

Intravenous therapies to neonates via central lines

IV drug administration - managing flushes and drugs (bolus and continuous infusions) for PICC lines, UVC and surgically placed central lines is a 2 person procedure using a Critical Aseptic Field.

Double lumen umbilical venous catheters may be used to infuse both PN or other maintenance fluids e.g. 10% glucose, and a continuous drug infusion e.g. morphine, at the same time. Always check the drug monographs for compatibility. If in doubt contact the NICU Pharmacist.

Surgically inserted central lines (Hickman or Broviac) that are running maintenance fluids e.g. PN or 10% glucose, may also be used for blood products, bolus or short infusion drugs. Unless it is a double lumen central line, the maintenance fluid must be stopped for the duration of the bolus/short infusion. PICC (long line) maintenance fluid must be stopped for the duration of the bolus/short infusion. These lines must not be used for administering blood products.

Blood products, bolus or short infusion drugs should not be administered via a central line unless there is no other venous access. The Dr/ANNP on for ITU must record in the infant's notes that it is permissible to use the central line for bolus or short infusion drugs.

Equipment for all procedures

Sterile wound cleansing/dressing pack (critical aseptic field), sterile swabs, sterile hand towel, sterile gloves, white disposable apron, 2% chlorhexidine in 70% alcohol solution/swab, packet of detergent wipes, selection of IV syringes, 21g safety needle, alcohol swabs, Medex extension line, long extension line, flush solution, Water for Injection and drug.

Procedure for cleaning the hub (no-needle port/connector)

1st nurse

- Cleanse hands according to the NNU policy.
- Apply white disposable apron.
- Prepare the trolley surface by cleaning it with a detergent cloth. Once the surface is dry, apply a small volume of 2% chlorhexidine in 70% alcohol solution/swab and wipe over the area. Allow this to dry.
- Equipment is assembled and placed in an accessible position for carrying out the procedure.
- With another registered nurse/midwife, check the 'flush' solution for type of 'flush' and expiry date. If a bolus drug or infusion is to be commenced, carry out the protocol for checking drugs with another registered nurse/midwife (see note 1).
- Open outer wrap of sterile wound cleansing/dressing pack (critical aseptic field) and place the inner pack onto the clean trolley.
- As a pair of sterile gloves are within the dressing pack, if another pair is required place a separate set of sterile gloves on top of dressing pack.
- Cleanse hands according to NNU policy and dry hands with sterile dressing towel as provided by 2nd Nurse.
- Put on sterile gloves.
- Open up the dressing pack via the corners without touching the tray or swabs.

2nd nurse

- Put on white disposable apron.
- Cleanse hands according to NNU policy.
- Present the chlorhexidine/alcohol solution to the 1st nurse for confirmation of use – checking for correct solution and expiry date.
- Pour the solution into the sterile tray.
- Open the packet of sterile swabs and without touching them, offer them to 1st nurse for placement on critical aseptic field.
- Open port holes for 1st nurse then go to the other side of the incubator and lift the central line off of the mattress.

1st nurse will now clean the central line no-needle port and line prior to flushing

- Place the sterile field dressing under the central line.
- Soak the sterile swabs in the chlorhexidine/alcohol solution.
- Take two swabs and squeeze to remove excess solution.
- Wrap the no-needle connector with one soaked swab and with another swab, wrap it around the catheter and move it away from the connector, up the catheter for about 15-20cms. Discard the swab.
- Rub no-needle connector vigorously for 30 seconds. Discard swab.
- Place no-needle connector and catheter onto sterile field and allow drying for 30 seconds.
- If double gloved, remove first pair of gloves.

Preparing the flush

2nd nurse

- Open outer wrapping of needle and syringe via the corners, half way and offer to 1st nurse for placement on general aseptic field.
- Present checked 'flush' solution (0.9% Sodium Chloride) to 1st nurse.
- Open the plastic ampoule of 0.9% Sodium Chloride.

1st nurse

- Connect needle and syringe ensuring not to touch the outer wrapping and Key Parts.
- Draw up 1.5mL of flush solution into the syringe; remove any air bubbles
- Remove the needle
- When the no-needle connector is dry (approximately 30 seconds from removing swabs) insert the 5mL syringe with the 0.9% Sodium Chloride into the no-needle connector and twist to connect ensuring Key Parts are meeting other Key Parts.
- Unclamp central line and flush the line with 0.5mL of solution.
- Remove the syringe and place it onto the sterile dressing pack.

Preparing the drug - see individual monographs for specifics

- The procedure for reconstitution and administration of medicines must follow aseptic principles.
- Equipment: a selection of syringes and needles according to the individual drug requirement as outlined in the monographs, drug, water for Injection, alcohol swabs, Medex 150cm extension line, long extension line.

Reconstitution and administration of bolus of drug

2nd nurse

- Open outer wrapping of needle and syringe half way and offer them to 1st nurse to take them from you ensuring Key Parts aren't touched.
- Open the plastic ampoule of Water for Injection.
- Present checked Water for Injection and drug vial/ampoule to 1st nurse.

1st nurse

- Connect needles and syringes ensuring Key Parts are not touched.
- Vigorously rub the rubber bung of the drug vial with an alcohol swab for 30 seconds, allow to dry for 30 seconds.
- Draw up the required amount of water into the syringe; insert needle into the rubber bung of the drug vial and add Water for Injection.

2nd nurse

- Shake vial well to mix.

1st nurse

- Vigorously rub the rubber bung of the drug vial with an alcohol swab for 30 seconds, allow to dry for 30 seconds.
- With the appropriately sized syringe and needle, insert the needle into the rubber bung of the drug vial and draw up the required amount of drug as indicated in the monograph.
- Remove any air bubbles from the syringe.
- Remove the needle.
- Ensuring the newly prepared no-needle connector is dry, approximately 30 seconds from removing swabs, connect the 'drug' syringe.
- Unclamp central line and inject the drug according to the monograph.
- Disconnect syringe.
- Insert the 5mL syringe with the 0.9% Sodium Chloride into the connector.
- Flush the line with 0.5mL of solution. Remove the syringe.
- Dispose of equipment according to NNU policy.

If administering a drug as an infusion, short and long.

- Follow procedure as above to reconstitute the drug.

2nd nurse

- Open outer wrapping of extension line half way and pass to 1st nurse.

1st nurse

- Attach the extension line to the syringe ensuring only Key Parts are touching and flush drug through the line.
- Protect end of the extension line on sterile dressing pack and give the drug syringe to 2nd nurse.

2nd nurse

- Place the syringe into the infusion pump, inputting and checking the dose and time delivered are correct with 1st Nurse.
- Infusion may need purged prior to attaching it to central line.

1st nurse

- Place the end of the line with the protective cap onto the sterile drape included in dressing/wound pack.
- Clean no needle connector hub for 30 seconds and allow drying for 30 seconds on the central line.
- Remove the cap from extension set and attach the line to the no-needle connector.
- Unclamp central line.

Both nurses/midwives

- Check that the solution is attached to the correct line, there are no incompatibility concerns (see drug monograph) and the pump rate is correct; this applies when new lines are connected and in the event of an alteration in rate to the current line.
- Start the pump and infuse the drug according to the monograph.

Post procedure

- Discard sharps and equipment safely as per NNU policy.
- Clean IV blue tray with a detergent cloth from front to back and allow to dry.
- Remove white disposable apron and non sterile gloves, disposing of same in clinical waste.
- Clean hands immediately as per NNU policy.
- Observe the infant's physiological responses to the procedure and report abnormal findings to nurse / midwife in charge.
- Record procedure in the relevant documentation.

Stopping continuous infusions

- Once the infusion is complete, the line must be flushed using Aseptic Non Touch Technique (as above).
- If the line was being used for dopamine, insulin, prostin or adrenaline then the 0.9% Sodium Chloride should be infused over 1 hour at the same rate as the drug.

Notes

1. Protocol for checking drugs

- All prescriptions are checked by 2 registered nurses/midwives (one who has completed the NICU's IV Therapy for Neonates course) for accuracy in:
 - patient name, ID number, weight and gestation,
 - drug to be given, route of administration, special instructions, legibility of the signature of the prescribing person,
 - date and time of current dose and
 - date and time of previous dose.
- The prescription should be checked against the drug monograph:
 - drug name,
 - dose (considering gestation, weight, actual age),
 - therapeutic monitoring level (check 'Antibiotic drug level' entry in baby's Badger notes if appropriate) and
 - reconstitution (if appropriate).

- Having independently calculated the dose and volume to be infused (in mls/kg/dose and or rate/minute) the 2 nurses/midwives must confer and agree on the dose before proceeding.
- Both nurses/midwives must check that the drug is being infused into the correct line, and there are no incompatibility concerns (see drug monograph). The prescription chart is signed by both nurses/midwives after administration is complete.