

TRUST PARENTERAL NUTRITION POLICY

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1. **Introduction**

This policy outlines the management of patients who are receiving artificial nutrition via the parenteral (intravenous) route. This policy covers referral for Parenteral Nutrition (PN) and how to manage and monitor patients receiving this therapy.

PN is the intravenous administration of a solution containing any of the following:

- amino acids
- glucose
- fat
- electrolytes
- trace elements
- vitamins

It should be considered as a method of feeding where there is failed oral/enteral feeding and/or a non-functional, inaccessible or perforated (leaking) gastrointestinal tract.

Long term PN may be required for intestinal failure. Intestinal failure is characterised by reduced intestinal absorption either due to lack of function or inadequate length. PN is used when it proves impossible to provide adequate nutrition or fluid and electrolytes via the gastro-intestinal tract. PN may be given in conjunction with enteral nutrition to meet a patient's nutritional requirements.

2. **Purpose and Outcomes**

The purpose of this policy is to ensure safe and effective practice with patients receiving PN, minimise the risk of infection and complications and standardise practice throughout the Trust.

To ensure that practice complies with:

- N.I.C.E. guidance (2006)
- N.C.E.P.O.D. (2009)

3. **Definitions Used**

Parenteral Nutrition: Intravenous feeding

4. **Key Responsibilities/Duties**

Director of Patient Experience & Chief Nurse

The Director of Patient Experience & Chief Nurse is the Executive Lead for Nutrition and is responsible for the implementation of this policy within the Trust.

Nutrition and Hydration Steering Group

The Nutrition team annual report will be sent to the Nutrition and Hydration Steering Group who will provide advice and support on the implementation and monitoring of this policy. The Nutrition and Hydration Steering Group is accountable to the Trust Board via the Trust Quality Governance Structure.

Medical Staff

Medical staff are responsible for implementation of this policy within Divisions specifically concentrating on the reason for referral, rationale and aims of therapy.

Nutrition Team

The Nutrition Team are available to assist, support, and advise staff within the Acute Trust on all issues relating to the management of PN. They will provide an initial assessment and monitoring of all patients referred for PN. The team is also responsible for developing and disseminating best practice and providing staff training.

Matrons/ Senior Sisters

Matrons/ Senior Sisters are responsible for ensuring the dissemination and implementation of this policy within their clinical ward areas and for demonstrating compliance of staff competency through audit.

Registered Nursing Staff

Registered nursing staff are responsible for ensuring their own compliance with this policy.

5. Implementation of the Parenteral Nutrition Policy

5.1 Access to the Policy

This policy will be placed on Flo (Trust intranet system) and linked to all nutrition pages, providing access to key proformas for ease of use. Updates will be available through the Trust communication channels

5.2 Training & Competence

All ward staff who manage patients receiving P.N. will have received training and be competency assessed. A trained nurse who has undergone competency based evaluation must carry out all procedures. Competency is defined as demonstrating the understanding of theory and practice in the administration of PN into an intravenous central line, including:

- Emphasis on full aseptic technique being vital in the avoidance of feeding line related sepsis
- Caring for the line entry site
- Changing the infusion daily
- Monitoring, reporting and managing complications following catheter insertion, catheter maintenance and infusion of PN
- Liaison with the Nutrition Team should problems arise

5.2.1 Criteria for undertaking training for PN competence

The nurse should be:

- A first level registered nurse
- Willing to undertake the role
- Competent in the administration of intravenous drugs. It is recognised that much of the theoretical and practical knowledge associated with the administration of intravenous drugs also pertains to PN administration and will have been covered in their intravenous drug administration training

5.2.2. Attaining PN competency

Competency statement: The nurse is competent in understanding both the theory and practice of the administration of PN and can administer this safely.

Recommended actions to obtain competency:

- Obtain competency in intravenous drug administration and attend Central Venous Access Device (CVAD) study session
- Attend the Trust PN training programme and complete workbook
- Observe a competent practitioner undertaking a routine PN bag change and a central line site dressing
- Undertake the same procedure under the supervision of a competent practitioner
- Identify when you have reached a standard of competency and record this in your professional profile

5.2.2. Assessment of competence in the administration of PN.

Nurses who are competent to administer PN can act as a clinical practice supervisor in the theory and practice of PN administration. The clinical practice supervisor must possess a recognised teaching and assessing qualification. The practitioner must also have their manager's support to undertake this role.

These protocols aim to ensure a quality nursing service related to PN by providing guidance and knowledge, in association with the specialist training required to safely care for patients receiving PN.

5.2.3. Maintenance of competency

Nurses who administer PN must perform this role regularly (at least every 3 months) in order to maintain competence.

5.2.4 Legal liability

Only staff assessed as competent and recorded on the Trust database should undertake PN administration. The Trust guidelines and policies should be adhered to.

5.3 Safe administration of PN.

It is important that PN is only instigated and managed in areas where the nursing staff have received sufficient training and experience of this treatment, to maintain an adequate standard of expertise and practice (N.I.C.E. 2006)

Due to the nature of parenteral nutrition; lines are at a far greater risk of catheter related blood stream infection than lines used for the infusion of other none nutrient rich solutions. It is therefore important that PN is delivered via a dedicated central venous catheter (CVC) or unused, clean lumen of an existing CVC (Pittiruti, Hamilton, Biffi, MacFie, & Pertkiewicz, 2009) (National Institute for Health and Clinical Excellence, 2006) PN must be administered using aseptic technique to reduce the risk of catheter related blood stream infection (CRBSI) (Ryder, 2006) (Boyce & Pittett, 2002). Nurses managing patients receiving PN must have attended the Trust IV and CVAD study days and have been assessed as competent to change PN infusion bags.

6. Monitoring Compliance and Effectiveness

Monitoring Requirement :	Training records and competencies, clinical audits of practice
Monitoring Method:	Incident analysis, review of training records, I.R.1 reporting, monthly to Nutrition and Hydration Steering Group
Report Prepared by:	Nutrition Team
Monitoring Report presented to:	Nutrition and Hydration Steering Group
Frequency of Report	Annually

7. References

Austin.P, Stroud.M. (2007) Prescribing adult intravenous nutrition. Pharmaceutical press: London.

Boyce, J. M., & Pittett, D. (2002). HICPAC committee and HIC/SHEA/APIC/IDSA hand hygiene Task Force: guideline for hand hygiene in health-care settings. MMWR Recommendations and Reports, 1-44.

Kerin M., Pickford I.R. Jaegar N.F. (1991) A prospective and randomised study comparing the incidence of infusion phlebitis during continuous and peripheral parenteral nutrition. Clinical Nutrition. Vol. 10. pp 315-319

Infusion Nurses Society (2000) Standards for infusion therapy. Infusion Nurse's Society.Massachusetts.

Maki D., Ringer M., Alvarado C.J. (1991a) Prospective randomised trial of povidone iodine, alcohol and chlorhexidine for prevention of infection associated with central venous and arterial catheters. Lancet. Vol. 338 pp 339-43.

Maki D., Stolz S., Wheeler S et al (1991b) A prospective trial of gauze and two polyurethane dressings for site care of pulmonary artery catheter: The implications for catheter management Critical Care Medicine 22 pp1729-1737

N.I.C.E. (2003)Infection Control – Prevention of Healthcare associated infection in primary and community care. Clinical guidelines. N.I.C.E. London.

N.I.C.E. (2006) Nutrition support in adults: oral nutrition support, enteral tube feeding and parenteral nutrition. N.I.C.E. London

Pratt R.J. , Pellowe C.M., Wilson, J.A., et al (2007) Epic 2 : National Evidence based guidelines for preventing Health care associated infections in NHS hospitals in England. Journal of Hospital Infection. Volume 65 supplement1-64.

Pittiruti, M., Hamilton, H., Biffi, R., MacFie, J., Pertkiewicz, M. (2009). ESPEN Guidelines on Parenteral Nutrition: Central Venous Catheters (access, care, diagnosis and therapy of complications). Clinical Nutrition, 365-377.

Rich A.J. (1995) Artificial Nutrition Support in Clinical Practice. Payne James J., Silk D., Grimble G., (eds) Edward Arnold: London.

Ryder, M. (2006). Evidence-based practice in the management of vascular access devices for home parenteral nutrition therapy. Journal of Parenteral and Enteral Nutrition, S82-93.

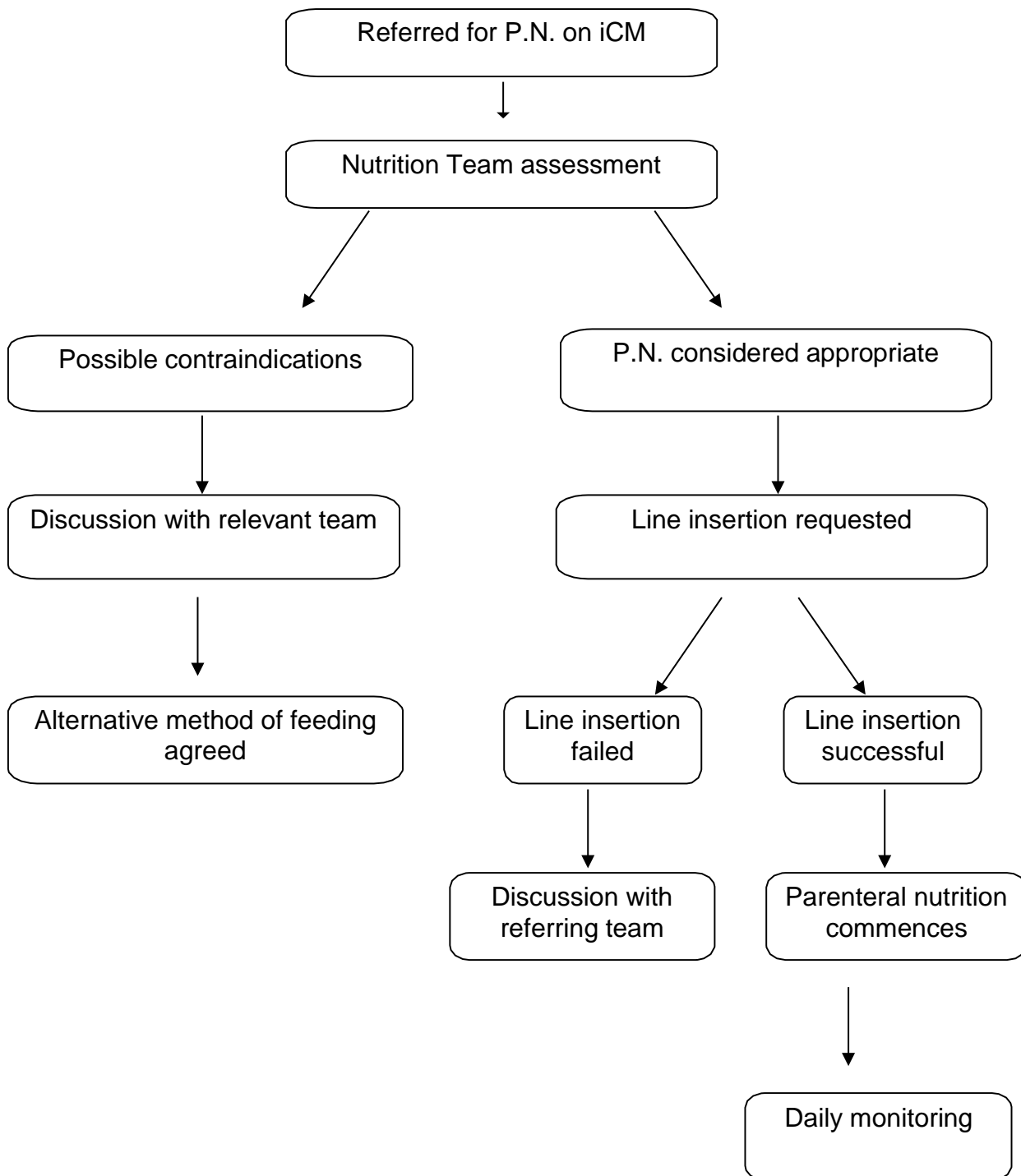
Springhouse A. (2002) Intravenous therapy made incredibly easy. Springhouse Lippincott. Philadelphia.

Trust policy and procedure for the care and maintenance Central Venous Access Devices (2015). Derby Teaching Hospital NHS Foundation Trust .

Trust policy and procedure for hand hygiene (2015) Derby Teaching Hospital NHS Foundation Trust.

Parenteral Nutrition referral flow chart

- Refer for Parenteral Nutrition (P.N.) via iCM -
- Referrals received before 12.30 will be dealt with the same day
- If the referral is appropriate the following must have been undertaken;
- Blood tests for: U & E, L.F.T.'s, Calcium, phosphate, magnesium and zinc
- B12, folate, vitamin D and selenium
- Any abnormalities should be corrected prior to PN commencing
- If patients have been NBM > 5 days Pabrinex should be prescribed
- N.B. Home PN patients also need referring via iCM



Lines available for Parenteral Nutrition within the Trust

- Following assessment by the Nutrition Team, the Nutrition Nurse Specialist will arrange the insertion of a suitable line.
- Lines should not be placed prior to assessment by the Nutrition Team as an alternative to PN may be advised.
- All lines must be dedicated for administration of PN only

1. Short term feeding

- Usually a Peripherally Inserted Central Catheter (P.I.C.C.) is used for PN administration.
- In extraordinary circumstances a multi lumen line central venous catheter (CVC) may be used if no other access is available. However lumen MUST be previously unused.

2. Home PN

- Long term single lumen cuffed tunnelled central line 6.6fr (e.g. Broviac, Hickman)

Insertion of a PICC for Parenteral Nutrition

Insertion of a PICC is performed by the PICC team following iCM referral and confirmation from the Nutrition Team that PN is appropriate /required.

Insertion of cuffed central lines for PN lines under X-ray guidance

This procedure must be requested via iCM, the ward staff must ensure that the following has been performed:

- The patient is consented as per Trust policy
- Intravenous cannula in situ
- Clotting profile and FBC - within normal limits
-

The Nutrition Nurse Specialist will arrange for the appropriate line to be taken to the ward/X-ray department.

Following insertion, the tip should be at the level of the right atrium/distal SVC to minimise the risk of thrombosis. A tip higher than this is only suitable for low osmolar feed.

Management of patients receiving Parenteral Nutrition



1. Monitoring of patients receiving Parenteral Nutrition

Parameter	Action	Frequency	Rationale
1. Temperature and pulse		4 hourly initially	To detect any signs of infection.
2. Line entry site and dressing	Assess line insertion site for signs of redness, pain and swelling.	Each shift	To detect leakage, infection and line migration.
3. Capillary Blood Glucose (CBG)	BM stix	Initially 4 times daily, then as directed by the Nutrition Team	To ensure there is adequate pancreatic endocrine function to manage the glucose load of feed.
4. Weight	Weigh at the same time of day in same clothes and with the same scales.	Weekly unless directed by the Nutrition Team	To identify any weight changes and changes in fluid balance
5. Biochemistry profile	Urea, electrolytes and glucose, phosphate, calcium, magnesium Liver function tests, albumin and C.R.P. Zinc, B ₁₂ , folate, vitamin D and selenium	Daily or as directed by the Nutrition Team Monday and Thursday or as directed by Nutrition team Baseline then as directed by Nutrition Team.	To promptly detect changes to biochemical profile
6. Urine sodium	Collection of urine	Weekly or as directed by the Nutrition Team.	To detect sodium depletion.
7. Accurate fluid balance	Document strict input and output	Continuously	To promptly detect fluid overload/dehydration
8. Infusion rate	Document on the parenteral therapy infusion chart	Hourly	To ensure that the correct rate/volume of PN is delivered

2. Nursing responsibilities for patients receiving Parenteral Nutrition.

Important points

- It is vital that all PN lines are managed under strict aseptic conditions at all times. (Ryder, 2006)
- PN must only be instigated and managed in areas where the nursing staff have sufficient experience of this treatment to maintain an adequate standard of expertise and practice (N.I.C.E. 2006).
- Nurses managing patients receiving PN must have attended the Trust IV and CVAD study days **and** have been assessed as competent to change PN infusion bags.
- Bloods **MUST NOT** be taken from a PN line, other than for culture if a line infection is suspected.
- PN line/lumen **MUST NOT** to be used for anything other than PN **unless** instructed by the nutrition team.
- Antibiotics given via a PN line to treat a line infection, should **not** be flushed.

Nursing responsibilities for monitoring patients on PN

- Weekly weighing of patients.
- Daily fluid balance.
- Daily temperature and blood pressure.
- Blood glucose monitoring 4 times daily initially, then as directed by the Nutrition Team.
- Line site inspection for redness, swelling, discharge or pain – each shift, record the VIP score.
- Weekly collection of urine sodium sample.

Nursing responsibilities for PN lines

- Ensure asepsis is maintained at all times when handling the PN and/or line.
- Weekly change of the occlusive dressing and closed system device as Trust policy.
- Ensure a port protector cap is used to cover the closed system device whenever P.N. is not being administered (eg cyclic PN) .
- **DO NOT** reconnect the PN if discontinued/disconnected for any reason, wait for a new P.N. bag. Document reason for PN being stopped.
- Ensure replacement fluids are prescribed and commenced, if PN is stopped.

Dressing Change for Parenteral Nutrition lines

Important points

- Frequency of dressing change: within 24 hours of insertion and then every 7 days using transparent, high moisture vapour permeable dressing.
- Any dressing should be changed if it has become loose, damp or soiled.
- Sterile steri-strips should be used to secure the PICC in addition to the transparent, high moisture vapour permeable dressing.
- Measure catheter length to check for migration. This measurement should be from the exit site to the PICC hub and the length documented on the central venous access device observation record.
- Mechanical phlebitis is more likely to occur within the first 7 days following insertion of the PICC. It can usually be resolved within 48 hours by the application of heat to the upper arm for 10-20 minutes, 3 times a day.
- Cuffed central lines and CVC's have sutures post insertion, refer to the CVAD policy for care and maintenance of these.

Equipment

- Sterile dressing pack including sterile gloves.
- Apron
- Non sterile gloves
- Steri strips (**PICC ONLY**)
- 2% Chlorhexidine gluconate and 70% Isopropyl alcohol cleansing solution/ wipe or if chlorhexidine sensitivity is suspected 10% aqueous Povidone iodine cleansing solution
- Sterile IV 3000 or Tegaderm (high moisture vapour permeable transparent dressing).

Procedure

1. Assess the need to carry out additional procedures e.g. change of needle free access device.
2. Undertake effective hand hygiene in accordance with the Trust policy and procedure for hand hygiene (2015)
3. Using the principles of ANTT prepare the equipment and assemble on a clean dressing trolley or tray.
4. Prepare the patient and examine catheter for signs of infection/ damage, dislodgement or phlebitis. If any concerns inform clinician.
5. Put on non-sterile gloves and loosen the dressing, removing it without touching the catheter and exit site.
6. Measure catheter length to check for migration.
7. Use effective hand hygiene and put on sterile gloves.
8. Clean catheter site with 2% Chlorhexidine gluconate and 70% Isopropyl alcohol or if chlorhexidine sensitivity is suspected 10% aqueous Povidone iodine cleansing solution. Using a scrubbing technique for 30 seconds (this will allow the 2% Chlorhexidine gluconate and 70% Isopropyl alcohol to penetrate the top 5 layers of skin), start from the exit site, extending out to the area that will be covered by the dressing
9. Allow to air dry for minimum of 30 seconds.
10. **PICC and tunnelled lines ONLY** -Secure line with steri strips placing them in an "H" style and apply a transparent high moisture vapour permeable transparent dressing over the top. Lines can be looped under the dressing for extra security, however **DO NOT** loop line over the top of itself. Leave extension set / injection port exposed.
11. Dispose of all waste as per guidelines and use effective hand hygiene.
12. Document using the central venous access device observation record.

Changing needle free access device

Important points

- The needle free access device is a self- sealing bung that must not be pierced by a needle.
- It does not have to be removed to attach a syringe or giving set tube to the line.
- The device can be used for up to 140 times, but must always be changed at least weekly.
- The device must also be changed if it becomes contaminated, or if it is suspected that blood may have collected inside.
- The device will usually be changed at the same time as the dressing change.

Equipment

- Sterile dressing pack including sterile gloves
- Apron
- 2% Chlorhexidine gluconate and 70% Isopropyl alcohol wipe or if chlorhexidine sensitivity is suspected 10% aqueous Povidone iodine cleansing solution
- Needle free access device

Procedure

1. Undertake effective hand hygiene in accordance with the Trust policy and procedure for hand hygiene (2015)
2. Prepare the equipment using ANTT and assemble on a clean dressing trolley or tray.
3. Prepare the patient and examine catheter for signs of infection/ damage, dislodgement or phlebitis. If any concerns inform clinician.
4. Ensuring line is clamped, holding a sterile piece of gauze, one in each hand, hold the line and with the other hand remove the existing needle free access device and discard.
5. Clean the line hub end with 2% Chlorhexidine gluconate/70% Isopropyl alcohol or if chlorhexidine sensitivity is suspected 10% aqueous Povidone iodine cleansing solution and allow to air dry for a minimum of 30 seconds / hub appears dry.
6. Using ANTT attach the new needle free access device to the catheter hub.
7. Remove and dispose of waste equipment correctly.
8. Record procedure and any variances in the patient's clinical record.

3. Administration of Parenteral Nutrition

Inserting an intravenous administration set into PN bag

Important points

- It is vital that all PN lines are managed under strict aseptic conditions at all times.
- Nurses managing patients receiving PN must have attended the Trust IV and CVAD study days and have been assessed as competent to change PN infusion bags.
- PN must only be instigated and managed in areas where the nursing staff have sufficient experience of this treatment to maintain an adequate standard of expertise and practice (N.I.C.E. 2006).
- PN line/lumen **MUST NOT** to be used for anything other than PN.
- If PN is kept in the fridge it is advisable to take it out at least 2 hours before connecting
- The PN bag will be provided in a light proof cover from Pharmacy.
- PN must never be stacked on top of each other in a fridge as this may interfere with the temperature regulation. Fridges should be checked weekly to ensure correct temperature is maintained
- Two trained nurses must check the label on the P.N bag against the prescription sheet, checking the patient's details, volume, expiry date and electrolytes, also ensure that there is a medical staff signature. Inspect the feed itself, ensuring that there is no 'creaming' (flocculation) of the bags' contents, debris or leakage from the bag.
- If there is any contamination of the P.N. please inform pharmacy and return the bag to the department.(J.P.E.N. 2002)

Equipment required

- Sterile gloves x1 pair
- Intravenous administration set
- Alcoholic hand rub
- 2% Chlorhexidine gluconate and 70% Isopropyl alcohol wipe
- ANTT mat

This should be undertaken away from the patient's bedside.

Procedure

1. Undertake effective hand hygiene in accordance with the Trust policy and procedure for hand hygiene (2015)
2. Using the principles of Aseptic Non-Touch Technique prepare the ANTT mat and dressing trolley. Gel your hands. Gently agitate the P.N. bag to ensure thorough mixing. Place the PN bag onto the ANTT mat. Open a 2% chlorhexidine & 70% alcohol wipe and place on themat. Put on the sterile gloves and remove the protective cap from the administration port of the PN bag. Clean the port thoroughly with the wipe and allow to air dry.
3. **DON'T TOUCH CONNECTION OR GIVING SET SPIKE.** Manipulate the giving set spike out of the packet leaving the remainder of the set in the packet.
4. The giving set should be inserted into the central port at the bottom of the bag using a strict ANTT according to local policy. The giving set should be twisted 1 and a half times into the port.
5. Hang the PN bag on a drip stand using the hanging loop, then prime the giving set, ensuring the luer lock end of the giving set remains in the packet

Changing P.N. infusion

Equipment required

- Dressing pack
- Alcoholic hand rub
- 2% Chlorhexidine gluconate and 70% Isopropyl alcohol wipe x 2

Procedure for attaching the P.N. to the patient

1. Undertake effective hand hygiene in accordance with the Trust policy and procedure for hand hygiene (2015)
2. Open dressing pack, and a 2% chlorhexidine & 70% alcohol wipe, put on sterile gloves.
3. Place the patient's line on the sterile field. Disconnect the 'old' giving set using the gauze out of the dressing pack, holding both the line and the giving set with gauze. Discard the gauze. Clean the needle free device with 2% chlorhexidine & 70% alcohol wipe, allow to air dry for 30 seconds or until hub appears dry.
4. Take the luer lock end of giving set out of packet and remove the protective cover, attach to the needle free device on the patient's line. Check that the giving set is securely attached by applying gentle traction.
5. Referring to the prescription sheet set the rate and total volume of the PN on the infusion pump and observe that the pump is functioning.
6. Undertake effective hand hygiene in accordance with the Trust policy and procedure for hand hygiene (2015)
7. Two nurses must sign on the prescription sheet, record the volume infusing on the fluid balance chart and sign prescription card.
8. Check and document the infusion rate hourly.

Disconnecting Parenteral Nutrition for Cyclic Feeding

Important points

- Rebound hypoglycaemia can occur after discontinuing the infusion of concentrated glucose solution until the endogenous insulin levels fall.
- Reducing the rate of the infusion before disconnection can prevent this problem.
- The feeding regimen will be documented by the Nutrition Team when patients are cyclically feeding.
- If the line is not going to be accessed within 8 hours. Instil Heparin sodium flushing solution 50 I.U./mls, using positive pressure flush and clamp the line which prevents backflow of blood into the catheter and promotes positive pressure.

Equipment required

- Sterile gloves
- 10mls Pre-filled syringe of Sodium chloride 0.9%
- 2% Chlorhexidine gluconate and 70% Isopropyl alcohol wipe
- Heparin sodium flushing solution 50 I.U./mls (if required)

Procedure

1. Clean the trolley with hard surface wipes.
2. Explain the procedure to the patient and maintain comfort and privacy.
3. Undertake effective hand hygiene in accordance with the Trust policy and procedure for hand hygiene (2015)
4. Wash hands with soap and use alcoholic hand rub prior to commencing the ANTT.
5. Open the sterile pack and chlorhexidine wipes.
6. Disconnect the completed PN and clean hands with alcoholic rub.
7. Put on sterile gloves and clean the end of the closed I.V. device with antiseptic wipes and allow to air dry for 30-60 seconds (Pratt 2007, Springhouse 2002).
8. Check expiry dates and the prescription of flushing solution and draw these up using an ANTT technique.
9. Flush the line with 0.9% sodium chloride) via the closed IV device, using positive pressure.
10. **If it is more than 8 hours until PN recommence** -Instil Heparin sodium flushing solution 50 I.U./mls, using positive pressure
11. Cover the closed system device with a port protector cap.
12. Undertake effective hand hygiene.

4. Managing complications with feeding lines

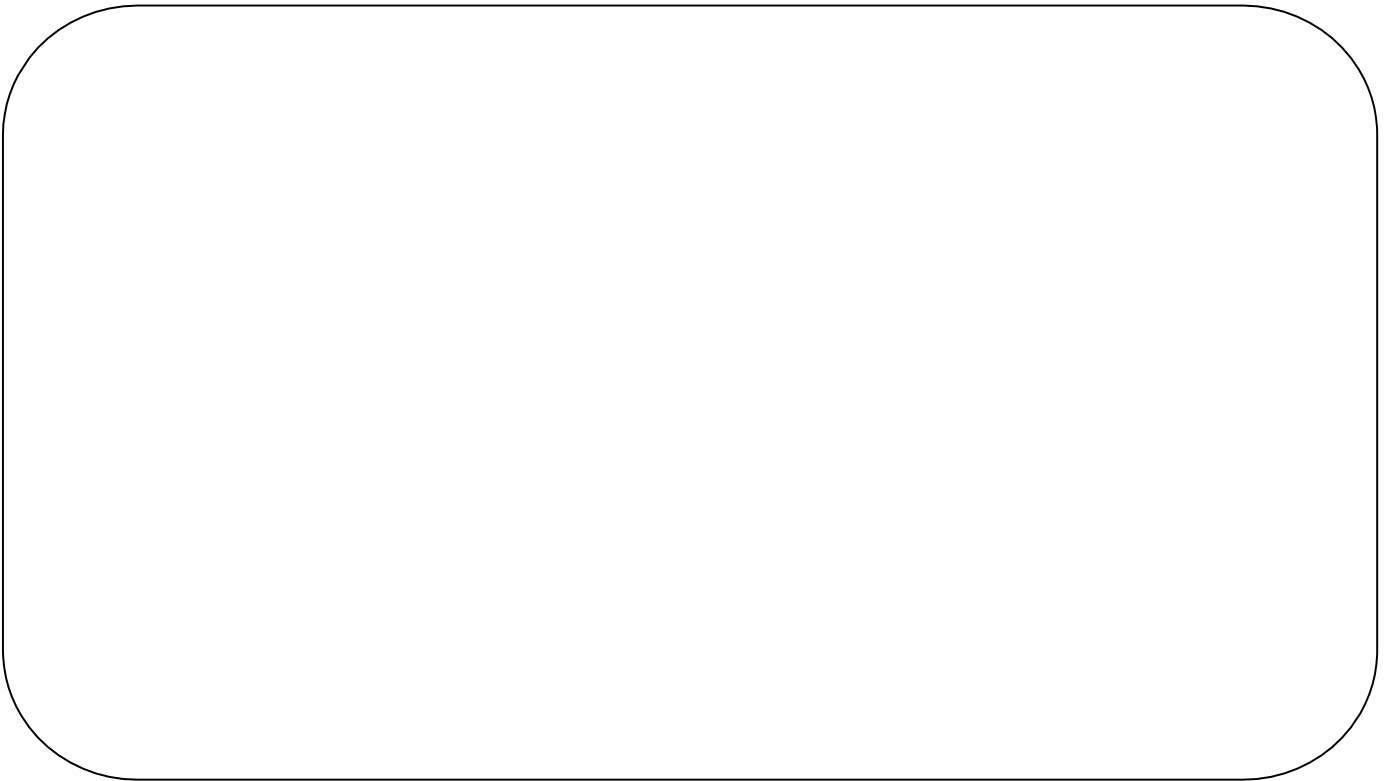
Possible infection in the feeding line Unexplained pyrexia of $>38^{\circ}\text{C}$

- Stop PN, do not flush until cultures have been taken
- Peripheral blood cultures to be taken using ANTT (**LABEL CLEARLY AS PERIPHERAL**)
- Line cultures to be taken from the line using ANTT (**LABEL CLEARLY AS LINE CULTURES**)
- heparin lock the line as Trust protocol
- Swab the entry site if indicated
- Obtain specimens of urine, sputum and swab wounds
- Do **NOT** use line until culture result returned, if the patient is septic and unwell remove the line immediately and send tip for culture
- If line is infected :
 - Temporary line– remove the line and treat the patient with the recommended antibiotics and leave for 48 hours before replacing.
 - Long term line- discuss with the Nutrition Team as the line may be salvageable
- If the fever does not persist whilst the central line is heparin locked and no micro-organisms are identified in the cultures, re-commence PN
- Replacement fluids must be given whilst PN is withheld

Air in the line

- Stop the infusion and clamp off feeding line
- Check all the connections are tight and that the giving set is firmly inserted into the PN
- Prepare the trolley with sterile gloves and receiver
- Wash hands, use alcoholic hand rub and use an ANTT to unscrew connection of giving set
- Ask an assistant to purge system until all the air is removed
- Re-connect the patient to the infusion

Line migration



Further line complications

For the management of further complications refer to the Trust policy and procedures for the care and management of Central Venous Access Devices (2015)