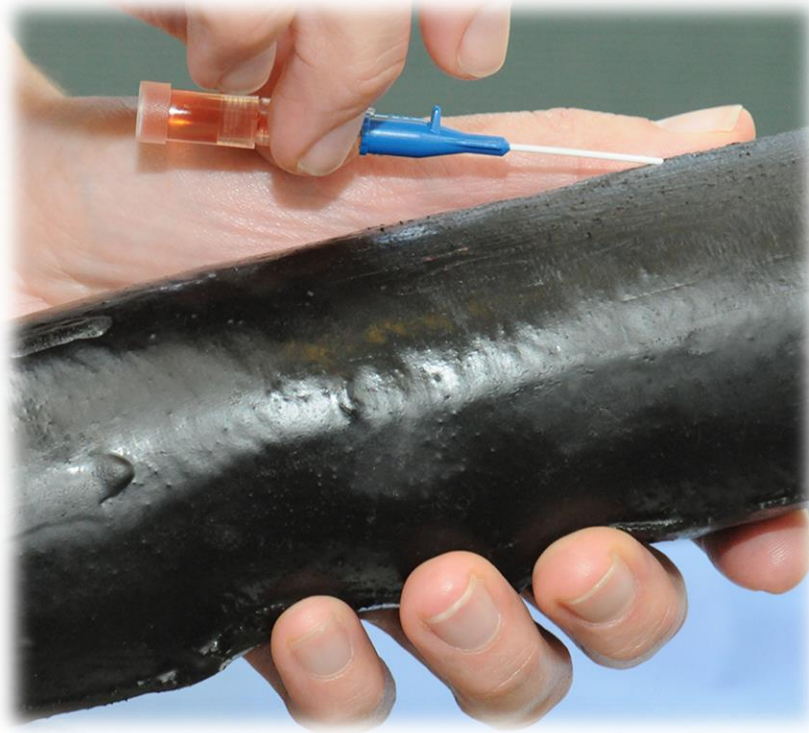


# IV Catheter Placement



## Disclaimer

A series of booklets has been developed by the Clinical Skills Lab team (staff, recent graduates and students) from the School of Veterinary Sciences, University of Bristol, UK.

Please note:

- Each booklet illustrates one way to perform a skill and it is acknowledged that there are often other approaches. Before using the booklets students should check with their university or college whether the approach illustrated is acceptable in their context or whether an alternative method should be used.
- The booklets are made available in good faith and may be subject to changes.
- In using these booklets you must adopt safe working procedures and take your own risk assessments, checked by your university, college etc. The University of Bristol will not be liable for any loss or damage resulting from failure to adhere to such practices.

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## Equipment list:

### IV Catheter Placement

#### Equipment for this station:

- IV catheter model, with giving set and red fluid bag
- IV catheter
- Bung or T-port
- Tape – two strips cut to size before starting

#### Additional equipment you *would* need with a live animal:

- Swab/cotton wool
- Skin preparation solution
- Needle
- Syringe
- Sterile saline

#### Considerations for this station:

- Stylets and needles must be disposed of in a sharps container.
- In the Clinical Skills Lab (CSL) stylets and needles should be used more than once wherever possible
- Wear gloves if allergic to latex

Anyone working in the Clinical Skills Lab must read the 'CSL\_I01 Induction' and agree to abide by the 'CSL\_I00 House Rules' & 'CSL\_I02 Lab Area Rules'

Please inform a member of staff if equipment is damaged or about to run out.

# Clinical Skills:

## IV Catheter Placement



Before attempting to place an IV catheter it is important to prepare all equipment. It may become difficult to restrain an anxious or wriggly animal if the procedure is prolonged while waiting for missing equipment. Prepare 2 lengths of tape for securing the catheter. These should be long enough to pass around the animal's leg approximately 1½ times.



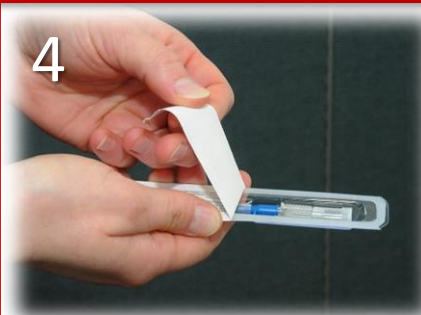
### With live animals:

Pre-flush a T-port with sterile saline (see 'CSL\_A09 IV Fluid Therapy Set Up' booklet). This avoids delivering an air embolus with the fluids or drug/s.

The above picture demonstrates flushing a needle free system.



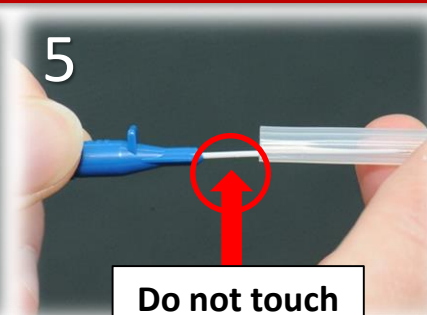
In a live animal clip the hair at the insertion site and then clean according to the clinics standard operating procedure (both chlorhexidine and alcohol are commonly used).



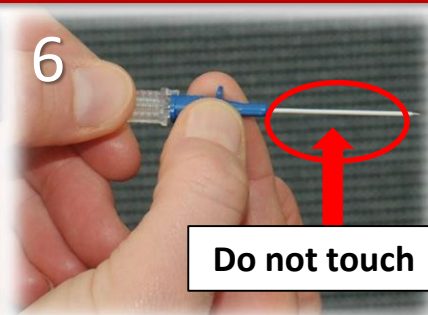
Open the catheter packaging by peeling off the paper back.

N.B. Sterility must be maintained whilst placing catheters.

If you break sterility, stop and correct the mistake appropriately. See page 10 of this booklet for examples.



Remove the catheter from its protective plastic cap (container).



Top tip: Partially separate the catheter and stylet and then replace them in the original position. They can be difficult to separate the first time.

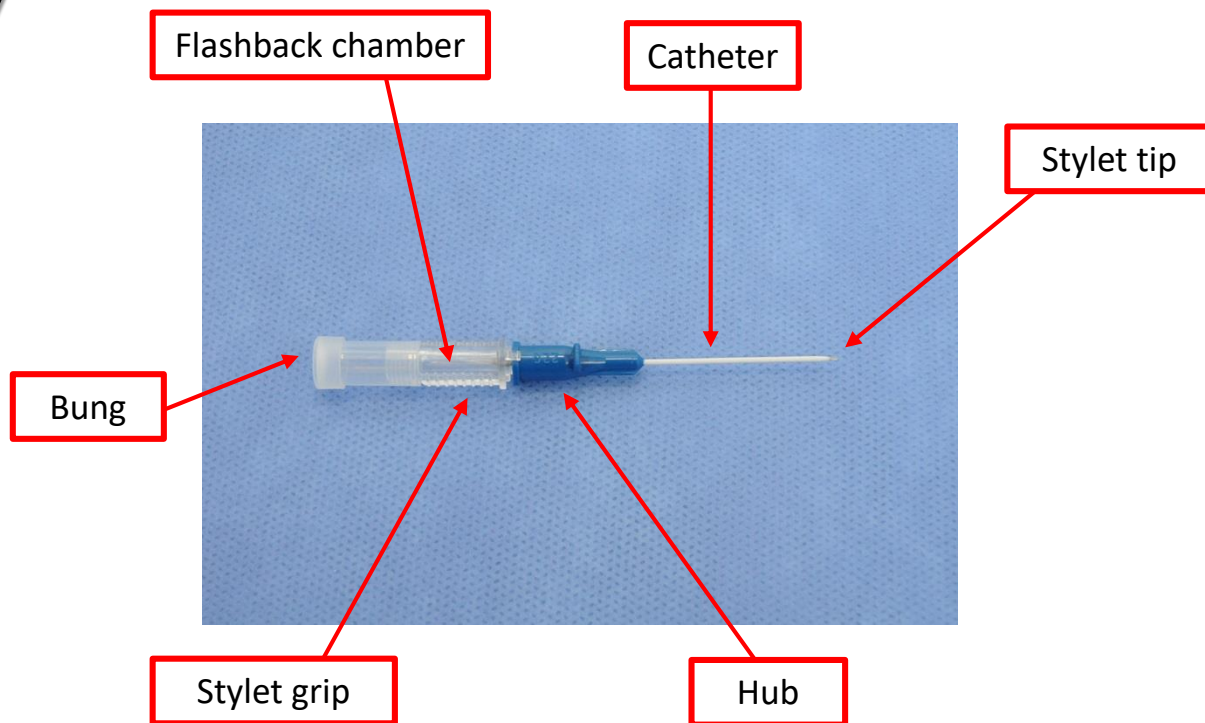
**Take care not to touch the catheter tubing or rest it on the table as the catheter tube lies within the vein and must be kept sterile.**

See the "I Wish I'd Known" section towards the end of this booklet for more information on maintaining sterility.

# Clinical Skills:

## IV Catheter Placement

7



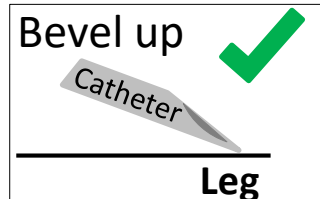
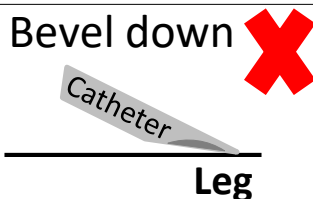
In a live animal, ask an assistant to restrain the animal, stabilise the limb and raise the vein.



If you are right handed, place your left thumb alongside the vein to stabilise it (but not over the sterile area).



With your right hand position the catheter with the bevel facing upwards at an angle of approximately 30° to the leg.

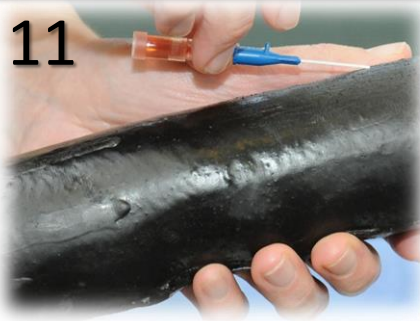




# Clinical Skills:

## IV Catheter Placement

11



Insert the tip of the catheter in one confident movement to pierce the skin and vein.

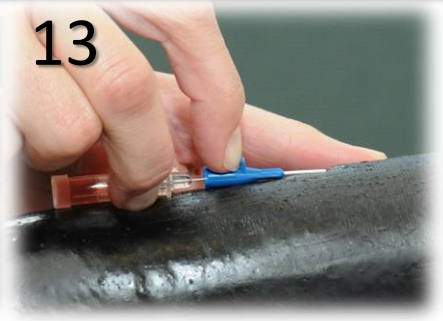
If placed correctly the catheter will enter the lumen of the vein a red flash of blood is seen in the flashback chamber. Be careful not to exit through the other side of the vein.

12



Once the red flash is seen, flatten the angle of the catheter and continue to insert for approximately another 5mm to ensure that the catheter is lying well within the vein.

13



Gently press the end of the catheter down onto the limb so that if the animal moves you will move with it and not accidentally remove the catheter.

With your index finger on the catheter (as shown above) advance the catheter into the vein and off the stylet. The stylet should be held still and not be advanced into the vein, only the catheter is advanced.

14



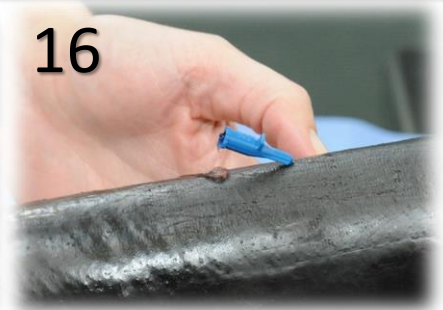
Advance the catheter until the hub meets the entry point of the skin. The stylet should remain still and should not be advanced into the vein.

15



At this stage, in the live animal instruct the assistant to stop raising the vein.

16



Fully remove the stylet and continue to hold the limb. There may be some leakage of blood from the catheter although this can be minimised by being ready to attach a bung or T-port.

# Clinical Skills:

## IV Catheter Placement

17



While ensuring that you do not let go of the limb securely attach a bung onto the catheter.

18



Gently wipe the area surrounding the catheter using a swab to ensure the skin is clean and dry; this will ensure the tape adheres to the skin.

19



Pass a piece of tape around the leg, this should lay underneath the catheter. Then tape over the top of the catheter without covering the connection to the bung.

This will ensure the catheter remains securely taped in place should you need to remove a T-port or bung.

20



Pinch the tape around the catheter to ensure that it adheres securely to the catheter.

21



To secure the bung in place, pass a second piece of tape around the leg (as directed in step 24) then tape over the top of the bung, ensuring that the tape does not cover the join between the catheter and the bung.

22



In a live animal, a T-port may be used rather than a bung. Connect the T-port to the catheter and ensure it is secure.

Pass a piece of tape around the leg, this should lay under the tubing just below where the T-port is connected to catheter. Then tape over the top of the T-port tubing.

# Clinical Skills:

## IV Catheter Placement

23



When using a T-port, before applying a protective bandage it is important to check the catheter placement. Flush the catheter with sterile saline, if it flushes easily, with no subcutaneous swelling, create a loop in the T-port and tape it onto the leg.

See 'CSL\_B04 Catheter Bandage - Catheter not in use' and 'CSL\_B03 Catheter Bandage - Catheter in use' for catheter bandaging techniques.

# Resetting the station:

## IV Catheter Placement

1. Remove tape, T-port and/or bung (in the CSL the T-port and bung will be reused).
2. Remove the catheter – these are re-used so re-insert the stylet – see 'CSL\_U02 Safe use of needles' for re-sheathing of needles and place them back in their packaging in a tray. Take care not to injure yourself. If the catheter is blunt, dispose of in a sharps bin.
3. If no-one else is about to use the model, turn the 'blood' drip off, but **do not disconnect anything**:



The gate should be closed, so the roller is at the bottom.

The 3 way tap behind the model should NOT allow the 'blood' to flow into the model – the arrows show where fluid can move. Match it to the picture.

*Station ready for the next person:*





# I wish I'd known: IV Catheter Placement

- Everyone has 'bad vein days': don't be disheartened, even the best people miss veins.
- Some people find it easier catheterising the left or right leg – if you are struggling on live animals, try a different leg next time.
- Sometimes it is less stressful if you can take your patient to a procedures room or ask the owner to wait in reception while a blood sample is taken.
- Open the packaging and remove the catheter without touching the inside of the packaging. This means if you need to place the catheter down for any reason, you have a readily available sterile sleeve to place it in. N.B. You should always re-sheath the catheter in its hard protective cap before placing in the packaging, to help maintain sterility, and for sharps safety.



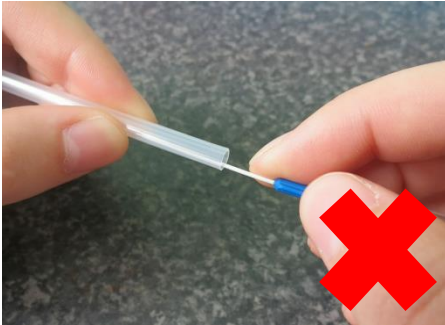
- Removing the bung at the end of the catheter and flushing with saline makes it much easier to see the 'flashback' of blood during catheter insertion and advancement
- Making a small skin nick with a no. 11 scalpel blade facilitates catheter insertion in animals with thick or tough skin (e.g. bulldogs).
- It is essential to maintain sterility whilst placing a catheter. If the tubing of the catheter (the white tube that lies inside the vein) touches any non-sterile surface e.g. your hand, the table, or the animal's hair before placement, it will be contaminated and a new sterile catheter must then be used.
- Consequences of poor sterility include phlebitis (inflammation of the vein) which can be caused by mechanical, chemical or infectious irritation at the catheter site. If left untreated, this can lead to infection or thrombus formation.
- Studies have shown the rate of bacterial colonisation of catheters to vary between 7-20%<sup>1-3</sup>
- Careful placement whilst adhering to sterility measures can help to prevent phlebitis and associated complications.

- 1) Mathews, K. A., Brooks, M. J. and Valliant, A. E. (1996), A Prospective Study Of Intravenous Catheter Contamination. *Journal of Veterinary Emergency and Critical Care*, 6: 33–43.
- 2) Lobetti, Remo G; Joubert, Kenneth E; Picard, Jackie; et al. (2002) Bacterial colonization of intravenous catheters in young dogs suspected to have parvoviral enteritis. *Journal of the American Veterinary Medical Association* Volume: 220 Issue: 9 Pages: 1321-1324
- 3) Seguela, J. and Pages, J.-P. (2011), Bacterial and fungal colonisation of peripheral intravenous catheters in dogs and cats. *Journal of Small Animal Practice*, 52: 531–535.

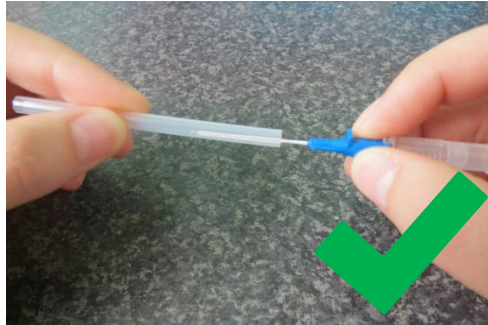
# Incorrect Technique

## IV Catheter Placement

This page highlights **INCORRECT** technique. If you make any of these errors whilst inserting a catheter, it is important to recognise the error, and ensure that sterility is re-established before continuing.



**Do not** touch the tubing of the catheter when removing the protective cap.



**Do:** Hold the blue port end of the catheter in your dominant hand, and the protective cap in your non-dominant hand. Remove the catheter carefully from the cap.

If you touch the tubing, discard that catheter and use a new, sterile one.



**Do not** place the catheter directly on the table.



**Do:** If you need to put the catheter down, re-sheath the catheter within its protective cap and place both catheter and cap within the original packaging (ensure packaging was opened in a sterile manner).

If you place the catheter on the table, or compromise its sterility, discard that catheter and use a new, sterile one.



**Do not** touch the tubing of the catheter with your thumb (stabilising the vein) when inserting the catheter.



**Do:** Be aware of where the catheter will enter the vein and where your thumb is stabilising the vein. Rotate your non-dominant hand away from the insertion site a little to allow more room and easier visualisation.

If you touch the tubing during catheter insertion, discard the catheter (even if it has been inserted) and use a new, sterile one. You may also need to re-prepare the skin at the insertion site.