VYGON
Value Life

Biovalve Safe

A Guide to Peripheral IV Cannulation

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Biovalve Safe

Peripheral IV Cannulation from Vygon (UK) Ltd

The information provided here is intended as guidance in performing intravenous cannulation. It does not dictate medical practice, and you should always follow your local hospital or Trust policies.

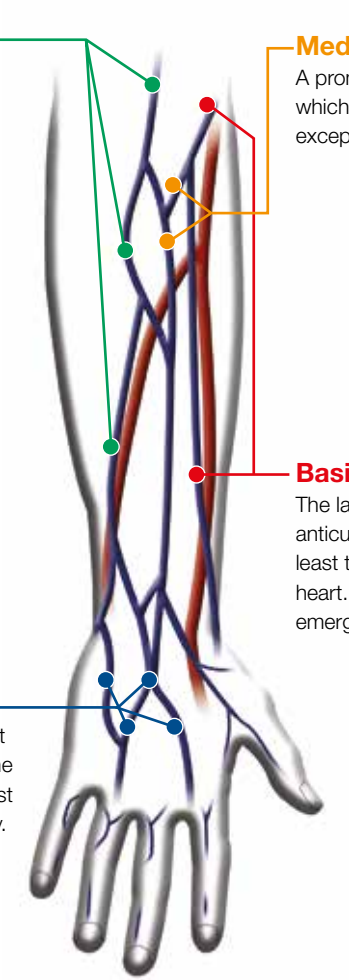
Contents

Useful Information

Size/Colour guide: 22G 20G 18G 16G 14G

Cephalic
A prominent vein of the forearm often used for cannulation as it is large, straight and easy to access.

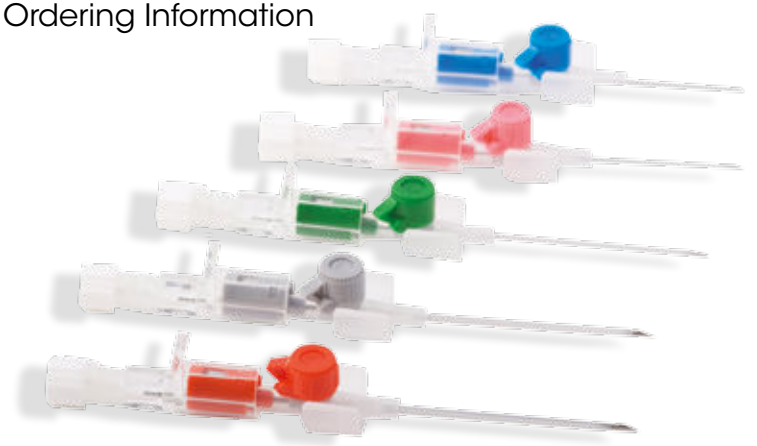
Median Cubital
A prominent anticubital vein which should be avoided except in an emergency.



Basilic
The largest of the three anticubital veins with the least tortuous route to the heart. Only to be used in an emergency for cannulation.

Metacarpal
Easily accessible in most people and should be the veins that you assess first for cannulation suitability.

Biovalve Safe Ordering Information



Code	Size	Flow Rate (ml/min)	Applications
0106082	22G	36	Neonates, paediatrics, elderly patients with fragile veins or patients on long term therapy.
0106102	20G	60	Patients receiving up to 2-3 litres of fluid per day, patients on longer term medication.
0106122	18G	90	Patients receiving blood components or large volumes of fluid.
0106172	16G	180	Rapid transfusions of whole blood or blood components.
0106212	14G	270	Rapid transfusions of whole blood.

CANNULATION

IV Cannulation Products from Vygon

Biovalve Safe

A short ported IV cannula designed specifically for peripheral access.

Also available in a pack with everything you need. Please refer to our Biovalve Safe literature for further information, available on request.

CANNULATION

Handwashing Technique

STEP ONE
Wet hands thoroughly before applying washing agent.

STEP TWO
Rub palm to palm.

STEP THREE
Right palm over back of left hand and left palm over back of right hand.

STEP FOUR
Palm to palm fingers interlaced.

STEP FIVE
Backs of fingers to opposing palms with fingers interlocked.

STEP SIX
Wash each thumb by clasping and rotating in the palm of the opposite hand.

STEP SEVEN
Rotational rubbing back and forwards with clasped fingers of right hand in left palm and vice versa.

STEP EIGHT
Rinse hands under running water.

STEP NINE
Dry hands thoroughly.

CANNULATION

Preparation

STEP ONE

Explain the cannulation procedure to the patient, check understanding and obtain consent. Ask the patient about any allergies to drugs, solutions or adhesive dressings. Check wrist band for patient identification against patient notes.

STEP TWO

Various intravenous sites should be examined before a choice is made. Take time to look at alternative sites. Common sites are the dorsum of the hand, the forearm, the median ante-cubital veins (emergency use only) and very occasionally the veins of the foot.

CAUTION: Avoid placing cannula over points of flexion (e.g. the wrist).

STEP THREE

Choose the smallest practical cannula size, taking into account the patient's fluid requirements, the size of vessel to be cannulated and the timescale of IV therapy.

Please refer to the cannula guide in the front cover foldout.

STEP FOUR

Assemble all necessary equipment required for cannulation in accordance with hospital policy. When intermittent IV access is required, the use of a cannula extension is recommended. Ideally, the top port of the cannula should only be used in an emergency situation to minimise the risk of infection.

Please note: Hospital policy may advocate the use of a non-ported cannula.

Aseptic Technique & Palpating of the Vein

STEP FIVE

Strict aseptic technique in accordance with hospital policy is essential and the clinician should wash their hands using a soap or soap solution. Hands should be washed vigorously for 20-30 seconds.

Refer to the hand hygiene and handwashing section on page 4-5.

STEP SIX

Use a tourniquet to help identify an appropriate vein. The tourniquet should be applied above the intended site of cannulation. Application of tourniquet should not impede arterial blood flow and should not remain on patient for longer than two minutes.

STEP SEVEN

Gloves should be worn to minimise the risk of infection to both the clinician and patient.

STEP EIGHT

Gentle palpation over the intended cannulation site will assist vein location. Additionally, the patient may be asked to aid vein location by making a fist, releasing and repeating this action.

Aseptic Technique

STEP NINE

The intended cannulation site should be prepared using an antiseptic solution (2% chlorhexidine in 70% isopropyl alcohol) or swab. Cleansing should start at the intended cannula insertion point and wiping should be performed in a circular motion, radiating outwards (follow manufacturer's skin cleansing guidelines).

The skin must be allowed to dry before proceeding.

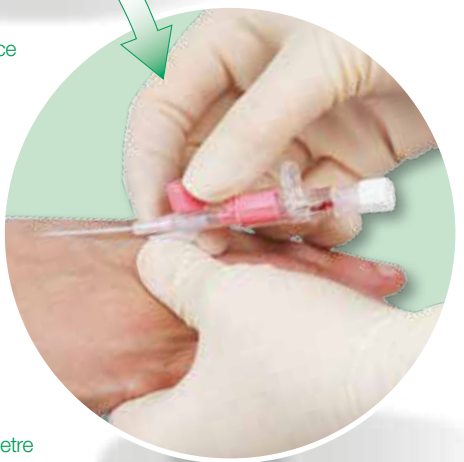
STEP TEN

Stabilisation of the vein is the key to successful cannulation. If necessary place thumb approx 2-5 centimetres beneath the insertion site to anchor the vein. This reduces the risk of vein movement on needle insertion.

Cannulation

STEP ELEVEN

Insert the needle cannula assembly through the skin at an angle of 25-35°.



STEP TWELVE

Penetrate the skin and advance the needle cannula assembly into the vein. Successful entry into the vein is confirmed by free flow of blood into the flashback chamber.

Slightly lower the needle until it is almost flush with the skin. This angle reduces the risk of passing the needle through the vein (transfixion). Advance the entire needle and cannula assembly a further half centimetre into the vein.

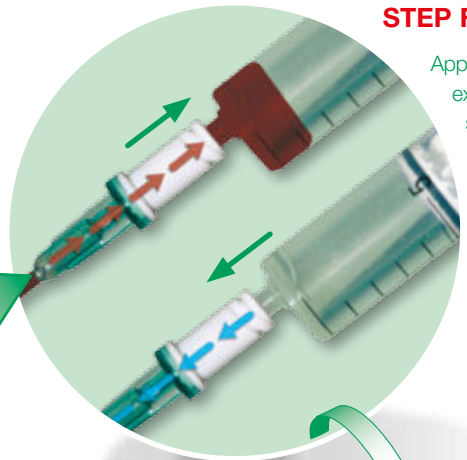
Cannulation

STEP THIRTEEN

The introducer needle is now withdrawn a short distance and blood should be seen to enter the cannula. This confirms the position in the vein. The needle must not be reinserted as this can damage the cannula.

STEP FOURTEEN

Whilst stabilising the needle, advance the cannula into the vein. Release the tourniquet and place a finger over the vein, distal to the cannula tip. Remove the introducer needle and safely dispose in an appropriate sharps container.



STEP FIFTEEN

Apply a pre-primed cannula extension and attach a 10ml syringe containing normal saline. Draw blood back into the syringe to confirm the cannula's location in the vein. Flush from the cannula to remove any blood.

STEP SIXTEEN

The cannula should be secured with a transparent, semi-permeable membrane dressing in accordance with hospital policy. This will reduce the risk of infection, cannula movement and accidental cannula displacement, and will allow clear observation of the entry site. Record the cannula procedure in the patient's notes.

Cannula Care

In order to prevent infection the following should be included in the management of all IV cannulae.

- Follow aseptic technique when handling the cannula and other equipment.
- The cannula should always be secured using a transparent semi-permeable dressing to prevent movement.
- To minimise cannula movement always use a cannula extension to administer prescribed medication.
- All connections should be checked for tightness.
- Inspect the insertion site daily for signs of infection, i.e. inflammation, redness, tenderness. Consider the use of Visual Infusion Phlebitis (VIP) scoring.
- In order to maintain patency, regularly flush the cannula using a cannula extension.
- If any signs of inflammation or infection are found the cannula should be removed and a new one inserted at an alternative site.
- The cannula should be removed after 72-96 hours unless clinically indicated otherwise.

Cannula Removal

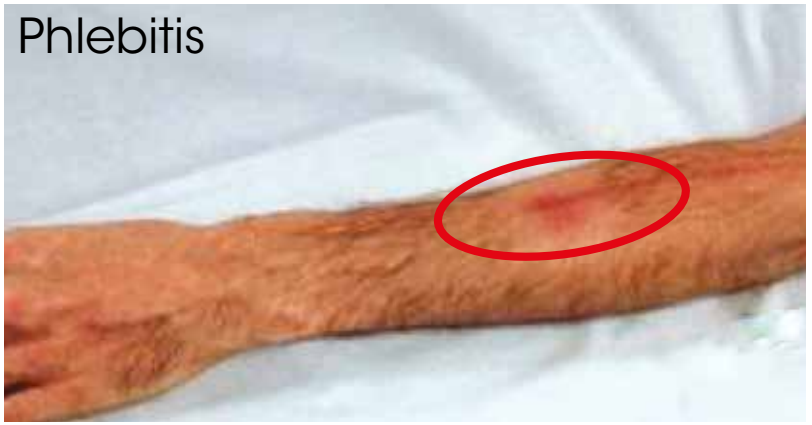
- Wash your hands.
- Apply a pair of gloves.
- Remove all IV dressings and tape. **Do not use scissors.**
- Hold a small sterile dressing over the site and slowly remove the cannula.
- Immediately apply firm pressure for 2-3 minutes to ensure there is no subcutaneous leakage of blood. Elevate the arm if bleeding persists.
- If necessary apply a new sterile dressing to site.

CANNULATION

Complications & Recommendations

Complications	Recommendations
 **Air embolism** occurs when air enters the vein. Although it takes a considerable amount of air to cause concern, it is best prevented.	Make sure all lines are well primed prior to use and connections secure. Also consider using an air-eliminating filter in the line.
 **Infiltration** is the inadvertent administration of a non-vesicant medication or solution into the surrounding tissue instead of into the intended vascular pathway and will present with coolness and blanching of the skin, as well as leaking at the site.	The cannula must be removed immediately. To continue treatment insert a cannula in an alternative site away from the area of infiltration. The risk of infiltration can be reduced by using a cannula extension and a secure cannula dressing.
 **Extravasation** occurs when an infusate of a vesicant nature enters the subcutaneous tissue rather than the vessel as intended. This can be extremely painful for the patient and detection is important, as some infusates are hypertonic solutions and cytotoxic drugs.	Refer to local extravasation policies and procedures for treatment options.
 **Thrombolism / Thrombophlebitis** occurs when a blood clot (thrombus) becomes detached from the sheath of the cannula or the vessel wall.	Prevention is the greatest form of defence. Flush the cannula on a regular basis and consider re-siting the cannula if IV therapy is to continue for more than 3-4 days.
 **Haematomas** occur when blood leaks out of the vessel wall. The common cause of this is using cannulae that are not tapered at the distal end. It will also occur if, on insertion, the cannula has penetrated through the other side of the vessel wall.	Apply pressure to the site for approximately 2 minutes and elevate the limb.

Complications & Recommendations



Visual Infusion Phlebitis (VIP) Score

IV site appears healthy	0	No signs of phlebitis ● Observe cannula
One of the following is evident: ● Slight pain near I.V. site ● Slight redness near I.V. site	1	Possible first signs of phlebitis ● Observe cannula
Two of the following are evident: ● Pain at I.V. site ● Swelling ● Erythema	2	Early stage of phlebitis ● Resite cannula
All of the following are evident ● Pain along the path of the cannula ● Erythema ● Swelling	3	Medium stage of phlebitis ● Resite cannula ● **Consider treatment**
All of the following are evident & extensive ● Pain along the path of the cannula ● Erythema ● Swelling ● Palpable venous cord	4	Advanced stage of phlebitis (or start of thrombophlebitis) ● Resite cannula ● Consider treatment
All of the following are evident & extensive ● Pain along the path of the cannula ● Erythema ● Swelling ● Palpable venous cord ● Pyrexia	5	Advanced stage of Thrombophlebitis ● Resite cannula ● Initiate treatment

Oxford Radcliffe Trust Infection Control Services. Updated from A Jackson. 1997 OM141067

Complications

Phlebitis can be defined as the acute inflammation of the intima of the vein. It is characterised by pain and tenderness along the course of the vein. There are three main types of phlebitis: mechanical, chemical and infective.

Mechanical Phlebitis occurs where the cannula itself irritates or injures the vein wall.

Chemical Phlebitis occurs where the infusate (or particles in the infusate) damages the vein wall.

Infective Phlebitis occurs where bacteria causes irritation to the vein wall.

Recommendations

To prevent phlebitis - use aseptic insertion techniques, choose the smallest gauge cannula possible for the prescribed treatment, secure the cannula properly to prevent movement. It is important to do regular checks for the signs of phlebitis.

Use the smallest gauge cannula neccessary for prescribed therapy in order to minimise catheter and vein wall contact. Stabilise the cannula with a transparent, semi-permeable dressing and assess the cannula site regularly.

This can be avoided by ensuring the infusate is filtered, does not exceed a final osmolarity of 500mmol/l, pH between 5 and 9, dextrose concentrations of >10%. Selecting the smallest gauge cannula and the largest vein possible will allow a greater volume of blood to flow around the cannula tip, thus diluting the infusate.

The principles of asepsis, including handwashing, minimal touch technique and the cleansing of access points prior to use are essential. This must also include the use of a sterile dressing to cover the cannula insertion site. Cannula changes of at least 72-96 hours are recommended.

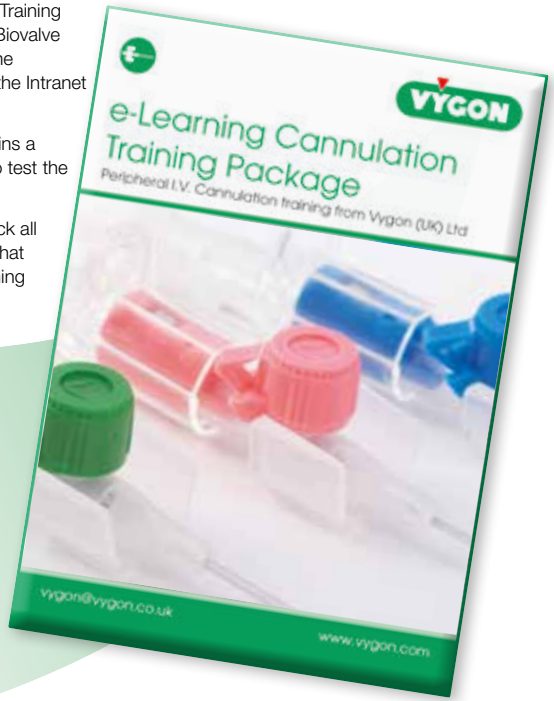
CANNULATION

e-Learning Cannulation Training Package

Vygon's e-Learning Cannulation Training Package is available to existing Biovalve customers either as a stand-alone CD-ROM or available to use on the Intranet of an NHS Trust or workplace.

Each of the eight sections contains a built-in assessment at the end to test the student's knowledge.

The package will upload and track all user progress for organisations that have SCORM compliant e-Learning Management systems.



TOPICS COVERED IN THE PACKAGE

- ✓ Legal
- ✓ Anatomy & Physiology
- ✓ Site Selection
- ✓ Equipment Choice
- ✓ Principles & Practice of Cannulation
- ✓ Complications
- ✓ Post Insertion Care
- ✓ Infection Control

"Good teaching is good teaching, no matter how it's done." The old adage still rings true, and e-Learning brings with it new dimensions in education and training.

Advantages of e-Learning over conventional training

It's interactive and fun

Training material that is designed to get the student to explore ideas then make choices and decisions based on what they have been taught, will most certainly be effective. Being free to make mistakes and repeat the process until you get it right is an excellent way of embedding information in our brains.

It's self-paced

e-Learning programmes can generally be taken when needed. Most e-Learning material comes in a module-based design, allowing the learner to go through smaller chunks of training that can be used and absorbed for a while before moving on.

Students can choose where and when they do their training

e-Learners can go through training sessions from anywhere, usually at any time. This benefit can make learning possible for people who find it hard to work training into their busy schedules.

It can lead to increased retention and a stronger grasp of the subject

This is because of the many elements that are combined in e-Learning to reinforce the message, such as video, audio, quizzes, interaction, etc. There is also the option to revisit or replay sections of the training that might not have been clear the first time around.

It builds confidence

Students do not need to worry that they are holding the class up by asking questions. They can take their time to learn and understand before moving on to the next topic.

It provides a consistent message

e-Learning eliminates the problems associated with different instructors teaching slightly different material on the same subject. For ward-based training, this is often critical.

It can be easily managed for large groups of staff

e-Learning allows managers and others to keep track of the course offerings, schedule or assign training for staff and track their progress and results. Managers can review a student's scores and identify any areas that need additional training.

Notes

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