Clinical Guideline for Adult Parenteral Nutrition in the Hospital Setting

1. Aim/Purpose of this Guideline
The aim of this guideline is to provide information to ensure appropriate and safe administration of Parenteral Nutrition and to aim to reduce complications (mechanical, infective and metabolic).

2. The Guidance

2.1. Parenteral Nutrition is the direct infusion of solutions containing the essential macronutrients and micronutrients in quantities to meet daily needs of the patient into a vein. It can be administered by peripheral vein via a midline or central vein via a peripherally inserted central catheter (PICC), multi-lumen or single lumen short term central venous catheter (CVC/ 7 days longevity), tunneled Hickman catheter or implantable port (Portacath). It is the responsibility of clinical managers to ensure that health care professionals undertaking clinical skills have received sufficient and appropriate training. Health care professionals should have the necessary education and competency in the administration of injectable medicines. It is the responsibility of individual practitioners to attain and maintain competency in administering PN and ongoing patient management through frequent update and use of these skills. Education may be achieved through completion of the Parenteral Nutrition E learning module available on NLMS.

2.2. Indications and contraindications for Parenteral Nutrition

2.2.1. The basic indication for using Parenteral Nutrition is to provide nutrition when the gastrointestinal tract is not functioning or is inaccessible. Parenteral Nutrition is needed if an individual cannot meet their nutritional and or/ fluid requirements by mouth or via an enteral feeding tube and can be life saving. Some individuals will manage to take some nutrition by mouth and therefore only require supplementary Parenteral Nutrition.

2.2.2. Parenteral Nutrition should not be used in patients who have a functioning and accessible GI tract, where alternative methods (e.g. enteral nutrition) should be considered.

POLICY UNDER REVIEW
Please note that this policy is under review. It does, however, remain current Trust policy subject to any recent legislative changes, national policy instruction (NHS or Department of Health), or Trust Board decision. For guidance, please contact the Author/Owner.
2.3. Nutritional screening and how to refer a patient for Parenteral Nutrition

2.3.1. All patients should be screened on admission to hospital using the MUST screening tool and a nutrition care plan completed where appropriate. Patients unable to meet their requirements through simple measures or who have a non-functioning or inaccessible GI tract should be referred by a member of the clinical team or ward diettian for consideration of Parenteral Nutrition to the Nutrition Support Team (NST). The NST is a multidisciplinary team established to offer access to comprehensive assessment of highly complex nutrition support cases. The NST operates across the Royal Cornwall hospital site but also provides expert assessment and clinical support to outpatients on home Parenteral Nutrition and other healthcare professionals who may be managing highly complex nutritional cases. Where Parenteral Nutrition is indicated the NST should be informed.

2.3.2. The patient must be referred to the NST before 11am Monday to Friday to allow proper assessment of suitability for Parenteral Nutrition, and to allow time for compounding of Parenteral Nutrition in the aseptic unit. If the referral is made after 11am Parenteral Nutrition may not be ready until the following day and the patient may not be seen by NST until the next day. Under these circumstances, doctors may be advised to prescribe IV dextrose, correct electrolytes and provide Vitamins. Establishment of appropriate intravenous access will be required depending on the constituents of Parenteral Nutrition (see vascular access decision tree page 3). Peripheral cannula should not be used for administration of Parenteral Nutrition.

2.4. Prescribing and ordering Parenteral Nutrition

2.4.1. The NST will have responsibility for calculating requirements, prescribing and ordering Parenteral Nutrition. In addition, significantly undernourished patients may require Pabrinex and/or micronutrients and electrolyte replacement prior to Parenteral Nutrition to prevent refeeding syndrome.

2.4.2. Parenteral Nutrition should be anticipated and, there are very few indications for commencing Parenteral Nutrition as an emergency (i.e. out of hours / weekend). However, if this felt to be required then it should usually be discussed with the on call pharmacist and/or on call Consultant Biochemist.

2.5. Peripheral and central catheters used for Parenteral Nutrition and management

2.5.1. Selecting the right catheter for the patient can minimise the risk of infection and complications. The Nutrition support team will offer advice on the appropriate Catheter for administration of Parenteral Nutrition.

2.5.2. Parenteral Nutrition containing final concentrations exceeding 10% dextrose and/or 5% protein (nitrogen) should be administered via a central venous catheter with tip placement in the superior vena cava this is because
Parenteral Nutrition is hypertonic and it can increase the risk of thrombosis and damage to vascular tissue.

2.5.3. Refer to RCHT Central Venous Catheter guideline on intranet document library for further management of lines and complications.
2.5.4. Vascular access decision tree for Parenteral Nutrition

Referral to Nutrition support team
Dietitian to advise on PN
In absence of Nutrition nurse,
Referring Team to contact Vascular Access

- PN required short term i.e. < 4 weeks
  - Midline IF PN
  - Triomel ST
  - Triomel N4
  - Vascular access team to insert Midline or PICC on ward

- PN required long term i.e. > 4 weeks
  - PICC line or short term CVC* – single lumen or identified lumen on CVC IF PN
  - Triomel N5, N7, N9, SMOFKABIVEN
  - Tunnelled Hickman line or implantable port
  - * Insert or Hickman in theatres or radiology department

2.6. Refeeding syndrome

2.6.1. Refeeding syndrome is when metabolic complications occur due to severe fluid and electrolyte shifts in very undernourished individuals as feeding is commenced. Potential consequences include hypophosphataemia, hypokalaemia, hypomagnasaemia, altered glucose metabolism, fluid balance abnormalities and vitamin deficiencies- refer to out of hours enteral feeding regime see link below.

2.6.2. Onset can occur within 12-72hrs after commencement of feed. Symptoms include irregular pulse, lethargy and muscle weakness and shortness of breath, cardiac arrest and death. Refer to RCHT policy on intranet document library for out of hours feeding regime.

2.6.3. Patient electrolytes need to be as close as possible to the normal range prior to starting Parenteral Nutrition- please discuss with ward dietitian or NST if further advice needed.
2.7. **Procedure for Setting up Parenteral Nutrition**

*adapted from the Royal Marsden Hospital Manual of Clinical Nursing procedures 2011 8th edition.*

2.7.1. **Equipment required for setting up Parenteral Nutrition**
- patients prescription chart
- prescribed bag of Parenteral Nutrition
- intravenous infusion stand
- clean dressing trolley *
- Parenteral Nutrition intravenous administration giving set unless bag pre-spiked with specific filtration and needle free system connector. Parenteral Nutrition solutions should be removed from refrigeration two hours prior to infusion in order to reach approximate room temperature.
- sterile dressing pack*
- sterile gloves*
- Swabs containing 2% chlorhexidine in 70% isopropyl alcohol (known allergy- contact pharmacy)*
- volumetric pump
- 10ml Sodium chloride 0.9% for injection*
- sterile 10ml syringe (nothing smaller)*
- green needle*
- red cap (to protect key parts)*
- sharps bin *

<table>
<thead>
<tr>
<th>Pre-procedure</th>
<th>Action</th>
<th>Rationale</th>
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<tbody>
<tr>
<td><strong>Ensure the intravenous access has been approved for use and is documented in the medical notes before administering Parenteral Nutrition</strong></td>
<td>To ensure that the device is safe and in the correct position prior to infusing Parenteral Nutrition.</td>
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<tr>
<td><strong>A single lumen catheter should be used for the administration of Parenteral Nutrition. If a multi-lumen catheter is used, Parenteral Nutrition should to be administered via a lumen kept exclusively for this purpose and strict aseptic technique implemented when handling this lumen. There is greater risk of infection the more times a line is manipulated.</strong></td>
<td>There is greater risk of infection the more times a line is manipulated</td>
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<tr>
<td><strong>Blood should not be sampled from this line.</strong></td>
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<td><strong>Explain and discuss the procedure with the patient.</strong></td>
<td>To ensure that the patient understands the procedure and gives their valid consent</td>
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<tr>
<td><strong>Before administering any Parenteral Nutrition check that it is due and has not been given already</strong></td>
<td>To protect the patient from harm</td>
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<tr>
<td>Action</td>
<td>Rationale</td>
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<tr>
<td>Before administering any Parenteral Nutrition consult the patient’s prescription chart and ascertain the following: (a) Drug (b) Dose/rate (c) Date and time of administration (d) Route and method of administration (e) Validity of prescription (f) Signature of prescriber.</td>
<td>To ensure that the patient is given the correct drug in the prescribed dose using the appropriate diluent and by the correct route To protect the patient from harm To comply with NMC (2008a) Standards for Medicines Management.</td>
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<tr>
<td>Wash hands with bactericidal soap and water or bactericidal alcohol handrub.</td>
<td>To prevent contamination of medication and equipment</td>
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<tr>
<td>Prime the intravenous administration set with Parenteral Nutrition mixture and hang it on the infusion stand. Administration sets used for Parenteral Nutrition should be changed every 24 hours or immediately upon suspected contamination or when the integrity of the product or system has been compromised. Parenteral Nutrition should never be disconnected and then reconnected unless in an emergency (If it is necessary to disconnect the Parenteral Nutrition in the middle of an infusion then the whole bag must be discarded and a new one commenced).</td>
<td>To ensure removal of air from set and check that tubing is patent. To prepare for administration However, if the solution contains only glucose and amino acids, administration sets in continuous use do not need to be replaced more frequently than every 72 hours</td>
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<tr>
<td>Draw up 10 ml of compatible flush solution for injection using ANTT.</td>
<td>To ensure sufficient flushing solution is available</td>
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<tr>
<td>Place the syringes in a clinically clean receiver or tray on the bottom shelf of the dressing trolley.</td>
<td>To ensure top shelf is used for sterile dressing pack in order to minimize the risk of contamination</td>
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<tr>
<td>Collect the other equipment and place it on the bottom shelf of the dressing trolley.</td>
<td>To ensure all equipment is available to commence procedure</td>
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<tr>
<td>Place a sterile dressing pack on top of the trolley.</td>
<td>To minimize risk of contamination.</td>
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<tr>
<td>Check that all necessary equipment is present.</td>
<td>To prevent delays and interruption of the procedure.</td>
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<tr>
<td>Wash hands thoroughly using bactericidal soap and water or bactericidal alcohol handrub before leaving the treatment room.</td>
<td>To minimize the risk of cross-infection</td>
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<tr>
<td>Proceed to the patient. Check patient’s identity against prescription chart and prepared drugs.</td>
<td>To minimize the risk of error and ensure the correct drug is given to the correct patient.</td>
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<tr>
<td>Procedure</td>
<td>Rationale</td>
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<tr>
<td>Open the sterile dressing pack onto top shelf trolley</td>
<td>To minimize the risk of cross-infection</td>
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<td>Open the 2% chlorhexidine swab packet and empty it onto the dressing pack.</td>
<td>To ensure the correct cleaning swab is available</td>
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<tr>
<td>Wash hands with bactericidal soap and water or with a bactericidal alcohol handrub.</td>
<td>To minimize the risk of cross-infection.</td>
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<tr>
<td>Inspect the insertion site of the device.</td>
<td>To detect any signs of inflammation, infiltration, and so on. If present, take appropriate action</td>
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<td>Wash and dry hands.</td>
<td>To minimize the risk of contamination</td>
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<tr>
<td>Put on sterile gloves.</td>
<td>To protect against contamination with hazardous substances, for example cytotoxic drugs</td>
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<tr>
<td>Place a sterile towel under the patient’s arm.</td>
<td>To create a sterile area on which to work.</td>
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<tr>
<td>Clean the needle-free cap with 2% chlorhexidine swab allow to air dry</td>
<td>To minimize the risk of contamination and maintain a closed system</td>
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<tr>
<td>Inject gently 10 ml of 0.9% sodium chloride for injection.</td>
<td>To confirm the patency of the device.</td>
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<td>Check that no resistance is met, no pain or discomfort is felt by the patient, no swelling is evident, no leakage occurs around the device and there is a good backflow of blood on aspiration.</td>
<td>To ensure the device is patent</td>
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<td>Connect the infusion to the device.</td>
<td>To commence treatment.</td>
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<td>Open the roller clamp or insert the tubing into an infusion pump and start pump.</td>
<td>To check the infusion is flowing freely.</td>
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<tr>
<td>Check the insertion site and ask the patient if they are comfortable.</td>
<td>To confirm that the vein can accommodate the extra fluid flow and that the patient experiences no pain.</td>
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<td>Adjust the flow rate as prescribed.</td>
<td>To ensure that the correct speed of administration is established</td>
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<tr>
<td>Tape the administration set if necessary in a way that places no strain on the device, which could in turn damage the vein.</td>
<td>To reduce the risk of mechanical phlebitis or infiltration</td>
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<tr>
<td>Remove gloves and wash hands</td>
<td>To reduce the risk of infection</td>
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<tr>
<td>The equipment must be cleared away and new equipment prepared when required at the end of the infusion.</td>
<td>To ensure that the equipment used is sterile prior to use.</td>
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<tr>
<td>Monitor flow rate and device site frequently ie VIP score</td>
<td>To ensure the flow rate is correct and the patient is comfortable, and to check for signs of infiltration</td>
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<tr>
<td>Step</td>
<td>Description</td>
<td>Reason</td>
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<tr>
<td>Stop the infusion when all the fluid has been delivered.</td>
<td>To ensure that all the prescribed mixture has been delivered and prevent air infusing into the patient.</td>
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<tr>
<td>Disconnecting the infusion set and flushing the device.</td>
<td>To flush any remaining irritating solution away from the catheter.</td>
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<tr>
<td>The Parenteral Nutrition must not be stopped or disconnected for any other reason than completion of prescribed volume or in an emergency.</td>
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<tr>
<td>NB: Attach a new sterile injection cap if necessary at least weekly.</td>
<td>To maintain a closed system.</td>
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<tr>
<td>Draw up 10 ml of compatible flush solution for injection using ANTT. Open dressing pack onto trolley, Open the 2% chlorhexidine swab packet and empty it onto the dressing pack. Put on sterile gloves. Ensure aseptic field is maintained with a sterile towel under the patient's arm/device. Disconnect the infusion. Clean the injection site of the cap with 2% chlorhexidine swab and allow to air dry.</td>
<td>To minimize the risk of contamination.</td>
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<tr>
<td>Administer flushing solution using the push-pause technique and ending with positive pressure.</td>
<td>To maintain the patency of the device and if needle was used, to enable reseal of the injection site.</td>
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<tr>
<td>Remove gloves and wash hands.</td>
<td>To minimize cross infection.</td>
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<tr>
<td>Assist the patient into a comfortable position.</td>
<td>To ensure the patient is comfortable.</td>
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**Post-procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Reason</th>
</tr>
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<tbody>
<tr>
<td>Record the administration on appropriate charts.</td>
<td>To maintain accurate records, provide a point of reference in the event of any queries and prevent any duplication of treatment.</td>
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<tr>
<td>Discard waste, placing it in the correct containers, for example sharps into a designated container.</td>
<td>To ensure safe disposal and avoid injury to staff.</td>
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</tbody>
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2.8. Clinical monitoring

The main components of monitoring include blood monitoring TPR, accurate fluid balance, blood sugars and body weight.

2.8.1. Fluid balance
Accurate fluid balance is important due to the large volume of Parenteral Nutrition administered. Parenteral Nutrition will provide most or all the patients' fluid requirement, additional intravenous fluids are not usually necessary if the patient is able to tolerate the required Parenteral Nutrition rate. Excess fluid or sodium may be detrimental to overall patient care and promote ileus. It is imperative that an accurate fluid balance is monitored as fluid requirements can change rapidly. Refer to RCHT fluid balance guidelines: supporting optimal hydration in adults during hospital stay. Fluid requirements should be calculated from an accurate daily fluid balance chart taking into account all oral and iv fluids (including drugs), evaluating both measured and insensible losses, and putting into the clinical context of the patient (i.e. is patient fluid overloaded/ depleted). Refer to RCHT fluid balance guidelines: supporting optimal hydration in adults during hospital stay.

2.8.2. Capillary blood glucose monitoring
Blood sugars should be monitored 6 hourly until target nutritional requirements reached and daily thereafter if these remain between 4mmols – 10mmol

2.8.3. Hyperglycaemia
2.8.3.1. This may occur due to stress-induced insulin resistance or due to excess carbohydrate. Parenteral Nutrition contains approximately 7.5% dextrose by volume plus lipid. This gives at least 0.35 kcal/ml in the form of dextrose compared with 0.2 kcal /ml in 5% dextrose, therefore a simultaneous sliding scale insulin infusion may be required as per RCHT policy (see link below). Insulin doses for Parenteral Nutrition may need to be 10-20% higher than the standard protocol which is titrated against 5% dextrose. Failure to recognize hyperglycaemia may result in osmotic diuresis. Please seek guidance from the NST on the use of insulin in this circumstance.
2.8.3.2. Additional glucose infusions are not required with Parenteral Nutrition. Refer to RCHT guidelines for sliding scale insulin.

2.8.4. Laboratory monitoring
It is the responsibility of the medical staff in each clinical team to ensure that appropriate blood testing is carried out on all their patients receiving Parenteral Nutrition. Results should be monitored by the clinical team and will also be reviewed by the NST when prescribing further Parenteral Nutrition.
2.8.5. Monitoring requirements Prior to, on Commencing and During Parenteral Nutrition Administration

NB: It is important to start correcting any electrolyte results which fall outside normal range before the commencement of Parenteral Nutrition.

2.8.5.1. Prior to commencing Parenteral Nutrition the following data must be available:

- FBC & CRP
- Blood glucose
- Urea & Electrolytes (U&Es) including magnesium
- Liver Function Tests (LFT’s)
- Serum triglyceride
- Clotting factors (INR and APTT)
- Bone profile

2.8.5.2. On commencement of Parenteral Nutrition repeat biochemistry: U&Es, LFTs, calcium, magnesium and phosphate daily for first 5 days and continue daily until electrolytes and LFT’s are stable. Repeat haematology and clotting factors (as above) 3 x weekly. Repeat serum triglyceride weekly.

2.8.5.3. In addition those patients with long standing under nutrition and/or long-standing chronic diarrhoea require copper, zinc and selenium, Vitamin A, D, E & B12 if more than 2 weeks of Parenteral Nutrition is anticipated.

2.8.6. Liver dysfunction

Abnormal liver function in patients on Parenteral Nutrition is related to underlying sepsis in up to 70% of cases. However abnormal function can also be due to the glucose content of Parenteral Nutrition or cholestasis. Although Parenteral Nutrition may be a life-saving therapy for patients who cannot support their nutritional needs via the enteral route, it poses significant complications in the form of Parenteral Nutrition-associated liver dysfunction. Clinical and pathologic presentations include steatosis, steatohepatitis, cholestasis, cholelithiasis and decompensate liver disease. Management of TParentral Nutrition-induced liver dysfunction is dependent on a multitude of factors. These include the trialling of (enteral nutrition where possible), sepsis prevention, treatment of small bowel bacterial overgrowth, avoidance of overfeeding, optimization of lipid and amino acid emulsions- contact the NST for advise on the requirement to change the Parenteral Nutrition prescription.
2.9. Nursing care & management

<table>
<thead>
<tr>
<th>Nursing intervention</th>
<th>Rationale</th>
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<tbody>
<tr>
<td>Daily weight before Parenteral Nutrition and twice weekly (Daily if there is a concern about fluid balance) 2)BMI weekly</td>
<td>1) Weekly measurements are used to assess change in tissue mass and therefore adequacy of energy provision. Takes into account muscle and fat. 2) Support aims/goals related to achieving and ideal body weight.</td>
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<tr>
<td>6 hourly temperature, pulse, respirations &amp; Blood pressure.</td>
<td>Observe for evidence of infection/ general wellbeing</td>
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<tr>
<td>Accurate fluid balance chart</td>
<td>To maintain accurate fluid balance- prevent under/over hydration.</td>
</tr>
<tr>
<td>Capillary blood glucose monitoring 6 hourly for 48 hours – then BD or OD if blood glucose between 4-10mmols.</td>
<td>To detect hyperglycaemia and/or hypoglycaemia. Patient may require sliding scale Insulin if Blood sugar &gt;10mmols</td>
</tr>
<tr>
<td>Daily assessment of vascular line</td>
<td>To detect exit site infection/ leakage</td>
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<tr>
<td>Dressing changes 48 hours after insertion, thereafter weekly or more frequent if loose, soiled or wet. Weekly obturator changes.</td>
<td>To maintain line integrity and reduce risk of CRBSI.</td>
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<tr>
<td>Twice weekly urinary sodium.</td>
<td>For nitrogen balance and electrolytes</td>
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<tr>
<td>Documentation</td>
<td>To comply with national and hospital policy</td>
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2.10. Catheter Related Sepsis in patients receiving Parenteral Nutrition

2.10.1. The most frequent complication for patients receiving long term Parenteral Nutrition (Parenteral Nutrition) via a central venous catheter is of catheter related infection/ sepsis (CRS).

2.10.2. This guideline has been developed to aid any practitioner caring for patients on long term Parenteral Nutrition with the complications listed below. This is based on The St Marks Hospital Intestinal Failure Unit protocol (2010 version), after local discussion with Nurse Consultant Infection Prevention Control, Consultant Microbiologist and members of the NST. This should be read in conjunction with RCHT document Central Venous Catheter guideline- excluding dialysis catheters (GEN57) link

2.10.3. This guideline mainly refers to complications in patients receiving Home Parenteral Nutrition via a tunnelled catheter device (usually a Hickman line). It is important to inform a member of the NST when a patient on Home Parenteral Nutrition is admitted to the hospital with suspected CRS (see list of contacts at end)
2.11. Definitions

2.11.1. Catheter related sepsis (CRS)
Clinical picture of spiking fever and chills resulting from blood passage of micro organisms from an intravascular infusion system. Isolation of same organism from blood and catheter segments is considered definite proof.

2.11.2. Definite CRS
Pyrexia and rigors with Parenteral Nutrition infusion + positive central and peripheral cultures

2.11.3. Probable CRS
Pyrexia and rigors with Parenteral Nutrition infusion with positive peripheral cultures (negative or absent central cultures) and no other source of infection

2.11.4. Entry site infection
Erythema, tenderness and induration or pus within 2cm of skin at entry site of catheter into vein.

2.11.5. Tunnel infection
Erythema, tenderness, induration or pus in tissues overlying tunnelled catheter and >2cm from exit site

2.11.6. Exit site infection
Erythema, tenderness and induration or pus within 2cm of skin at the exit site of the catheter site

2.11.7. Pocket infection
Purulent fluid in skin pocket of totally implanted device (eg Portacath)
2.12. Catheter related sepsis protocol

Symptoms: chills, flu-like symptoms (especially during Parenteral Nutrition infusion)
Signs: fever >38°C, rigors

1. Stop Parenteral Nutrition
2. Central and peripheral blood cultures
3. Blood tests, MEWS score chart
4. Screen for other causes of infection
5. Establish peripheral iv access

No shock
Await culture results

Mild shock
Relative tachycardia and hypotension

Blood cultures negative

Peripheral iv antibiotics (blind)
Vancomycin 1g bd ± gentamicin 3-5mg/kg od depending on renal function

Blood cultures positive

Any other organism from CVC culture

Septic shock
Fever, hypotension, tachycardia requiring inotropes or ITU

Candida, Staph aureus, GRE or Pseudomonas

Targeted antibiotic regime (7 days)
According to sensitivities via CVC, leaving in CVC (no flush)
Give peripheral fluids
Peripheral Parenteral Nutrition if required

1. Remove CVC
2. Send tip for culture
3. Peripheral antibiotics according to sensitivities

Fever >38°C

Restart

No fever
Take cultures and restart algorithm

Home

1. Remove CVC
2. Send tip for culture
3. Blind antibiotic regime (d/w micro)

2.13.1. Review patient technique for connection/ disconnection of Parenteral Nutrition (may need to involve Healthcare at Home/ other outside agency involved in delivery of Parenteral Nutrition)

2.13.2. Consider prophylactic Tauroidine lock (TaurolockTM contains anticoagulant and antimicrobial substances, instilled in catheter between Parenteral Nutrition infusions) especially if recurrent bacterial or fungal infection or limited iv access options- decision to be made jointly with senior member of NST and Microbiology.

2.13.3. Exit site infection

2.13.4. No systemic features
Try and obtain swab of pus for Gram stain to guide antibiotic treatment, daily cleansing of site (2% chlorhexidine & 70% alcohol or 10% povodine-iodine)

2.13.5. Systemic features
Blood cultures (central and peripheral), swab exit site and follow CRS protocol

2.13.6. Tunnel infection
Swab exit site and remove CVC, send tip for culture, discuss antibiotics with microbiologist

2.13.7. Pocket infection
Swab site, remove port, intravenous antibiotics for 1 week (discuss with microbiology)

Parenteral Nutrition will usually be stopped when oral or enteral nutrition intake is deemed adequate by the NST and is a multi disciplinary decision. After cessation of Parenteral Nutrition the NST may maintain contact in order to audit clinical outcome and performance.

2.15. Nutrition Support Team contacts:
Consultant gastroenterologist contact through switchboard/ netpage
Consultant Biochemist contact through switchboard/ netpage
Lead Dietitian bleep 3087
Lead Nutrition Nurse Specialist bleep 3089
Nutrition Pharmacist bleep 3210
Pharmacy technician bleep 3210
3. Monitoring compliance and effectiveness

<table>
<thead>
<tr>
<th>Element to be monitored</th>
<th>Correct documentation and completion of Parenteral nutrition care plan. Including accurate completion of fluid balance charts, peripheral and central line care plans, blood monitoring as per guideline.</th>
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<tbody>
<tr>
<td>Lead</td>
<td>Ward managers and Nutrition support team</td>
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<tr>
<td>Tool</td>
<td>Root cause analysis of Datix incidents- retrospective case notes review. Daily review by Nutrition support team Administration of Parenteral Nutrition through a central line will be monitored through the saving lives (DH 2007) High impact intervention NO.1 CVC as part of the ongoing care bundle. Lines used for Parenteral Nutrition will in addition be monitored by the NST. Confidence in caring metrics electronic platform.</td>
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<tr>
<td>Frequency</td>
<td>Monthly sample of ten charts per clinical area for fluid balance. Otherwise as they arise and annually.</td>
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<tr>
<td>Reporting arrangements</td>
<td>Incidents that are uploaded to NRLS are included in the risk and safety clinical governance reports and presented to nutrition steering group. All serious incidents are subject to root cause analysis along with recommendations and actions. Outcomes of case note reviews will be reported to Strategic Nutrition Steering Group (SNSG). Matrons monitor the monthly CIC results for their area of responsibility and report at divisional governance groups</td>
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<tr>
<td>Acting on recommendations and Lead(s)</td>
<td>The SNSG is responsible for interrogating required serious incident actions and to designate a named lead where appropriate. The nutrition steering group</td>
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<tr>
<td>Change in practice and lessons to be shared</td>
<td>As monitoring includes using incidents, complaints and serious incidents as a resource for monitoring practice it is actions identified from root cause analysis that determine whether local. Divisional or corporate learning will need to be shared and changes implemented. Designated leads will forward where appropriate the lessons to be shared with all the relevant stakeholders</td>
</tr>
</tbody>
</table>

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the ‘Equality, Diversity & Human Rights Policy’ or the Equality and Diversity website.

4.2. The Initial Equality Impact Assessment Screening Form is at Appendix 2.
## Appendix 1. Governance Information

<table>
<thead>
<tr>
<th>Document Title</th>
<th>Clinical Guideline for Adult Parenteral Nutrition in the Hospital Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Issued/Approved:</td>
<td>April 2015</td>
</tr>
<tr>
<td>Date Valid From:</td>
<td>April 2015</td>
</tr>
<tr>
<td>Date Valid To:</td>
<td>April 2018</td>
</tr>
<tr>
<td>Directorate / Department responsible (author/owner):</td>
<td>Clinical Support Services &amp; Cancer Division, Therapies Dept Tracy Lee, Nutrition support team</td>
</tr>
<tr>
<td>Contact details:</td>
<td>01872 252409</td>
</tr>
</tbody>
</table>

### Brief summary of contents
The document aims to ensure safe administration of Parenteral Nutrition. To prevent the complications associated with the administration. To give clear advice and guidance for staff involved in the administration of Parenteral Nutrition.

### Suggested Keywords:
Parenteral nutrition, advanced nutrition, nutritional support

### Target Audience
- RCHT
- PCT
- CFT

### Executive Director responsible for Policy:
Executive Director of Nursing

### Date revised:
December 2014

### This document replaces (exact title of previous version):
Total Parenteral Nutrition for Adults v4.0

### Approval route (names of committees)/consultation:
- Strategic Nutrition Steering Group (16.3.15)
- RCHT Matrons & clinical divisional leads
- CSSC Governance DMB (14.4.15)

### Divisional Manager confirming approval processes
Sally Rowe, Divisional Director CSSC

### Name and Post Title of additional signatories
Janet Gardner, Governance Lead CSSC Division

### Signature of Executive Director giving approval
{Original Copy Signed}

### Publication Location (refer to Policy on Policies – Approvals and Ratification):
Internet & Intranet

### Document Library Folder/Sub Folder
Clinical / Dietetics

### Links to key external standards
National Institute for Health and Clinical Excellence (2006) Nutrition support in
Adults. Clinical guideline CG32.
www.nice.org.uk
Care quality commission (2009) provider compliance assessment tool outcome 5 regulation.
NPSA (2008) promoting safer use of injectable medicines
St Marks Hospital Intestinal Failure Unit protocol (2010)
The Royal Marsden Manual 2011 8th edition

Related Documents:

Training Need Identified? Yes

All or part of this document can be released under the Freedom of Information Act 2000

This document is to be retained for 10 years from the date of expiry.

This document is only valid on the day of printing

Controlled Document
This document has been created following the Royal Cornwall Hospitals NHS Trust Policy on Document Production. It should not be altered in any way without the express permission of the author or their Line Manager.

Version Control Table

<table>
<thead>
<tr>
<th>Date</th>
<th>Version No</th>
<th>Summary of Changes</th>
<th>Changes Made by (Name and Job Title)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 09</td>
<td>V3.0</td>
<td>Previous version history not known.</td>
<td>Amanda Thompson</td>
</tr>
<tr>
<td>May 12</td>
<td>V4.0</td>
<td>Procedure for setting up Total Parenteral nutrition via peripheral and central lines in adults.</td>
<td>Tracy Lee</td>
</tr>
<tr>
<td>Dec 14</td>
<td>V5.0</td>
<td>Changes to practice, updated flowcharts, reformatting to meet RCHT criteria.</td>
<td>Tracy Lee</td>
</tr>
</tbody>
</table>
## Appendix 2. Initial Equality Impact Assessment Form

| Name of service, strategy, policy or project (hereafter referred to as *policy*) to be assessed: Clinical Guideline for Adult Parenteral Nutrition in the Hospital Setting |
| Is this a new or existing Procedure? | Existing |
| **Directorate and service area:** Clinical Support Services & Cancer Division, Therapies Dept, Nutrition support team | **Name of individual completing assessment:** Tracy Lee |
| **Telephone:** 01872 252409 | |

### 1. Policy Aim*

Who is the strategy / policy / proposal / service function aimed at?

- Safe administration of Total Parenteral Nutrition. Prevention of complications associated with the administration of Parenteral Nutrition.
- To promote timely, optimal and safe delivery of nutrition

### 2. Policy Objectives*

Safe and timely introduction and administration of Parenteral Nutrition.
- Clear advice and guidance for staff involved in the administration of Parenteral Nutrition.
- Evidence based practice
- Provide consistent trust-wide guidance

### 3. Policy – intended Outcomes*

Patients will clearly benefit from the safe administration of Parenteral Nutrition and the prevention of associated complications by reducing the risk of re-feeding and line complications i.e. metabolic, mechanical and infective. To provide clear and consistent advice to enable practitioners to make informed decisions.

### 4. *How will you measure the outcome?

By auditing how often the protocol is used this should happen on an annual basis. Administration of Parenteral Nutrition through a central line will be monitored through the saving lives (DH 2007) High impact intervention NO.1 CVC as part of the ongoing care bundle. Lines used for Parenteral Nutrition will in addition be monitored by the NST.

### 5. Who is intended to benefit from the policy?

Patients who require Parenteral Nutrition
- Staff

### 6a) Is consultation required with the workforce, equality groups, local interest groups etc. around this policy?

No

### 6b) If yes, have these *groups been consulted?

NA

### 6c) Please list any groups who have been consulted about this procedure.

- Strategic Nutrition Steering Group
- Nutrition support team
- Nutrition and dietetic department.
- Infection control- Consultant Nurse
- Pharmacy- PTSU

### 7. The Impact

Please complete the following table.
Are there concerns that the policy could have differential impact on:

<table>
<thead>
<tr>
<th>Equality Strands:</th>
<th>Yes</th>
<th>No</th>
<th>Rationale for Assessment / Existing Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>√</td>
<td></td>
<td>This guideline relates only to adult patients. This policy will prevent discrimination or inappropriate feeding or withholding of artificial feeding for older people through proper assessment of the clinical need, risk assessment. Assessment of mental capacity and consideration of best interest.</td>
</tr>
<tr>
<td>Sex (male, female, transgender / gender reassignment)</td>
<td>√</td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
</tr>
<tr>
<td>Race / Ethnic communities /groups</td>
<td>√</td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
</tr>
<tr>
<td>Disability - Learning disability, physical disability, sensory impairment and mental health problems</td>
<td>√</td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
</tr>
<tr>
<td>Religion / other beliefs</td>
<td>√</td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
</tr>
<tr>
<td>Marriage and civil partnership</td>
<td>√</td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
</tr>
<tr>
<td>Pregnancy and maternity</td>
<td>√</td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
</tr>
<tr>
<td>Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian</td>
<td>√</td>
<td></td>
<td>This guideline relates to clinical need and documentation</td>
</tr>
</tbody>
</table>

You will need to continue to a full Equality Impact Assessment if the following have been highlighted:

- You have ticked “Yes” in any column above and
- No consultation or evidence of there being consultation - this excludes any policies which have been identified as not requiring consultation. or
- Major service redesign or development

8. Please indicate if a full equality analysis is recommended. Yes No

9. If you are not recommending a Full Impact assessment please explain why.

No potential for differential impact identified

Signature of policy developer / lead manager / director

Date of completion and submission 01/08/2014

Names and signatures of members carrying out the Screening Assessment

1. Tracy Lee
2. 

Keep one copy and send a copy to the Human Rights, Equality and Inclusion Lead, c/o Royal Cornwall Hospitals NHS Trust, Human Resources Department, Knowledge Spa, Truro, Cornwall, TR1 3HD

A summary of the results will be published on the Trust’s web site.

Signed ________________

Date ________________

Clinical Guideline for Adult Parenteral Nutrition in the Hospital Setting

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