Title	**Protocol for Insertion, care and removal of Hickman Type, Skin Tunnelled Central Venous Catheters: Includes Procedure for Administration of Actilyse Cathflo.**	
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PROTOCOL FOR INSERTION, MAINTENANCE AND CARE OF HICKMAN TYPE, SKIN TUNNELLED CENTRAL VENOUS CATHETERS

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Adapted from:
The Protocol for Care of Hickman Type, Skin Tunnelled Central Venous Catheters using aseptic non touch technique by Val Gibson/Katrina Armstrong, April 2008

CONTENTS

1.0 Introduction

A Hickman Line is the trade name for a tunnelled central venous catheter.
Other models used include; Groschong, Broviac and Leonard.

The practitioner should establish which type and gauge of device has been inserted and if it is a single, double or multi-lumen catheter. This is normally clearly marked on the line itself.

N.B. Hickman lines have clamps on the lumens, and are the type of line inserted in NHS Borders. The Groschong Line does not have a clamp, it has a patented valve safety system integral to the line.

This protocol is for Hickman Type Central Venous Catheters only
Throughout the document when heparinised saline is referred to the strength is: 10 International units/ml for flushing and must be prescribed.

2.0 Purpose of the Protocol

To produce evidence based guidelines for nursing and medical staff promoting best practice in the care and maintenance of Hickman type tunnelled central venous catheters; to improve patient outcomes, safety, comfort and satisfaction. This protocol should also be used as part of an education package.

N.B Only Healthcare Practitioners who have completed the education package and been signed off as competent should access Hickman Type Central Venous Catheters

3.0 Scope of the Protocol

This protocol should enable any competent registered nurse or doctor to provide support and care to patients with a Hickman type tunnelled central venous catheter. This protocol should be used for all aspects of Hickman line management from referral to removal. The protocol includes a trouble shooting guide and contact numbers for advice. Staff should adhere to this protocol to ensure best practice across NHS Borders.

4.0 Indications for Use of Hickman Lines

Hickman Lines are recommended for patients whom long term venous access (> 30 days) is anticipated.

The decision regarding the insertion of a Hickman line should be made by an experienced clinician at the outset of therapy and should be based upon:

- Diagnosis
- Length and type of therapy
- Clinical status
- Availability of venous access
- Previous CVC history

- Operator experience
- Patient preference (long term access)

Hickman Lines may be indicated in the following situations:

- Poor peripheral venous access in patients requiring administration of irritant, vesicant or hyper-osmolar drugs
- To facilitate the administration of intensive chemotherapy regimens or conditioning chemotherapy prior to bone marrow or peripheral blood stem cell transplantation
- To facilitate expected frequent blood sampling
- To facilitate expected frequent transfusion of blood products
- To facilitate ambulatory chemotherapy at home

The risk of complications associated with venous access can be minimised by selecting the smallest access device with the fewest lumens that will meet the clinical need of the patient.

5.0 Referral for Hickman Line Insertion

Hickman Lines in NHS Borders are inserted in Theatre by surgeons.
A referral form should be completed (Appendix 1) and delivered to the surgical secretaries office. The patient should attend for pre-assessment.
It is vital that any known risk factors such as MRSA o r previous TB etc are clearly identified as this has planning implications for theatre.

6.0 Insertion of Hickman Lines:

Pre-operative

When the need for a Hickman line is identified, patients should be given verbal information about Hickman lines and the patient information leaflet "Your Hickman Line"

Patients must be screened for MRSA carriage and de-colonisation started if colonised. The de-colonisation should be continued for 5 days and the procedure performed while still on the regimen. If the anticipated lapse between screen result and line insertion is prolonged, decolonisation can be delayed in outpatients. In inpatients, where the lapse between result and procedure may be slightly more than 5 days, the regimen should be continued to cover the insertion.

Peri-operative

Insertion of femoral lines should be avoided if a suitable jugular site is available. Local experience suggests that Left jugular site is associated with mechanical complications.
Image intensifier and ultrasound probes used to assist insertion should not contaminate the sterile field.
The skin should be prepared with 2% chlorhexidine in 70% alcohol, which should be allowed to dry.
Following insertion, the lumens should be flushed with 10mls of 0.9% normal saline. . **(Please refer to the Intravenous Flush Policy)** available at: **http://intranet/resource.asp?uid=37081**

This should be followed by 5mls of heparinised saline flushing solution **(This must be prescribed)** and capped with a SmartSite.

A biopatch and a semi-permeable occlusive dressing should be applied to the exit site e.g. Tegaderm I.V. Advanced. A sterile adhesive dressing should be used for the neck wound.

The Hickman Line Diary will be given to the patient in theatre post insertion and the *initial documentation of insertion* must be completed. Also documented in the diary should be if imaging or x-ray was used and if the line/s have been bled and flushed and locked with Heparinised Saline.

Post operative

Ward staff must give the patient verbal and written instructions regarding the care of their line. They must ensure the patient has a Hickman line discharge pack and t h e i r hand held diary. A Hickman line discharge checklist (Appendix 2) must be completed and filed in the patient's case notes.

7.0 When to Flush the Hickman Line:

When heparinised saline is referred to the strength is: 10 International units/ml and must be prescribed. 0.9% normal saline should be given following the Intravenous Flush Policy (http://intranet/resource.asp?uid=37081)

1) When the line is not being used for an infusion ("capped off"):
The Line should be bled and flushed with10mls of 0.9% normal saline followed by 5mls heparinised Saline for each lumen **weekly** or if any blood becomes visible in the line.

2) If the line is capped off but having bolus injections of medications administered
The drug should be flushed with 10mls of 0.9% normal saline followed by 5mls heparinised saline. *The speed of the flush should take into account the required speed of administration of the drug or, the drug should be withdrawn If the patient reacts before flushing* (*if the drug is withdrawn, 10mls of 0.9% normal saline will be required to flush any accumulated blood).

3) When the line is in use:
10mls of 0.9% normal saline (at least) followed by 5mls heparinised saline flush is required after having taken a blood sample or having administered a blood product.

Always be aware as to how much heparinised saline is being administered to the patient.

THE AMOUNT OF HEPARINISED SALINE REQUIRED: (Strength: 10 International units/ml) this should be prescribed.

The volume of "dead space" must be established to calculate how many mls of heparinised saline is required. Most Hickman catheters= 2.5ml lumen dead space.

8.0 Changing the Smartsite:

When to the change the Smartsite.

The SmartSite needle free device should be changed weekly, preferably when the dressing is being changed.

9.0 Priming the SmartSite:

1. Prime the SmartSite by attaching a 10ml luer lock syringe of 0. 9% normal saline, flick the SmartSite to exclude all evidence of air.
2. The SmartSite can also be primed by attaching the I V administration set.

10.0 Procedure for blood Sampling from the Line:

- **5mls** of blood should be withdrawn when entering a line which is not in use, before routine flushing occurs.
- **10mls** of blood needs to be discarded prior to taking a blood sample **(unless the sample is for blood cultures).**

Taking a blood sample for drug or potassium levels
Should blood samples be required for potassium levels, antibiotic or other drug levels, the ports through which the sample is to be taken should be clearly marked and the drug/infusion administered through a different port. Certain drugs and potassium can adhere to the silicone lumen giving false readings.

11.0 Equipment required:

GATHER THE REQUIRED EQUIPMENT

Equipment required for accessing/ flushing a line:

- Plastic Apron
- Appropriate face covering
- Yellow Bag
- Hard surface disinfectant wipes
- 2 pairs non sterile gloves (more pairs if required)
- 1 plastic procedure tray
- 5 x 2% chlorhexidine in 70% alcohol wipes (per lumen)
- 4 x10 ml luer lock syringes (per lumen)
- 1 x vygon red cap
- 1 Blunt Fill Needle (per lumen)
- 1 Multi adaptor for blood collection
- SmartSite if required to be changed
- 2 x10 ml vials of 0.9% Normal saline (per lumen)
- 1 x 5 ml vial of Heparinised saline10u/ml (per lumen)
- Appropriate blood sample tubes
- Sharps bin

Additional equipment required if taking blood cultures

- Culture bottles 1 red (anaerobic) and 1 blue (aerobic) for adults or 1 yellow for children
- Sterile gloves
- 2 sterile wrapped plain Monovette tubes
- 2 Monovette needles
- 2 x 2%chlorhexidine in 70 % alcohol wipes for disinfection of culture bottles
- "Record of blood culture" sticker. (**DO NOT** remove bar code labels from blood culture bottles)

Patient Preparation

1 Explain the procedure to the patient
2 Listen to any anxieties or fears and take action to alleviate stresses
3 Place the patient on top of bed/lying down whenever possible
4 Assess the catheter and skin for signs of potential problems.
5 Prepare the catheter for the required procedure:
   a. *clamp off the line/s*
   b. *switch off infusions*
   c. plan and prepare the infusion device/s and which settings will be required after the procedure
6 Assess the knowledge of the patient and plan future education and instruction. (Patient information leaflets and discharge packs are available within Borders MacMillan Centre and clinical areas within the Borders General Hospital).

12.0 Procedure for bleeding and flushing one lumen and taking blood samples

1. Check that all jewellery is removed apart from a wedding band.
2. Utilising Six Step Technique, wash hands and pat dry thoroughly with paper towels.
3. Clean and dry work surface using hot soapy water and paper towels.
4. Clean aseptic tray using hard surface disinfectant wipes or hot soapy water and paper towels.
5. Arrange equipment around tray.
6. Put on plastic apron and face covering.
7. Re-clean hands using Six Step Technique or use alcohol gel hand rub.
8. Apply non sterile gloves.
9. Open10ml luer lock syringe. Open vygon red cap and attach to syringe ensuring that "key parts" are not contaminated and place in tray. If there are no vygon red caps wipe outer packaging of syringe with hard surface disinfectant wipes and place in tray.
10. Individually open packaging of10ml luer lock syringes ensuring that "key parts" are not contaminated and attach a safety needle.
11. Outer wrappers, ampoules and fluid bottles which cannot be prepared in an ANTT method should be cleaned with hard surface disinfectant wipes and placed in tray.
12. Wipe neck of vial of 0.9% normal saline with 2% chlorhexidine in 70% alcohol wipe and allow to dry.
13. Utilising one of the syringes and needles draw up 10mls of 0.9% normal saline ensuring that key parts are not contaminated and place in tray. Repeat this procedure so that you have 2 x 10ml syringes of 0.9% normal saline for flushing.
14. Wipe neck of vial of heparinised saline 10u/ml with 2 % chlorhexidine in 70% alcohol wipe and allow to dry. Utilising the 10ml syringe, attach the blunt fill needle and draw up 5mls of Hepsarinised saline. Place in tray.
15. Clean blood tubes with hard surface disinfection wipes and place in tray.

16. Clean outer covers of 2% chlorhexidine in 70% alcohol swabs with hard surface disinfection wipes and open top for easy access and place in tray.

17. Take equipment to patient and expose end of line.

18. Remove gloves and re-wash hands utilising Six Step Technique.

19. Apply new gloves. (**Sterile if blood cultures are being taken**).

20. If the patient is unable to assist holding the line, use a sterile sheet or sheet in a dressing pack to lay the Hickman line on between procedures.

21. Remove 2% chlorhexidine in 70% alcohol swab from packaging without contaminating it.

22. Lift lumen and clean injection port with 2% chlorhexidine in 70% alcohol swab. Allow to dry for a minimum of 60 seconds.

23. Ensure lumen does not become re-contaminated (e.g. allowing to drop back onto the patient or contaminating with hands).

24. Attach 10ml luer lock syringe to lumen ensuring „key parts" not contaminated. Unclamp the catheter and aspirate 5mls blood or 10mls if blood samples are required from the lumen. Clamp the catheter, remove syringe and discard in sharps box **(unless blood cultures are required).**

25. If blood sampling is required Attach first blood tube to the Interlink Multi adaptor ensuring "key parts" are not contaminated. Attach to the smartsite , unclamp the catheter and aspirate required amount.
Clamp the catheter and remove blood tube leaving Multi- adaptor insitu. Repeat procedure for each blood sample required. Clamp catheter and remove multi-adaptor.

26. Attach syringe with 0.9% normal saline ensuring "key parts" are not contaminated.

27. Unclamp the catheter and flush line using a rapid pulsating movement ensuring that the cap is clear of blood. Clamp the catheter. **NB** If cap cannot be cleared of all blood additional 0.9% normal saline should be used until the cap is clear of blood.

28. Attach the syringe with heparinised saline ensuring that "key parts" are not contaminated.

29. Unclamp the catheter and flush the line and ensure that the line is clamped under positive pressure. (ie clamp the catheter whilst the final ml of Heparinised saline is instilled).

30. Re-clean end of lumen with new 2% chlorhexidine in 70% alcohol swab ensuring any residual blood is removed.
31. Verify and write patient details on blood tubes at patient's bedside.
32. Dispose of clinical waste as per BGH policy.
33. Remove gloves apron and face covering and Wash hands utilising Six Step technique.
34. Document procedure in nursing notes and Hickman line Diary.

13.0 Procedure for Infusions:

1. Check that all jewellery is removed apart from a wedding band.
2. Utilising the Six Step Technique, wash hands and pat dry thoroughly with paper towels.
3. Clean and dry work surface using hot soapy water and paper towels.
4. Where possible clean a plastic tray using hard surface disinfectant wipes or hot soapy water and paper towels.
5. Arrange equipment around tray.
6. Put on plastic apron and appropriate face covering.
7. Re-clean hands using Six Step Technique or use alcohol gel hand rub.
8. Apply non sterile gloves.
9. Open10ml luer lock syringe. Open vygon red cap and attach to syringe ensuring that "key parts" are not contaminated and place in tray. If there are no vygon red caps wipe outer packaging of syringe with hard surface disinfectant wipes and place in tray.
10. Individually open packaging of 10 ml luer lock syringe ensuring that "key parts" are not contaminated and attach a safety needle.
11. Wipe neck of vial of 0.9% normal saline with 2% chlorhexidine in 70% alcohol wipe and allow to dry.
12. Utilising the syringe and needle draw up 10mls of 0.9% normal saline ensuring that key parts are not contaminated and place in tray. Repeat this procedure so that you have 2 x 10ml syringes of 0.9% normal saline for flushing.

13. Prepare the prescribed fluid and prime the administration set, ready for connection to the patient.

Follow steps 16-24 of procedure for bleeding and flushing one lumen and taking blood samples.

25. Attach syringe with 0.9% normal saline ensuring "key parts" are not contaminated.
26. Unclamp the catheter and flush line using a rapid pulsating movement ensuring that the cap is clear of blood. Clamp the catheter. **NB:** If cap cannot be cleared of all blood additional 0.9% normal saline should be used until the cap is clear of blood.
27. Re-clean cap with 2% chlorhexidine in 70% alcohol swab and allow to dry for 60 seconds.
28. Attach prepared primed administration set onto SmartSite ensuring the connector is not contaminated.
29. Unclamp catheter and administration set and commence infusion.

At end of infusion use:

1. Clamp catheter and administration set.
2. Disconnect administration set.

Repeat steps 1 -14

Follow steps 16-24

25. Attach syringe with 0.9% normal saline ensuring "key parts" are not contaminated.
26. Unclamp the catheter and flush line using a rapid pulsating movement ensuring that the cap is clear of blood. Clamp the catheter. **NB** If cap cannot be cleared of all blood additional 0.9% normal saline should be used until the cap is clear of blood.
27. Attach the syringe with heparinised saline ensuring that "key parts" are not contaminated.
28. Unclamp the catheter and flush the line and ensure that the line is clamped under positive pressure. (ie clamp the catheter whilst the final ml of Heparinised saline is instilled).

29. Re-clean end of lumen with new 2% chlorhexidine in 70% alcohol swab ensuring any residual blood is removed.

30. Dispose of clinical waste as per BGH policy.

31. Remove gloves and Wash hands utilising Six Step technique.

32. Document procedure in nursing notes and patients Hickman line Diary.

Changing IV Giving Sets
It is preferable to avoid routine replacement as this will increase the risk of introducing infection into the catheter. Administration sets should be **changed every 96 hours** except in the following circumstances.

Transfusion of blood products

a. Replace at the end of transfusion
b. Replace between different types of blood products (e.g platelets/red cells)

Lipid Feeds

c. Change every 24 hours

14.0 Procedure for Taking Blood **Cultures:**

Do not take blood cultures unless there is clinical evidence of infection.

If the cultures are required to detect a line infection, a separate sample should be taken from each port of the line as well as from a peripheral vein.

An 8-10ml blood sample is required for each bottle of the pair. No blood should be discarded – Take specimens for blood culture before other specimens

Note: If using the interlink system, the spiked bare cannula cannot be used to inject the blood into the culture bottle.

Follow procedure for bleeding and flushing one lumen until step 18.

- Apply gloves and flip off the plastic lids covering the blood culture bottle tops.
- Using the 2% chlorhexidine in 70% alcohol wipe over top of each bottle and allow to dry for at least 1 minute
- Place needle into each bottle
- Apply sterile gloves for Filling the Monovette tubes for blood cultures, using aspiration technique, **DO NOT LOCK PISTON INTO BASE,** before any other samples

- Connect Monovette tubes to blood culture bottles and let the blood flow into the bottles until the last 0.5mls

Put on sterile gloves and then follow procedure from step19 to completion:

Ensure that the monovette blood tubes are placed on a sterile field until attached to blood bottles. Document the procedure in the patient notes, including date, time, Lumen specimen taken from, and indication for blood cultures. Use the 'Record of blood culture' stickers provided.

15.0 Procedure for Dressing the site:

Dressings

- Dressings require a strict aseptic non touch technique (ANTT)
- The entry sites should be cleansed with 2% chlorhexidine in 70% alcohol swab, *saline solution may be required to remove dry blood prior to using swabs*
- Daily (mepore) should be used on the entry site until the area is dry, then an IV tegaderm dressing thereafter.
- The patient is allowed to shower or bath as usual however showers are preferable. If baths are taken, please remind the patient not to allow the line to become submerged.
- If patient is using gauze dressings these **MUST** be covered with a waterproof dressing whilst bathing and the dressing changed thereafter.

When to change the dressing

IV Tegaderm/Mepore
Change if wet; soiled, blood stained or the edges become loose/curled.
Remove for inspection if infection is suspected or site needs to be monitored.

Biopatch and Tegaderm I.V. Advanced
Change weekly or, sooner if soiled; blood stained; if the edges are curled or, if adhesion is impaired due to clammy skin.

DRESSING THE EXIT SITE

Equipment required for dressing the exit site

- A Biopatch and tegaderm I.V. Advanced semi-occlusive transparent dressing should be applied to the exit site

- Sterile dressing pack/or sterile gloves
- BD Chloraprep 3ml skin prep for exit site dressing
- Disposal bag
- Stitch cutter and sharps bin if removing sutures
- Clean unsterile gloves

1. Wash your hands.
2. Open Sterile dressing pack onto trolley/or Sterile gloves
3. Open BD Chloraprep 3 ml onto sterile field
4. Open Biopatch onto sterile field
5. Open tegaderm I.V. Advanced dressing onto sterile field
6. Open Stitch cutter onto sterile field (if required)
7. Wash hands
8. Apply non sterile gloves, apron and face covering
9. Remove the original dressing with caution, taking care not to pull or twist the Line and place in Disposal bag. Do not use scissors near the line. Remove gloves.
10. Wash your hands with hot soapy water using the six step technique. Apply sterile gloves.
11. Clean 4cm of skin around the exit site with BD. Chloraprep 3ml using a back and forward motion using the cross hatch method.
12. Leave skin to dry for at least 1 minute.
13. Apply Biopatch and transparent tegaderm I .V. Advanced dressing. If patient allergic to the IV dressing or if exudate from site then non- adherent dressing, ie MEPORE would be acceptable.
14. Ensure the catheter is secure – either looped under the dressing or secured in a Pouch. DO NOT USE TAPE TO STICK LINE TO SKIN. If the patient prefers the catheter to be looped under the dressing, take great care not to kink or twist the line.
15. Remove gloves, apron and face covering and Wash hands utilising Six Step technique.

16.0 When to remove sutures

Entry site: Approximately 7 days, depending on the granulation process.

Exit site: 14-21days. Again observing the granulation process. Use extreme caution when removing this suture. Always direct the stitch cutter/scalpel blade *away* from the line.

17.0 Line Removal

Lines must be removed as soon as there is no longer a clinical need for them. Other reasons for line removal include

- Proven and unresolved infection
- Faulty or fractured device
- Proven thrombosis
- Unresolved occlusion
- Unresolved phlebitis or thrombophlebitis
- Extravasation

Prior to removing the line every effort should be made to discuss with the clinical team responsible for on-going care of the patient.

Hickman line Removal Service

The Hickman line Removal Service is provided by the Surgical Department in collaboration with Lesion Clinic, Outpatient Department. The Lesion Clinic is on every Monday from 9am to 12.30 pm as well as every first Friday of the month from 9am to 12.30pm.

Planned removal:

Complete Hickman Line insertion/removal referral (Appendix 1) and
Deliver or submit to Out-patient department, first-floor, Borders General Hospital.
All the details history should be completed to prevent unnecessary delay in delivering the service. Please make sure all the patients contacts are available and correct on the request (telephone/landline or mobile, email, home address, etc.)

Unplanned removal:

Contact on call surgical team.

Document line removal and reason for removal in case notes and patient hand held diary.

18.0 Documentation of Hickman Line Care:

All line care should be documented in patient case notes.

In addition the patient held record, "Hickman Line Patient Diary" is designed to assist with communication and promote best practice regarding Hickman line care and will be used to assist with audit.

In-Patient Care

Complete the diary daily when accessing the line
Complete the diary if any problems occur when accessing the line at other points throughout the day

Out-Patient Care

Complete the diary when the patient attends for Hickman line care
When the line is removed the diary should be returned to the Macmillan Centre or BGH.

19.0 Infection

Infection is a serious complication which can be life threatening. There is an increased incidence of between 3 – 8% when parental feeding is infused. Emphasis is on prevention and early detection in order to prevent bacteraemia septicemia.

Complication	Signs and Symptoms	Management	Community Management
Exit Site Infection	• Erythema >1cm <2cm • Tenderness • Exudate Around exit site • Swelling • Pyrexia	• Swab exit site • Clean & redress site • Commence on flucloxacillin (or doxycycline if penicillin allergic) • If the patient is known to be MRSA colonised doxycycline can usually be given but advice should be sought from microbiology or infection control. • Following Insertion a Biopatch should be used.	As hospital management but if patient pyrexial and on chemotherapy consider to be neutropenic and liaise with oncology team or medical assessment if out of hours

Tunnel Infection	• Erythema, induration and tenderness along tract > 2cm from exit site • Purulence /inflammation at exit site • Positive culture from exit site • Pyrexia	• If Neutropenic refer to neutropenic sepsis policy • IV Antibiotics • Line removal, ensure tip of line sent for culture	• Emergency Admission to hospital
Complication	**Signs and Symptoms**	**Management**	**Community Management**
Systemic Infection	• Pyrexia • Rigors following line flush • Hypotension • Tachycardia • Altered conscious level • Increased white cell count • Consider hypothermic sepsis if temperature low	• Take Blood cultures – line & peripheral • If Neutropenic refer to Neutropenic policy • If normal neutrophil count consider antibiotics in consultation with microbiologist • Consider line removal	• Emergency Admission to hospital

Note: In the immunocompromised patient some symptoms may be absent

20.0 Complications and trouble shooting

Whenever possible lines should be accessed Monday to Friday 0900-1700 when specialist advice is available

1 Aspiration Difficulties can be due to: blockage; kinking, occlusion or clotting

ACTION:
First check the line for kinking and that the clamps are open.

Tilting the head, coughing, lifting the arms above the head or lying flat on bed can rectify this problem.

NEVER try to aspirate with anything less than a 10ml syringe. For further aspiration attempts it is recommended that a syringe greater than a 10mls is used.

If aspiration is still unsuccessful, with 0. 9% normal saline in no less than a 10ml syringe, attempt a small flush, exerting **very gentle** pressure. If this is successful, continue to administer the rest of the saline flush and try aspiration again.

If unsuccessful or aspiration remains difficult after the full saline flush seek further advice/assistance from a member of nursing or medical staff who specialise in the care of Hickman catheters.

2 Thrombosis

Detect early signs: Aspiration difficulties
Pain
Swelling around the upper thorax, neck or arms Pyrexia
Abnormal heart rate, blood pressure, respirations.

ACTION:

If no other symptoms apart from aspiration difficulties follow the algorithm on page 27 (Appendix 3,4 & 5). If other symptoms are evident then patient needs reviewed by a doctor or advice sought from sources identified on page 23.

3 Breakage of the Hickman

catheter ACTION:

If the catheter appears to have a leak, tear or break

- Clamp the line between the catheter exit site and the damaged area (*Try to clamp the catheter nearer the damaged area for repair*

to be successful, at least 3cms of line needs to be protruding from the exit site).

- Seal damaged area with sterile occlusive dressing
- Inform the nearest specialist centre or consultant in charge of the patient's care.

Repair kit is located in Ward 4 BGH.

DO NOT tape the line or giving set to the bed or clothing of a patient and never use scissors or a blade near the Hickman line.

4 Air or catheter embolism Signs and symptoms may be:

- Sudden alteration in heart rate, blood pressure, and respirations
- Pallor
- Clammy
- Dizzyness

ACTION:
Emergency medical review.

5. Catheter Migration

Signs / Symptoms may include

- Line appears longer
- Cuff may be visible
- Blood noted at exit site
- Completely dislodged

ACTION

- Stop all infusions
- Confirm position by x-ray
- Apply pressure to bleeding area
- Inform medical staff
- Possible removal

21.0 Patient leaflets/records associated with this procedure

The following leaflets can be obtained from the Borders Macmillan Centre and clinical areas.

- Patient information leaflet "Your Hickman Line" Review date 2019
- Patient held record, "Hickman Line Patient Diary" (Reviewed 2018)

22.0 Sources for Advice

Borders General Hospital. 01896 826000 Oncology Nurse Bleep 3041 (Mon – Fri 0900-1700).

Borders General Hospital, Ward 4. 01896 826004 (weekends and out of hours).

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Appendix 1

REFERRAL LETTER FOR INSERTION/REMOVAL OF HICKMAN LINE

Addressograph

TELEPHONE NUMBER …….. Dear

Mr……..

We would be grateful if you would insert/remove Hickman line into the patient above:
(delete as appropriate)

SINGLE:

DOUBLE (JUSTIFY CHOICE):

TRIPLE (JUSTIFY CHOICE):

NB: The risk of complications associated with Hickman lines can be minimised by selecting the fewest lumens that will meet the clinical need of the patient.
INDICATION FOR HICKMAN LINE – PLEASE TICK

- ○ CHEMOTHERAPY AND SUPPORT
- ○ TPN (MUST BE DISCUSSED WITH DIETICIAN FIRST)
- ○ LONG TERM ANTIBIOTICS

OTHER – DETAILS ……..

DATE REFERRED ……....

INR/FBC CHECKED ……..…...

RESULT OF STAPH AUREUS SCREEN…….. DATE ……

RISK FACTORS eg. TB, MRSA, HEPATITIS…….……

COMMENTS …….

…….

SIGNED …….…….
Confidential

Appendix 2

Insertion of Hickman Line Discharge Checklist

Prior to discharge complete the following checklist then file in patient case notes Patient Addressograph

□ Assess wound. Dressings should be left intact for 7 days unless excessive bleeding or soakage noted
Comments

□ Contact appropriate Nursing Team in either community or hospital to arrange change of weekly dressing post insertion
Comments

□ Contact appropriate Nursing Team in either community or hospital to arrange ongoing management of Hickman line
Comments

□ Advise patient on analgesia
Comments

□ Supply of 0.9% Saline and Heparinsed Saline 10 international units per ml for flushing given

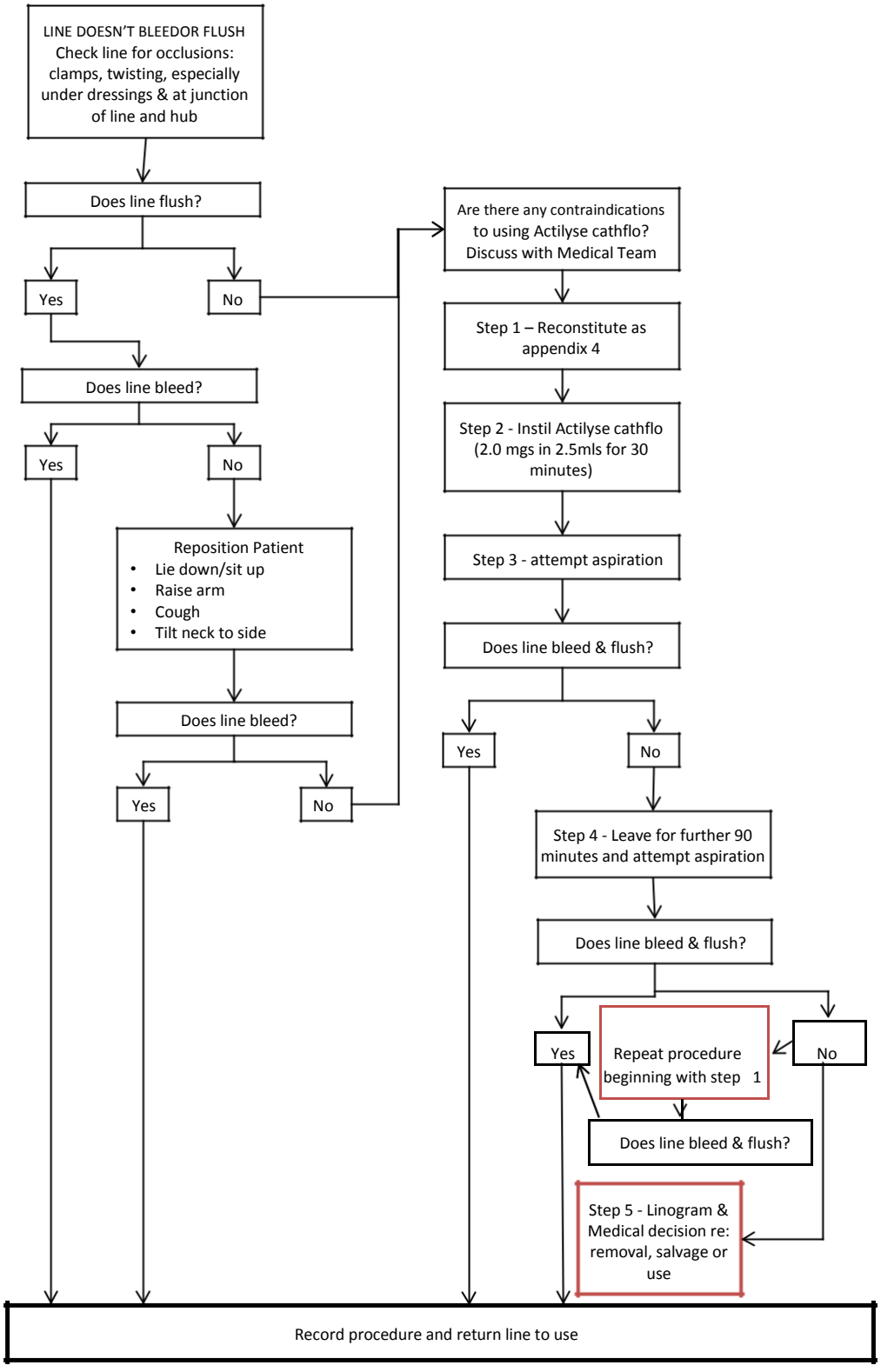
□ Patient Hand Held Record completed and given to patient

□ Discharge pack given

Checklist completed by

Name	Designation	Signature	Date/Time

Appendix 3 - DIFFICULTY BLEEDING AND FLUSHING HICKMAN LINE



Appendix 4 - Procedure for Administration of Actilyse Cathflo

If Urokinase in unavailable Actilyse Cathflo will be used for unblocking occluded venous access devices.

SPC information on usage:
Actilyse Cathflo should be given as soon as possible after occlusion. The following dose guidelines apply. *Posology*

A dose of up to 2 mg alteplase administered up to two times for any one occlusion can be used to restore function of ports, single and multiple lumen catheters including those used for haemodialysis, which became dysfunctional due to thrombotic occlusion.

For use in this indication reconstitution to a final concentration of 1 mg alteplase per ml is recommended.

In patients with a body weight of 30 kg or more, a total dose of 2 mg alteplase in 2 ml of reconstituted solution should be instilled into the dysfunctional central venous access device.

In patients with a body weight below 30 kg, the volume of reconstituted solution to be instilled into the dysfunctional central venous access devices should correspond to 110% of the internal lumen volume of the device. The total dose of alteplase should not exceed 2 mg. I.e. for a catheter with internal volume of 1.0 ml the total dose of Actilyse Cathflo would be 1.1 mg in a volume of 1.1 ml.

If central venous access device function is not restored at 120 minutes after the first dose, a second dose of equal amount may be instilled.

Method of catheter clearance

The reconstituted solution should be instilled into the occluded central venous access device.

Only 2 mg vials of alteplase are indicated for use in Hickman lines.

1. Reconstitute the content of an injection vial to a final concentration of 1 mg alteplase per ml. For catheters with a lumen volume greater than 2 ml, the reconstituted solution can be further diluted with sterile sodium chloride 9 mg/ml (0.9 %) solution for injection to the desired volume. I.e. for a catheter with internal volume of 2.5 ml the total dose of Actilyse Cathflo would be 2.0 mg in a volume of 2.5 ml.

2. Instil the appropriate dose of Actilyse Cathflo into the dysfunctional central venous access device.

3. After 30 minutes of dwell time, assess catheter function by attempting to aspirate blood. If the catheter is functional, go to Step 6. If the catheter is not functional, go to Step 4.

4. After 120 minutes of dwell time, assess catheter function by attempting to aspirate blood and catheter contents. If the catheter is functional, go to Step 6. If the catheter is not functional, go to Step 5.

5. If catheter function is not restored after the first dose, a second dose of equal amount may be instilled. Repeat the procedure beginning with Step 1. If after a second dose of alteplase the device remains dysfunctional consider device replacement.

6. If catheter function has been restored, aspirate 4–5 ml of blood in patients weighing 10 kg or more, or 3 ml in patients with a body weight below 10 kg to remove Actilyse Cathflo and residual clot, and gently irrigate the catheter with sterile sodium chloride 9 mg/ml (0.9 %) solution for injection.

Appendix 5

PROCEDURE FOR ADMINISTRATION OF ACTILYSE CATHFLO

Ask Doctor to prescribe Actilyse Cathflo.

Reconstitute the content of an injection vial to a final concentration of 1 mg alteplase per ml.

For Hickman lines it would be 2.0 mg in a volume of 2.5 ml.

Follow steps 1- 23 for Procedure for bleeding and flushing one lumen and taking blood Samples. Then follow instructions for priming the HUB/SmartSite.

Clamp Catheter. Remove existing hub/Smartsite.

Clean lumen with 2% chlorhexidine in 70% alcohol swab.

Attach 10ml syringe, unclamp line and remove dead air space and any Heparinsed

Saline from lumen and then re-clamp.

Unclamp line and instil Actilyse Cathflo

Re-clamp line and replace hub

Leave for 30 minutes and then try to bleed line if unsuccessful repeat procedure and leave for a further 90 minutes.

If unable to bleed the line after 120 minutes repeat procedure from step1 again. If bleeding and flushing is still unsuccessful a linogram should be arranged. Depending on results it may be necessary to remove line, this requires to be discussed with the patient's Consultant.