LRI Children's Hospital

(Children's Hospital Parenteral Nutrition Part 1of 4)

Initiation – referral, ordering and prescribing of Parenteral Nutrition in Term neonates, children and adolescents (excludes patients on NNU)

Staff relevant to:	Health Professionals who administer PN to Children and Young People at UHL and applies to children and young people cared for in the Childrens Hospital
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Written by: Reviewed by:	D. Harris, H. Bhavsar, R. Zseli D Harris
Trust Ref:	C42/2018

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Contents

1. Introduction and who Guideline applies to

Parenteral nutrition (PN) is nutrition that is delivered to the circulation without using the gut. It is complex and expensive. A multidisciplinary approach to the management of these patients is needed to optimise therapy and reduce complications. Close liaison between the patient's clinical team and the ward Dietician or Paediatric Gastroenterologist on service is vital to achieve optimum care.

This guideline applies to all Health Professionals who administer PN to Infants, Children and Young People cared for in UHL Childrens Hospital, including those aged 16-25 on Ward 27 (Teenage, Young Adult Cancer Unit) or in EMCHC. Young adults aged 16-18 years who are being cared for on all other UHL wards requiring PN should be referred to the Leicester Intestinal Failure team (LIFT)

Related documents:

- **Adults - Parenteral Nutrition via a Central Venous Catheter UHL Policy B22/2015**
- **Neonates - Parenteral Nutrition UHL Neonatal Guideline C28/2018**

When considering using TPN for your patient there are a few questions to answer to demonstrate the benefits outweigh the risks of treatment

This guideline is in 4 sections:

1) **This document - Initiation – referral, ordering and prescribing C42/2018 (this document)**
    a. Indication — Will TPN be beneficial?
    b. Vascular Access — Is a central line present or planned?
    c. Nutritional requirements — Is there enough volume available?
2) **UHL Parenteral Nutrition - Monitoring and Weaning UHL Childrens Hospital Guideline C43/2018**

a. Monitoring — Are these assessments feasible?

b. Troubleshooting — What can go wrong?

3) **UHL Parenteral Nutrition – Supporting Information UHL Childrens Hospital Guideline C44/2018**

Appendices of forms and basis for advice

4) **UHL Parenteral Nutrition – Administration by Nurses UHL Childrens Hospital Guideline C45/2018**

Section 1 - Indication for TPN

- Non-functioning GI tract

and/or

- Inadequate oral intake for greater than up to 5 days (except neonates) in a patient with sub-optimal nutritional status (There is no clinical or nutritional justification for PN, which lasts less than 3 days. Anticipated need for parenteral nutrition should be for at least 3 to 5 days)

and/or

- Increased nutrient requirements or losses, which cannot be met by enteral nutrition

NEONATES

Absolute indications:	Intestinal failure (short bowel, functional immaturity, pseudo-obstruction)
	Congenital bowel abnormalities
	Gut immaturity where establishment of full enteral feeds is unlikely to be achieved within seven days of life.
	Surgical GI condition in newborn
	Suspected /confirmed necrotising enterocolitis
Relative indications:	Intra uterine growth restriction
	Promotion of growth in preterm infants
	Respiratory Distress Syndrome
	Risk factors for necrotising enterocolitis

OLDER INFANTS AND CHILDREN

Intestinal failure:	Chronic intestinal pseudo-obstruction
	Short bowel syndrome
	Post-operative abdominal / cardiothoracic surgery
	Protracted diarrhoea
	Radiation/cytotoxic therapy
Temporary exclusion of luminal nutrients:	Pancreatitis
	Crohn's disease
Organ failure:	Acute renal failure
	Acute liver failure
Hyper-catabolism:	Extensive burns
	Severe trauma

Remember: -

- If the gut is working, use it!
- Luminal nutrition is essential for the maintenance of gut structure and function. Enteral nutrition, even in small amounts, will aid gut maturation particularly in neonates. It may prevent osteopenia of prematurity and result in better growth and shorter hospital stay.
- A child should not be on PN therapy alone for longer than four weeks. At this time, or ideally sooner, there should be some enteral intake either orally or via a feeding tube. This has a trophic effect on the gut and will prime it ready for full enteral feeding.

The provision of PN is **not** an emergency and can wait till the next ordering session when the pharmacy team are available – for referral see section 3

- Monday to Friday - request by 9:30am for bespoke ordering and delivery the same day
- After 10am Monday to Friday and on Saturday/Sunday between 9am-12midday, a starter bag regimen can be provided using off the shelf standard bags for cases that urgently require PN

After 5pm weekdays and after midday at weekends of these times administer an appropriate IV fluid until the next available ordering session.

Section 2 - Vascular Access

In order for PN to be administered, your patient **MUST** have vascular access which must be a central line. If your patient does not have vascular access and you are planning to order PN, please consult the ward Dietician or Paediatric Gastroenterologist on service prior to getting vascular access as there might be other ways to provide the nutrition necessary for your patient.

Central administration:

- Is suitable for PN solutions that are < 1800mosmol/L.
- If using a percutaneous long line (e.g. PICC) the tip must be confirmed radiologically to be in a central position i.e. catheter tip in the mid-right atrium or superior vena cava or high IVC.
- A surgical central venous catheter (e.g. a Broviac or Hickman line) should have catheter tip low in the SVC / right atrium – contact the Paediatric Surgeon of the week to arrange placement.

The team who placed the line MUST ensure radiological confirmation of tip placement and documentation.

Nursing staff must check intravenous site for extravasation regularly using the central venous access device care bundle. (See appendix 2)

Section 3 - Nutritional requirements

Refer to the Fluid Electrolyte Management UHL Childrens Hospital Guideline for more detail. (Ctrl + click for quick access to guideline)

TPN REGIMENS

Initial TPN Regimens – these are then adjusted to patient need in later treatment

- Sodium and potassium content – use routine replacement and daily maintenance values
- If the patient is oedematous and fluid restricted use the working weight.
- It may be appropriate to use a different regime compared to the child's weight, when at the extreme ends of the regimens. For instance it may be appropriate for the pharmacist ordering the PN to use the 20.0-29.9Kg regime for a child weighing 19.7Kg.
- If PN is stopped temporarily because of an unavoidable situation and previous PN was tolerated, then the child should be restarted on the same regime. There is no need to return to a day 1 regime.

TABLE 1a - Neonate <37/40 and <1.5kg: (Neonatal Unit)

DAY	NITROGEN g /kg /d	NON N Energy kcal/kg/d	GLUCOSE g/kg/d	FAT g/kg/d
1	0.24	50	10	1
2	0.32	70	12.5	2
3	0.44	90	15	3
4	0.56	103-107	17	3.5
5+	0.62	107	17	3.5

TABLE 2a - Neonate < 37/40 and ≥ 1.5kg: (Neonatal Unit)

DAY	NITROGEN g /kg /d	NON N Energy kcal/kg/d	GLUCOSE g/kg/d	FAT g/kg/d
1	0.24	50	10	1
2	0.32	70	12.5	2
3	0.44	90	15	3
4+	0.56	103-107	17	3.5

TABLE 3 - Neonate≥ 37/40, and infant <2.5kg:

DAY	NITROGEN g /kg /d	NON N Energy kcal/kg/d	GLUCOSE g/kg/d	FAT g/kg/d
1	0.32	70	12.5	2
2	0.44	90	15	3
3+	0.56	103-107	17-18	3.5

- Used as a basis for bag content – adjusted as needed according to patient need
- All patients receive water soluble and fat soluble vitamins with trace elements

EQUIVALENT CONTENTS in 120ml/kg/day NNU STANDARD BAGS

ALL VALUES/KG/DAY

	Fluid ml	Nitrogen g	Glucose g	Fat g	Na mmol	K mmol	PO_4 mmol	Ca mmol	Mg mmol
Bag 2	120	0.61	18	3.7	2	2	1.5	2	0.2
Bag 3	120	0.61	18	3.7	4	2	1.5	2	0.2

Consider when to move to day 4 regimen below

TABLE 4 - Day 1 only used if <37/40 or highly fluid restricted

PN FOR NEONATES < 2.5kg (Not for Neonatal unit) Use Vaminolact as Nitrogen Source

ALL VALUES/KG/DAY

Day	Fluid ml	Nitrogen g	N Energy kcal	Non N Energy kcal	Glucose g	Fat g	PO_4 mmol	Ca mmol	Mg mmol
1	150	0.24	0.96	49	10	1	1	1	0.1
2	150	0.32	1.28	78	12.5	2	1	1	0.1
3	150	0.44	1.76	87	15	3	1	1	0.1
4	150	0.56	2.24	100-104	17-18	3.5	1	1	0.1

Unless otherwise indicated, start both sodium and potassium contents at 2mmol/kg/day. The Ng: non nitrogen energy ratio is 1: 178 or 1:185 Term neonates can commence at 0.32g/kg/day of Nitrogen

TABLE 5

PN FOR CHILDREN 2.5-9.9kg ALL VALUES/KG/DAY

Use Vaminolact as Nitrogen Source

Day	Fluid ml	Nitrogen g	N Energy kcal	Non N Energy kcal	Glucose g	Fat g	PO_4 mmol	Ca mmol	Mg mmol
1	120	0.20	0.80	53	11	1	0.8	1	0.1
2	120	0.32	1.28	74	14	2	0.8	1	0.1
3	120	0.42	1.68	91	16	3	0.8	1	0.1

Unless otherwise indicated, start both sodium and potassium contents at 2mmol/kg/day

The Ng: non nitrogen energy ratio is 1: 200

TABLE 6

PN FOR CHILDREN 10-19.9kgs ALL VALUES/KG/DAY

Use Vamin 18 EF as Nitrogen Source

Day	Fluid ml	Nitrogen g	N Energy kcal	Non N Energy kcal	Glucose g	Fat g	PO_4 mmol	Ca mmol	Mg mmol
1	90	0.2	0.8	38	6	1.5	0.8	1	0.1
2	90	0.32	1.28	57	7.5	3	0.8	1	0.1
3	100	0.32	1.28	68	9	3.5	0.8	1	0.1
4	100	0.36	1.44	72	10	3.5	0.8	1	0.1

Unless otherwise indicated, start both sodium and potassium contents at 2mmol/kg/day

Calcium – maximum of 15mmol/day The Ng: non nitrogen energy ratio is 1: 200

TABLE 7

PN FOR CHILDREN 20-29.9kg ALL VALUES/KG/DAY (EXCEPT Ca)

Use Vamin 18 EF as Nitrogen Source

Day	Fluid ml	Nitrogen g	N Energy kcal	Non N Energy kcal	Glucose g	Fat g	PO_4 mmol	Ca mmol	Mg mmol
1	50	0.2	0.8	34	5	1.5	0.8	15	0.1
2	60	0.2	0.8	46	5.8	2.5	0.8	15	0.1
3	70	0.32	1.28	55	6.9	3	0.8	15	0.1
4	70	0.34	1.36	68	9	3.5	0.8	15	0.1

Unless otherwise indicated, start both sodium and potassium contents at 2mmol/kg/day

The Ng: non nitrogen energy ratio is 1:200

TABLE 8

PN FOR CHILDREN 30-40kgs ALL VALUES/KG/DAY EXCEPT (Ca and PO_4)

Use Vamin 18 EF as Nitrogen Source

Day	Fluid ml	Nitrogen g	N Energy kcal	Non N Energy kcal	Glucose g	Fat g	PO_4 mmol	Ca mmol	Mg mmol
1	45	0.16	0.64	23	3.4	1.0	15	15	0.1
2	60	0.21	0.84	31	4.6	1.4	15	15	0.1
3	60	0.21	0.84	44	5.8	2.3	15	15	0.1
4	60	0.21	0.84	53	7	2.8	15	15	0.1

Unless otherwise indicated, start both sodium and potassium contents at 2mmol/kg/day

The Ng: non nitrogen energy ratio is 1:196

TABLE 9

PN FOR CHILDREN > 40kgs ALL VALUES PER DAY

Use Vamin 18 EF as Nitrogen Source

Day	Fluid ml	Nitrogen g	N Energy kcal	Non N Energy kcal	Glucose g	Fat g	PO_4 mmol	Ca mmol	Mg mmol
1	2000	9	37.6	1050	150	50	15	10	1.5
2	2500	9	37.6	1250	200	50	15	10	1.5
3	2500	9	37.6	1900	250	100	15	10	1.5

Unless otherwise indicated, start both sodium and potassium contents at 60mmol/day – usually adjust by 10-20mmol/day

Volume can be altered in 500ml increments The Ng: non nitrogen energy ratio is 1:213

TABLE 10

For patients > 50kg ALL VALUES PER DAY

Use Vamin 18 EF as Nitrogen Source

Day	Fluid ml	Nitrogen g	N Energy kcal	Non N Energy kcal	Glucose g	Fat g	PO_4 mmol	Ca mmol	Mg mmol
1	2000	9	37.6	1050	150	50	15	10	1.5
2	2000	12.9	48	1250	200	50	15	10	1.5
3	2000	12.9	48	1900	250	100	15	10	1.5
4	2000	12.9	51.6	2550	300	150	15	10	1.5

Unless otherwise indicated, start both sodium and potassium contents at 60mmol/day – usually adjust by 10-20mmol/day

The Ng: non nitrogen energy ratio is 1:182

Standard versus bespoke bags

Standard bags are premade PN bags with a pre-set nutrition composition. They are usually used when patients first start PN out of hours and may also be suitable for long term use. All other TPN is "Bespoke" and individualised for that patient on that day.

The types of standard bags used are:

Neonates (up to 10kg)	ITH Pharma Concentrate® (without vitamins)
Paediatric (> 10kg)	Kabiven 8® (without vitamins) Kabiven 11® (without vitamins)

Please consult the ward pharmacist, Dietician or Paediatric Gastroenterologist on service team for appropriate use of standard bags or additional vitamin infusions.

Section 4 - Referral, Ordering and Administration

Patients must be referred to pharmacy in order for the ward Dietician or Paediatric Gastroenterologist on service to review the patient and assist with an appropriate feed prescription. Routine TPN is made by an external supplier who must receive their order by 10am each weekday.

Each referral must be with the pharmacy team by 09.30 at the latest.

- The provision of PN is **not** an emergency and can wait till the next ordering session when the pharmacy team are available
  - Monday to Friday - request by 9:30am for bespoke ordering and delivery the same day
  - Outside of these times administer an appropriate IV fluid until the next available ordering session.
  - Before 5pm weekdays and midday at weekends, a starter bag regimen can be provided using off the shelf standard bags until a bespoke bag can be ordered

Weekday orders will arrive, be checked and dispatched to the ward for hanging approximately by 7pm. Weekend bags will be ordered in advance on Fridays.

Referral

Weekdays

- Contact the paediatric pharmacist as soon as the decision for PN is made.
  - Paediatric Pharmacist (LRI) #6737

Weekends

- Call Windsor pharmacy – x15690 – to speak to the W&C pharmacist on shift

A referral form (Appendix 1) must be completed and sent to the pharmacist before PN will be ordered.

The order for each patient bag is prepared in conjunction with the medical team for the patient. **All relevant blood monitoring ("TPN bloods") MUST be done by 7am to allow time for the lab to process the samples in time for the decision making time.**

Refer to Part 2 on the prevention and management of Refeeding syndrome – this will require extra infusions of electrolytes before initiation of PN

Prescribing

PN is an unlicensed medicine, and classified as a Prescription Only Medicines (POM) meaning it must be prescribed by a prescriber. TPN prescriptions must be signed for by a prescriber prior to administration.

The PN detail form, which lists the TPN to be administered; including its constituents (electrolytes (potassium, sodium etc.), lipids, glucose etc.) is the 'prescription' and includes a prescriber signature section. These forms are sent up within each outer bag of PN. (See example form page 10)

The order is generated in the morning and prescribers may not be available on the ward to sign the prescription so signing may occur later in the day, but prior to administration then retained in the notes. The prescriber should confirm that there has been no significant change in fluid, glucose or electrolyte requirements since the last senior review by reviewing the latest fluid balance and biochemistry.

Refer to part 3 of the guideline for further detail.

PN For Central Intravenous Infusion
Infuse Aqueous on 07/12/17 for 24 hours at 13.5ml/hr
Infuse Lipid on 07/12/17 for 12 hours at 2.8 ml/hr
Infuse Lipid on 07/12/17 for 12 hours at 2.8 ml/hr
Name: (Blank) **Date of Birth: 00/00/00**
Hospital Number: 00000000000 **Weight: 3.9kg**
Batch No: T171207083 **Expiry: 14/12/2017**
Ward: NNU

Product Volumes

Glucose 50%	117ml	Vaminolact	184.52ml
Calcium Chloride 1mMol/ml	3.9ml	Magnesium Sulfate 50%	0.39ml
Sodium Chloride 30%	0.38ml	Sodium Glycerophos 21.6%	2.95ml
Potassium Chloride 15%	9.75ml	Peditrace 2.59ml	
Iron Chloride 1.790mol/ml	2.59ml		

Aqueous Volume: 324 1ml Aqueous Overage: 50ml

Glucose Concentration: 18.1% Osmolarity Concentration: 1477.1mOsm/L

Product Volumes

Intratipid 20%	53 51ml
Vit'ipid N Infant	10ml
Solivito N (10ml WFI) B	3.9ml

Lipid Volume: 67.4ml Lipid Overage: 20ml

MAJOR constituents per bag volume (excluding overage)

Nitrogen	1.72 gram	0.44 gram/kg
Glucose	58.5 gram	15 gram/kg
Lipid	11.7 gram	3 gram/kg
Total calories	396 KCal	102 KCal/kg
Non-Nitrogen Calories	352 KCal	90 KCal/kg
Sodium	7.8 millimol	2 millimol/kg
Potassium	19.5 millimol	5 millimol/kg
Calcium	3.9 millimol	1 millimol/kg
Magnesium	0.78 millimol	0.2millimoll/kg
Phosphate	3.9 millimol	1 millimol/kg
Acetate	0 millimol	0 millimol/kg
Chloride	29.22 millimol	7.49 illimol/kg
Zinc	9.92 micromole	2.54micromole/kg
Selenium	65.53 nanomol	16.8 nanomol/kg
Copper	0.82 micromole	0.21 micromole/kg
Iron	4.64 micromole	1.19 micromole/kg
Total Volume (excluding overage)	391.47 ml	100.38 ml/kg

Administration

Refer to Part 4 - Parenteral Nutrition – Administration by Nurses UHL Childrens Hospital Guideline

5. Education and Training

Any staff (including agency staff) who has not undertaken specific medication administration training and competence assessment, must receive local training before being involved in the administration of central line medication to patients under 16 years of age. (LMC 5th edition)

Medical Staff Introduction of the ordering and review of PN at induction; Specialist training regarding use and content within day to day ward teaching

Nursing Staff , All staff who undertake administration of PN must:

a) Have been assessed as competent to administer medications to children via a central venous access device. This is achieved by attending a children's IV study day and completing the 'Administration of Central Intravenous Medications to Infants and Children' competency assessment.

b) Have attended a Children's Central Line/PN theory study day or equivalent local training and completed the 'Administering Parenteral Nutrition to Infants and Children' competency assessment

c) Competency for blood sampling from a central line can be achieved by attending Children's Central Line/PN theory study day or equivalent local training and completing 'blood sampling via central venous access device' competency assessment

Staff who are new to the Trust who have been trained and assessed elsewhere:

a) Provide evidence accepted by their Line Manager of the training and assessment of competence. If the member of staff is unable to provide suitable evidence they may be required to undertake UHL training. This must be discussed with the Line Manager and Children's Education Team

b) Staff member must read relevant Trust policies and undertake additional local training relating to equipment and documentation as required

c) Undertake a one off LCAT assessment of competency within own ward/department

Pharmacy Staff Successful completion of Assessment of Competency in ordering Neonatal and Paediatric PN

6. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
Monitoring of Central Line Infection on all Children on PN 100%	Line infections highlighted by UHL reporting system	Medical & Pharmacy Teams	Monthly/Quarterly	Local Quality & Safety Board
Procedure used by all staff administering PN to children (under 16yrs)	Peer review by LCAT assessment	Ward Sisters	Monthly/Quarterly	Senior Nurses Board

7. Supporting References

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Leicestershire Medicines Code Trust Ref: B60/2011

LNR Cytotoxic Policy Trust Ref: E13/2016

UHL Children's IV Monographs (available via INsite)

UHL Patient ID Band Policy Trust Ref: B43/2007

UHL Policy for Consent to Examination or Treatment Trust Ref: A16/2002

UHL Infection Prevention & Control Policy Trust Ref: B4/2005

UHL Health and Safety Policy Trust Ref: A17/2002

UHL Control of Substances Hazardous to Health (COSHH) Policy Trust Ref: B10/2002

UHL Personal Protective Equipment Policy (PPE) Trust Ref: B9/2004

UHL Assessment and Administration of Medicines by Nurses and Midwives Policy Trust Ref: B13/2009

UHL IV Policy Preparation and Administration of Intravenous Medications and Fluids to Adults, Babies, Children and Young People Trust Ref: B25/2010

8. Key Words

Parental Nutrition Central Lines, Medication, Infusions, Aseptic Non-Touch Technique, Babies, Children, Young People, Children's Nurses

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CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title) David Harris – Advanced Specialist Pharmacist Hemant Bhavsar - Consultant Anne Willmott - Consultant Rebecca Zseli – Children's Gastroenterology Specialist Nurse	**Executive Lead** Chief Medical Officer
Details of Changes made during review: TPN Regime tables updated Title amended to distinguish between other guidelines Format updated	

Appendix 1 – Paediatric Parenteral Nutrition Referral Form

SECTION A	
Name: Hospital number: Date of birth: Age: Date of admission:	Speciality: Ward: Consultant:

Date of request: Time: Day of week:

Indication for PN:

☐ Immaturity of gut function
☐ Congenital anomalies, gut
☐ Congenital anomalies, non-gut
☐ Necrotising enterocolitis
☐ Dysmotility
☐ Non-functioning gut
☐ Malabsorption
☐ Failure of enteral nutrition
☐ No access for enteral nutrition
☐ Flare-up of inflammatory bowel disease
☐ Pre-operative nutrition
☐ Post-operative complication
☐ Post-operative ileus
☐ Perforated/leaking gut
☐ Obstruction
☐ Short bowel
☐ Mucositis
☐ Radiation enteritis
☐ GVHD
☐ Other,

Treatment goal:

☐ pre-op nutrition optimisation
☐ maintain nutrition until established enteral feed
☐ achieve normal growth
☐ achieve catch up growth from poor nutritional state
☐ other,

Background

Estimated period of suboptimal nutrition:

☐ < 4days ☐ 5 – 7 days ☐ 1 week to 1 month ☐ > 1 month

Details of enteral feeding in the week prior to PN:

Enteral nutrition considered as an alternative to PN? ☐ Yes ☐ No

Details of any enteral nutrition to be continued whilst on PN:

Risk of re-feeding syndrome? ☐ Yes ☐ No

(No nutrition for 5 or more days would constitute a risk of re-feeding syndrome)

Seen by Dietician: ☐ Yes ☐ No Date:

Seen by Gastroenterologist: ☐ Yes ☐ No Date:

Initial patient assessment:

Relevant clinical / nutritional assessment(if any):

Current weight = ((Centile ……) Recent weigh

Over what pe

Presence of oedema: ☐ Yes ☐ No

Biochemical assessment (any abnormal biochemistry):

Fluid requirement:

Additional clinical information:

Relevant drug therapy:

Details of intravenous access

Type of central venous catheter (CVC) or peripheral line:

Number of lumens:

Details of insertion of CVC:

Date of insertion –

Operator/ Designation –

Insertion technique –

Is position of tip documented and appropriate – Yes/ No

Any complications during procedure –

Is line used for any other purpose, specify

Name and signature: **Designation:**
Date:

Appendix 2 – Central Venous Access Device Bundle

NHS
University Hospitals of Leicester

Central Venous Access Device (CVC) Care Bundle – Including PICC

A LOCSIP form must be undertaken for all midlines, PICCS, central lines (including renal dialysis access) inserted in UHL

Name:
Hospital number:
Ward:

Care Bundle Elements during **ongoing care**		
If vascular access is required for longer than seven days, a multi lumen device is not appropriate. Outside of critical care please refer to the specialist vascular access team for insertion of the most appropriate device.		
Hand Hygiene Hands must be cleaned before contact with device	**Continuing Clinical Indication (Required)** Need for IV access must be assessed and recorded twice daily and the device removed if no longer clinically indicated	**Appropriate Device** Is this the most suitable device for the patient e.g. if the patient has a multi lumen non-tunnelled device is this required, refer to Vascular Access Team for PICC assessment
Signs of Infection The device is inspected for signs of infection eg tracking, swelling or redness at insertion site and documented at least twice daily	**Dressing Intact** Ensure that the dressing is intact and does not obscure visual inspection of the insertion site	**Administration Sets** Administration sets must be labelled with the date they are due to be changed (72 hours fluid sets, 24 hours TPN, and 12 hourly for blood or according to manufacturer's guidance)
Disconnection Do not disconnect giving sets other than for disposal	**Device Access** Ensure key parts are protected when accessing the device. Scrub the hub with 2% chlorhexidine gluconate in 70% isopropyl alcohol for fifteen seconds and allow to dry	**Occlusion prevention** Do not allow IV bags to stand empty. Following use (or weekly if lumen not in use), flush with sodium chloride 0.9% for intravenous use. Use a 10 ml syringe and clamp under positive pressure.
Measurement of PICC Measure the residual length of the PICC prior to access to ensure the device has not been dislodged	**Documentation** Document date and time of removal, identifying grade and name of operator legibly with signature	**Removal of CVAD** All CVADs must be removed as soon as no longer clinically indicated.

RAID assessment: Must be completed for all devices and a VIP score to evidence observation of insertion site twice daily														
	Date:		Date:		Date:		Date:		Date:		Date:		Date:	
Required? Device used in last 12 hours (Y/N) if N remove	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Appropriate? Is this the best device for the patient? (How long is access required)														
Infected? Is there any evidence of swelling or tracking (redness) along the vein?														
Dressing? Is the dressing transparent, semi-permeable and intact?														
VIP score? Record VIP score twice daily before accessing the device														
Identification of practitioner														

RAID assessment: Must be completed for all devices and a VIP score to evidence observation of insertion site twice daily														
	Date:		Date:		Date:		Date:		Date:		Date:		Date:	
Required? Device used in last 12 hours (Y/N) if N remove	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Appropriate? Is this the best device for the patient? (How long is access required)														
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