



Value Life

Intravascular Access
A Nurse's Guide to Lifecath Midline



Lifecath Midline

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This booklet provides guidance in the care and maintenance of Lifecath Midline catheters. It does not dictate medical practice, and you should always follow your local hospital or Trust policies.

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Lifecath Midline catheters overview

Description

- Lifecath Midline catheters offer an alternative to peripheral and central venous access, providing vascular access in a larger peripheral vein without entering central venous circulation
- They are available in various sizes which are suitable for both children and adults
- They are peripherally inserted with the tip terminating before the axillary vein
- Benefits to the patient include less frequent resiting of the peripheral cannulas and a subsequent reduction in associated venous trauma, and ultimately improving patient experience.

Indications

- Patients undergoing peripheral IV therapy (e.g. antibiotics) for five days or more, in order to preserve the integrity of the veins and increase patient comfort by removing the need for resites
- Patient preference
- Where patients present with poor peripheral venous access in the lower arm and when the use of a CVC is contraindicated, the Lifecath Midline catheter provides venous access along with easy, less hazardous insertion.

Contraindications for Lifecath Midlines

The following therapies are not appropriate for administration via a Lifecath Midline catheter:

- Total Parental Nutrition (TPN)*
- Irritating antibiotics, unless administered with caution and according to local guidelines (INS, 2016)
- Vesicant chemotherapeutic agents
- Hyperalimentation fluids

Also consider:

- Mastectomy on side of insertion
- Fistula on side of insertion
- Difficulty in identifying adequate target vein in arm.

*ESPEN Guidelines⁽¹⁾ recommend that peripheral PN (given through a short peripheral cannula or through a midline catheter) should be used only for a limited period of time, and only when using nutrient solutions whose osmolarity does not exceed 850 mOsm/L.

Immediate post-insertion care

Overview

- Lifecath Midline catheters can be adequately secured with catheter securement devices such as Grip-Lok™
- The insertion site can then be covered with a semi-permeable transparent dressing and changed according to the manufacturer's recommendations
- The device should be flushed with 0.9% sodium chloride solution after each use. A syringe no smaller than 10ml should be used for flushing the device
- Lifecath Midline catheters can be left in situ for extended periods of time, maximum dwell time is unknown, but Philpot and Griffiths report a Lifecath Midline removed at 296 days.⁽²⁾

Cleaning solutions

- Most transient flora can be removed from the skin by cleaning with soap and water
- Chlorhexidine 2% in 70% alcohol has been shown to be the most effective agent for skin cleaning around the site prior to insertion and between dressing changes.⁽³⁾

Securement of device and dressings

- Lifecath Midline catheters should be secured to prevent movement, which reduces the risk of phlebitis, infiltration, infection and migration
- Choice of dressing is usually based upon suitability for a particular VAD site or skin type
- An IV dressing is applied to minimise the contamination of the insertion site.

Pulsated flush

- Use a pulsated (push-pause technique) flush to create a turbulent flow when administering the flush solution. This removes debris from the internal catheter wall.



Positive flush technique

- Positive flushing prevents reflux of blood into the catheter tip, reducing the risk of catheter occlusion. This is accomplished by maintaining pressure on the plunger of the syringe during disconnection from the line.

Catheter removal

What to do:

- Remove the dressing and securement device
- Pull the catheter to remove, maintaining gentle firm traction
- Pressure should be applied to the insertion site after removal for at least three to four minutes and the site inspected prior to applying a dressing to ensure bleeding has stopped
- The catheter integrity should be checked and its length measured to ensure that an intact device has been removed.

Catheter complications

Fibrin sheath formation

- Fibrin is a fibrous protein that works with platelets to clot blood and to form a protective mesh over a wound site. It forms a sheath around catheters placed in the bloodstream and can provide a potential focus for bacterial growth
- When the sheath covers the catheter tip it can act as a one-way valve, allowing fluids to be administered but making it difficult or impossible to aspirate
- Fibrin sheath formation often leads to persistent withdrawal occlusion (PWO). PWO can be managed using thrombolytic therapy such as Urokinase. However, PWO may lead to more serious complications such as chemotherapy extravasation.

Treatment ⁽³⁾

- Attempt to flush the catheter using a 10ml syringe of 0.9% sodium chloride. If resistance is met, stop and request a resiting of the device.

Prevention ⁽³⁾

- Maintain a continuous, regular fluid flow, or ensure that patency is maintained by flushing. Instruct the patient to keep their arm below the level of the heart if ambulant and attached to a gravity flow infusion.

Phlebitis

Phlebitis is the inflammation of a vein, which can occur in a number of ways:

- Infusion phlebitis is diagnosed when the acute inflammation of a vein can be linked directly to the presence of any vascular access device, and causes can be mechanical, chemical or infective
- Thrombophlebitis is a further complication when phlebitis can be linked to a thrombus.

Identification

- The symptoms of phlebitis include skin inflammation, the formation of erythema, oedema, venous cord and pain
- In 50% of patients, pain will be the first indication of phlebitis. It is therefore important that the practitioner takes any indication of pain or discomfort during line assessment seriously.

Mechanical phlebitis

- Mechanical phlebitis results from catheter trauma to the tunica intima (the lining of the vessel wall). This may occur during insertion, or as a result of repeated catheter movement within the vessel. The trauma exposes the subendothelial layer of the vessel to which platelets adhere, which activates the normal haemostatic clotting processes and increases the likelihood of thrombus formation.

Treatment ⁽³⁾

- Apply warm compresses to provide symptomatic relief. If that fails, stop the infusion and resite the device. Encourage mild movement of the limb. Reassure the patient by explaining what has happened then document.

Prevention ⁽³⁾

- Always select an appropriately-sized catheter for the patient. Ensure the device is correctly secured. Use an extension set to minimise manipulation of the device. Instruct the patient on the amount of movement permitted.

Chemical phlebitis

- Chemical phlebitis can usually be attributed to the nature of the fluid being administered. An inflammatory response can result if solutions or medication with a high or low pH or osmolarity damage the tunica intima, resulting in phlebitis.

Treatment ⁽³⁾

- Stop the infusion and resite the device. Apply warm compresses to provide symptomatic relief. Encourage movement of the limb. Reassure the patient by explaining what has happened then document.

Prevention ⁽³⁾

- Dilute drugs according to instructions. Check compatibilities carefully to reduce the risk of particulate formation.
- Administer drugs via infusion rather than bolus injection. Be aware of the factors involved, such as pH.

Infective phlebitis

- Infective phlebitis is the inflammation of a vein caused by the presence of infection. It is characterised by positive significant bacterial culture from the catheter tip, in conjunction with a positive culture from a peripheral vein.
- If the bacteria cultures are negative, the cause of the phlebitis is assumed to be either mechanical or chemical.

Treatment ⁽³⁾

- Stop the infusion, remove the catheter and site a new device in the opposite arm if possible. Follow hospital policy about sending cannula tip for bacterial analysis. Clean the area and apply a sterile dressing. Check regularly and document.

Prevention ⁽³⁾

- The use of correct aseptic technique during insertion, while handling the catheter, and proper care and dressing of the insertion site will minimise the risk of infective phlebitis.

Thrombophlebitis

- Thrombophlebitis is venous inflammation in combination with venous thrombosis, which may lead to vessel occlusion. Dislodgement of a thrombus could cause a pulmonary embolus
- Clinical symptoms of peripheral thrombophlebitis include: oedema of the affected arm, shoulder and face, associated with pain, numbness or tingling; there may be a distension of the veins and the formation of a collateral blood supply; and the affected arm may be cooler or discoloured compared with the other arm.

Treatment ⁽³⁾

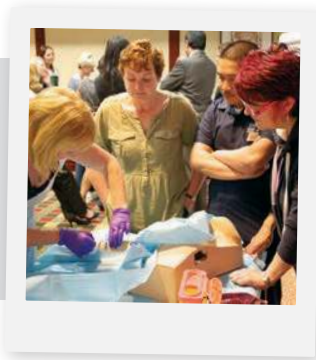
- The patient may require ultrasound to diagnose a clot in the arm.
- If confirmed the patient will require anticoagulation therapy. Catheter removal will depend on the severity of the symptoms, and other device options.

Prevention ⁽³⁾

- Ensure the tip is correctly positioned.

Education and training

If you are looking to extend the skills of individual members of your team, Vygon can offer you a number of supporting services as part of our on-going commitment to education and training. For more information about either of these services please contact your local Vygon representative.



Local and regional educational study days designed to teach and support competency in placing and caring for extended dwell IV catheters.

Insertion Structured Learning Programme and Clinical Competency Portfolio for the insertion care and maintenance of extended dwell IV catheters.



Useful information

Adult venous blood flow

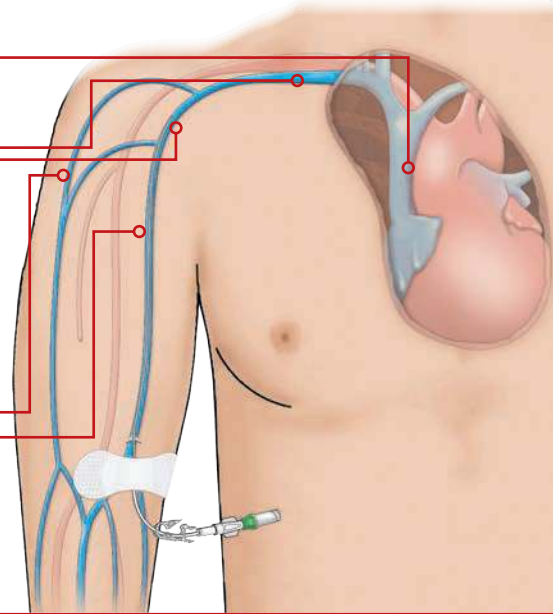
Superior Vena Cava
2-2.5L/min

Subclavian Vein
1-1.5L/min

Axillary Vein
350ml/min

Cephalic Vein
150ml/min

Basilic Vein
200ml/min



Lifecath Midline with MST (1296.113)



Peelable Cannula Introducer
Code: 7370

MIDLINE MIDLINE

Grip-Lok™
Code: 5804

Bionector®
Code: 0896

Also included:

- Patient labels
- 1 x Tape measure
- 1 x Midline identification label

Lifecath Midline Catheter
Code: 1296

Vygon (UK) Ltd

Order information

Description	Product Codes		Lumen	Catheter information			
	Vygon	NHSCC		Size (Fr)	Length (cm)	OD (mm)	Priming Vol. (ml)
Lifecath Midline	1296.13	FSU177	Single	3.0	25	1.0	0.45
Lifecath Midline	1296.14	FSU178	Single	4.0	25	1.35	0.48
Lifecath Midline	1296.15	FSU179	Single	5.0	25	1.67	0.63
Lifecath Midline	1296.142	-	Single	4.0	20	1.35	0.44
Lifecath Midline	1296.245	FSU180	Double	4.5	25	1.5	0.35 × 2
Lifecath Midline with MST	1296.113	-	Single	3.0	25	1.0	0.45
Lifecath Midline with MST	1296.114	-	Single	4.0	25	1.35	0.48
Lifecath Midline with MST	1296.345	-	Double	4.5	25	1.5	0.35 × 2
Lifecath Midline with MST	1296.433	-	Single	3.0	20	1.0	0.43
Lifecath Midline with MST	1296.442	FSU455	Single	4.0	20	1.35	0.44

(Continued)

Product Code	Flow Rate (ml/min)*	Cannula Introducer Gauge	Puncture needle		Guidewire		Unit of sale	MST Kit Code
			Length (mm)	Gauge	Length (mm)	OD (mm)		
1296.13	3.5	19	-	-	-	-	10	G1146.037
1296.14	19.5	17	-	-	-	-	10	G1146.047
1296.15	66.0	15	-	-	-	-	10	G1146.057
1296.142	22.0	17	-	-	-	-	10	G1146.047
1296.245	15.0 × 2	15	-	-	-	-	10	G1146.457
1296.113	3.5	-	70	21	500	0.46	10	-
1296.114	19.5	-	70	21	500	0.46	10	-
1296.345	15.0 × 2	-	70	21	500	0.46	10	-
1296.433	4.1	-	70	21	500	0.46	10	-
1296.442	22	-	70	21	500	0.46	10	-

*Tested to ISO 10555

References

1. The European Society for Clinical Nutrition and Metabolism (ESPEN)
<http://www.espen.org/education/espen-guidelines> Accessed in August 2017
2. Philpot P, Griffiths V. (2007) Poster presentation: Retrospective evaluation to assess the efficacy of Midlines in a District General Hospital in the UK.
3. Loveday, H.P. et al (2013) epic3: National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England. London: Elsevier Ltd.
4. Treatment and prevention of catheter complications, are taken from The Royal Marsden Hospital Manual of Clinical Nursing Procedures. Ninth Edition. pp.245-248.

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