Saskatoon Health Region	Policies & Procedures Title: **PARENTERAL NUTRITION (PN) – <u>Adult Units</u> Administration and Maintenance** I.D. Number: **1078**
Authorization [x] SHR Nursing Practice Committee	Source: **Nursing** Date Reaffirmed: **July 2017** (new Appendix A) Date Revised: **January 2015** Date Effective: **January/February 2000** Scope: **SHR Acute** **SHR Home Care**

DEFINITIONS:

Parenteral Nutrition (PN) – administration of nutrients via venous route

Central – formulation appropriate for delivery via a central line

Peripheral – formulation appropriate for delivery via peripheral line

2 –in – 1 PN - consists of dextrose, amino acids, electrolytes, vitamins, minerals and trace elements with intravenous fat emulsion administered on separate lines

3 – in – 1 PN – (Total Nutrient Admixture) consists of dextrose, amino acids, intravenous fat emulsion, electrolytes, vitamins, minerals and trace elements

1. PURPOSE

1.1 To ensure patients receive adequate nutritional support.

2. POLICY

2.1 The Dietitian must be consulted to determine the patient's nutritional status.

2.2 The most responsible physician will determine the need for PN and provide clinical supervision and monitoring of administration.

Note: *At RUH, a consult to the Nutrition Support Service (NSS) is required.*

2.3 PN orders will be written daily by the most responsible physician or designate using the "3-1 Adult Parenteral Nutrition Order Form" (# 100020) or "2 in 1 Adult Parental Nutrition Form" (# 1040020)

Note: *At RUH, NSS or (when unavailable) the unit Resident will write the orders.*

2.4 PN Orders

2.4.1 Pharmacy must receive early notification for new PN starts.

2.4.2 Orders must be written and faxed to pharmacy before 1100 hours. Orders received after 1100 hours will be prepared and sent the following day.

2.4.3 After 1100 hours Pharmacy may supply the formulation ordered on the previous day if it is safe to do so.

2.4.4 Changes after 1100 hours are limited to rate decreases.

2.4.5 If the patient is stabilized on PN, orders for more than one day may be written in advance.

2.5 For all new PN patients an appropriate infusion line for administration must be in place. If the infusion line is peripheral an 18 or 20 gauge IV is preferred.

2.6 When using a multiple lumen Central Venous Catheter (CVC), one lumen should be dedicated to PN administration.

Note: *No other IV solutions, medications, or blood products may be administered using the PN line (primary or secondary) or lumen. Replacement fluids must be infused separately.*

Note: *No blood withdrawal or CVP monitoring should be done using the PN lumen.*

2.7 No additions can be made to the PN bag.

2.8 The flow rate will not be increased to catch up if the infusion falls behind the ordered rate.

2.9 Peripheral PN may be infused through a central line until the current bag is completed then the formula must be changed to a central formulation.

Note: *PN formulated for central use CANNOT be infused through a peripheral line.*

2.10 The most responsible physician or designate will be notified if there are any signs of inflammation or discharge at the CVC or IV entry site.

2.11 Clients requiring community PN on discharge may be referred to and supported by the Provincial PN program.

3. PROCEDURE

3.1 Pre-Administration

3.1.1 Supplies:

- PN solution and filter from Pharmacy
- Infusion pump tubing
- Alcohol 70% swab
- Infusion pump
- Clean gloves

3.1.2 Change the PN bag, tubing and filter every 24 hours. Keep the PN bag refrigerated until 30 minutes prior to hanging.

3.2 Administration

3.2.1 Check the PN order for the flow rate of the formula.

3.2.1.1 Initiate PN therapy slowly and gradually increase (over 48-72 hours) to the desired daily volume because of the relative high dextrose load. Do not adjust the rate of PN unless ordered.

3.2.1.2 Do not increase or decrease the rate of PN abruptly.

Note: *PN containing lipid can be weaned over 2 hours if necessary.*

Note: *In certain circumstances, (i.e. insulin dependent diabetics or unconscious patients) sudden discontinuation of PN should be followed by Dextrose 10% for 2-4 hours at 50 mls/hr as ordered by physician.*

3.2.2 Check the PN label for the patient's name, the ordered emulsion and electrolyte additions (2 in 1 or 3 in 1 formulation), expiry date, and the bag for presence of particulate matter or creaming. PN should not be infused if visual changes or precipitates are apparent.

3.2.3 Rotate or agitate the bag prior to hanging to keep the 3-in-1 solution from settling.

3.2.4 Wash hands.

3.2.5 Prime the tubing and filter (refer to instructions on the filter package)

Note: *All 3-in-1 formulations require a 1.2 micron filter placed closest to the patient.*

Note: *For 2-in-1 formulations, the non- lipid bag is hung on the primary line using pump tubing with inline 0.2 micron filter sent by pharmacy. The lipid bag is hung on the secondary line. Connect the provided 1.2 micron filter to the pump tubing closeset to the patient. (See Appendix A)*

3.2.6 Turn off existing PN line.

3.2.7 If administering PN via a CVC with a clamp, clamp the catheter to prevent air embolism and/or blood loss.

3.2.8 Don clean gloves.

3.2.9 Cleanse connection for 15 seconds with Alcohol 70% swab.

3.2.10 Disconnect old tubing, avoiding contamination of the central venous or IV catheter.

3.2.11 Connect new tubing and filter.

3.2.12 Check all connections.

3.2.13 Unclamp catheter and/or tubing if clamp in place.

3.2.14 Program the infusion pump and start PN infusion as ordered.

Note: *All 2-in-1 formulations require an independent double check at the pump to prevent fat overload syndrome (See Appendix B).*

Note: *Malnourished patients may have slower than normal rates of infusion to prevent refeeding syndrome (See Appendix B).*

3.3 Monitoring

3.3.1 Weigh the patient once a week and document the weight in kilograms on appropriate record.

3.3.2 Maintain accurate intake and output records.

3.3.3 Monitor lab work according to the Adult Blood Work Monitoring for PN form (#101758).

3.3.4 Document date and time of tubing, filter and bag change on appropriate record.

4. REFERENCES

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Ukleja, A. et al. (2010) Standards for Nutrition Support: Adult Hospitalized Patients. Nutrition in Clinical Practice, August 2010, Vol 25, Number 4, 403-414.

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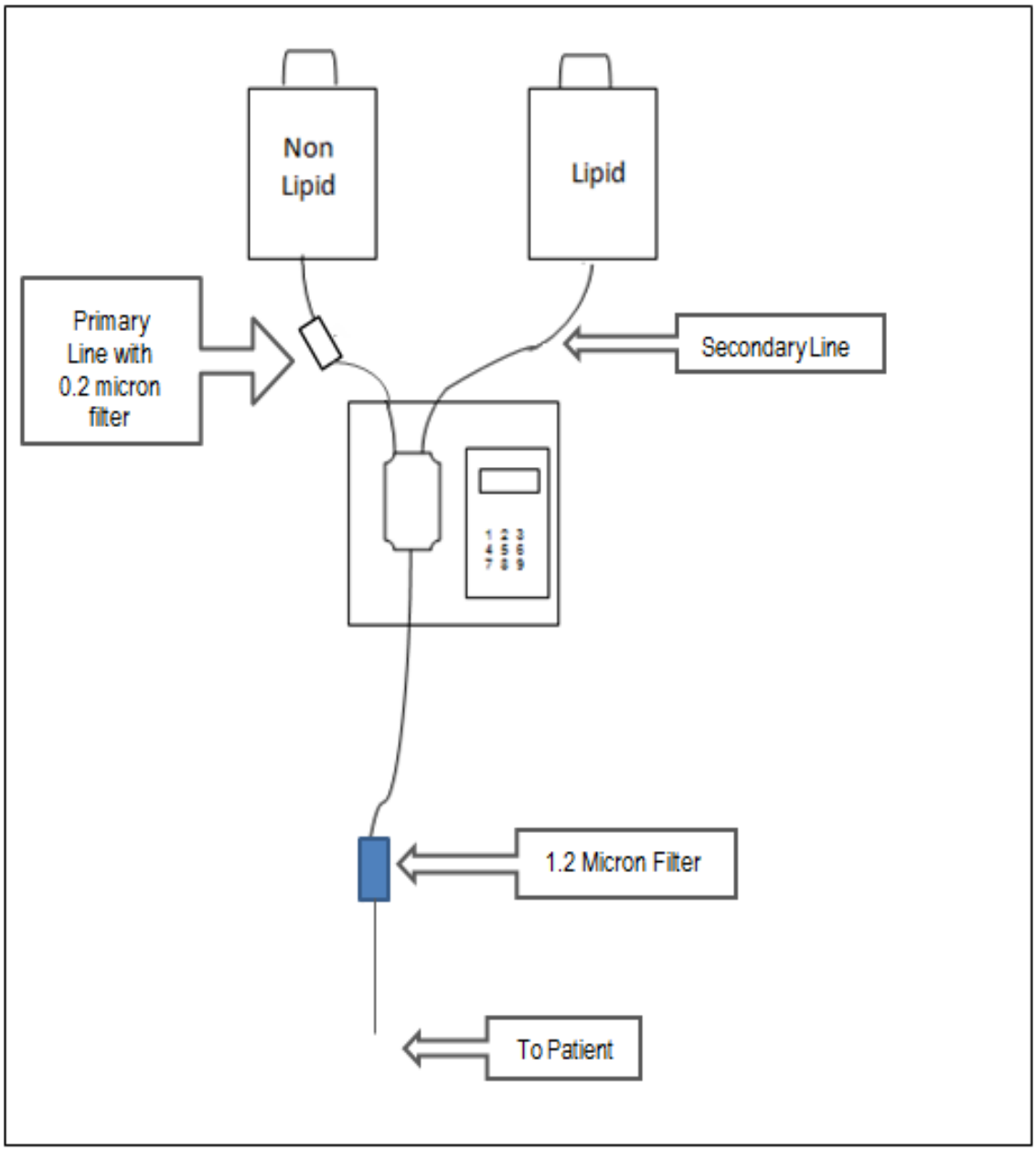
Appendix A

Special Instructions for the Administration of 2 in 1 PN



Appendix B

Fat Overload Syndrome

Fat overload syndrome is a complication due to soy based lipids being infused faster than indicated and causes the following:

Hyperlipidemia	Fever	Fat Infiltration
Hepatomegaly (may have jaundice)	Splenomegaly	Anemia
Leukopenia	Thrombocytopenia	Coagulation Disorders
Hemolysis	Reticulocytosis	Abnormal Liver Function Test
Coma		

Refeeding Sydrome

Refeeding syndrome is a fluid and electrolye imbalance after nutritional support such as Intravenous fluid, enteral tube feeding or oral intake has started on a malnourished patient. This will cause:

- Hypokalemia
- Hypophosphatemia
- Hypomagnesemia

This in turn can cause:

CNS: Weakness Altered mental state Seizure Paresthesia Paralysis Tetany	**GI:** Nausia and vomiting Anorexia Constipation/diarrhea Abdominal pain Vitamin deficiency Low albumin/prealbumin	**Hematologic:** Bleeding Infection Anemia Thrombocytopenia Platelet dysfunction
CVS: Hypotension Dysrhythmias	**GU:** Edema Elevated BUN & Creatinine	**Metabolic:** Metabolic alkalosis/acidosis
Respiratory: Hypoxia	**Musculoskeletal:** Myalgia	