



GUIDELINE/PROCEDURE

SUBJECT: MANAGEMENT OF IMPLANTED CENTRAL VENOUS DEVICES (PORT-A-CATHS® / PORTS®) IN JHCH (excluding NICU)

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DISTRIBUTION: All Clinical Areas JHCH, excluding NICU but including John Hunter Hospital Intensive Care Unit, Emergency Unit, Operating Theatres, Recovery, and Medical Imaging.

PERSON RESPONSIBLE FOR MONITORING AND REVIEW:

Clinical Nurse Consultants - Paediatric Oncology and Respiratory. Oncology CNE.

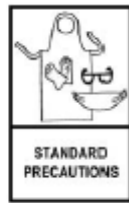
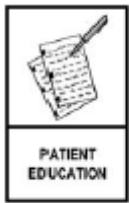
COMMITTEE RESPONSIBLE FOR RATIFICATION AND REVIEW:

Kaleidoscope GNS Quality and Safety Committee

Keywords: Access, children, CVAD, infusaport, port, port-a-cath

Disclaimer:

It should be noted that this document reflects what is currently regarded as a safe and appropriate approach to care. However, as in any clinical situation there may be factors that cannot be covered by a single set of guidelines, this document should be used as a guide, rather than as a complete authoritative statement of procedures to be followed in respect of each individual presentation. It does not replace the need for the application of clinical judgment to each individual presentation.



RISK STATEMENT

This local clinical guideline and procedure has been developed to provide instruction to the healthcare worker and to ensure that the risks of harm to the patient associated with the clinical management of port-a-caths and infusaports are identified and managed.

Any unplanned event resulting in, or with the potential for, injury, damage or other loss to the patient as a result of this clinical procedure must be reported through the Incident Information Management System. This would include unintended patient injury or complication from treatment that results in disability, death or prolonged hospital stay and is caused by health care management.

Open Disclosure procedures must be commenced to ensure the concerns of the patient are identified and managed in accordance with Ministry of Health Policy Directives. The Policy Directives and Guidelines for managing complaints and concerns about clinicians should be used in conjunction with other relevant NSW Health Policy Directives that govern the behaviour and actions of all staff.

OVERVIEW:

Port-a-cath's (Ports) are frequently used in children with chronic conditions requiring repeated blood sampling and intravenous treatments.

A port is made up of a reservoir and catheter inserted by a surgeon or medical officer (MO) into a large central vein leading directly to the heart. The reservoir, which is made up of a silicon septum, lies beneath the subcutaneous tissue and may be accessed using a Straight Huber™ needle or Gripper™ needle.

Risk factors such as infection, obstructions and haemorrhage exist, particularly in the peri-operative period (Tercier, Gapany, Diezi et al, 2008).

IMPORTANT CONSIDERATIONS:

Types of Ports

Since 2007, ports inserted at JHCH are titanium backed. This change was made following several incidents of leakage and separation of the older plastic backed ports. Any patients with plastic backed ports should not be left accessed if they leave the hospital to attend Ronald McDonald House or day leave activities without consultation with their specialist.

Patient Preparation

This procedure has the potential to cause pain and anxiety. Patients should receive procedural care as described in JHCH Clinical Practice Guideline 1.8 Paediatric Procedural Care in JHCH/JHH/RNC.

Prior to commencement, the procedure must be explained to patient/parent/carer in an understandable manner. There should be opportunity for the child/parent/carer to ask questions, and verbal consent to proceed should be obtained and recorded.

Written consent is required for insertion of a Hickman or a port-a-cath in operating theatre. Check allergies to all materials used including dressings, solutions and catheters.

Placement

Radiological confirmation of the correct placement of the port will be attended in the Operating Theatre.

Pain and Anxiety

Pain at the port site is an important sign of infection or leakage and must not be ignored. All paediatric patients should have a pain assessment attended as a routine part of their observations - pre, during, and post procedure.

Anxiety prior to procedures is to be expected and may be reduced by use of the "Distraction Box" toys, play therapist or other diversional techniques like music or videos.

Syringe Size

Only 10mL syringes are to be used to access a port-a-cath with the exception of unblocking procedures (p14) where a smaller syringe may be used under medical direction.

Under exceptional circumstances a smaller syringe may be required due to very small dose and limited drug stability - this is to be discussed with the Consultant Medical Officer on a case by case basis

Fluids for infants or patients with a fluid restriction

Care must be taken when administering fluids to infants, or to patients with a fluid restriction. Refer to the drug manufacturers' product information or the "Australian Injectable Drugs Handbook" or "Paediatric Injectable Guidelines" (kept in JHCH medication rooms) for the minimum dilution and infusion rates. A syringe driver should be used to deliver the medications in such cases.

Hand Hygiene

Hand hygiene must be attended prior to and after each shift, each patient contact, each procedure, each intervention and whenever hands become contaminated.

The statement “**Attend hand hygiene**” requires a 10 second hand wash or antimicrobial gel application. This will apply to any procedure that does not open the CVL. E.g. administration of an intravenous medication.

The statement “**Complete a 60 second hand wash**” requires hands to be cleaned thoroughly with antimicrobial soap (pink chlorhexidine surgical scrub 4%) for 60 seconds and dried thoroughly without re-contamination using single use hand towels. This procedure will apply to any procedure that accesses the port or line. E.g. a line change.

Wearing gloves does not negate the need for appropriate hand hygiene as described above. (NSW Health Policy -PD2007_036 2.1.1.3)

Jewellery and Finger Nails

All hand/wrist/and below the elbow jewellery on the clinician, with the exception of plain wedding bands, must be removed prior to any procedure outlined in this document.

False fingernails and/or nail polish are not permitted in the clinical setting.

(NSW Health Policy -PD2007_036 2.1.1.7)

Cleaning Solution

- 2% Chlorhexidine Gluconate with 70% Alcohol (RNAO, 2004) - Persist Plus- green stick solution if the child is >2 months old.
- For infants < 2 months of age use 0.5% chlorhexidine acetate (NSW Health web address). Three swabs will be required if using Chlorhexidine Acetate 0.5% (RNAO, 2004)

Septic Shower

A septic shower is the sudden systemic influx of pathogens that have colonized in an inserted device triggered by the infusion of fluids into the device causing septic shock in the patient. This is a life threatening condition and requires urgent medical attention.

Attempts should be made to aspirate and discard approximately 3 mL blood from all inserted devices when they are first accessed and after any prolonged periods of non-use e.g. prior to daily medications to avoid this adverse event.

Observation

The port site must be visualized and examined prior to any drug administration or blood sampling, checking for:

- Inflammation
- Swelling
- Dressing integrity if accessed
- Leakage
- Pain

Notify the MO if any abnormalities are detected.

Children with a port must have their temperature recorded at least 4th hourly whilst in hospital. Fevers > 38° must be reported promptly to the MO responsible for the child's care.

Three Way Taps

A three way tap should be attached using aseptic non-touch technique if IV fluids are running via a CVL.



Clinical Competency

All procedures in this document require an accredited level of clinical competency. To attain these competencies see the JHCH Oncology CNC or CNE or Respiratory CNC for details of how to become accredited. Experienced paediatric clinical staff must be accredited on an annual basis.

Outcomes:

- Minimise risk of infection, air embolus or blood loss.
- Maintain line patency.
- Avoidance of dislodgement or displacement of line.
- Procedure performed with minimal discomfort to patient.
- Patient privacy will be protected at all times.

ACCESSING A PORT:

Straight Huber™ needles and an extension tube are to be utilised if needle is not required to remain insitu. These needles are predominantly used for Cystic Fibrosis patients.

Gripper™ needles are only to be used for indwelling access.

Pre-Procedure:

- Verify correct patient identification by asking the patient/parent/carer to state full name and date of birth and verify this against identification band/s, health record and MRN.
- Explain the procedure to the child and parents/caregiver and obtain verbal consent to proceed.
- Apply topical anaesthetic according to protocol to minimise discomfort. (See procedures 13.18 and 13.14)
- Ensure the child's privacy is maintained throughout the procedure.

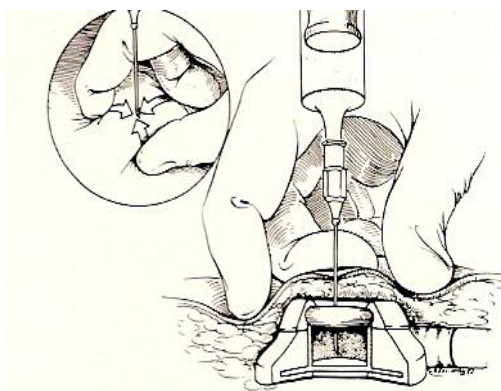
Equipment:

- Clean work area
- Dressing pack
- 2% Chlorhexidine Gluconate with 70% Alcohol – Persist Plus™ swab
- Huber/Gripper needle
- 10 mL syringe
- Extension tubing
- Normal Saline x 10ml ampule
- A clear occlusive dressing is to be used when covering the insertion site if the needle is to remain insitu. E.g. 1-Hand™ or Opsite 3000™.

Procedure:

- Moment 1 hand hygiene – position patient
- Moment 4 hand hygiene – prepare work area and open dressing pack/place sterile equipment
- Moment 2 hand hygiene - Wash hands for 60 seconds - don sterile gloves
- Prime needle and extension with Normal Saline

- Swab area over port with Persist Plus™ working from the centre outwards to clean the area to be covered by the dressing - use a circular motion by using each swab to cover an increasing circle of antiseptic without overlapping - allow to dry
- With your non-dominant hand palpate the port and visualise its position under the skin.
- Stabilise the device by placing a finger either side of the "port body" – this hand is now contaminated and should not be used again in the procedure
- Identify the centre point of the infusa port
- Insert the Huber or Gripper needle at 90 degree angle through the patient skin, into the centre point of the portal membrane - see diagram below



- Attempt to aspirate 3 mL of blood to confirm the needle placement and discard the aspirated specimen (unless required for blood cultures – see below) in a contaminated waste container to minimise the risk of a septic shower

1 in 5 devices will not yield blood - this does not necessarily mean that the device has not been successfully cannulated.

- Inject 5mL of saline rapidly into the device with a pulsatile technique to flush the blood through. Clamp the line and turn off three-way tap whilst maintaining positive injection pressure
- Assess for pain and swelling around the device. If swelling occurs, or if resistance to injection –**STOP INJECTING** and contact R.M.O. or an accredited physician
- If long term inpatient access is required, dress the area with an occlusive dressing, to allow clear view of access site secure tubing firmly to chest with Hypafix™ to ensure traction is not placed on insertion site
- If short term access is required, the access needle should be removed at the end of the procedure as below

REMOVAL OF ACCESS NEEDLE (De-accessing):

If IV fluids are not running, the port must be flushed with 10 mL of Normal Saline and 5 mL of Heparinised Saline 50 Units in 5mL using a 10mL syringe under **positive pulsatile pressure** (i.e. the clamp is closed under pressure at the 1 mL mark while the injection is being infused in a rapid start/stop manner and clamped under pressure – this creates turbulence within the port body that clears all areas, and a positive pressure within the port that maintains patency).

Removal of the closed line may then occur:

- Moment 1 hand hygiene – position patient
- Moment 4 hand hygiene – prepare work area, open dressing pack, place sterile equipment on field, don personal protective equipment
- Moment 2 hand hygiene - don clean gloves
- Support the port with the non-dominant hand and pull the needle out with the dominant hand
- Applying digital pressure over the insertion site for approximately 60 seconds then place a small occlusive dressing over the site once it is no longer bleeding.
- Remove personal protective equipment and dispose of all sharps and contaminated waste according to policy followed by Moment 4 hand hygiene
- Ensure that the child is comfortable and settled.
- Moment 5 hand hygiene
- Documenting the removal in the medical record, along with the condition of the site, and the verbal consent for the procedure.

ADMINISTRATION OF INTRAVENOUS MEDICATIONS FOR INPATIENTS:

Options:

- ❖ Bolus dose via a 3 way tap or available bung with intravenous fluids running.
- ❖ Bolus dose without intravenous fluids running.
- ❖ Intermittent infusion via a side-line or syringe driver.
- ❖ Intermittent infusion via a burette.

Outcomes:

Prevent / minimise infection

Effective delivery of the prescribed medication

Drug interactions are avoided


Equipment:

- Clean kidney dish


- 10mL syringe
- Access cannula
- Required Intravenous medication
- Blue label indicating intravenous route
- Line label indicating a central venous line
- Normal saline
- Alcohol wipes x 3

Procedure :

❖ Bolus dose via three way tap or available bung with intravenous fluids running

- Attend Moment 2 hand hygiene
 - Obtain a clean kidney dish and collect required equipment.
 - Attend Moment 2 hand hygiene
 - Prepare medications aseptically and according to the pharmacist and manufacturer's instructions
 - Tell the child/parent what the medication is and what it's for
 - Moment 1 hand hygiene - check the port site and notify the Medical Officer of any concerns prior to administration
 - Verify the patient's identification – use specific patient label or 3 unique identifiers e.g. full name, medical record number and date of birth. Ensure the correct medication, dose, route, and time with a second independent checker at the bedside
 - Attend Moment 2 hand hygiene
 - Clamp IV line proximal to the intravenous bung and pause the IV pump
 - Vigorously clean the nearest available bung to the patient with alcohol wipes x 3 and allow to dry between each wipe
 - Deliver the medication through the cleaned bung
 - Follow with 5mL of Normal Saline
 - Recommence prescribed IV therapy
- 
- Ensure that the line is labelled as a CVL at each injection bung
 - Dispose of sharps into sharps container
 - Attend Moment 4 hand hygiene
 - Ensure that the patient is comfortable and settled
 - Document drug administration and report any adverse effects.

❖ Bolus dose without IV fluids running

- Attend Moment 1 hand hygiene – explain procedure, obtain verbal consent, and position the patient
- Check the port site - notify MO of any concerns prior to administration
- Attend Moment 4 hand hygiene
- Obtain a clean kidney dish and collect equipment.
- Attend Moment 2 hand hygiene
- Prepare medications aseptically and according to the pharmacist and manufacturer's instructions
- Verify the patient's identification – use specific patient label or 3 unique identifiers e.g. full name, medical record number and date of birth. Ensure the correct medication, dose, route, and time with a second independent checker at the bedside
- Attend Moment 2 hand hygiene
- Check the line label to ensure correct route 
- Vigorously clean the bung with an alcohol wipes x 3 and allow to dry between each wipe
- Attach a 10mL syringe, unclamp the line, and flush with 5mL of normal saline and re-clamp.
- Deliver the medication through the cleaned bung.
- Follow with 5mL of Normal Saline to flush using pulsating positive pressure and clamp
- If the port is not to be used within 24 hours, unclamp the line and instil heparinised saline 50units/5mL using pulsating positive pressure then clamp under injection pressure
- Dispose of equipment appropriately
- Attend Moment 4 hand hygiene
- Ensure the patient is settled and comfortable
- Attend Moment 5 hand hygiene
- Sign medication chart and document any concerns in the medical record

❖ Intermittent infusion via a side-line

This may be used to minimise fluid volumes, drug and IV fluid incompatibilities and pre-mix drugs.

- Attend Moment 2 hand hygiene.



- Gather appropriate equipment including line label
- Use syringe pump or 100 mL bag and infusion pump depending on volume to be infused.
- Attend Moment 2 hand hygiene.
- Prepare medications aseptically and according to the pharmacist and manufacturer's instructions
- Verify the patient's identification – use specific patient label or 3 unique identifiers e.g. full name, medical record number and date of birth. Ensure the correct medication, dose, route, and time with a second independent checker at the bedside
- Attend Moment 2 hand hygiene



- Check the line label to ensure correct route
- Stop IV therapy and clamp that line
- Vigorously clean the bung with an alcohol wiper x 3 and allow to dry between each wipe
- Attach 10mL syringe and flush with 5mL of normal saline
- Connect the giving set to bung.
- Place blue additive label on the syringe or giving set to identify the infusion as going into a CVL
- Commence infusion at the required rate
- Attend Moment 4 hand hygiene
- Ensure the patient is settled and comfortable
- Attend Moment 5 hand hygiene
- Sign medication chart and document any concerns in the medical record
- At completion of the infusion flush with 5mL of Normal Saline.
- Recommence prescribed IV therapy by unclamping line and starting pump
- Discard the drug line ensuring that any remaining S8 drugs (if used) are disposed of according to NSW Health PD2007_077 6.2.3 and any cytotoxic drugs/waste (if used) according to NSW Health PD 2005_081 9.2

- Attend Moment 4 hand hygiene.
- Document drug administration and report any adverse effects along with staff responses/management of same.

❖ Intermittent infusion via a burette

- Attend Moment 2 hand hygiene
- Obtain a clean kidney dish and collect equipment
- Attend Moment 2 hand hygiene
- Prepare medications aseptically and according to the pharmacist and manufacturer's instructions
- Attend Moment 1 hand hygiene – explain procedure, obtain verbal consent, and position the patient
- Verify the patient's identification – use specific patient label or 3 unique identifiers e.g. full name, medical record number and date of birth. Ensure the correct medication, dose, route, and time with a second independent checker at the bedside



- Check the line label to ensure correct route
- Pause IV therapy
- Attend Moment 2 hand hygiene
- Vigorously clean the bung on the burette with alcohol wipes x 3 and allow to dry between wipes
- Add medication to the burette
- Dilute to required volume
- Place completed blue additive label to burette to identify the contents.
- Set IV rate and volume then re-commence IV therapy
- Dispose of equipment as per policy
- Attend Moment 4 hand hygiene
- At completion of drug administration attend Moment 2 hand hygiene, add 20-30mL of IV therapy to the burette, and indicate on the blue label that flushing is in progress – this is usually done by partially tearing the label
- Recommence IV therapy at prescribed rate following flush and remove medication label
- Attend Moment 4 hand hygiene
- Document drug administration and report any adverse effects

CHANGING INTRAVENOUS FLUIDS ON A PORT:

Outcomes


Intravenous fluids will be changed using aseptic non-touch technique

Correct fluid will be infused on the correct patient via the correct route

Schedule:

- Intravenous fluid bags MUST be changed at least every 24 hours
- Intravenous lines must be changed every 72 hours
- Total Parenteral Nutrition (TPN) bags and lines must be changed every 24 hours
- Lipid and blood lines must be changed immediately after use

Procedure

- Attend Moment 2 hand hygiene
- Explain the procedure to the patient/parent
- Label the fluid bag with the correct label . Do not write on the bag with a permanent marker as it may be absorbed into the fluids
- Attend Moment 2 hand hygiene
- Swab around site to be disconnected with alcohol swabs x 3. Leave to dry between swabs
- Disconnect and change the fluid bag without touching entry site or introducer of giving set
- Check the infusion rate is correct
- Attend Moment 4 hand hygiene
- Document the fluid change in the patient's medical record and on the fluid balance chart
- Sign off any discarded intravenous fluids on the order chart and fluid balance chart

MAINTAINING PATENCY: HEPARIN LOCKING.

Note: Heparin concentrations have been reduced.

Heparinised Saline 50units/5mL is now used.

When not in use, INPATIENT ports must be flushed WEEKLY to maintain patency and OUTPATIENT ports must be flushed ever 4 weeks. They can be flushed at 6 weekly intervals at a medical consultant's discretion.

Equipment

- 10mL syringes x 2
- Dressing pack + extra gauze
- 2% Chlorhexidine solution
- Sterile gloves
- Heparinised Saline 50units/5mL
- Normal Saline ampoule/s
- Drawing up needle x 2

Procedure

- Attend Moment 1 hand hygiene – explain procedure, obtain verbal consent, and position the patient
- Verify the patient's identification – use specific patient label or 3 unique identifiers e.g. full name, medical record number and date of birth. Ensure the correct medication, dose, route, and time with a second independent checker at the bedside



- Check the line label to ensure correct route
- Attend Moment 2 hand hygiene
- Clean trolley, open dressing pack, and prepare equipment
- Attend Moment 2 hand hygiene
- Don sterile gloves
- Draw up 10mL of normal saline for each lumen in a 10mL syringe
- Draw up 5mL of Heparinised Saline 50units/5mL
- Remember to always clamp the line when changing syringes or removing lines
- Vigorously clean around IV bung with chlorohexidine 2% x 3 swabs and allow to dry
- Using a gauze square remove the IV lines or IV bung
- Clean threaded section of extension tube with chlorohexidine soaked gauze
- If the port has not had IV therapy infusing, withdraw 5mL of blood as a discard (unless required for blood culture – see below) prior to heparin locking to prevent septic shower and remove the previous heparin lock
- Clamp the line
- Attach 10mL syringe, open the clamp and flush the line with 10mL of normal saline with a pulsating positive pressure
- Clamp the line

- Instil 5mL of Heparinised Saline 50units/5mL until 1mL is remaining – clamp line whilst maintaining pulsating positive pressure
- Consider port dressing change
- Discard equipment according to policy
- Clean trolley with neutral detergent
- Attend Moment 4 hand hygiene
- Sign medication chart for the heparinised saline
- Ensure that the patient is comfortable and settled
- Attend Moment 5 hand hygiene
- Document procedure in the patient's notes.
- Report any complications to the appropriate Medical Officer

COLLECTION OF BLOOD:

- ❖ Closed System
- ❖ Blood cultures
- ❖ TPN infusing

Equipment

- Two kidney dishes (one clean one for discard)
 - 10mL syringes x3
 - Non-sterile gloves
 - Alco wipes x3
 - Normal Saline ampoule
 - Blunt drawing up needle
 - Blood tubes
 - Signed Pathology request form

Procedure

- Attend Moment 1 hand hygiene – explain procedure, obtain verbal consent, and position the patient
- Verify the patient's identification – use specific patient label or 3 unique identifiers e.g. full name, medical record number and date of birth. Check patient identification against the pathology form with a second independent checker at the bedside
- Attend Moment 2 hand hygiene

- Gather equipment
- Label blood tubes
- Attend Moment 2 hand hygiene
- Draw up normal saline
- Check port insertion site – notify MO of any abnormalities and document same
- Pause IV therapy
- Open 3-way tap if insitu
- Attend Moment 2 hand hygiene
- Don clean gloves and PPE
- Vigorously clean the bung with alcohol wipes x 3 and allow to dry between wipes
- Attach 10mL syringe and withdraw 5mL of blood for discard unless required for blood cultures
- Clamp the extension line
- Attach new 10mL syringe and collect required specimen volume of blood. Inject blood into a correctly labelled tube and place this in a sealed specimen bag
- Clamp the extension line
- Attach a 10mL syringe of normal saline and flush the line with a pulsating positive pressure
- Release clamp and recommence IV therapy, if running, at the prescribed rate
- Dispose of equipment as per policy
- Attend Moment 4 hand hygiene
- Ensure that the patient is comfortable and settled
- Attend Moment 5 hand hygiene
- Document procedure in the patient's notes

Refer to heparin locking procedure if intravenous line is no longer required.

❖ Blood Cultures specific to oncology patients only

Blood collection using either closed or open system

- Blood culture bottle/s - pink top for general paediatrics
-purple top for anaerobic specimens especially used in paediatric oncology
- Alcohol wipes x 1 per bottle
- 19 gauge needle x 1 per bottle

- 10 mL syringe
- Specimen bag
- Pathology request form

Attend Moment 2 hand hygiene

Clean the top of the blood culture bottle with an alcohol wipe after removing the cap

Approximately 3 mL of blood is required for each bottle

Change the needle for each bottle

Call Speci-Prep on extension 14396 if you have questions regarding collection times or the required blood tubes.

❖ Parental Nutrition

Blood collection using a closed system.

- Attend Moment 2 hand hygiene
- Turn the TPN off
- Flush with 10 mL Normal Saline prior to blood collection
- Collect the blood as per closed system
- Turn TPN on at prescribed rate

UNBLOCKING PORTS

The following procedures are only to be carried out by Medical Officers or RNs who have completed the required competency and are under the direction of the patient's consultant.

The procedures are used to unblock occluded ports or to control infection within a port.

All procedures are to be attended using aseptic non-touch technique.

❖ **ALTEPLASE (tPA) FOR ATTEMPTED UNBLOCKING OF OCCLUDED PORT**

It is strongly recommended that you phone the Haematologist/Oncologist on-call prior to using Alteplase. Sites other than JHCH within Hunter New England Area Health Service should also phone the JHCH Haematologist/Oncologist on-call for advice.

Alteplase (tPA) is used in an attempt to unblock an occluded Port when thrombosis is thought to be involved. Consider assessing coagulation / prothrombotic status prior to instillation of Alteplase®.

- Obtain 1 x 10 mg vial of Alteplase from pharmacy
- Attend Moment 2 hand hygiene
- Reconstitute with Water for Injection to 1 mg/mL
- Draw up 0.5 mg (0.5mL) Alteplase plus an extra 1 mL Water for Injection making up a 1.5mL solution containing 0.5mg tPA with second checker
- Explain the procedure to the patient/parent/carer in plain language and obtain verbal consent to proceed - refer to consent policy if required
- Verify correct patient identification by asking the patient/parent/carer to state full name and date of birth and verify this against identification band/s, health record and MRN
- Instill the entire 1.5mL into the port using sterile technique and leave for 2 hours
- Attend Moment 4 hand hygiene and sign medication chart
- Attend Moment 2 hand hygiene
- Withdraw the solution from the port and discard in contaminated waste
- Attach a 10mL syringe of normal saline and flush the line with a pulsating positive pressure
- Attend Moment 4 hand hygiene and document procedure
- If necessary, this procedure may be repeated

Potential Complications

Avoid the use of Alteplase in patients at high risk of bleeding / thrombotic events. Side effects are uncommon but may include hypersensitivity, major haemorrhage, thrombosis, embolic events, sepsis, catheter related complications e.g. rupture.

❖ ETHANOL LOCK FOR UNBLOCKING OF OCCLUDED OR INFECTED PORT

Patients with persistent positive blood cultures despite appropriate antibiotics may be treated with an Ethanol lock in an attempt to sterilise the line, as an alternative to port removal.

Sometimes ethanol locking of a port is used in an attempt to **clear a blocked line** of drug or TPN precipitates. In this instance, only one injection of Ethanol is used.

Determining Port-a-cath volume – see manufacturer’s instructions or insertion operation report if available. If information is not available discuss with the patient’s consultant. Average dead space volume for a Port-a-cath : 0.6 to 1.6 mL (plus gripper 0.3 - 0.5ml) = 0.9 to 2.1mL

Technique for Ethanol Sterilisation of Port-a-cath (Infection)

1. Obtain a prescription from the MO
2. Attend Moment 2 hand hygiene
3. To make Ethanol 70% in water, draw up 7mL Dehydrated Alcohol (Ethanol 100%) with 3mL Water for Injection in a 10mL syringe with a second checker independently confirming the preparation
4. Attend Moment 1 hand hygiene
5. Explain the procedure to the patient/parent/carer and obtain verbal consent to continue
6. Verify correct patient identification by asking the patient/parent/carer to state full name and date of birth and verify this against identification band/s and medication chart Patient Identification with a second checker at the bedside
7. Slowly inject the volume of port-a-cath (see Determining Port-a-cath Volume p15) (maximum 0.55mL/kg) of Ethanol (70% in water) into the port and leave for 24 hours
8. Attend Moment 4 hand hygiene
9. After 24 hours the solution is aspirated and discarded using aseptic non-touch technique
10. Re-culture port after removal
11. Flush through with saline and heparinised saline under pressure to prevent clotting inside the port line

If the port-a-cath needs to be used quickly a 4 hour ethanol lock may be instilled and repeated up to 5 times. This is at the medical consultant’s discretion.

Technique for Ethanol Lock for Port-a-cath Occlusion

1. Obtain a prescription from the MO
2. Attend Moment 2 hand hygiene

3. To make Ethanol 70% in water, draw up 7mL Dehydrated Alcohol (Ethanol 100%) with 3mL Water for Injection in a 10mL syringe with a second checker independently confirming the preparation
4. Attend Moment 1 hand hygiene
5. Explain the procedure to the patient/parent/carer and obtain verbal consent to continue
6. Verify correct patient identification by asking the patient/parent/carer to state full name and date of birth and verify this against identification band/s and medication chart Patient Identification with a second checker at the bedside
7. Attend Moment 2 hand hygiene
8. To make Ethanol 70% in water, draw up 7ml Dehydrated Alcohol (Ethanol 100%) with 3mls of Water for Injection in a 10ml syringe
9. Slowly inject volume of Port-a-cath (maximum 0.55mL/kg) of Ethanol (70% in water) into the blocked port and leave for 1 hour
10. After 1 hour aspirate and discard, then flush the port with saline and heparinised saline under pressure
11. Notify the consultant if unable to aspirate ethanol

Potential Complications

No severe side effects have occurred in studies using ethanol. It is generally well tolerated.

Mild side effects can occur including tiredness, headaches, dizziness, nausea and light-headedness.

No cases of thrombosis, seizures, loss of consciousness or delirium have been reported.

❖ HYDROCHLORIC ACIDIFICATION OF AN INFECTED OR BLOCKED PORT

Patients with persistent positive blood cultures despite appropriate antibiotics may be treated with HCl in an attempt to sterilise the line, as an alternative to port removal.

Sometimes acidification of a port is used in an attempt to **clear a blocked line**. In this instance, only one injection of HCl is required.

SAFETY ALERT: Protect the eyes of the patient and relatives with safety goggles or sunglasses and ask them to look away from the procedure. Staff must ensure that they are wearing full PPE to protect from acid splash.

Technique

Standard aseptic non-touch technique should be used throughout.

1. Obtain a prescription from the MO
2. Attend Moment 1 hand hygiene
3. Ascertain port-a-cath Volume (see Determining Port-a-cath Volume p15)
4. Explain the procedure to the patient/parent/carer and obtain verbal consent to continue
5. Verify correct patient identification by asking the patient/parent/carer to state full name and date of birth and verify this against identification band/s and medication chart Patient Identification with a second checker at the bedside
6. Attend Moment 2 hand hygiene
7. Slowly inject port-a-cath volume of HCl (2 Molar) into the port with a 10 mL syringe
Leave for 20 minutes
8. Use a 10mL syringe to aspirate as much of the HCl as possible back out of the port
9. Flush with 10mL saline
10. Leave 10 minutes, and then repeat steps 2 to 4 after 20 mins, to a total of 3 times. The port can then be used immediately after the third discard
11. Dispose of waste as per policy
12. Attend Moment 4 hand hygiene
13. Ensure patient is settled and comfortable
14. Attend Moment 5 hand hygiene and document the procedure in the medical record
15. Re-culture from the port 24hrs later

Potential Complications

- Rupture of the port or its catheter
- Failure to aspirate HCl back out of the port - seek experienced (nursing) help and abandon the procedure for the day. Notify the patient's consultant
- It is safe to slowly flush HCl into patient if it is not possible to aspirate
- Pain may be experienced if the HCl is injected too quickly

** Febrile reaction is not uncommon. This is a presumed reaction to denatured proteins entering the circulation. The patient can be cultured if febrile post-HCl, but the port should still be cultured 24hrs after the procedure.

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AMENDED: For Altaplast® - specialist consultation required and patient eye protection with the use of ethanol.

APPROVED: CPGAG 7th September, 2009.

KGNS Quality Committee–9th September, 2009.

REVIEWED and AMENDED by E.Kepreotes: For addition of Aseptic Non-touch Technique and 5 Moments of Hand Hygiene

APPROVED: CPGAG - 29th October, 2012

KGNS Quality and Safety Committee – 30th October, 2012