Parenteral Nutrition Procedure

Effective: 19 May 2020

1. Guiding Principles

Parenteral Nutrition (PN) provides a life-sustaining option for patients with impaired gastrointestinal (GI) function where oral intake or enteral nutrition (EN) is not possible, however the use of PN in patients with sufficient GI function may contribute to unfavourable outcomes when compared with EN. The risks of PN (increased risk of infection, hepatic dysfunction, electrolyte imbalances, overfeeding, increased ICU LOS) can outweigh the benefits. Careful selection of PN candidates is required, and adherence to evidence-based clinical practice guidelines form the foundation of appropriate PN therapy[1].

This procedure aims to outline the process for determining indication for, prescribing and initiating parenteral nutrition (PN) specific to Bunbury Hospital.
This document is intended to be used in conjunction with the WACHS Adult Parenteral Nutrition Clinical Practice Standard.

2. Procedure

Indications for parenteral nutrition

- Inability to absorb nutrients via the GI tract
- Consider preoperative PN in severely malnourished patients unable to tolerate sufficient oral intake or EN[1] (7-10 days of PN prior to surgery is required to improve outcomes)[2]

Conditions likely to require PN at Bunbury Hospital:

- Impaired absorption:
  - Short bowel syndrome*
  - Volvulus
  - High output intestinal fistula
  - Small bowel mucosal disease: radiation or chemotherapy induced enteritis
- Mechanical bowel obstruction
  - Stenosis or strictures
  - Inflammatory disease
  - Peritoneal carcinomatosis*
  - Severe adhesive disease
- Requirement for bowel rest
  - Ischaemic bowel
  - Severe pancreatitis
  - Chylous fistula*
- Motility disorder
  - Prolonged ileus
  - Pseudo-obstruction

*These presentations may require liaison with or transfer to a tertiary centre.

Time Frame[3]

- Well-nourished, stable patients who have inadequate oral/ enteral nutrition (less than 50% requirements)
  - After 5 days, patient should be flagged with the team
  - After 7 days, initiate PN
- Nutritionally-at-risk patients: initiate PN within 3 to 5 days
- Baseline Malnutrition (moderate or severe): initiate PN as soon as possible
- Haemodynamic and metabolic instability : delay initiation of PN until condition has improved (i.e. first 24-48hours of critical illness/ “ebb” phase : where the following may be present hyperglycaemia, hypertriglyceridaemia , hyponatraemia, hypernatraemia, hypomagnesiemia, hypocalcaemia, hypophosphataemia)

Contraindications

- Functional and accessible GI tract
- Receiving end of life care (expected survival less than 2 months)[1]

Process at Bunbury Hospital for outreach PN

1. Medical/ surgical team determine PN is indicated for the patient.
   - In consultation with the dietitian if available (i.e. Monday to Friday)
   - When timeframe for commencement of PN is predicted to fall on a weekend, early referral (i.e. Friday or earlier) is required, with a commencement plan to be put in place (including nutrition assessment and TPN order) prior to the weekend
2. Team completes referrals:
   - to ICU consultant via written referral/ eReferral and telephone call (extension 1551)
   - to dietitian for nutrition assessment : pager 126 / phone 1468
3. Dietitian completes nutrition assessment and calculates patient’s requirements
4. ICU Consultant charts daily TPN order using MR 60.1.11
   - in consultation with the dietitian if available (i.e. Monday to Friday)
5. Dietitian/ Team to notify ward clinical pharmacist that PN has been prescribed.
6. ICU Consultant to review patient daily with Dietitian and liaise with admitting team regarding PN management.

Supply

Two pre-mix PN solutions are available at Bunbury Hospital and stocked within Pharmacy: N7 and N9. Both are stocked on ICU and Surgical Ward. Additional supplies are maintained in Pharmacy.

Stocks of the light-protective PN covers are kept in ICU and surgical ward next to the PN solutions. There is evidence to support the use of these covers if additions of vitamins (especially A and E) have been made to the PN bag, and in neonates/ premature infants. Otherwise the use of a cover is not mandatory.

Prescription

PN should be prescribed on the Adult Parenteral Nutrition Form (MR 60.1.11) by ICU consultant in consultation with dietitian when available. Form is filed in the patient bedside file for nursing staff to administer. When commencing PN after hours, refer to WACHS TPN CPS.

3. Definitions

Parenteral Nutrition	(PN) is the infusion of an intravenous nutrition formula into the bloodstream.
Nutritionally-At-Risk Adult	- Unintentional weight loss of 5-9% of usual body weight within 3-6 months - Body mass index (BMI) less than 20 kg/m2 - Increased metabolic requirements, or poor absorptive capacity - Altered diet e.g. clear or nourishing fluids, texture modified diet, thickened fluids - Inadequate nutrition intake, including not receiving food or nutrition products for more than 5 days[1, 2]
Malnutrition: Moderate/ severe	- BMI of less than 18.5 kg/m2 - unintentional weight loss greater than 10% within the last 3–6 months, or 5% within 1 month - a BMI of less than 20 kg/m2 and unintentional weight loss greater than 5% within the last 3–6 months.[2]

4. Roles and Responsibilities

Medical/ Surgical Team

- Review patient daily
- Completes referral to Intensivist and dietitian for commencement of TPN
- Medical/Surgical teams to document in the TPN referral :
  - Diagnosis
  - The reasons why nutrition cannot be administered by the oral or enteral route
  - The expected duration of gastrointestinal dysfunction
  - Plans for medical and/or surgical management
  - The expected outcome/prognosis
- Order relevant bloods/ tests:
  - On commencement of TPN check Triglycerides, U&Es, calcium, phosphate, magnesium, albumin, LFTs.
  - Daily U&Es, calcium, phosphate, magnesium, albumin, LFTs
  - Ongoing biochemistry as per intensivist/ managing team
- Order electrolyte replacement
- Chart multivitamin (Cernavit) and trace element (ADTE) solution (both as intravenous preparations) on Medication Chart
- No additions are to be made to the available premixed PN solutions.

ICU Consultant

- Prescribes TPN, in consultation with the dietitian when available
- Daily medical review (on week days) of patient with particular attention to signs of sepsis, line status, fluid balance.
- Assist the dietitian with management of complex or inappropriate TPN referral
- On weekends, the ICU medical staff will not perform routine TPN rounds and admitting teams are responsible for reviewing their patients as usual. However, selected cases may be reviewed along with pathology results. Where problems occur or if changes relating to TPN are required, the duty ICU Registrar must be notified.

Dietitian

- Involved in decision-making as to whether PN is appropriate
- Completes full nutritional assessment (MR 60.1.1)
- Assesses for malnutrition (MR 60.1.6 SGA or MR 60.1.7 PG-SGA)
- Estimates nutrition requirements
- Determines risk of re-feeding syndrome: see appendix A
- Recommends TPN type, starting rate and target rate
- Monitors nutritional status of patient
- Transitional feeding once oral or enteral intake commences (MR 144C Food Intake Chart or MR 60.1.10 Enteral Feeding Form)

Pharmacist

- reviews medications and anticipates drug-drug interactions, drug-nutrient interactions and medications that may adversely affect a patients electrolytes
- liaise with pharmacy regarding PN supplies

Nursing

- Administer TPN following WACHS CPS
- Ensure PN solution is covered with light protective bag while solution is hanging (if required)
- Monitor BGL as per CPS
- Complete 4 hourly observations – or observations as indicated
- Complete strict Fluid Balance Chart (MR144) and Food Intake Chart (MR 144C)
- Monitor for signs of sepsis, line status
- Daily weight

5. Compliance

Failure to comply with this procedure may result in poor patient care, and CIMS being initiated and may constitute a breach of the WA Health Code of Conduct (Code). The Code is part of the Integrity Policy Framework issued pursuant to section 26 of the *Health Services Act 2016* (WA) and is binding on all WACHS staff which for this purpose includes trainees, students, volunteers, researchers, contractors for service (including all visiting health professionals and agency staff) and persons delivering training or education within WACHS.

WACHS staff are reminded that compliance with all policies is mandatory.

6. Records Management

Clinical:
Health Record Management Policy

Non Clinical:

Records Management Policy

7. Evaluation

Monitoring of compliance with this document is to be carried out by the Senior Dietitian, every year using the following means or tools:

- Review of CIMS data relevant to PN in Bunbury Hospital

8. Standards

National Safety and Quality Health Service Standards –
Action 1.27 – Evidence-based care
Action 5.5 – Collaboration and teamwork
Action 5.27 and 5.28 – Nutrition and hydration

9. Legislation

Health Services Act 2016 (WA)

10. References

1. ASPEN 2017, 'When is Parenteral Nutrition Appropriate?', Journal of Parenteral and Enteral Nutrition, vol. 41. No.3, pp. 324-377
2. National Institute of Clinical Excellence (NICE) 2006, 'Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition'
3. ASPEN 2016, 'Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient:SCCM and ASPEN', Journal of Parenteral and Enteral Nutrition, vol. 40. No.2, pp. 159-211.

4. Related Forms

WACHS MR 60.1.1 Dietetics- Inpatient Assessment Form
WACHS MR 60.1.6 Dietetics Subjective Global Assessment
WACHS MR 60.1.7 Dietetics Patient Generated Subjective Global Assessment PG-SGA
WACHS MR 60.1.10 Adult Enteral Feeding Form
WACHS MR 60.1.11 Adult Parenteral Nutrition Form
WACHS MR 144C Food Intake Chart

5. Related Policy Documents

WACHS Adult Parenteral Nutrition Clinical Practice Standard
WACHS Nutrition Clinical Practice Standard
WACHS Enteral Tubes and Feeding – Adults - Clinical Practice Standard

6. Related WA Health System Policies

OD 0475/13 Nutrition Standards for Adult Inpatient in WA Hospitals

7. Policy Framework

Clinical Services Planning and Programs

This document can be made available in alternative formats on request for a person with a disability

Contact:	Senior Dietitian Bunbury Hospital (A. Madigan)		
Directorate:	Health Programs	**EDRMS Record #**	ED-CO-20-37733
Version:	1.00	**Date Published:**	20 May 2020