

## Total Parenteral Nutrition (TPN) – ordering

### Medication Management

#### Quick reference guide

All Parenteral nutrition should be ordered within the 'Parenteral Nutrition (TPN) Paediatric' Power Plan.

Parenteral nutrition is a high-risk, specialty medication that requires careful consideration. Either an experienced Medical Officer or credentialed Dietitian can order PN. When PN is being started for the first time, it should be started in business hours and following review from both a Dietitian and Pharmacist. The patient should have baseline electrolytes checked and be assessed for their re-feeding syndrome risk. See PN guideline BEFORE ordering.

### Placing the Orders- Initial prescribing (Day by Day Prescribing)

1. In the Orders Tab Press press  Add and in the search field, type "TPN paed".
2. Select the Parenteral Nutrition (TPN) Paediatric PowerPlan

Enter name to create sequence:

Search:  Type:

- TPN Parenteral Vitamins and Trace Elements (intermittent) Paediatric
- Parenteral Nutrition (TPN) Paediatric**
- Parenteral Nutrition Paediatric Modified IV Infusion (mL/hr, IV continuous infusion, order duration: 1 dose)
- TPN Parenteral Nutrition Paediatric 20/100 with Trace Elements 7.5 mL IV infusion 1L (mL/hr, IV continuous infu
- TPN Parenteral Nutrition Paediatric 25/150 with Trace Elements 7.5 mL IV infusion 1L (mL/hr, IV continuous infu
- TPN Parenteral Nutrition Paediatric 30/200 with Trace Elements 7.5 mL IV infusion 1L (mL/hr, IV continuous infu

In the Parenteral Nutrition (TPN) Paediatric PowerPlan there are multiple phases. They should all be in the (Planned Pending state).

- Parenteral Nutrition (TPN) Paediatric
  - TPN Cares, Labs and Consults (Planned Pending)
  - Neonatal Intensive Care/Special Care (Planned Pending)
  - Children <5kg (Planned Pending)
  - Children 5-10 kg (Planned Pending)
  - Children 10-20 kg (Planned Pending)
  - Children 20-45 kg (Planned Pending)
  - Children > 45 kg (Planned Pending)
  - Disclaimer (Planned Pending)

### TPN Cares, Labs and Consults Phase

Within the First phase there are Patient Care, Laboratory and Consult/Referrals orders.

All patients at LCCH require careful monitoring on initiation of Parenteral Nutrition. Refer to the gastroenterology team, dietician and Parenteral Nutrition Guideline to ensure all tests are ordered.

### Order Phase according to patient weight

**Note: Neonatal Intensive Care/ Special Care Phase. This phase is not to be used at LCCH.**

1. Choose the appropriate phase that corresponds to the patient weight.

- Parenteral Nutrition (TPN) Paediatric
  - TPN Cares, Labs and Consults (Planned Pending)
  - Neonatal Intensive Care/Special Care (Planned Pending)
  - Children <5kg (Planned Pending)
  - Children 5-10 kg (Planned Pending)
  - Children 10-20 kg (Planned Pending)**
  - Children 20-45 kg (Planned Pending)
  - Children > 45 kg (Planned Pending)
  - Disclaimer (Planned Pending)

The orders for the lipid phase and vitamins will be pre-selected.

<b>Vitamins</b>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> vitamins in fat emulsion 20% (Vitamins in Fat Emulsion 20% (Soluvit 5 mL + Vitalipid 10 mL + SMOFlipid FKS0...
<b>Lipids</b>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> fat emulsion, intravenous (SMOFlipid 20% intravenous emulsion)

2. Tick the box that corresponds to the Parenteral Nutrition fluid that is required for the patient.

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> vitamins in fat emulsion 20% (Vitamins in Fat Emulsion 20% (Soluvit 5 mL + Vitalipid 10 mL + SMOFlipid FKS0...
<b>Lipids</b>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> fat emulsion, intravenous (SMOFlipid 20% intravenous emulsion)
<b>Parenteral Nutrition</b>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> parenteral nutrition (Parenteral Nutrition Paediatric 20/100 with Trace Elements 7.5 mL IV infusion 1L)

3. Double click on the Order Details of each item to review and modify the prescription.

**To order the Vitamins in Fat Emulsion:**

1. The volume, rate and duration should be input as per the parenteral nutrition guideline.

Details for **Vitamins in Fat Emulsion 20% (Soluvit 5 mL + Vitalipid 10 mL + SMOFlipid FKS020V) Inf**

Details Continuous Details Offset Details Diagnoses

Base Solution	Bag Volume	Rate	Infuse Over
SMOFlipid 20% intravenous emulsion	120 mL	6 mL/hr	20 hour(s)
Additive	Additive Dose	Normalized Rate	Delivers
<b>Total Bag Volume</b>	120 mL		

2. In the order details screen, if appropriate, the duration of 1 can be removed and Duration Unit changed to (none) – this will make the order a true continuous infusion.

\*Route of administration: IV continuous infusion

Requested start date/time: --:--:--

Duration:  Duration unit: **(None)**

Indication: TPN Special instructions:

Priority:

Bolus dose:  Bolus dose unit:

Clinician bolus range:  Starting dose:

Starting dose unit:  Titration range:

3. In special instructions the OFF time is to be documented.

Special instructions: For 20 hours only- OFF from 0200-0600 each day.

**Note:** If the clinical area does not have specific OFF times, you can just specify an OFF time period.

**To order the SMOFlipid 20% intravenous emulsion**

1. Calculate the rate of administration for the patient according to dietician recommendations.

Base Solution	Bag Volume	Rate	Infuse Over
SMOFlipid 20% intravenous emulsion	120 mL	6 mL/hr	20 hour(s)
Additive	Additive Dose	Normalized Rate	Delivers
<b>Total Bag Volume</b>	120 mL		

2. Insert the rate in mL/hr into the Rate field and the Infuse over time (usually 20 hours at LCCH). This will auto-populate the Bag Volume.

3. In special instructions the OFF time is to be documented.

Special instructions: For 20 hours only- OFF from 0200-0600 each day.

**Note:** If the clinical area does not have specific OFF times, you can just specify an OFF time period.

4. In the order details screen, if appropriate, the duration of 1 can be removed and Duration Unit changed to (none) – this will make the order a true continuous infusion.

\*Route of administration: IV continuous infusion

Requested start date/time: --:--:--

Duration:  Duration unit: **(None)**

Indication: TPN Special instructions:

Priority:

Bolus dose:  Bolus dose unit:

Clinician bolus range:  Starting dose:

Starting dose unit:  Titration range:



**To order the clear phase Parenteral Nutrition**

1. Input the bag volume (the bag volume is at the end of the description of the product i.e. 20/100 = 1000mL).
2. Input the calculated rate for the patient in mL/hr.
3. The Infuse over duration will auto-populate based on the bag volume and rate.

Details Continuous Details Offset Details Diagnoses

Base Solution	Bag Volume	Rate	Infuse Over
Parenteral Nutrition Paediatric 20/100 with Trace Elements 7.5 mL IV infusion 1L 1000 mL	1000 mL	65 mL/hr	15.4 hour(s)
Additive	Additive Dose	Normalized Rate	Delivers
<b>Total Bag Volume</b>	<b>1000 mL</b>		

4. In the details tab – order the number of bags required for 24 hours (rounding up to the nearest bag). This allows for up-titration of the solution each day if clinically appropriate as per the guideline.

Details Continuous Details Offset Details Diagnoses

+ Add - Remove

\*Route of administration:  Requested start date/time:

Duration:  Duration unit:

Indication:  Special instructions:

Priority:

5. If the patient is to have any time off parenteral nutrition each day, ensure this is clearly documented in the details tab under special instructions.

Special instructions: 

For 20 hours only - OFF from 0800-1200 each day. Wean rate to 30mL/hr for one hour prior to ceasing each day

**For Children >45kg:**

**To order TPN Parenteral Vitamins and Trace Elements (intermittent) Paediatric:**

1. The volumes of the additives are auto-populated as is the total volume and rate (over four hours) which is for a standard infusion.

Details for **Cernevit intravenous injection 5 mL + Trace elements with iron (AD**

Details Ingredient Details Offset Details Diagnoses

Ingredients	Dose	Rate	Infuse Over	Frequency
Cernevit intravenous injection	5 mL	28.75 mL/hr	4 hour(s)	morning
Trace elements with iron (ADTE) Prefilled syringe 10 mL	10 mL			
sodium chloride 0.9% up to	115 mL			
<b>Total Volume</b>	<b>115 mL</b>			

Order comments  
Add Cernevit 5 mL and Trace elements 10 mL to Sodium Chloride 0.9% 100 mL minibag, to a total volume 115 mL. Infuse over duration may be reduced to 1 hour if line access problems

2. If the patient has line access problems the Infuse over duration can be reduced to 1 hour(s) by changing the 4 to a 1 and then hitting Enter. This will then recalculate the Rate.

Details for **Cernevit intravenous injection 5 mL + Trace elements with iron**

Details Ingredient Details Offset Details Diagnoses

Ingredients	Dose	Rate	Infuse Over	Frequency
Cernevit intravenous injection	5 mL	115 mL/hr	1 hour(s)	morning
Trace elements with iron (ADTE) Prefilled syringe 10 mL	10 mL			
sodium chloride 0.9% up to	115 mL			
<b>Total Volume</b>	<b>115 mL</b>			

**To Initiate the Powerplan:**

1. Once all orders are selected and checked, click .
2. A lightbulb will now appear next to all initiated orders.
3. Click Orders for Signature.



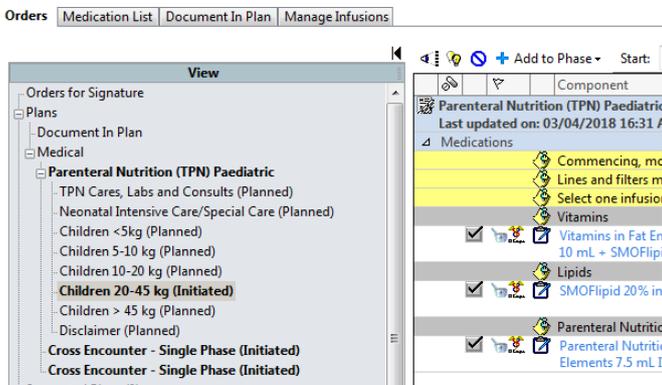
4. Check the orders are correct before clicking sign.
5. The Authorizing Signature box will display.
6. Enter your username and password.



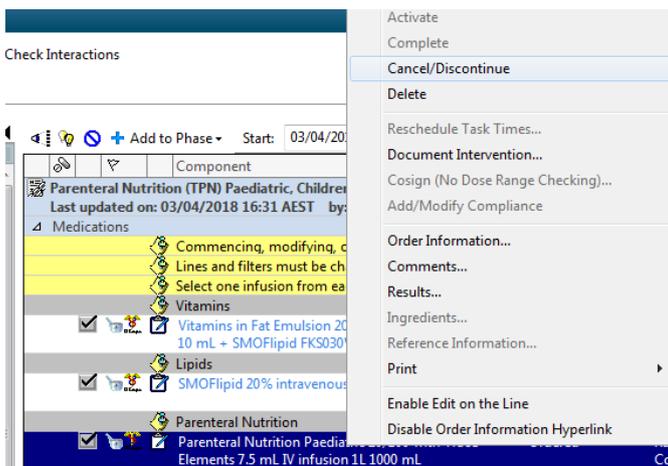
7. Click OK to finalise the order and refresh.
8. Orders now show as "ordered". Check final orders on the MAR to ensure they are correct.

**Changing from one standard bag formulation to another standard bag formulation (i.e up-titrating on initiation)**

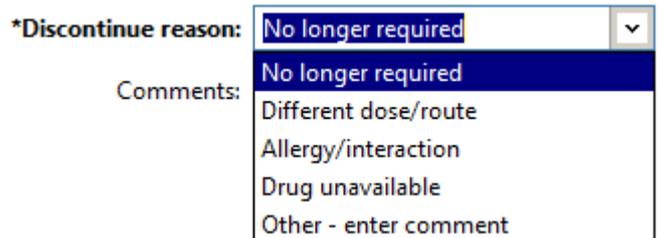
1. Navigate to the Orders screen and the Parenteral Nutrition (TPN) Paediatric PowerPlan.



2. Right click on the parenteral nutrition order currently prescribed and "Cancel/Discontinue" the order.



3. Input the Discontinue reason from the dropdown menu then sign the order.



4. In the same phase of the PowerPlan click on the lightbulb    + Add to Phase on the top left hand of the orders screen. This will bring all of the previously unordered items to the order screen.

Component	Status	Details
Parenteral Nutrition (TPN) Paediatric, Children 20-45 kg (Initiated) 03/04/2018 15:25 AEST		Last updated on: 03/04/2018 16:31 AEST by: LAWSON, RACHAEL ANN PHARM
Medications		Commencing, modifying, or ceasing Parenteral Nutrition requires PN team or Managing Consultant in... Lines and filters must be changed every 24 hours for lipid containing phases and every 48 hours for cle... Select one infusion from each of the grey subheadings
Vitamins		Vitamins in Fat Emulsion 20% (Soluvit 10 mL + Vitalipid 10 mL + SMOFipid FKS030V) infusion 30 mL 3...
Lipids		SMOFipid 20% intravenous emulsion 120 mL
Parenteral Nutrition		Parenteral Nutrition Paediatric 20/100 with Trace Elem... Processing No longer required, 03/A... parenteral nutrition (Parenteral Nutrition Paediatric 25/150 with Trace Elements 7.5 mL IV infusion 1L) Composition: Amino ac... parenteral nutrition (Parenteral Nutrition Paediatric 30/200 with Trace Elements 7.5 mL IV infusion 1L) Composition: Amino ac... parenteral nutrition (Parenteral Nutrition Paediatric Modified IV Infusion) Composition: Amino ac...

5. Tick the box of the new solution required. The item will then have a light bulb appear and will be highlighted.



6. Double click the order details or right click and select Modify
7. In the OEF, input the bag volume (the bag volume is at the end of the description of the product i.e. 20/100 = 1000mL).
8. Input the calculated rate for the patient in mL/hr.



- The Infuse Over duration will auto-populate based on the bag volume and rate.

Details Continuous Details Offset Details Diagnoses

Base Solution	Bag Volume	Rate	Infuse Over
Parenteral Nutrition Paediatric 20/100 with Trace Elements 7.5 mL IV infusion 1L	1000 mL	65 mL/hr	15.4 hour(s)
Additive	Additive Dose	Normalized Rate	Delivers
Total Bag Volume 1000 mL			

- If the patient is clinically stable and to continue this type of Parenteral Nutrition for a significant duration of time, the order can be changed to a true continuous order. In the Details tab, the duration of 1 should be removed and Duration Unit changed to (none).

\*Route of administration: IV continuous infusion

Requested start date/time: [calendar icon]

Duration: [input field]

Duration unit: (None)

Indication: TPN

Special instructions: [dropdown menu]

Priority: [dropdown menu]

Bolus dose: [input field]

Bolus dose unit: [dropdown menu]

Clinician bolus range: [input field]

Starting dose unit: [dropdown menu]

Starting dose: [input field]

Starting dose unit: [dropdown menu]

Titration range: [input field]

Titration range: [dropdown menu]

**To Initiate the PowerPlan:**

- Once all orders are selected and checked, click Initiate .
- A lightbulb will now appear next to all initiated orders.
- Click orders for signature.



- Check the orders are correct before clicking sign.
- The Authorizing Signature box will display.
- Enter your username and password.
- Click OK to finalise the order and refresh.

- Orders now show as "ordered". Check final orders on the MAR to ensure they are correct.

**Making a modification to a standard bag**

- Navigate to the Orders screen and the Parenteral Nutrition (TPN) Paediatric PowerPlan.

Orders Medication List Document In Plan Manage Infusions

View

Orders for Signature

- Plans
  - Document In Plan
  - Medical
    - Parenteral Nutrition (TPN) Paediatric
      - TPN Cares, Labs and Consults (Planned)
      - Neonatal Intensive Care/Special Care (Planned)
      - Children <5kg (Planned)
      - Children 5-10 kg (Planned)
      - Children 10-20 kg (Planned)
      - Children 20-45 kg (Initiated)
      - Children > 45 kg (Planned)
      - Disclaimer (Planned)
    - Cross Encounter - Single Phase (Initiated)
    - Cross Encounter - Single Phase (Initiated)

Component

Parenteral Nutrition (TPN) Paediatric  
Last updated on: 03/04/2018 16:31 A

Medications

- Commencing, mo
- Lines and filters m
- Select one infusio
- Vitamins
- Vitamins in Fat En
- 10 mL + SMOFlipi
- Lipids
- SMOFlipid 20% in
- Parenteral Nutritio
- Parenteral Nutric
- Elements 7.5 mL l

- Navigate to the base solution bag that will require modification and "copy" the composition of the bag from the Infusion Instructions.

Details for Parenteral Nutrition Paediatric 20/100 with T

Details Continuous Details Offset Details Diagnoses

Base Solution	Bag Volume
Parenteral Nutrition Paediatric 20/100 with Trace Elements 7.5 mL IV infusion 1L	mL
Additive	Additive
Total Bag Volume mL	

Weight: [input field]

Infusion instructions

Composition:

- Amino acid: 20 g
- Glucose: 100 g
- Sodium: 50 mmol
- Potassium: 30 mmol

- In the same phase of the PowerPlan click on the lightbulb Add to Phase



in the top left hand of the orders screen. This will bring all of the previously unordered items to the order screen.

Component	Status	Details
Parenteral Nutrition (TPN) Paediatric, Children 20-45 kg (Initiated) 03/04/2018 15:25 AEST Last updated on: 03/04/2018 16:31 AEST by: LAWSON, RACHAEL ANN PHARM		
Medications		
Commencing, modifying, or ceasing Parenteral Nutrition requires PN team or Managing Consultant ir Lines and filters must be changed every 24 hours for lipid containing phases and every 48 hours for cle Select one infusion from each of the grey subheadings		
Vitamins		
<input checked="" type="checkbox"/>	Ordered	Vitamins in Fat Emulsion 20% (Soluvit 10 mL + Vitalipid 10 mL + SMOFlipid FKS030V) Infusion 30 mL 3...
Lipids		
<input checked="" type="checkbox"/>	Ordered	SMOFlipid 20% intravenous emulsion 120 mL
Parenteral Nutrition		
<input type="checkbox"/>	Processing	Parenteral Nutrition Paediatric 20/100 with Trace Elem... No longer required, 03/A
<input type="checkbox"/>		parenteral nutrition (Parenteral Nutrition Paediatric 25/150 with Trace Elements 7.5 mL IV infusion 1L) Composition: Amino ac
<input type="checkbox"/>		parenteral nutrition (Parenteral Nutrition Paediatric 30/200 with Trace Elements 7.5 mL IV infusion 1L) Composition: Amino ac
<input type="checkbox"/>		parenteral nutrition (Parenteral Nutrition Paediatric Modified IV Infusion) Composition: Amino ac

4. Tick the box of the parenteral nutrition (Parenteral Nutrition Paediatric Modified IV Infusion) solution at the bottom of the screen. The item will then have a light bulb appear and will be highlighted.

Component	Status
Parenteral Nutrition (TPN) Paediatric, Children 10-20 kg (Initiated Pending) 05/04/2018 10:21 AEST Last updated on: 05/04/2018 10:21 AEST by: LAWSON, RACHAEL ANN PHARM	
Medications	
Commencing, modifying, or ceasing Parenteral Nutrition requires PN team or Managing Consultant ir Lines and filters must be changed every 24 hours for lipid containing phases and every 48 hours for cle Select one infusion from each of the grey subheadings	
Vitamins	
<input checked="" type="checkbox"/>	Order
Lipids	
<input checked="" type="checkbox"/>	Order
Parenteral Nutrition	
<input checked="" type="checkbox"/>	Order
<input type="checkbox"/>	
<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Order

5. In the details screen for the modified bag you will notice the Infusion Instructions containing the contents is not complete. "Paste" the previously copied bag contents into this section over the top of the current content.

Base Solution	Bag Volume
Parenteral Nutrition Paediatric Modified IV Infusion	mL
Additive	Additive Dose
Total Bag Volume	mL

Weight:

Infusion instructions

Composition:  
Amino acid: 20 g  
Glucose: 100 g  
Sodium: 50 mmol  
Potassium: 30 mmol

6. Within the composition section, document the modifications to the bag. Use the + or - to show how the component has been modified and then have the total of the bag clearly documented in brackets. E.g (Potassium 30mmol + 30 mmol = (Total 60mmol).

Infusion instructions

Composition:  
Amino acid: 30 g  
Glucose: 200 g  
Sodium: 50 mmol  
Potassium: 30 mmol +30mmol (Total 60mmol potassium)

7. Navigate to the Details tab and in special instructions insert the name of the base solution and the component modified. E.g Modified TPN 20/100 with 7.5mL Trace Elements and additional potassium.



8. Input the bag volume (the bag volume is at the end of the description of the base product you are modifying i.e. 20/100 = 1000mL).
9. Input the calculated rate for the patient in mL/hr.
10. The Infuse Over duration will auto-populate based on the bag volume and rate.

Details for Parenteral Nutrition Paediatric Modified IV Infusion 1000 mL

Base Solution	Bag Volume	Rate	Infuse Over
Parenteral Nutrition Paediatric Modified IV Infusion 1000 mL		85 mL/hr	15.4 hour(s)
Additive	Additive Dose	Normalized Rate	Delivers
Total Bag Volume: 1000 mL			

11. If the patient is clinically stable and to continue this type of Parenteral Nutrition for a significant duration of time, the order can be changed to a true continuous order. In the order details screen the duration of 1 should be removed and Duration Unit changed to (none).

12. Ensure you cancel any order that are not required.

13. Right click on the parenteral nutrition order currently prescribed and "Cancel/Discontinue" the order.

14. Input the Discontinue reason from the dropdown menu then sign the order.

\*Discontinue reason: **No longer required**

Comments: **No longer required**

- Different dose/route
- Allergy/interaction
- Drug unavailable
- Other - enter comment

Alternatively, if you are copying a base composition from a bag that has not already been commenced, ensure you de-select the checkbox – as you do not want to place two orders.

