

# Procedure

## Emergency Management of the Child Receiving Home Parenteral Nutrition (PN)

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Author/custodian	Director of Gastroenterology (GHLT)			Review date	13/11/2021
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Applicable to	All Children's Health Queensland Staff				
Authorisation	Executive Director Clinical Services (QCH)				

### Purpose

This Procedure provides an Emergency Management Plan for all paediatric home Parenteral Nutrition (PN) patients who have had a febrile episode ( $\geq 38.5^{\circ}\text{C}$  x 1 or  $\geq 38^{\circ}\text{C}$  x 2), a Central Venous Access Device (CVAD) problem, hypoglycaemia, have fluid imbalance or disruption to their regular home PN.

The recommendations within this Procedure should be applied to all paediatric home PN patients, with notification to Senior Gastroenterology staff at Queensland Children's Hospital (QCH), and further consultation as clinically appropriate.

### Scope

This procedure applies to all Children's Health Queensland (CHQ) clinical staff caring for paediatric home PN patients who have presented for acute management. These patients are at increased risk of the following, which may occur concurrently:

- Sepsis due to an indwelling device.
- Dehydration, electrolyte abnormalities and/or hypoalbuminaemia due to stomal losses or abnormal gastrointestinal function/anatomy (for example, dysmotility disorders or short bowel syndrome).
- CVAD problems (for example, fractured, blocked, or dislodged line).
- Hypoglycaemia due to abrupt or prolonged cessation of PN.

#### ALERT



**Children with Intestinal Failure (IF) who have a CVAD are at significant risk of a bloodstream infection. Any fever ( $\geq 38.5^{\circ}\text{C}$  x 1 or  $\geq 38^{\circ}\text{C}$  x 2) should be a *presumed* bloodstream infection until proven otherwise<sup>1</sup>**

**Children with Short Bowel Syndrome ("short gut") are at risk of bacterial translocation and recurrent infections increase the likelihood of PN-associated liver disease.**

**ALERT**

Some children on home PN have extremely limited venous access options.



- Rapid management of a possible CVAD infection includes blood culture collection (from each lumen) followed by commencement of IV antibiotics via the CVAD, ideally within 30 minutes (maximum 60 minutes) of presentation.
- If the CVAD is functioning, it **MUST** be used to administer IV antibiotics following blood culture collection.
- If the CVAD is *not* functioning, peripheral venous access should be attempted by the clinician with the most vascular access experience.
- To differentiate systemic sepsis and causative organisms from a colonised CVAD, it is ideal to collect blood cultures from both the CVAD and peripherally.

## Procedure

### Clinical presentation

Children on home PN may present to the Emergency Department (ED) with:

- A. Fever ( $\geq 38.5^{\circ}\text{C}$  x 1 or  $\geq 38^{\circ}\text{C}$  x 2) or clinical evidence of CVAD/systemic infection
- B. Dehydration secondary to increased losses including stomal, diarrhoea and/or vomiting
- C. Disruption to CVAD (fractured, blocked, or dislodged line)
- D. Hypoglycaemia

Each paediatric home PN patient will have an individualised 'Acute Management Plan for Children Attending Emergency Department' plan as well as an 'Integrated Health Summary'. These may be found in ieMR (under 'care plans/protocols' in the clinical notes view), at triage in their local Emergency Department, and/or with the parent/carer.

Home PN patients are under the care of a Nurse Navigator and/or local Connected Care Coordinator, who can be contacted during hours.

**All home PN patients who present to an ED should be discussed with the QCH Gastroenterology team prior to them leaving the Department for admission or discharge.**

If the home PN patient presents to QCH ED outside hours due to home equipment failure (home pump) and/or no supply of home pump lines, please contact the on-call Gastroenterology Consultant/Fellow or the Safety CNC for access to emergency supply of lines and/or a loan home pump.

### Emergency management

#### Triage:

Children receiving home PN who present to the ED at QCH shall be triaged as a minimum Australian Triage Scale (ATS) Category 2 if they are demonstrating *any* of the following physiological symptoms<sup>2</sup>:

- Respiratory compromise
- Circulatory compromise
- Altered level of consciousness (drowsy or irritable)
- At risk of hypoglycaemia.

Children receiving home PN who have had a disruption to their PN but who are not displaying any of the symptoms above shall be triaged as a minimum ATS Category 3.

In all other cases, the child should be triaged according to the Paediatric Physiological Discriminator (Table 1).

This assessment will be documented in FirstNet and will directly follow the primary survey. Risk factors either reported or observed should also be documented.

For further information, refer to [CHQ-WI-00749 Triage - Emergency Management of the Child Receiving Home Parenteral Nutrition \(PN\)](#).

### Initial assessment and resuscitation (if required)

- Assess & Resuscitate using 'ABC' approach
  - Ensure the most senior doctor is aware of the need for resuscitation
    - **A:** Provide high flow oxygen as needed
    - **B:** Support ventilation as required
    - **C:** Attempt peripheral access immediately (or intra-osseous access in certain circumstances) and treat signs of shock with IV Sodium Chloride 0.9% in 20 mL/kg boluses.
- **Treat hypoglycaemia**
  - Initially with IV Glucose 10% 2 mL/kg and recheck BGL

## A. Fever ( $\geq 38.5^{\circ}\text{C}$ x 1 or $\geq 38^{\circ}\text{C}$ x 2) or clinical evidence of CVAD/systemic infection

### ALERT

Parents/carers of children on home PN are asked to present to their local ED when their child has a fever ( $\geq 38.5^{\circ}\text{C}$  x 1 or  $\geq 38^{\circ}\text{C}$  x 2) to facilitate prompt treatment.

Any fever ( $\geq 38.5^{\circ}\text{C}$  x 1 or  $\geq 38^{\circ}\text{C}$  x 2) should be a *presumed* bloodstream infection until proven otherwise<sup>1</sup>



- As per [CHQ-GDL-01069 CHQ Guideline Fever in a Child with Central Venous Access Device \(Management of Suspected Central Venous Access Device Infection in Children\)](#).

All home PN patients attending an ED with a temperature as above should have CVAD blood cultures taken and IV antibiotics commenced within 30 minutes (maximum 60 minutes) of presentation.

- Antibiotics **MUST** be given via the CVAD if it is functioning.

## Fever – Investigations and diagnosis

### Blood investigations:

- Blood cultures:
  - CVAD blood cultures should be collected prior to IV antibiotics commencing
  - For multiple lumen CVADs, a blood culture should be collected from each lumen

- Peripheral blood cultures should also be taken if access is obtainable prior to commencement of IV antibiotics (within 60 minutes of presentation)
- Full blood count (FBC), Electrolytes and liver function tests (ELFTs/CHEM20), C-Reactive Protein (CRP)
- Blood glucose level (BGL)

**Other investigations as clinically indicated:**

- Urine microscopy, culture and sensitivity (MCS)
- Chest x-ray
- Vascular ultrasound scan (USS) to exclude thrombophlebitis
- Respiratory panel Polymerase Chain Reaction (PCR)
- Lumbar puncture
- ECHO

**Fever – Treatment**

**Intravenous antibiotics:**

- Start IV antibiotics within 60 minutes of presentation to the ED
- **Always use CVAD for IV antibiotics, unless:**
  - Significant rigors or hypotension after flushing CVAD, then CVAD should be removed as a priority
  - In this case, peripheral IV access should be obtained immediately
- Antibiotic choice:
  - Commence Vancomycin IV 15mg/kg (maximum 750mg) every 6 hours
  - and**
  - Piperacillin/Tazobactam IV 100mg/kg (Piperacillin component) (maximum 4 gram) every 6 hours
- If patient has an allergy to Piperacillin/Tazobactam and/or Vancomycin, discuss antibiotic choice with QCH Gastroenterology team and QCH Infection Management Consultant/Fellow on service. For more information, refer to Antimicrobial Dosing Recommendations in Table 2 of:
  - CHQ Guideline [CHQ-GDL-01069 Fever in a Child with Central Venous Access Device \(Management of Suspected Central Venous Access Device Infection in Children\)](#)

**Intravenous fluid or PN:**

- If the patient is haemodynamically compromised and/or has electrolyte imbalance:
  - If required, administer IV Sodium Chloride 0.9% 10-20 mL/kg boluses to address intravascular depletion as per [CHQ-GDL-01025 CHQ Guideline Intravenous Fluid Guidelines – Paediatric and Neonatal](#)
  - Manage electrolyte imbalance
  - Commence IV maintenance fluids: IV Sodium Chloride 0.9% with Glucose 5% or 10% (glucose concentration to be chosen based on patient threshold for hypoglycaemia with cessation of PN).
  - Consult with QCH Senior Pharmacist or Pharmacist on-call (if after-hours) and see Appendix 2 of CHQ Guideline [CHQ-GDL-01025 Intravenous Fluid Guidelines – Paediatric and Neonatal](#) for guidance on preparing IV Sodium Chloride 0.9% with Glucose 10% solution.
  - See also: CHQ Guideline [CHQ-GDL-60010 Sepsis – Recognition and emergency management in children](#)

- **If the patient is hypoglycaemic:**
  - Treat hypoglycaemia initially with IV Glucose 10% 2 mL/kg and recheck BGL
- BGL monitoring should be attended to:
  - As a baseline
  - If the patient is symptomatic
  - If there is a delay in commencement of PN or IV fluids with glucose
  - In the case that the patient is commenced on IV fluids (in which the glucose may differ to their normal home PN glucose concentration)
- **If the patient is haemodynamically stable:**
  - Where the patient's CVAD is usable, the patient's usual home PN formula (in individualised dual chamber bag) may be commenced following discussion with the QCH Gastroenterology team.
  - The paediatric home PN patient's PN formula is often highly modified and is not interchangeable with hospital stock of PN solutions. Seek advice from the QCH Gastroenterologist/Fellow on-call, Senior Dietitian, or Surgical Pharmacist.
  - IV fluids should be commenced (as above) if the patient's home PN solution and/or Central Venous access is not available, or PN is not appropriate to administer based on clinical assessment
- Home PN ordering in ieMR:
  - During hours, contact the PN Dietitian for PN ordering. See CHQ Procedure [CHQ-PROC-63853 Dietitian Ordering of Paediatric Inpatient Parenteral Nutrition](#)
  - Outside hours, refer to [Parenteral Nutrition Ordering – ieMR Workflow](#) and [Modification of Parenteral Nutrition Order – ieMR Workflow](#)
- For PN and antibiotic compatibility information, see the [Paediatric Injectables Guidelines Royal Children's Hospital Melbourne](#) (available via CKN) and the [Paediatric Injectable Drugs 'The Teddy Bear Book'](#). Please contact the QCH Pharmacy team for further advice on PN/Medication compatibilities.

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## ALERT

A peripheral intravenous cannula (PIVC) is not appropriate to use for administration of IV solutions more than Glucose 10%



Paediatric PN 20/100 is the only PN solution that is suitable for peripheral administration.

Amino-acid / glucose solutions are highly irritating to peripheral veins. The peripheral access must additionally be of a sufficiently large bore to tolerate the fluid volumes and minimise phlebitis/ irritation. Extravasation of PN requires urgent medical review and management (see page 7).

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**Fever - Ongoing management:**

- Inform the on-call QCH Gastroenterologist or Fellow of the home PN patient's presentation/admission
- For management of a possible CVAD infection once a patient is admitted, contact the QCH Infection Management Consultant/Fellow on service for advice on antibiotic choice and device management. For more information, refer to CHQ Guideline [CHQ-GDL-01069 Fever in a Child with Central Venous Access Device \(Management of Suspected Central Venous Access Device Infection in Children\)](#) (see Figure 1, pg 7).

**B. Dehydration secondary to increased losses****ALERT**

**Paediatric patients with Short Bowel Syndrome with a (drainage) jejunostomy or ileostomy are at significant risk of electrolyte and fluid imbalance.**

**Losses may be due to increased stomal losses, increased vomiting and/or diarrhoea. The patient may present with significant weight loss, electrolyte abnormalities, and hypovolaemia<sup>1</sup>**

**Dehydration – Investigations and diagnosis****Blood investigations:**

- FBC, ELFTs (CHEM20), CRP
- Blood glucose level (BGL)
- Blood cultures when febrile ( $\geq 38.5^{\circ}\text{C}$  x 1 or  $\geq 38^{\circ}\text{C}$  x 2):
  - CVAD blood cultures should be collected prior to antibiotics commencing
  - For CVADs with multiple lumens, a blood culture should be collected from each lumen
  - Peripheral blood cultures should also ideally be taken if access is obtainable prior to commencement of IV antibiotics (within 60 minutes of arrival)

**Other investigations:**

- Stool sample MCS including viruses
- As clinically indicated – for example urine MCS, abdominal USS and/or chest x-ray

**Dehydration – Treatment:**

- Assess clinically for dehydration
- Provide IV fluid replacement if clinical evidence of dehydration and/or if significant weight loss as per CHQ Guideline [CHQ-GDL-01025 Intravenous Fluid Guidelines – Paediatric and Neonatal](#)
- Consider cessation of enteral feeding (oral, gastrostomy or jejunostomy) if clinical indicated due to losses – Consult with on-call QCH Gastroenterologist or Fellow and Senior/PN Dietitian
- If the patient is haemodynamically stable and their home PN is due for connection:
  - Where the patient's CVAD is functioning, the patient's usual home PN formula (in individualised, dual chamber bag) may be commenced following discussion with the QCH Gastroenterology team.

- The home PN patient's PN formula is often modified and is not interchangeable with hospital stock PN supplies. Seek advice from the on-call Gastroenterologist, Senior/PN Dietitian, or Gastro/Surgical Pharmacist.
  - A PIVC is NOT suitable for administration of any PN solutions where glucose concentration exceeds 10%
  - For PN and antibiotic compatibility information, see the [Paediatric Injectables Guidelines Royal Children's Hospital Melbourne](#) (available via CKN) and the [Paediatric Injectable Drugs 'The Teddy Bear Book'](#). Please contact the QCH Pharmacy team for advice on PN/Medication compatibilities.
- If also febrile ( $\geq 38.5^{\circ}\text{C}$  x 1 or  $\geq 38^{\circ}\text{C}$  x 2), manage as per fever management plan above.
  - Inform the on-call Gastroenterologist or Fellow of the home PN patient's presentation/admission.

### C. Disruption to CVAD (fractured, blocked, or dislodged line)

#### CVAD problems may include:

- Extravasation of PN into surrounding tissue
- PICC or CVL fracture (crack/split)
- Blockage of PICC, CVL, or port (see [CHQ-WI-03457 Central Venous Access Device \(CVAD\) – Patency, Flushing & Locking](#))
- Accidental removal or dislodgement of PICC or CVL
- Accidental disconnection of needleless access device (NAD)
- Port needle disconnection

**For accidental disconnection of NAD or port needle dislodgement, refer to:**

[CHQ-WI-03458 Central Venous Access Device \(CVAD\) – Accidental Disconnection](#)

[CHQ-PROC-03455 Management of Compromised Central Venous Access Device \(CVAD\)](#)

**For all home PN patients presenting to the ED with a CVAD problem, notify the on-call Gastroenterologist or Gastroenterology Fellow of patient's presentation/admission.**

#### PN Extravasation

PN is a vesicant solution and extravasation can cause severe injury due to its high osmolality<sup>3</sup>.

#### Management of suspected extravasation:

- Immediately stop PN administration if not already done so, and attempt aspiration of CVAD
- Seek Vascular Access Management Service (VAMS) or surgical advice regarding device management
- See CHQ Procedure 60579 [Infiltration and Extravasation: Prevention/Recognition, Management and Treatment](#)

## **CVAD blockage or fracture – Investigations and management**

### **Blood investigations:**

- Take peripheral blood sample for:
  - Blood cultures (prior to antibiotics)
  - FBC, ELFTs (CHEM20), CRP
  - Blood Glucose Level (BGL)

### **Other investigations may include:**

- Chest x-ray to confirm placement of distal tip of CVAD
- Line-o-gram (Line study) to check patency of CVAD and presence of fibrin sheath
- Vascular USS to exclude thrombus

### **CVL or PICC fracture - management:**

- Refer to CHQ Procedure [CHQ-PROC-03455 Management of Compromised Central Venous Access Device \(CVAD\)](#)
- Clamp the portion of the CVL or PICC still attached to the patient. Stop any IV fluids infusing and disconnect line.
- Using aseptic non-touch technique (ANTT), clean the damaged portion of the catheter with 2% chlorhexidine and 70% alcohol and seal the damaged portion of the catheter with an occlusive, transparent, sterile dressing.
- Tunnelled Cuffed Central venous lines/catheters are the only CVADs at QCH that are repairable. BioFlo™ PICCs cannot be repaired.
- Notify the CN – VAMS or Safety CNC, and the Gastroenterology Consultant or Fellow on-call.
- Peripheral IV access should be obtained rapidly.
- **If afebrile** (temperature <38°C) prescribe empiric single dose prophylactic antibiotic via a PIVC:
  - Vancomycin IV 15mg/kg (maximum 750mg) – single dose.
  - Alternative: Teicoplanin IV 10mg/kg (to a maximum of 400mg) – single dose.
  - Take blood culture at 24hrs post fracture, or at any time if febrile
  - Review blood culture in 24-48 hours. If blood culture is positive, contact IMPS Consultant / Fellow for advice on treatment.
- **If febrile** (temperature ≥38.5°C x 1 or ≥38°C x 2) treat empirically:
  - Take blood culture
  - Treat empirically
    - Commence Vancomycin IV 15mg/kg (maximum 750mg) every 6 hours
  - and**
    - Piperacillin/Tazobactam IV 100mg/kg (Piperacillin component) (maximum 4 gram) every 6 hours
  - Review blood cultures in 24-48 hours. If blood culture is positive, contact IMPS Consultant / Fellow for advice on treatment.
- If patient has an allergy to Piperacillin/Tazobactam and/or Vancomycin, discuss alternative antibiotic choice with the QCH Infection Management Consultant/Fellow on service. For more information, refer to Antimicrobial Dosing Recommendations in Table 2 of:



- CHQ Guideline [CHQ-GDL-01069 Fever in a Child with Central Venous Access Device \(Management of Suspected Central Venous Access Device Infection in Children\)](#)
- Commence peripheral IV fluids: Sodium Chloride 0.9% with Glucose 5% or 10% at maintenance rate through the peripheral intravenous cannula (PIVC)
  - Consult with Senior Pharmacist and see Appendix 2 of CHQ Guideline [CHQ-GDL-01025 Intravenous Fluid Guidelines – Paediatric and Neonatal](#) for guidance on making up IV Sodium Chloride 0.9% with Glucose 10%.
- A PIVC is NOT suitable for administration of any PN solutions where the IV glucose concentration exceeds 10%.

### Central Venous Line repairs

- For repair of a fractured CVL in hours: Contact the CN - VAMS at QCH
- For repair of a fractured CVL out of hours: Contact the Nurse Manager for Patient Flow and Staffing Unit (PFSU) or Safety CNC
- Only clinicians trained in line repair should use the CVL repair kits. Trained repairers at QCH include VAMS and Safety CNCs. These staff members have undertaken the appropriate training and have been credentialed to do so. The Nurse Manager, PFSU will have an up to date list of these staff members and will also provide information on which staff members are currently on shift and most likely to assist.
- Depending on the brand of CVL inserted, a child with a fractured CVL may present to the ED with an in-date CVL repair kit that matches their CVL brand and size. If not, an appropriately-sized kit may be obtained by contacting VAMS (in hours), Nurse Manager for PFSU, or the Safety CNC at QCH.
- Refer to CHQ Procedure [CHQ-PROC-03455 Management of Compromised Central Venous Access Device \(CVAD\)](#)

### Acronymns

ATS	Australian Triage Scale
BGL	Blood glucose level
CHQ	Children's Health Queensland
CN	Clinical Nurse
CNC	Clinical Nurse Consultant
CRBSI	Catheter related blood stream infection
CRP	C-reactive protein
CVAD	Central Venous Access Device
CVL	Central Venous Line (see also: Tunnelled cuffed central venous catheter)
ED	Emergency Department
ELFTs	Electrolytes and Liver function tests
FBC	Full blood count
HPN	Home Parenteral Nutrition
IF	Intestinal Failure
IV	Intravenous

MCS	Microscopy, culture and sensitivities
NAD	Needleless Access Device
NP	Nurse Practitioner
PFSU	Patient flow support unit
PICC	Peripherally inserted central catheter
PIVC	Peripheral intravenous cannula
PN	Parenteral nutrition
QCH	Queensland Children's Hospital
tc-CVC	Tunnelled cuffed central venous catheter
TPN	Total parenteral nutrition
USS	Ultrasound
VAMS	Vascular Access Management Service
WI	Work Instruction

## Key contacts

Position	Contact details
Paediatric Gastroenterologist / Fellow	Contact patient's Primary Gastroenterologist or Fellow during hours through QCH switch 07 3068 1111 Afterhours: page on-call Gastroenterologist/Fellow through QCH switch 07 3068 1111
Paediatric Infection Management Consultant/ Fellow	During hours, call via QCH switch 07 3068 1111 After-hours: page on-call Infection Management Consultant/Fellow through QCH switch 07 3068 1111
Paediatric Vascular Assessment and Management Service (VAMS) QCH	Contact CN during hours on 07 3068 3440
PN Nurse Navigator QCH	Contact during hours 07 3068 2213 or 0419 383 936
Infection Management and Prevention Service (IMPS), QCH	During hours, call via QCH switch 07 3068 1111
Safety Clinical Nurse Consultant (CNC) QCH	Call 07 3068 4444
Nurse Manager, PFSU, QCH	Call via QCH switch 07 3068 1111
Pharmacy Department, QCH	During hours: Call via QCH switch 07 3068 1111 - request Surgical Lead or Senior Surgical Pharmacist After hours: Page On-call Pharmacist through switch

## Supporting documents

- [CHQ-WI-00749: Triage - Emergency Management of the Child Receiving Home Parenteral Nutrition \(PN\).](#)

- [CHQ-GDL-01069 – Fever in a Child with Central Venous Access Device \(Management of Suspected Central Venous Access Device Infection in Children\)](#)
- [CHQ-GDL-01025 Intravenous Fluid Guidelines – Paediatric and Neonatal](#)
- [CHQ-GDL-63853 Dietitian Ordering of Paediatric Inpatient Parenteral Nutrition](#)
- [CHQ-GDL-01047-1 Parenteral Nutrition Ordering – ieMR Workflow](#)
- [CHQ-GDL-01047-2 Modification of Parenteral Nutrition Order – ieMR Workflow](#)
- [CHQ-WI-03457 Central Venous Access Device \(CVAD\) – Patency, Flushing & Locking](#)
- [CHQ-PROC-60579 Infiltration and Extravasation: Prevention/Recognition, Management and Treatment](#)
- [CHQ-PROC-03455 Management of Compromised Central Venous Access Device \(CVAD\)](#)
- [CHQ-WI-03460 – Totally Implanted Venous Port Device \(TIPVD\) - Needling](#)
- [CHQ-NS-01045 – Parenteral nutrition: Nursing Care of the Paediatric Patient](#)

## Consultation

Key stakeholders who reviewed, provided (incorporated) feedback into this version:

- Director GHLT Department
- Gastroenterologist/Home PN Consultant
- A/CNC Infection Management and Prevention Service (IMPS)
- Nurse Navigator PN
- Pharmacist Consultant
- Pharmacist, Senior Oncology
- Pharmacist Surgical Lead
- Pharmacist Antimicrobial Stewardship
- Pharmacist Critical Care Lead
- Pharmacist Advanced – Safety and Quality
- CHQ Medicines Advisory Committee

## References and Suggested Reading

1. ESPGHAN/ESPEN/ESPR/CSPEN Guidelines on Pediatric Parenteral Nutrition, 2018, *Clinical Nutrition*, vol. 37, issue 6 Part B.
2. Australian Government. (2009), '[Emergency Triage Education Kit](#)', Department of Health and Aging website: Canberra, [online] Available at: <http://www.health.gov.au/> [Accessed 13 Nov 2019].
3. Gorski, L, Hadaway, L, Hagle, ME, McGoldrick, M, Orr, M and Doellman, D (2016), Infusion Therapy Standards of Practice, *Journal of Infusion Nursing*, vol. 39, no. 1S.
4. Mermel LA et al. Clinical practice guidelines for the diagnosis and management of intravascular catheter-related infection: 2009 Update by the Infectious Diseases Society of America. *Clin Infect Dis*. 2009 Jul 1;49(1):1-45 [Accessed 22 October 2019].

## Audit/evaluation strategy

<b>Level of risk</b>	High if mitigation strategies not taken
<b>Strategy</b>	Home PN patient incidents reported via Riskman monitored and managed by NUM in conjunction with Nurse Navigator PN and, as appropriate, NP VAMS. Children on Home PN who present to QCH Emergency Department are reviewed by Nurse Navigator PN (weekdays, or outside hours as retrospective chart review and follow up with carer)
<b>Audit/review tool(s) attached</b>	Nil
<b>Audit/Review date</b>	Ongoing
<b>Review responsibility</b>	Nurse Navigator PN NUM ED NP VAMS as applicable
<b>Key elements / Indicators / Outcomes</b>	100% of children on home PN who present to an Emergency Department are treated in accordance with this Procedure

## Procedure revision and approval history

Version No.	Modified by	Amendments authorised by	Approved by
1.0	Nurse Educator, Department of Emergency Medicine	District Nursing Governance Committee Executive Critical Care Division, RCH; DDNS	General Manager Operations
2.0	<ul style="list-style-type: none"> <li>Staff Specialist, GE Unit CHQ</li> <li>Infectious Diseases Consultant, IMPS, CHQ</li> <li>Director, Paediatric Emergency Medicine, CHQ</li> <li>Director of Pharmacy, CHQ</li> <li>NP, VAMS CHQ</li> <li>CN Gastroenterology Support, GE Unit CHQ</li> <li>Antimicrobial Stewardship Pharmacist, CHQ</li> </ul>	Medicines Advisory Committee (MAC)	General Manager Operations
3.0 08/08/2017	<ul style="list-style-type: none"> <li>PN Nurse Navigator</li> <li>Staff Specialists, Emergency Department QCH</li> <li>Staff Specialists, Gastroenterology Department QCH</li> <li>NP and CN, VAMS QCH</li> <li>Infectious Diseases Consultant, IMPS, QCH</li> <li>Antimicrobial Stewardship Pharmacist, QCH</li> <li>Surgical Lead Pharmacist, QCH</li> </ul>	Medicines Advisory Committee (MAC)	EDHS
4.0 13/11/2017	<ul style="list-style-type: none"> <li>PN Nurse Navigator</li> <li>Staff Specialists, Gastroenterology Department, QCH</li> <li>VAMS QCH</li> <li>A/CNC IMPS, QCH</li> <li>Infectious Diseases team, QCH</li> </ul>	Medicines Advisory Committee (MAC)	Executive Director Clinical Services (QCH)

Version No.	Modified by	Amendments authorised by	Approved by
	<ul style="list-style-type: none"> <li>• Pharmacist Advanced – Safety and Quality, QCH</li> <li>• Pharmacist - Antimicrobial Stewardship, QCH</li> <li>• Senior Pharmacists, QCH</li> <li>• CHQ Medicines Advisory Committee</li> </ul>		

<b>Keywords</b>	PN, parenteral nutrition, total parenteral nutrition, home PN, home TPN, TPN, short gut, fever, febrile, CVAD, fracture, central venous access device, central line, PICC, port, implantable device, 01052
<b>Accreditation references</b>	NSQHS Standards (1-8): Standard 1 – Clinical Governance; Standard 3 – Preventing and Controlling Healthcare-Associated Infection; Standard 4 – Medication Safety; Standard 8 – Recognising and Responding to Acute Deterioration ISO 9001:2015 Quality Management Systems: (4-10): 8.5 Service Provision