

Pharmacy Information System (PhIS) and Clinic Pharmacy System (CPS)

User Manual Parenteral Nutrition Order

Version	: 13th Edition
Document ID	: U. MANUAL_OM PN



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Reference ID : U. MANUAL_OM PN-13th E

Application reference: PhIS & CPS v2.6.1



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1.0 Introduction

1.1 Overview of PhIS

Pharmacy Information System or better known as PhIS, is a complete and comprehensive system that integrates pharmacy related services geared towards pharmacy excellence. PhIS implementation would transform most of current manual process to electronic system would benefit facility end user in the health care sector.

There are 12 modules to assist services delivery by the health care sector which comprises of:

1. Order Management
2. Inpatient Pharmacy
3. Outpatient Pharmacy
4. Medication Counselling
5. Ward Pharmacy
6. Pharmacy Inventory
7. Manufacturing of Cytotoxic Drug Reconstitution, Parenteral Nutrition, IV Admixture & Eye Drop , Radiopharmaceuticals and Extemporaneous
8. Adverse Drug Reaction & Drug Allergic (ADR & DAC)
9. Clinical Pharmacokinetics Services (TDM)
10. Drug Information & Consumer Education (DICE)
11. Medication Therapy Adherence Clinic (MTAC)
12. Data Mining (PhARM)

1.2 Purpose and Objectives

This user manual outlines the Parenteral Nutrition sub-module and its key features and functionalities. The primary objective is to help guide user through the process of completing PhIS application process.

User will understand the following activities in detail:

- Nutritional Assessment
- Parenteral Nutritional Order

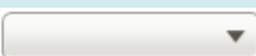
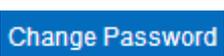
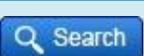
1.3 Organized Sections

These are the sections within this document:

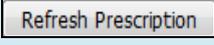
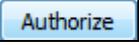
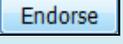
- Section 1 : Introduction
- Section 2 : Application Standard Features
- Section 3 : Parenteral Nutrition
- Section 4 : Acronyms
- Section 5 : Links to Clinical Modules

2.0 Application Standard Features

2.1 PhIS Legend

	Login to PhIS		Logout from PhIS
	Reset Login Screen		Expand Menu
	Display Home Tab		Expand Module
	Close All Open Tabs		Refresh Screen
	Add/Create New Record		Show Help
*	Mandatory Field		Calendar Icon
	Close Window		Radio Button
	Edit Record		Cancel
	Save		Add Item to the list
	Dropdown Box		Automatically Display/Retrieve Box
	Change Login Password		Delete Record
	Collapse Menu		Delete Item from the list
	Collapse Module		Empty Text Box
	Search Record		Search Icon
	Print	<input type="checkbox"/>	Checkbox

Parenteral Nutrition Order Module Legend

 Clear	Clear Prescription Information	 Refresh Prescription	Display Prescription
 Authorize	Authorisation Approval	 Nutritional Assessment	Nutritional Assessment
 Endorse	Endorsement Order	 Calorie Calculator	Calculate Patient's Calorie

Note

- To learn more about Login Information, kindly click [Login Information](#) module for descriptive steps.

3.0 Parenteral Nutrition Order

Overview

Parenteral nutrition (PN) is a vital therapeutic modality for neonates, children and adults for a number of indications used in a variety of settings. Appropriate use of this complex therapy maximizes clinical benefit while minimizing the potential risk for adverse events. The Safe Practices for PN addressed the standardization of practices surrounding PN to improve care and to limit medication errors.

User Group

This module is intended for doctor, specialist and pharmacist (subject to the user assigned by the facility)

Functional Diagram

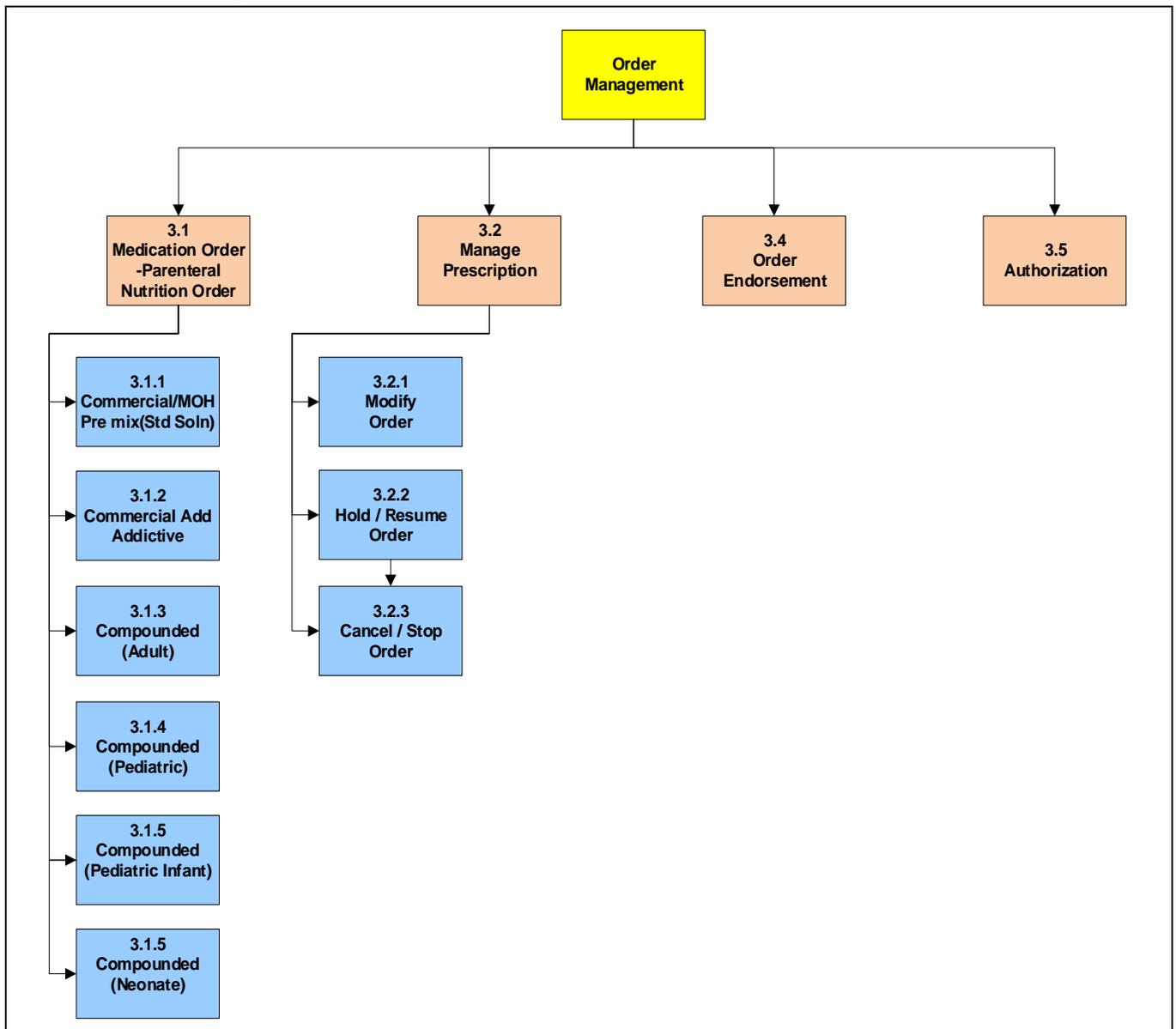


Figure 3.0-1



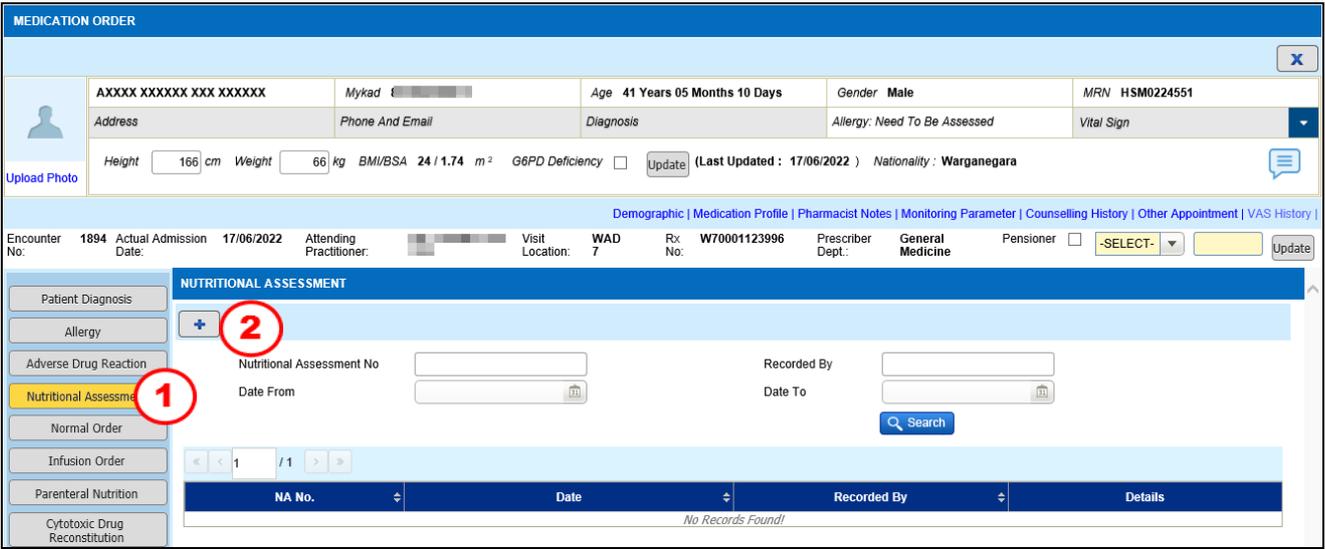
Functional Description

Parenteral Nutrition Order comprises of four (4) main functions:

- **Medication Order – Parenteral Nutrition Order**
To prescribe Parenteral Nutrition order
- **Manage Prescription**
To monitor patient's prescription by modifying order, stop order and tapering up/down.
- **Order Endorsement**
To endorse the intervention made by a Pharmacist
- **Authorization**
To approve list A/ A*/ A/KK drug that requires authorization

3.1 Nutritional Assessment

Nutritional Assessment allow user to record all nutritional assessment for new patient and existing patient.



The screenshot displays the 'MEDICATION ORDER' interface. At the top, there is a patient information section with fields for Mykad, Age (41 Years 05 Months 10 Days), Gender (Male), and MRN (HSM0224551). Below this is a demographic section with fields for Address, Phone And Email, Diagnosis, Allergy (Need To Be Assessed), and Vital Sign. A 'Nutritional Assessment' section is visible, containing fields for Nutritional Assessment No., Recorded By, Date From, and Date To. A search button is located below these fields. The sidebar on the left contains buttons for Patient Diagnosis, Allergy, Adverse Drug Reaction, Nutritional Assessment (highlighted with a red circle and '1'), Normal Order, Infusion Order, Parenteral Nutrition, and Cytotoxic Drug Reconstitution. A '+' button (highlighted with a red circle and '2') is located next to the Nutritional Assessment section. The bottom of the screen shows a table with columns for NA No., Date, Recorded By, and Details, and a message 'No Records Found!'.

Figure 3.1-1 PN Order

STEP 1

Click on the **Nutritional Assessment** button to do nutritional assessment for new patient or existing patient's

STEP 2

Click on the **+** button to do nutritional assessment for new patient

Note

Nutritional Assessment screen will be displayed as per Figure 3.1-2.

NUTRITIONAL ASSESSMENT																			
<p>NUTRITIONAL RISK SCREENING</p> <p>Initial Screening</p> <p>1. Is BMI < 20.5 ? <input type="radio"/> Yes <input type="radio"/> No</p> <p>2. Has the patient lost weight within the last 3 months ? <input type="radio"/> Yes <input type="radio"/> No</p> <p>3. Has the patient had a reduced dietary intake in the last week ? <input type="radio"/> Yes <input type="radio"/> No</p> <p>4. Is the patient severely ill ? (e.g. in intensive therapy) <input type="radio"/> Yes <input type="radio"/> No</p> <p>Yes: if the answer is "Yes" to any question, the final screening is performed. No: if the answer is "No" to any question, the patient is re-screened at weekly intervals. If the patient e.g. is scheduled for a major operation, a preventive nutritional care plan is considered to avoid the associated risk status.</p>																			
<p>FINAL SCREENING</p> <table border="1"> <tr> <td>Impaired nutritional status</td> <td>Mild Score</td> <td>Severity of disease</td> <td>Mild Score</td> </tr> <tr> <td>Score</td> <td>1</td> <td>Score</td> <td>1</td> </tr> <tr> <td colspan="2"> <p>Note:</p> <p>Absent: Normal nutritional status</p> <p>Mild: Wt loss > 5% in 3 mths or Food intake below 50-75% of normal requirement in preceding week</p> <p>Moderate: Wt loss > 5% in 2 mths or BMI 18.5-20.5 + impaired general condition or Food intake 25-50% of normal requirement in preceding week</p> <p>Severe: Wt loss 45% in 1 mth (> 15% in 3mths) or BMI < 18.5 + impaired general condition or Food intake 0-25% of normal requirement in preceding week</p> </td> <td colspan="2"> <p>Absent: Normal nutritional status</p> <p>Mild: Hip fracture* Chronic patients, in particular with acute complications: cirrhosis*, COPD*, Chronic hemodialysis, diabetes, oncology</p> <p>Moderate: Major abdominal surgery* Stroke* Severe pneumonia, hematologic malignancy</p> <p>Severe: Head injury* Bone marrow transplantation* Intensive care patients</p> </td> </tr> <tr> <td colspan="2">Total Score :</td> <td colspan="2">2</td> </tr> </table> <p><small>If Age is ≥ 70 years, total score above is inclusive +1 Score ≥ 3: the patient is nutritionally at-risk and a nutritional care plan is initiated Score < 3: weekly rescreening of the patient. If the patient e.g. is scheduled for a major operation, a preventive nutritional care plan is considered to avoid the associated risk status.</small></p>				Impaired nutritional status	Mild Score	Severity of disease	Mild Score	Score	1	Score	1	<p>Note:</p> <p>Absent: Normal nutritional status</p> <p>Mild: Wt loss > 5% in 3 mths or Food intake below 50-75% of normal requirement in preceding week</p> <p>Moderate: Wt loss > 5% in 2 mths or BMI 18.5-20.5 + impaired general condition or Food intake 25-50% of normal requirement in preceding week</p> <p>Severe: Wt loss 45% in 1 mth (> 15% in 3mths) or BMI < 18.5 + impaired general condition or Food intake 0-25% of normal requirement in preceding week</p>		<p>Absent: Normal nutritional status</p> <p>Mild: Hip fracture* Chronic patients, in particular with acute complications: cirrhosis*, COPD*, Chronic hemodialysis, diabetes, oncology</p> <p>Moderate: Major abdominal surgery* Stroke* Severe pneumonia, hematologic malignancy</p> <p>Severe: Head injury* Bone marrow transplantation* Intensive care patients</p>		Total Score :		2	
Impaired nutritional status	Mild Score	Severity of disease	Mild Score																
Score	1	Score	1																
<p>Note:</p> <p>Absent: Normal nutritional status</p> <p>Mild: Wt loss > 5% in 3 mths or Food intake below 50-75% of normal requirement in preceding week</p> <p>Moderate: Wt loss > 5% in 2 mths or BMI 18.5-20.5 + impaired general condition or Food intake 25-50% of normal requirement in preceding week</p> <p>Severe: Wt loss 45% in 1 mth (> 15% in 3mths) or BMI < 18.5 + impaired general condition or Food intake 0-25% of normal requirement in preceding week</p>		<p>Absent: Normal nutritional status</p> <p>Mild: Hip fracture* Chronic patients, in particular with acute complications: cirrhosis*, COPD*, Chronic hemodialysis, diabetes, oncology</p> <p>Moderate: Major abdominal surgery* Stroke* Severe pneumonia, hematologic malignancy</p> <p>Severe: Head injury* Bone marrow transplantation* Intensive care patients</p>																	
Total Score :		2																	
<p>SGA HISTORY (Subjective Global Assessment of Nutritional Status HISTORY)</p> <p>1. Weight change</p> <p>Overall in past 6 months: <input type="text"/> kg % loss: <input type="text"/></p> <p>Change in past 2 weeks: <input type="text"/></p> <p>2. Dietary intake change: <input type="radio"/> Yes <input type="radio"/> No</p> <p>3. Gastrointestinal symptoms(persisted>2 weeks)</p> <p><input type="checkbox"/> Nausea <input type="checkbox"/> Loss of Appetite</p> <p><input type="checkbox"/> Vomiting <input type="checkbox"/> Diarrhea</p> <p>4. Functional Capacity <input type="radio"/> No Dysfunction <input type="radio"/> Dysfunction</p>		<p>PHYSICAL EXAMINATION</p> <p>Specify for each sign: 0=normal 1=light 2=moderate 3=serious</p> <p><input type="checkbox"/> Loss of subcutaneous fat (triceps, chest)</p> <p><input type="checkbox"/> Loss of muscle mass (quadriceps, femoris, deltoids, loss of bulk and tone detectable by palpation)</p> <p><input type="checkbox"/> Ankle edema</p> <p><input type="checkbox"/> Sacral edema</p> <p><input type="checkbox"/> Ascites</p> <p>SGA score <input type="text"/></p> <p>Score Description: A - Well nourished B - Malnourished C - Severe malnourished</p>																	

Figure 3.1-2 Nutritional Assessment

Note

Nutritional Risk Screening Section

Answer all question by selecting "Yes" or "No" for initial screening.

Final Screening Section

- User have to select the **Impaired Nutritional Status** from the dropdown menu:
 - Absent
 - Mild Score
 - Moderate Score
 - Severe Score
- User have to select the **Severity of Disease** from the dropdown menu:
 - Absent
 - Mild Score
 - Moderate Score
 - Severe Score
- **Total Score** for final screening will automatically calculate and display by system.

SGA - Subjective Global Assessment of Nutritional Status (HISTORY) Section

Enter related field

MEDICATION ORDER

XXXXX XXXXXX XXX XXXXXX
Mykad [REDACTED]
Age 41 Years 05 Months 10 Days
Gender Male
MRN HSM0224551

Address
Phone And Email
Diagnosis
Allergy: Need To Be Assessed
Vital Sign

Height 166 cm Weight 66 kg BMI/BSA 24 / 1.74 m² G6PD Deficiency
Update (Last Updated : 17/06/2022)
Nationality : Warganegara

Demographic | Medication Profile | Pharmacist Notes | Monitoring Parameter | Counselling History | Other Appointment | VAS History |

Encounter No: 1894 Actual Admission Date: 17/06/2022 Attending Practitioner: [REDACTED] Visit Location: WAD 7 Rx No: W70001123996 Prescriber Dept.: General Medicine Pensioner
-SELECT- Update

NUTRITIONAL ASSESSMENT

Nutritional Assessment No

Date From

Recorded By

Date To

<< 1 / 1 >>
[1 - 1 / 1]

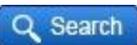
NA No.	Date	Recorded By	Details
NA23-02-0076	15/02/2023	DR. WONG KAH MING	NRS Total Score: 2, SGA Score: A - Well nourished

Figure 3.1-3 Nutritional Assessment Listing Page

Physical Examination Section

Enter related field

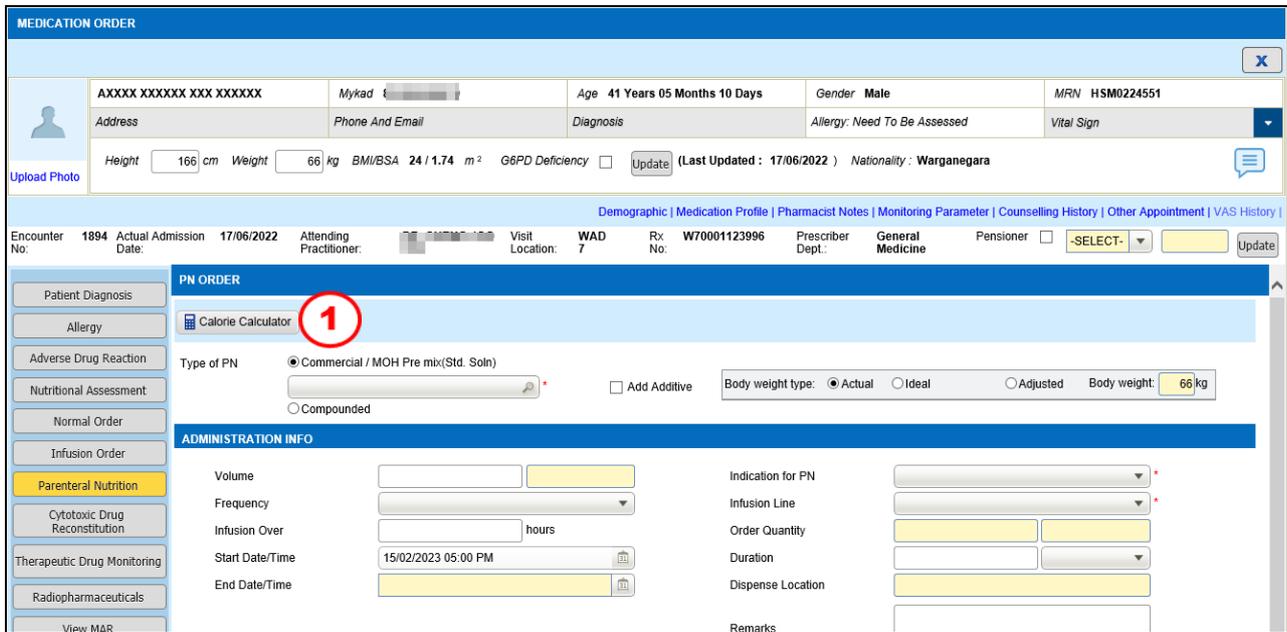
Note

- The  button to save record.
- The  button to close the screen.
- The Nutritional Assessment record will be displayed at Nutritional Assessment Listing Page as per Figure 3.1-3.
- To search for existing nutritional assessment record(s), you may search by criteria as follow:
 - a) Nutritional Assessment No
 - b) Date From
 - c) Date To
 - d) Recorded By
- The  button to search for nutritional assessment record(s).
- Nutritional assessment details will be displayed and user have to double click on the nutritional assessment record listing.

3.2 Parenteral Nutrition Order

3.2.1 Calorie Calculator

Calorie calculator allow user to calculate patient’s calorie requirement. This value will out as a guideline for user to order the required TPN order for patient.



The screenshot shows the 'MEDICATION ORDER' interface. At the top, there is a patient information section with fields for Mykad, Age (41 Years 05 Months 10 Days), Gender (Male), and MRN (HSM0224551). Below this is a 'PN ORDER' section where the 'Calorie Calculator' button is highlighted with a red circle containing the number '1'. The 'Type of PN' is set to 'Commercial / MOH Pre mix(Std. Soln)'. The 'Body weight type' is set to 'Actual' with a body weight of 66 kg. The 'ADMINISTRATION INFO' section includes fields for Volume, Frequency, Infusion Over, Start Date/Time (15/02/2023 05:00 PM), End Date/Time, Indication for PN, Infusion Line, Order Quantity, Duration, and Dispense Location.

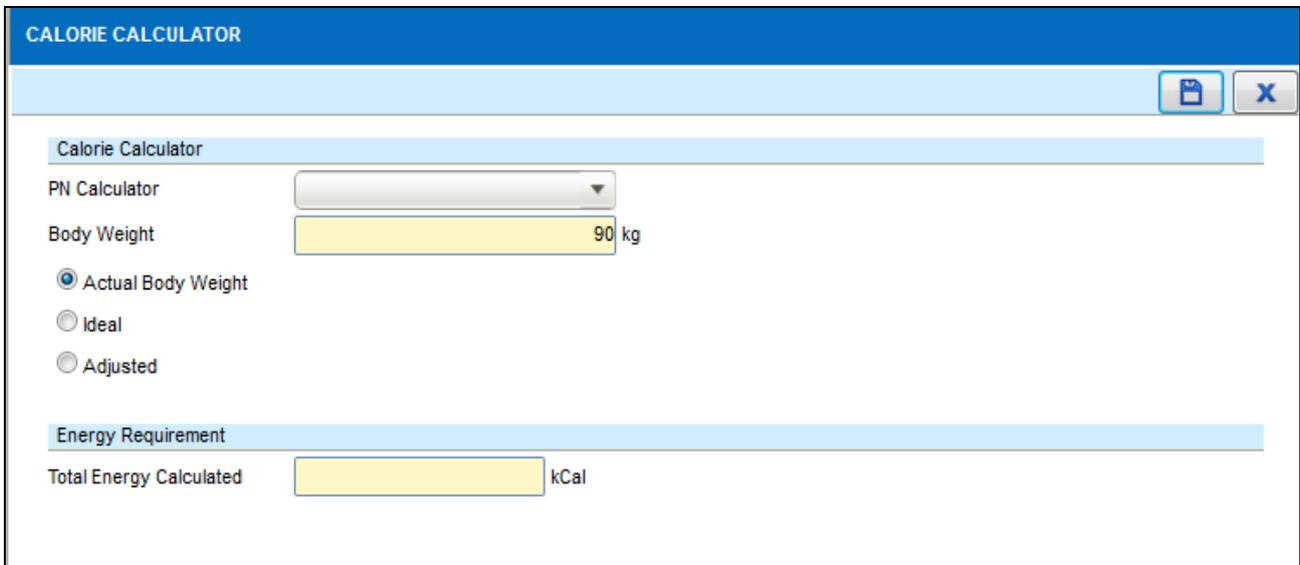
Figure 3.2.1-1 Calorie Calculator

STEP 1

Click on the  button to calculate patient calorie

Note

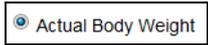
Calorie Calculator screen will be displayed as per Figure 3.2.1-2.



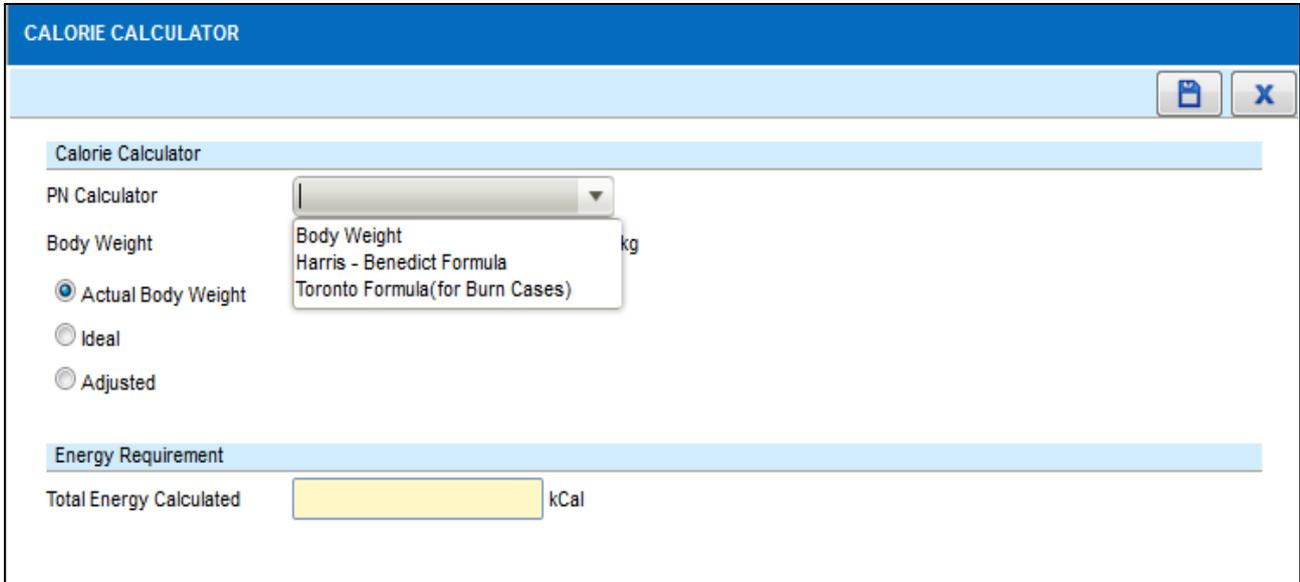
The screenshot shows the 'CALORIE CALCULATOR' screen. It features a 'PN Calculator' dropdown menu, a 'Body Weight' input field set to 90 kg, and three radio buttons for 'Actual Body Weight' (selected), 'Ideal', and 'Adjusted'. Below this is an 'Energy Requirement' section with a 'Total Energy Calculated' input field and a 'kCal' label.

Figure 3.2.1-2 Calorie Calculator

Note

- By default the **Body Weight** radio button will auto select the  of the patient.

- User have to select either one of the following **Body Weight** radio button:
 - Actual Body Weight
 - Ideal
 - Adjusted
- **Body Weight** value will automatically display base on the information from patient banner.

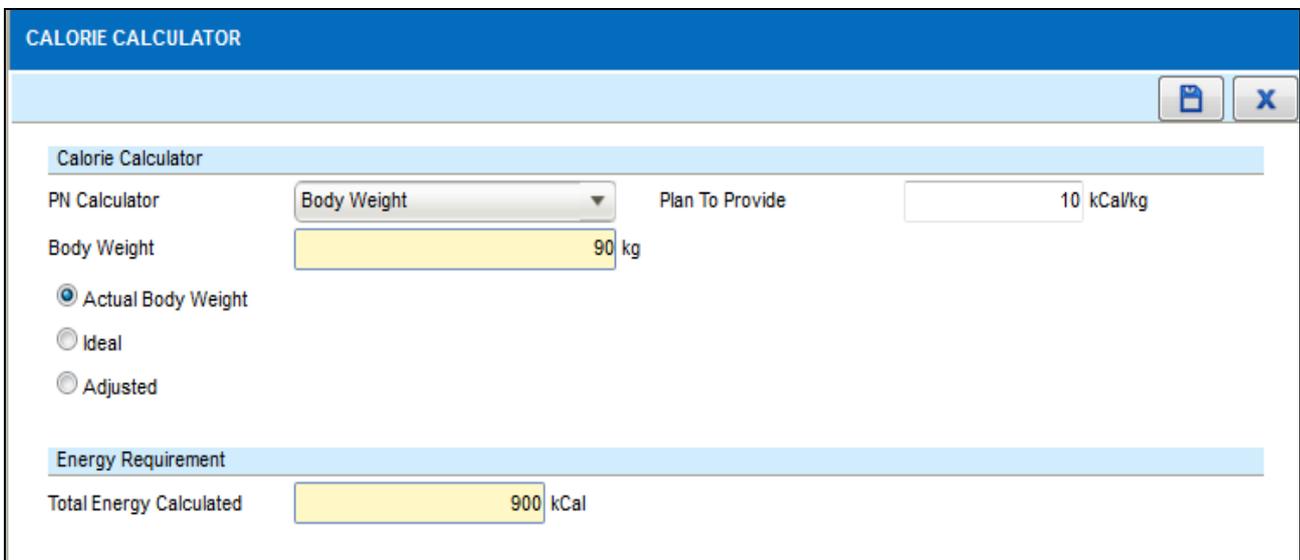


The screenshot shows a window titled "CALORIE CALCULATOR". It has a title bar with a save icon and a close icon. Below the title bar, there is a section labeled "Calorie Calculator". Underneath, there is a "PN Calculator" dropdown menu which is currently open, showing three options: "Body Weight", "Harris - Benedict Formula", and "Toronto Formula(for Burn Cases)". Below the dropdown, there are three radio buttons for "Body Weight": "Actual Body Weight" (which is selected), "Ideal", and "Adjusted". At the bottom, there is a section labeled "Energy Requirement" with a text box for "Total Energy Calculated" followed by "kCal".

Figure 3.2.1-3 Calorie Calculator

Note

- There are three type of **PN Calculator**:
 - Body Weight
 - Harris-Benedict Formula
 - Toronto Formula(for Burn Cases)



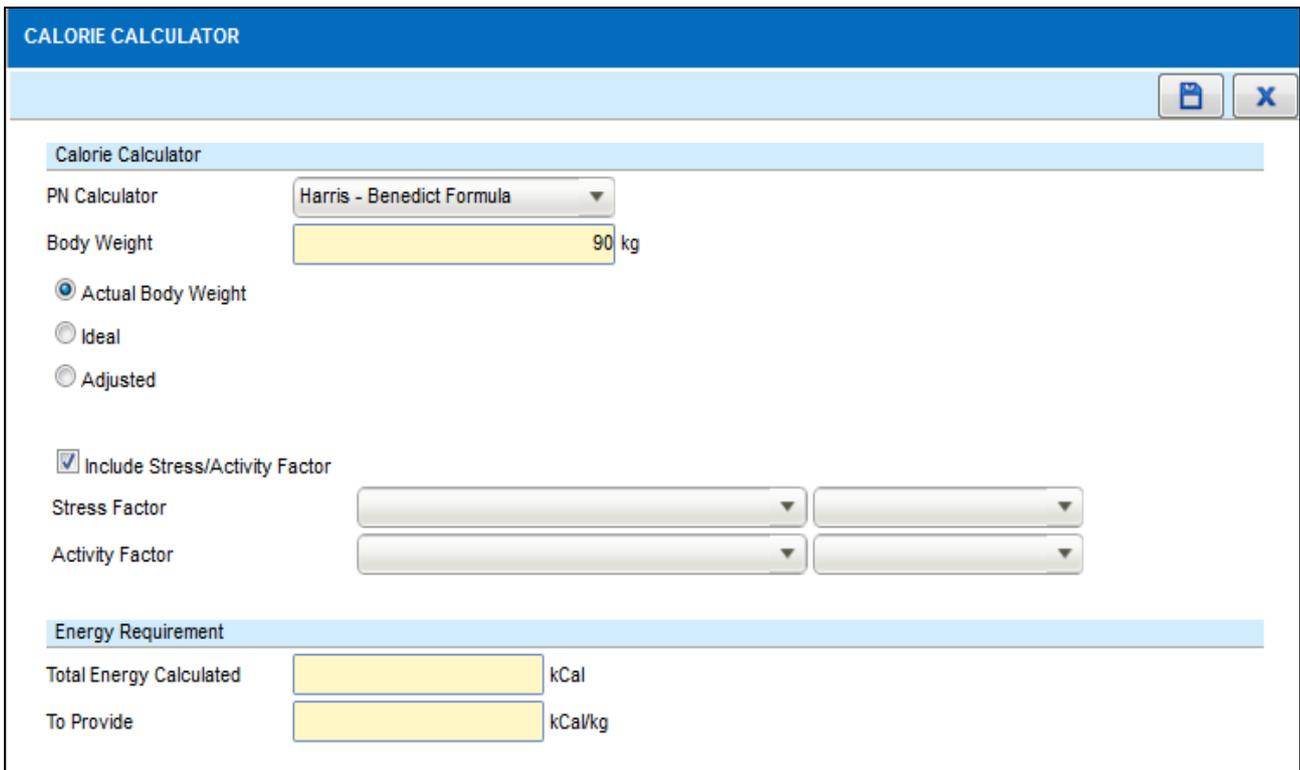
The screenshot shows the same "CALORIE CALCULATOR" window. The "PN Calculator" dropdown is now set to "Body Weight". To the right of the dropdown, there is a "Plan To Provide" field with the value "10 kCal/kg". The "Body Weight" field now displays "90 kg". The "Actual Body Weight" radio button remains selected. The "Total Energy Calculated" field now displays "900 kCal".

Figure 3.2.1-4 Calorie Calculator

Note

PN Calculator : Body Weight

- Select **Body Weight** from **PN Calculator** dropdown box.
- Enter the amount in **Plan To Provide** (kCal/kg).
- **Total Energy Calculated** will automatically calculate and display as per Figure 3.2.1-4.
- The  button to save record.
- The  button to close the screen.



CALORIE CALCULATOR

Calorie Calculator

PN Calculator Harris - Benedict Formula

Body Weight 90 kg

Actual Body Weight
 Ideal
 Adjusted

Include Stress/Activity Factor

Stress Factor

Activity Factor

Energy Requirement

Total Energy Calculated kCal

To Provide kCal/kg

Figure 3.2.1-5 Calorie Calculator

Note

PN Calculator : Harris-Benedict Formula

- Select **Harris – Benedict Formula** from **PN Calculator** dropdown box.
- Select the **Include Stress/Activity Factor** checkbox and **Stress Factor, Activity Factor** field will display after selected the **Include Stress/ Activity Factor** checkbox.

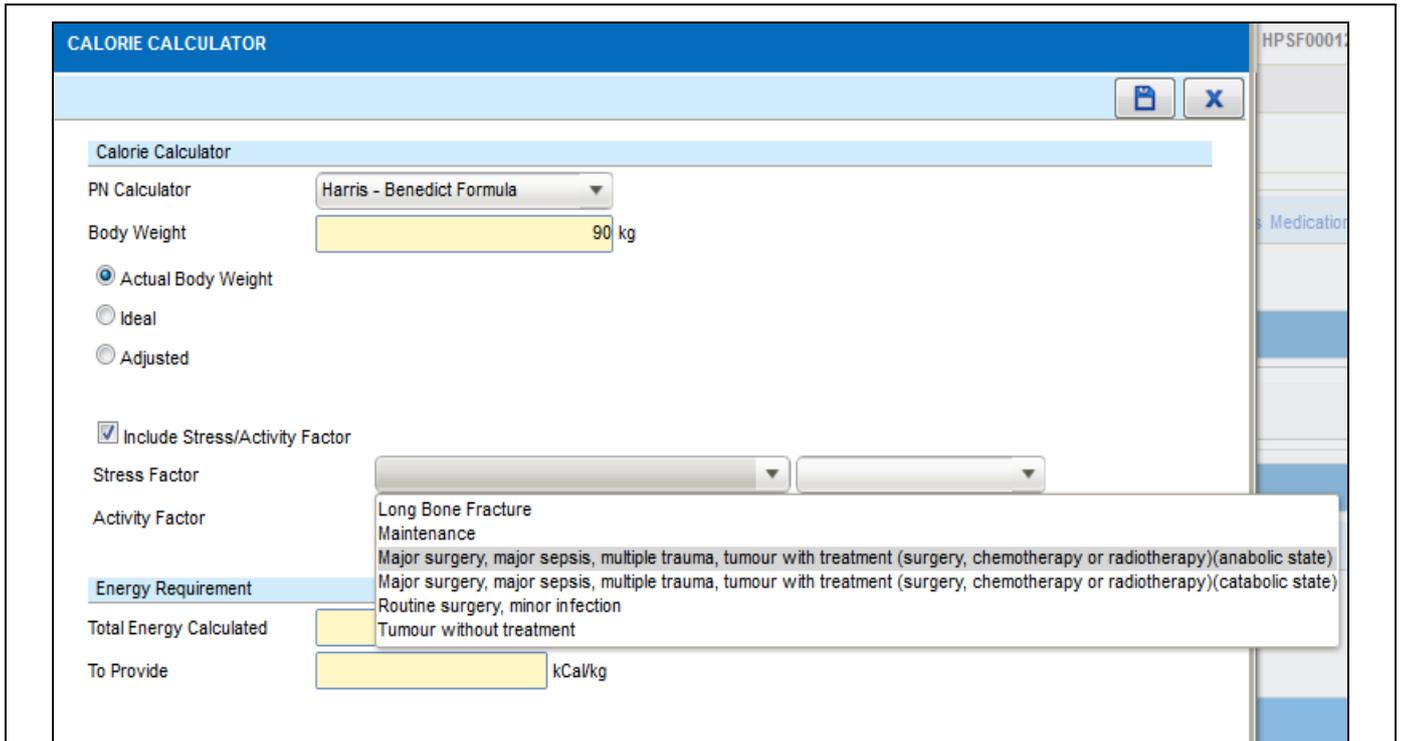
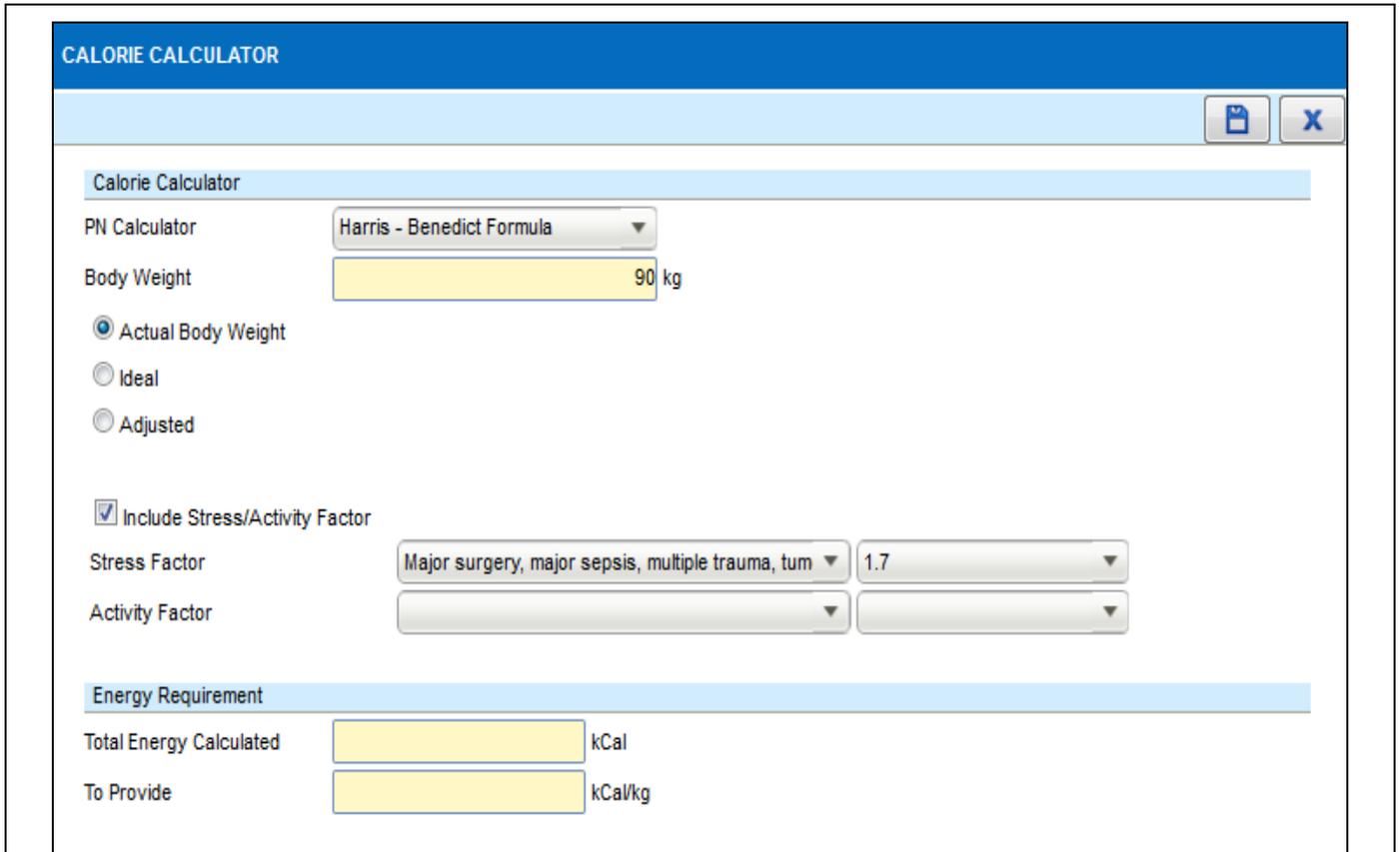


Figure 3.2.1-6 Calorie Calculator

Note

User have to select the type of **Stress Factor** from the dropdown box:

- Long Bone Fracture.
- Maintenance.
- Major surgery, major sepsis, multiple trauma, tumour with treatment (surgery, chemotherapy or radiotherapy)(anabolic state).
- Major surgery, major sepsis, multiple trauma, tumour with treatment (surgery, chemotherapy or radiotherapy)(catabolic state).
- Routine surgery, minor infection.
- Tumour without treatment.



CALORIE CALCULATOR

Calorie Calculator

PN Calculator: Harris - Benedict Formula

Body Weight: 90 kg

Actual Body Weight
 Ideal
 Adjusted

Include Stress/Activity Factor

Stress Factor: Major surgery, major sepsis, multiple trauma, tum 1.7

Activity Factor:

Energy Requirement

Total Energy Calculated: kCal

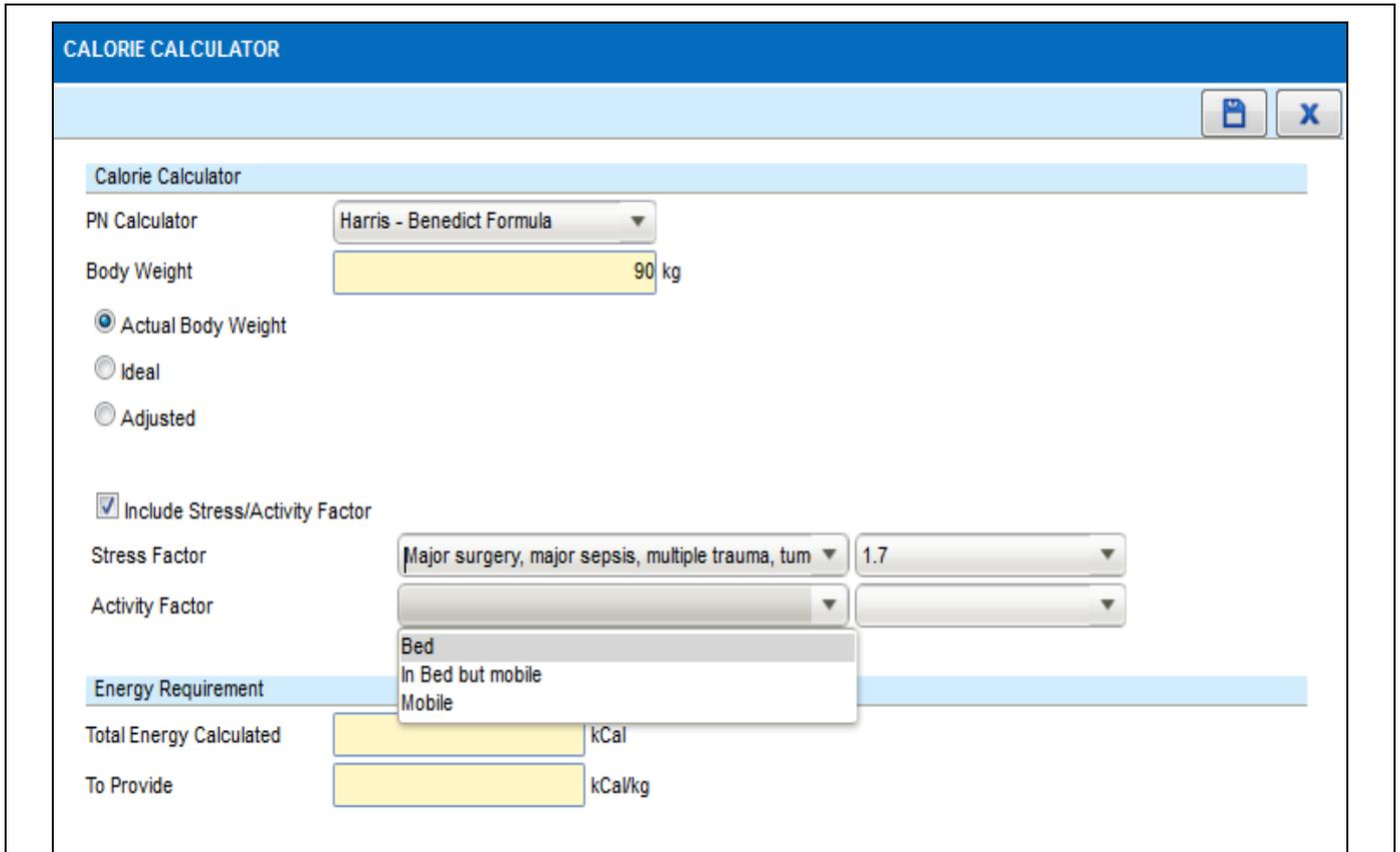
To Provide: kCal/kg

Figure 3.2.1-7 Calorie Calculator

Note

Value of the **Stress Factor** is to be selected from dropdown based on selected **Stress Factor**:

- Long Bone Fracture = 1.5
- Maintenance = 1.2 or 1.3
- Major surgery, major sepsis, multiple trauma, tumour with treatment (surgery, chemotherapy or radiotherapy)(anabolic state) = 1.7, 1.8, 1.9 or 2.0
- Major surgery, major sepsis, multiple trauma, tumour with treatment (surgery, chemotherapy or radiotherapy)(catabolic state) = 1.2
- Routine surgery, minor infection = 1.5
- Tumour without treatment = 1.5



CALORIE CALCULATOR

Calorie Calculator

PN Calculator: Harris - Benedict Formula

Body Weight: 90 kg

Actual Body Weight
 Ideal
 Adjusted

Include Stress/Activity Factor

Stress Factor: Major surgery, major sepsis, multiple trauma, tum | 1.7

Activity Factor: [Dropdown menu open showing: Bed, In Bed but mobile, Mobile]

Energy Requirement

Total Energy Calculated: [Field] kCal

To Provide: [Field] kCal/kg

Figure 3.2.1-8 Calorie Calculator

Note

From the dropdown box user have to select type of **Activity Factor** list which are:

- Bed
- In Bed but mobile
- Mobile

CALORIE CALCULATOR




Calorie Calculator

PN Calculator: Harris - Benedict Formula

Body Weight: 90 kg

Actual Body Weight
 Ideal
 Adjusted

Include Stress/Activity Factor

Stress Factor: Major surgery, major sepsis, multiple trauma, tum 1.7

Activity Factor: Bed 1.1

Energy Requirement

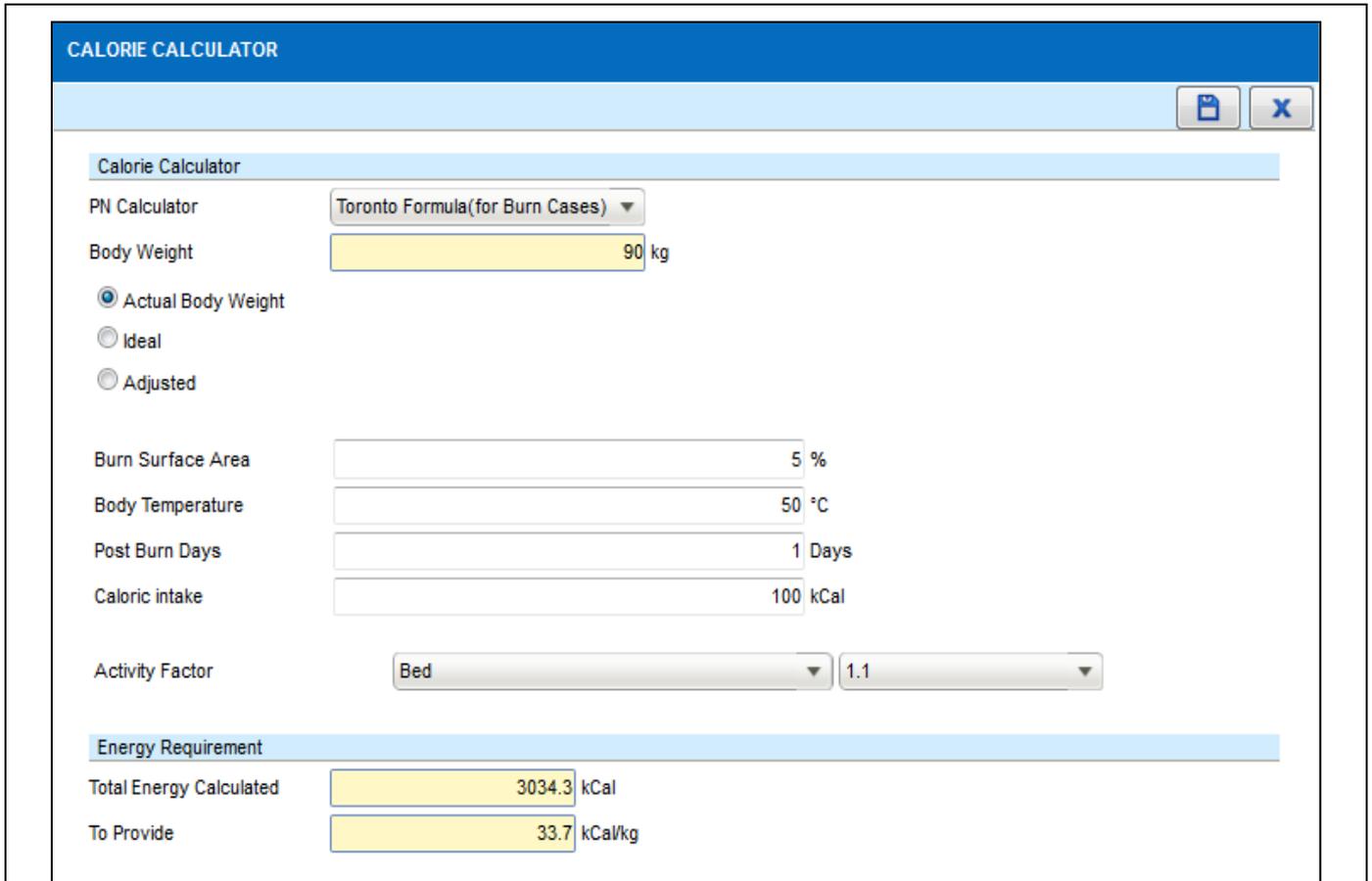
Total Energy Calculated: 2961.9 kCal

To Provide: 32.9 kCal/kg

Figure 3.2.1-9 Calorie Calculator

Note

- Value of the **Activity Factor** is auto populated based on selected **Activity Factor**:
 - Bed = 1.1
 - In Bed but mobile = 1.2
 - Mobile = 1.3
- Amount of **Total Energy Calculated** and **To Provide** will automatically calculate after selected the **Activity Factor** as per Figure 3.2.1-9.
- The  button to save record.
- The  button to close the screen.
- User still allow to save without select **Include Stress/Activity Factor** checkbox and Amount of **Total Energy Calculated** and **To Provide** also will automatically calculate if not select **Include Stress/Activity Factor** checkbox



CALORIE CALCULATOR

Calorie Calculator

PN Calculator: Toronto Formula(for Burn Cases) ▼

Body Weight: 90 kg

Actual Body Weight
 Ideal
 Adjusted

Burn Surface Area: 5 %
Body Temperature: 50 °C
Post Burn Days: 1 Days
Caloric intake: 100 kCal

Activity Factor: Bed ▼ 1.1 ▼

Energy Requirement

Total Energy Calculated: 3034.3 kCal
To Provide: 33.7 kCal/kg

Figure 3.2.1-10 Calorie Calculator

Note

PN Calculator : Toronto Formula

- Select **Toronto Formula (for Burn Cases)** from **PN Calculator** dropdown box.
- Enter all field below:
 - Burn Surface Area
 - Body Temperature
 - Post Burn Days
 - Calorie Intake
- User have to select type of **Activity Factor** from the dropdown box:
 - Bed
 - In Bed but mobile
 - Mobile
- Value of the **Activity Factor** will automatically calculate by system.
- **Total Energy Calculated** and **To Provide** will automatically calculate after selected the **Activity Factor** as per Figure 3.2.1-10.
- The  button to save record.
- The  button to close the screen.

3.2.2 Commercial/MOH Pre mix (Std. Soln)

Commercial / MOH Pre Mix (Std. Soln) allow user to order ready made product from manufacturer or facility.

Figure 3.2.2-1 PN Order

STEP 1

Select on the Commercial / MOH Pre mix(Std. Soln) radio button for **Type of PN**

STEP 2

Click on the button to search for product

Note

User allowed to choose **Body weight type: Actual/Ideal/Adjusted**

Drug Code	Drug Name	Details
PNA00012	Kabiven Central 1400kcal, 1.54L	Details
PNA00001	Nutriflex Lipid Peri 955kcal, 1.25L	Details
PNA00004	Nutriflex Lipid Plus 1265kcal, 1.25L	Details
PNA00017	Smof Kabiven Central 1600kcal, 1.5L	Details

Figure 3.2.2-2 PN Order

STEP 3

To search for existing product record(s), you may search by criteria as follow:

- Drug Code
- Drug Name

STEP 4

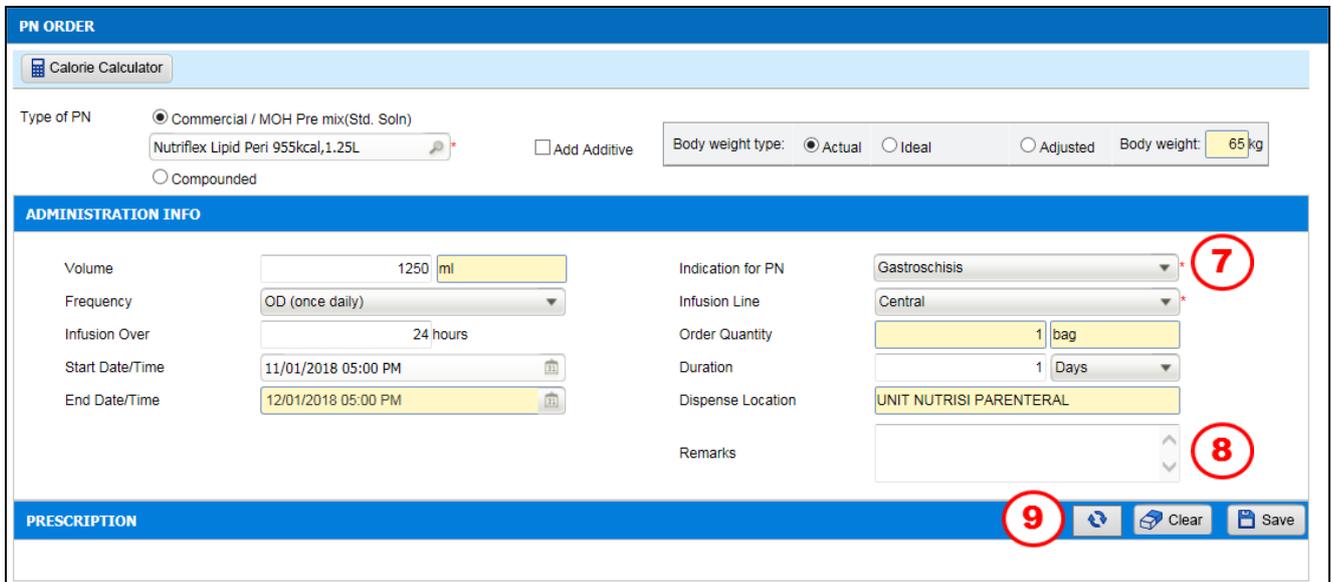
Click on the  button to search for the product

STEP 5

Click on the  button to view product ingredients and content

STEP 6

Select product that required for patient



The screenshot shows the 'PN ORDER' form. At the top, there is a 'Calorie Calculator' button. Below it, the 'Type of PN' section includes radio buttons for 'Commercial / MOH Pre mix(Std. Soln)' (selected) and 'Compounded', a dropdown menu for 'Nutriflex Lipid Peri 955kcal,1.25L', an 'Add Additive' checkbox, and 'Body weight type' radio buttons for 'Actual' (selected), 'Ideal', and 'Adjusted', with a 'Body weight' field set to '65 kg'. The 'ADMINISTRATION INFO' section contains fields for 'Volume' (1250 ml), 'Frequency' (OD (once daily)), 'Infusion Over' (24 hours), 'Start Date/Time' (11/01/2018 05:00 PM), 'End Date/Time' (12/01/2018 05:00 PM), 'Indication for PN' (Gastroschisis), 'Infusion Line' (Central), 'Order Quantity' (1 bag), 'Duration' (1 Days), and 'Dispense Location' (UNIT NUTRISI PARENTERAL). A 'Remarks' field is at the bottom. The 'PRESCRIPTION' section at the very bottom has a refresh button (circled 9), 'Clear', and 'Save' buttons. Red circles with numbers 7, 8, and 9 highlight the 'Indication for PN' dropdown, the 'Remarks' field, and the refresh button respectively.

Figure 3.2.2-3 PN Order

Note

- All information for **Volume, Frequency, Start Date/Time, End Date/Time, Order Quantity, Infusion Line, Duration, Infusion Over** and **Dispense Location** field will be automatically displayed and base on the information from PN Source Content and PN Constituents Reference Range.
- **Volume, Frequency, Infusion Line, Duration** and **Infusion Over** field still can be change by the user if applicable.
- **Start Date/Time** will be automatically default to current date and at 5.00pm but still can be change by the user if applicable.
- **End Date/Time** will display according to **Infusion Over**.
- **Dispense Location** will be automatically default by system based on order routing setting

STEP 7

Select Indication for PN from the dropdown box

STEP 8

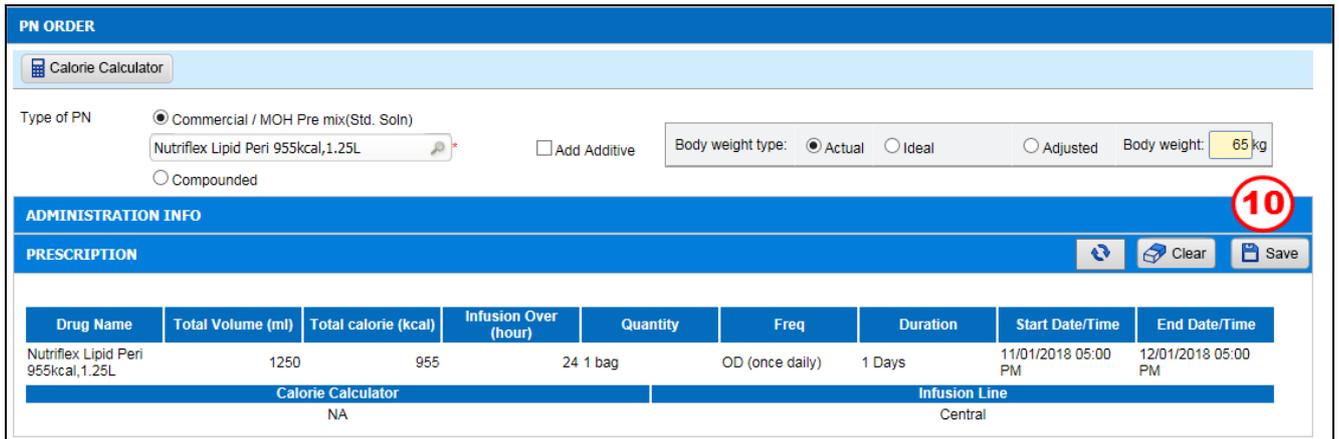
Enter **Remarks** if applicable

STEP 9

Click on the  button to add prescription details into prescription section.

Note

Prescription will be displayed as per Figure 3.2.2-4.



PN ORDER

Calorie Calculator

Type of PN: Commercial / MOH Pre mix(Std. Soln)
 Compounded

Nutriflex Lipid Peri 955kcal,1.25L Add Additive

Body weight type: Actual Ideal Adjusted Body weight: 65 kg

ADMINISTRATION INFO 10

PRESCRIPTION

Drug Name	Total Volume (ml)	Total calorie (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start Date/Time	End Date/Time
Nutriflex Lipid Peri 955kcal,1.25L	1250	955	24	1 bag	OD (once daily)	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM
Calorie Calculator				Infusion Line				
NA				Central				

Figure 3.2.2-4 PN Order

STEP 10

Click on the button to save prescription

Note

The button to clear all information of prescription order.

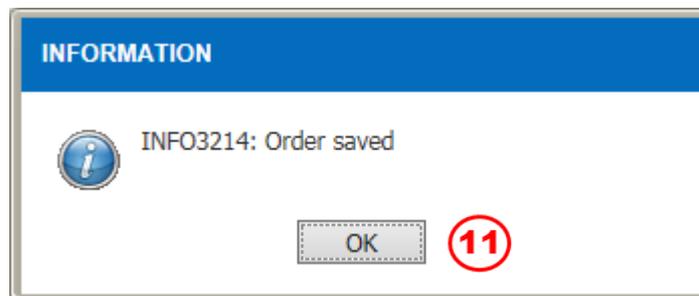


Figure 3.2.2-5 Information Alert

STEP 11

Click on the button to save order record

Note

After saving the record, button, button, button and button will be displayed as per Figure 3.1.3-6.

PN ORDER

Calorie Calculator

Type of PN: Commercial / MOH Pre mix(Std. Soln)
 Compounded

Nutriflex Lipid Peri 955kcal, 1.25L Add Additive

Body weight type: Actual Ideal Adjusted Body weight: 65 kg

ADMINISTRATION INFO 12

PRESCRIPTION

Drug Name	Total Volume (ml)	Total calorie (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start Date/Time	End Date/Time
Nutriflex Lipid Peri 955kcal, 1.25L	1250	955	24	1 bag	OD (once daily)	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM

Calorie Calculator: NA Infusion Line: Central

Figure 3.2.2-6 Medication Order

STEP 12

Click on the button to confirm prescription

Note

- The button to delete prescription.
- The button to print prescription.
- The button to edit information after saved record.

CONFIRMATION

 CONF3219: Are you sure want to confirm the order?

13

Figure 3.2.2-7 Confirmation Alert

STEP 13

Click on the button to confirm record order

PN ORDER

Calorie Calculator

Type of PN Commercial / MOH Pre mix(Std. Soln)
 Compounded

Nutriflex Lipid Peri 955kcal, 1.25L

Body weight type: Actual Ideal Adjusted Body weight:

ADMINISTRATION INFO

PRESCRIPTION

Drug Name	Total Volume (ml)	Total calorie (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start Date/Time	End Date/Time
Nutriflex Lipid Peri 955kcal,1.25L	1250	955	24	1 bag	OD (once daily)	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM
Calorie Calculator				Infusion Line				
NA				Central				

Figure 3.2.2-8 PN Order

Note

- Click on the button to view/print PN prescription as Figure 3.2.2-9
- Click on the button to order a new prescription

Ministry Of Health, Malaysia
Hospital Seri Manjung
PARENTERAL NUTRITION

Patient Name: AXXXX XXXXXX XXX XXXXXX **Patient ID:** [REDACTED]

Age: 41 Years 05 Months 10 Days **MRN:** HSM0224551

Gender: Male **Prescription :** W70001124235

Height / Weight / BSA: 168 cm/68 kg/1.76 m² **Order Date / Time :**

Room No / Bed: **Location:** WAD 7

Diagnosis: **Allergy:**

TPN Order: Kabiven Central 1400kcal, 1.54L **Order Quantity:** 1 bag

Start Date/Time: 15/02/2023 05:00 PM **End Date/Time:** 16/02/2023 05:00 PM

		Content / kg	Content / bag
Volume	(ml)	23.33	1540
Calorie	(kCal)	21.21	1400
Protein	(g)	0.77	51
Carbohydrate	(g)	2.27	150
Lipid	(g)	0.91	60
Sodium	(mmol)	0.73	48
Potassium	(mmol)	0.55	36
Calcium	(mmol)	0.05	3
Magnesium	(mmol)	0.09	6
Phosphate	(mmol)	0.23	15
Chloride	(mmol)	1.06	70
Acetate	(mmol)	0.89	58.5
Trace Element	(ml)	NA	NA
Combine Vitamin	(ml)	NA	NA
Water Soluble Vitamin	(ml)	NA	NA
Fat Soluble Vitamin	(ml)	NA	NA

Infusion Over: 24 hr **Infusion Rate:** 64.17 ml/hr

Prescriber: [REDACTED] **Frequency:** OD (once daily)

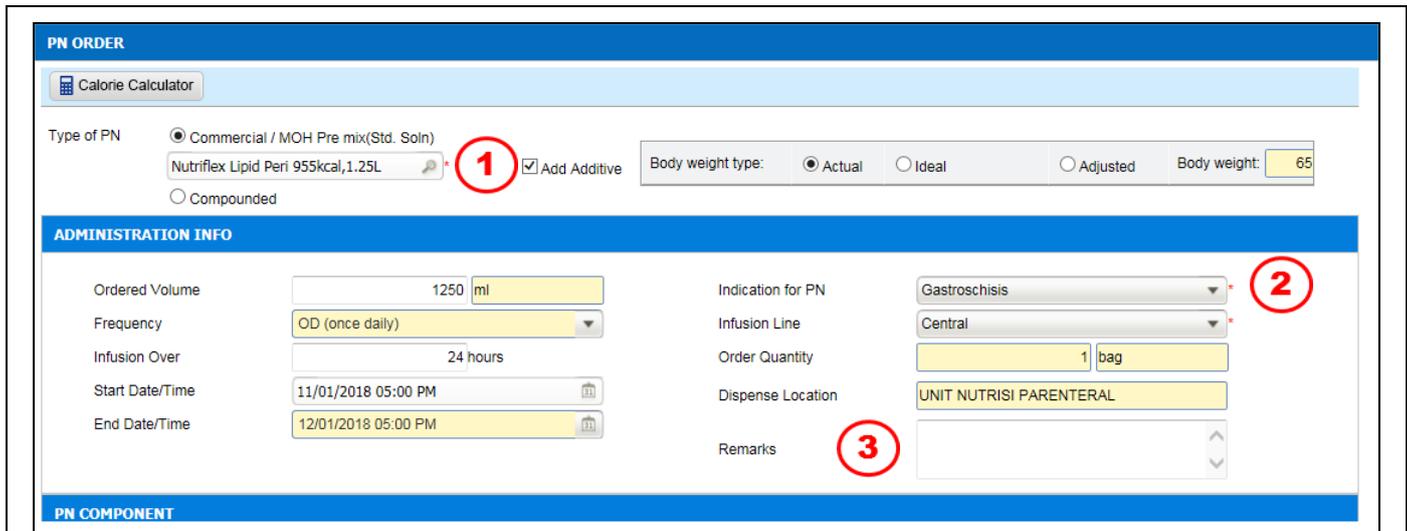
Designation: Pegawai Perubatan **Infusion Route:** Central

Department: Emergency Trauma Care **Remarks:**

Figure 3.2.2-9 PN Prescription

3.2.3 Commercial/MOH Pre mix (Std. Soln) Add Additive

Commercial / MOH Pre Mix (Std. Soln) allow user to order ready made product with additional PN component.



The screenshot shows the 'PN ORDER' form. At the top, there is a 'Calorie Calculator' button. Below it, the 'Type of PN' section is active, showing 'Commercial / MOH Pre mix(Std. Soln)' selected. A dropdown menu shows 'Nutriflex Lipid Peri 955kcal,1.25L'. A red circle '1' highlights the 'Add Additive' checkbox, which is checked. To the right, 'Body weight type' is set to 'Actual' and 'Body weight' is 65. The 'ADMINISTRATION INFO' section contains several fields: 'Ordered Volume' (1250 ml), 'Frequency' (OD (once daily)), 'Infusion Over' (24 hours), 'Start Date/Time' (11/01/2018 05:00 PM), 'End Date/Time' (12/01/2018 05:00 PM), 'Indication for PN' (Gastrostchisis), 'Infusion Line' (Central), 'Order Quantity' (1 bag), 'Dispense Location' (UNIT NUTRISI PARENTERAL), and 'Remarks' (empty). Red circles '2' and '3' highlight the 'Indication for PN' dropdown and the 'Remarks' field respectively. At the bottom, there is a 'PN COMPONENT' section.

Figure 3.2.3-1 PN Order

STEP 1

Select product and check on the **add additive** checkbox

Note

- All information for **Volume, Frequency, Start Date/Time, End Date/Time, Order Quantity, Infusion Line, Duration, Infusion Over** and **Dispense Location** field will be automatically displayed and base on the information from PN Source Content and PN Constituents Reference Range.
- **Volume, Frequency, Infusion Line, Duration** and **Infusion Order** field still can be change by the user if applicable.
- **Start Date/Time** and will be automatically default to current date and default time to 5.00pm but still can be change by the user if applicable.
- **End Date/Time** will display according based on infusion Over
- **Dispense Location** will be automatically default by system based on order routing settings
- User allowed to choose **Body weight type: Actual/Ideal/Adjusted**

STEP 2

Select Indication for PN from the dropdown box

STEP 3

Enter **Remarks** if applicable

PN ORDER

Type of PN Commercial / MOH Pre mix(Std. Soln)
 Add Additive Body weight type: Actual Ideal Adjusted Body weight:
 Compounded

ADMINISTRATION INFO

PN COMPONENT

Electrolytes	Initial Content	Additional Requirement	Total Per Day
Sodium(Natrium),Na+	<input type="text" value="50"/> mmol	<input type="text"/> mmol	<input type="text" value="50"/> mmol
Potassium(Kalium),K+	<input type="text" value="30"/> mmol	<input type="text"/> mmol	<input type="text" value="30"/> mmol
Calcium,Ca2+	<input type="text" value="3"/> mmol	<input type="text" value="3"/> mmol	<input type="text" value="6"/> mmol
Magnesium,Mg+	<input type="text" value="3"/> mmol	<input type="text" value="3"/> mmol	<input type="text" value="6"/> mmol
Phosphate,(PO4)2-	<input type="text" value="7.5"/> mmol	<input type="text"/> mmol	<input type="text" value="7.5"/> mmol
Acetate(CH3COO)	<input type="text" value="40"/> mmol	<input type="text"/> mmol	<input type="text" value="40"/> mmol
Trace elements	<input type="text" value="0"/> ml	<input type="text"/> ml	<input type="text" value="0"/> ml
L-Glutamin	<input type="text" value="0"/> ml	<input type="text"/> ml	<input type="text" value="0"/> ml

Vitamin
 Single Vitamin Combine Vitamin

PRESCRIPTION
5

Figure 3.2.3-2 PN Order

STEP 4

Enter value of **Electrolytes**, **Trace elements** and **L-Glutamin** that require for patient per day

Note

- User need to enter total electrolytes required for patient per day.
- All value must be more than per bag ordering.
- All value in all **Per Bag (Per Ordering)** field will automatically default by system.
- Select **Single Vitamin** radio button. **Water soluble** and **Fat soluble** field will automatically display as per Figure 3.2.3-3.
- Select **Combine Vitamin** radio button. **Water and Fat soluble** field will automatically display as per Figure 3.2.3-4.
- All value in all **Per Bag (Per Ordering)** field will automatically default by system.

Vitamin
 Single Vitamin Combine Vitamin

Water soluble	<input type="text" value="0"/> ml	<input type="text"/> ml	<input type="text" value="0"/> ml
Fat soluble	<input type="text" value="0"/> ml	<input type="text"/> ml	<input type="text" value="0"/> ml

Figure 3.2.3-3 PN Component

Vitamin
 Single Vitamin Combine Vitamin

Water and Fat Soluble	<input type="text" value="0"/> ml	<input type="text"/> ml	<input type="text" value="0"/> ml
-----------------------	-----------------------------------	-------------------------	-----------------------------------

Figure 3.2.3-4 PN Component

STEP 5

Click on the  button to add prescription details into prescription section

Note

Prescription will display as per Figure 3.2.3-5.

PN ORDER

Calorie Calculator

Type of PN Commercial / MOH Pre mix(Std. Soln)
 Compounded

Nutriflex Lipid Peri 955kcal,1.25L  * Add Additive

Body weight type: Actual Ideal Adjusted Body weight: 65

ADMINISTRATION INFO

PN COMPONENT

PRESCRIPTION   

Drug Name	Total Volume (ml)	Total calorie (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date
Nutriflex Lipid Peri 955kcal,1.25L With Additive	1250	955	24	1 bag	OD (once daily)	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM
Phosphate (mmol)	N/A	N/A	N/A	6	6	N/A	N/A	N/A
Sodium (mmol)	N/A	N/A	N/A	6	6	N/A	N/A	N/A
Potassium (mmol)	N/A	N/A	N/A	6	6	N/A	N/A	N/A
Calcium (mmol)	N/A	N/A	N/A	6	6	N/A	N/A	N/A
Magnesium (mmol)	N/A	N/A	N/A	6	6	N/A	N/A	N/A
Acetate (mmol)	N/A	N/A	N/A	6	6	N/A	N/A	N/A
Trace Element (ml)	N/A	N/A	N/A	6	6	N/A	N/A	N/A
Fat Soluble Vit. (ml)	N/A	N/A	N/A	6	6	N/A	N/A	N/A
Water Soluble Vit. (ml)	N/A	N/A	N/A	6	6	N/A	N/A	N/A
Combine Vitamin (ml)	N/A	N/A	N/A	6	6	N/A	N/A	20
L-Glutamin. (ml)	N/A		Calorie Calculator			Infusion Line		
	N/A		NA			Central		

Figure 3.2.3-5 PN Prescription

STEP 6

Click on the  button to save prescription

Note

The  button to clear all information of prescription order.

INFORMATION

 INFO3214: Order saved

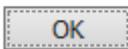
 7

Figure 3.2.3-6 Information Alert

STEP 7

Click on the  button to save order record

Note

After saving the record,  button,  button,  button and  button will be displayed as per Figure 3.2.3-7.

PN ORDER

Calorie Calculator

Type of PN Commercial / MOH Pre mix(Std. Soln)
 Compounded

Nutriflex Lipid Peri 955kcal,1.25L Add Additive

Body weight type: Actual Ideal Adjusted Body weight:

ADMINISTRATION INFO

PN COMPONENT

PRESCRIPTION

Confirm Order
Delete
Prescription
Modify

Drug Name	Total Volume (ml)	Total calorie (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date
Nutriflex Lipid Peri 955kcal,1.25L With Additive	1250	955	24	1 bag	OD (once daily)	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM

Phosphate (mmol)	Sodium (mmol)	Potassium (mmol)	Calcium (mmol)	Magnesium (mmol)	Acetate (mmol)	Trace Element (ml)	Fat Soluble Vit. (ml)	Water Soluble Vit. (ml)	Combine Vitamin (ml)
N/A	N/A	N/A	6	6	N/A	N/A	N/A	N/A	20

L-Glutamin. (ml)	Calorie Calculator	Infusion Line
N/A	NA	Central

Figure 3.2.3-7 Prescription

STEP 8

Click on the Confirm Order button to confirm prescription

Note

- The Delete button to delete prescription.
- The Prescription button to print prescription.
- The Modify button to edit information after saved record.

CONFIRMATION

?

CONF3219: Are you sure want to confirm the order?

Cancel
Yes
No

Figure 3.2.3-8 Confirmation Alert

STEP 9

Click on the Yes button to confirm record order

PN ORDER

Calorie Calculator

Type of PN Commercial / MOH Pre mix(Std. Soln)
 Compounded

Nutriflex Lipid Peri 955kcal,1.25L * Add Additive

Body weight type: Actual Ideal Adjusted Body weight:

ADMINISTRATION INFO

PN COMPONENT

PRESCRIPTION

Drug Name	Total Volume (ml)	Total calorie (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
Nutriflex Lipid Peri 955kcal,1.25L With Additive	1250	955		24 1 bag	OD (once daily)	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate (mmol)	Sodium (mmol)	Potassium (mmol)	Calcium (mmol)	Magnesium (mmol)	Acetate (mmol)	Trace Element (ml)	Fat Soluble Vit. (ml)	Water Soluble Vit. (ml)	Combine Vitamin (ml)
N/A	N/A	N/A	6	6	N/A	N/A	N/A	N/A	20
L-Glutamin. (ml)			Calorie Calculator			Infusion Line			
N/A			NA			Central			

Figure 3.2.3-9 PN Order

Note

- Click on the button to view/print PN prescription as Figure 3.2.3-10
- Click on the button to order a new prescription



Ministry Of Health, Malaysia
Hospital Pakar Sultanah Fatimah, Muar
PARENTERAL NUTRITION

Patient Name: SXXXXXXXXX XXX XXXXX XXXXX **Patient ID:** [REDACTED]

Age: 53 Years 01 Months 02 Days **MRN:** [REDACTED]

Gender: Male **Prescription :** 40001087882

Height / Weight / BSA: 160 cm/65 kg/1.73 m² **Order Date / Time :** 11/01/2018 12:55 PM

Room No / Bed: **Location:** WAD 4 (SURG - L)

Diagnosis: PREMED **Allergy:**

TPN Order: Nutriflex Lipid Peri 955kcal,1.25L With additive **Order Quantity:** 1 bag

Start Date/Time: 11/01/2018 05:00 PM **End Date/Time:** 12/01/2018 05:00 PM

	Additional Requirement	Content/bag	Content/kg
Volume (ml)	NA	1250	19.23
Calorie (kCal)	NA	955	14.69
Protein (g)	NA	40	0.62
Carbohydrate (g)	NA	80	1.23
Lipid (g)	NA	50	0.77
Sodium (mmol)	NA	50	0.77
Potassium (mmol)	NA	30	0.46
Calcium (mmol)	3	6	0.09
Magnesium (mmol)	3	6	0.09
Phosphate (mmol)	NA	7.5	0.12
Chloride (mmol)	NA	48	0.74
Acetate (mmol)	NA	40	0.62
Trace Element (ml)	NA	NA	NA
Combine Vitamin (ml)	20	20	0.31
Water Soluble Vitamin (ml)	NA	NA	NA
Fat Soluble Vitamin (ml)	NA	NA	NA
Glutamin (ml)	NA	NA	NA

Infusion Over: 24 hr **Infusion Rate:** 52.08 ml/hr

Prescriber: [REDACTED] **Frequency:** OD (once daily)

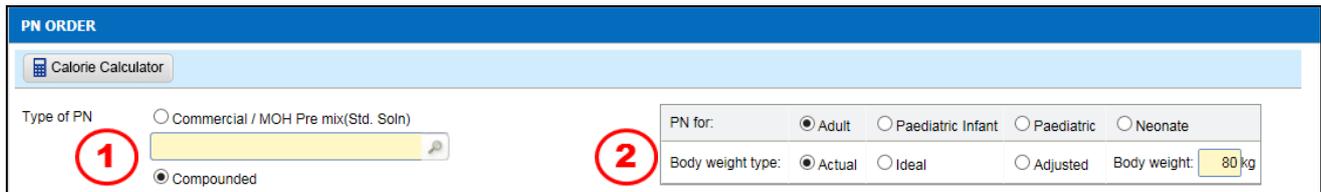
Designation: Pegawai Perubatan **Infusion Route:** Central

Department: Anaesthesia and Intensive Care **Remarks:**

Figure 3.2.3-10 PN Prescription

3.2.4 Compounded for Adult

PN Compounded allow user to order PN ready made product with customized patient requirement.



The screenshot shows the 'PN ORDER' interface. At the top left is a 'Calorie Calculator' button. Below it, the 'Type of PN' section has two radio buttons: 'Commercial / MOH Pre mix(Std. Soln)' and 'Compounded'. The 'Compounded' option is selected and highlighted with a red circle '1'. To the right, the 'PN for:' section has four radio buttons: 'Adult', 'Paediatric Infant', 'Paediatric', and 'Neonate'. The 'Adult' option is selected and highlighted with a red circle '2'. Below this, the 'Body weight type:' section has three radio buttons: 'Actual', 'Ideal', and 'Adjusted'. The 'Actual' option is selected. To the right of these radio buttons is a 'Body weight:' field with the value '80 kg'.

Figure 3.2.4-1 PN Order

STEP 1

Select on **Type of PN** as Compounded

Note

PN for: will be automatically based on the patient age;

- Adult : age from 13 years to 150 years
- Paediatric : age from 3 years to 12 years
- Paediatric-infant : 31 days to 2 years
- Neonate : from 1 day to 30 days

STEP 2

Select on the **Body Weight Type** radio button to use for calculation either as:

- Actual
- Ideal
- Adjusted

Note

By default **Body Weight Type** show the **Actual** body weight of the patient. Value for **Body Weight (kg)** will be change base on selected **Body Weight Type**.

PN COMPONENT							
By weight			Per day				
Use Fluid Calculator	<input checked="" type="checkbox"/>						
Total volume required	38.75 ml/kg			3100 ml			
Total oral feeding	0 ml/kg						
TPN Volume	38.75 ml/kg			3100 ml			
Energy required	48 kcal/kg			3840 kcal			
Macronutrient		Recommended range(per kg)			Energy(per day)		
Carbohydrate	3 g/kg	3.00 - 5.00 g/kg		240 g	960 kcal		
Lipid	1 g/kg	0.50 - 2.00 g/kg		80 g	720 kcal		
Protein	2 g/kg	0.50 - 2.00 g/kg		160 g	640 kcal		
L-Glutamin	2.5 ml/kg	1.50 - 2.50 ml/kg		200 ml	160 kcal		
Carbohydrate:Lipid (kcal)	57 : 43	Nitrogen Content	26 g	NPC:NRatio	70 : 1	Total	2480 kcal
Electrolytes							
Sodium (Natrium), Na+	1 mmol/kg	1.00 - 2.00 mmol/kg		80 mmol			
Potassium (Kalium), K+	1 mmol/kg	0.70 - 1.50 mmol/kg		80 mmol			
Calcium, Ca2+	0.1 mmol/kg	0.10 - 0.15 mmol/kg		8 mmol			
Magnesium, Mg+	0.1 mmol/kg	0.05 - 0.15 mmol/kg		8 mmol			
Phosphate, (PO4)2-	0.6 mmol/kg	0.50 - 0.70 mmol/kg		48 mmol			
Chloride, Cl+		1.30 - 2.00 mmol/kg		0 mmol			
Acetate, (CH3COO)		0.00 - 0.00 mmol/kg		0 mmol			
Trace elements		0.00 - 10.00 ml					
Vitamin							
<input checked="" type="radio"/> Single Vitamin	<input type="radio"/> Combine Vitamin						
Water soluble	0.09 ml/kg	0.00 - 10.00 ml		7 ml			
Fat soluble	0.06 ml/kg	0.00 - 10.00 ml		5 ml			

Figure 3.2.4-2 PN Component

STEP 3

Select **Use Fluid Calculator** check box

Note

By selecting **Use Fluid Calculator** check box, system will be auto calculate **Total volume required per day** based on the **Body Weight Type**

STEP 4

Enter value for **Total volume required per day** and **Total Oral Feeding per day**

Note

- TPN Volume on 'By Weight' (in ml/kg) will be auto calculate and TPN Volume on 'Per Day' (in ml) field editable.
- TPN Volume which is edited value (in ml) will impact to the final bag volume required which is same value will be displayed.
- If changing the value 'Total volume required' or 'Total Oral Feeding', edited 'TPN Volume' value will recalculate back based on existing calculation

STEP 5

Enter value for **Energy Required**

STEP 6

Enter value of the **Macronutrient** that applicable for the PN Component.

Note

- All entered value must between the **Recommended Range (per kg)**.
- All value **Per day** and **Energy(per day)** will automatically calculate and display.
- L-Gutamin is an optional component. Value of **By weight** and **Energy(per day)** will automatically display.
- Value of **Carbohydrate:Lipid(kcal)**, **Nitrogen Content** and **NPC:Ratio** will automatically calculate and display.

STEP 7

Enter value of the **Electrolytes** that applicable for the PN Component

Note

- All entered value must between the **Recommended Range (per kg)**.
- **Chloride ,Cl⁻** and **Acetate (CH₃COO)** is optional component.
- All value **Per day** will automatically calculate and display.
- Enter value of the **Trace elements Per day**. Value **By Weight** will be automatically calculated and displayed after enter the **Trace elements Per day** value.



Figure 3.2.4-3 PN Component



Figure 3.2.4-4 PN Component

Note

- Select either **Single Vitamin** or **Combine Vitamin** radio button.
- Vitamin have 2 types vitamin:
 - Single Vitamin
 - Combine Vitamin
- If user select **Single Vitamin** radio button; **Water soluble** and **Fat soluble** field will automatically display by system as per Figure 3.2.4-3.
- If user select **Combine Vitamin** radio button; **Water and Fat Soluble** field will automatically display by system as per Figure 3.2.4-4.

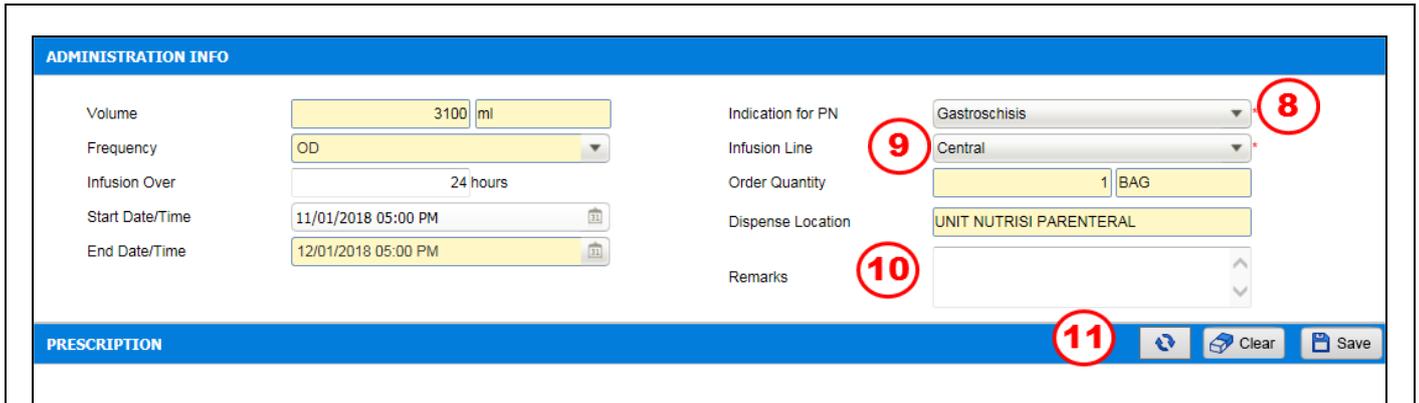


Figure 3.2.4-5 Administration Info

STEP 8

Enter **Indication for PN** by select from drop down box

STEP 9

Enter **Infusion Line** by select from drop down box

Note

- **Infusion Over** will be automatically default to 24 hours but user is allow to change at this field.
- **Volume** will be automatically displayed based on value of TPN Volume 'Per day'.
- **Order Quantity** will be automatically displayed by system and user is not allow to edit this field.
- **Start Date/Time** will be automatically default to current date and defaulted to 5.00pm but still can be change by the user if applicable.
- **End Date/Time** will be displayed according to *Infusion Over*
- **Dispense Location** will be automatically default by system based on order routing setting.

STEP 10

Enter **Remarks** if applicable

STEP 11

Click on the  button to add prescription details into prescription section

Note

Prescription will display as per Figure 3.2.4-6

PN ORDER

Calorie Calculator

Type of PN: Commercial / MOH Pre mix(Std. Soln) Compounded

PN for: Adult Paediatric Infant Paediatric Neonate

Body weight type: Actual Ideal Adjusted Body weight: 80 kg

PN COMPONENT

ADMINISTRATION INFO

PRESCRIPTION Clear Save

Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)	24	1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.4-6 PN Prescription

STEP 12

Click on the button to save prescription

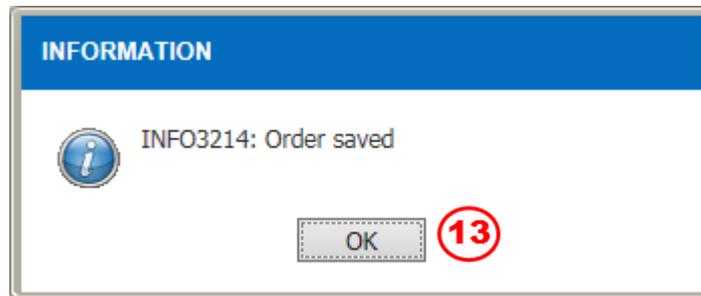


Figure 3.2.4-7 Information Alert Message

STEP 13

Click on the button to save order record

Note

After saving the record, button, button, button and button will be displayed as per Figure 3.2.4-8.

PN ORDER

Calorie Calculator

Type of PN: Commercial / MOH Pre mix (Std. Soln) Compounded

PN for: Adult Paediatric Infant Paediatric Neonate

Body weight type: Actual Ideal Adjusted Body weight: 80 kg

PN COMPONENT

ADMINISTRATION INFO 14

PRESCRIPTION Confirm Order Delete Prescription Modify

Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)	24	1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.4-8 PN Prescription

STEP 14

Click on the Confirm Order button to confirm prescription

Note

- The Delete button to delete prescription.
- The Prescription button to print prescription.
- The Modify button to edit information after saved record

CONFIRMATION

CONF3219: Are you sure want to confirm the order?

Cancel Yes No

15

Figure 3.2.4-9 Confirmation Alert Message

STEP 15

Click on the Yes button to confirm record order

PN ORDER

Calorie Calculator

Type of PN Commercial / MOH Pre mix(Std. Soln)
 Compounded

PN for: Adult Paediatric Infant Paediatric Neonate

Body weight type: Actual Ideal Adjusted Body weight: 80 kg

PN COMPONENT

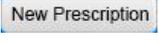
ADMINISTRATION INFO

PRESCRIPTION New Prescription Prescription

Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)		24 1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.4-10 PN Order

Note

- Click on the  button to view/print PN prescription as Figure 3.2.4-11
- Click on the  button to order a new prescription

Ministry Of Health, Malaysia
Hospital Pakar Sultanah Fatimah, Muar
PARENTERAL NUTRITION

Patient Name: MXXXXXXXX XXXXX XXX XXXXXX **Patient ID:** [REDACTED]

Age: 24 Years 09 Months 14 Days **MRN:** [REDACTED]

Gender: Male **Prescription :** W2L0001087884

Height / Weight / 169 cm/80 kg/1.97 m² **Order Date / Time** 11/01/2018 02:33 PM

Room No / Bed: **Location:** WAD 2 L (MED/SURG/ORTO)

Diagnosis: rheumatic fever **Allergy:**

TPN Order: PN Compounded Adult **Order** 1 bag

Start 11/01/2018 05:00 PM **End** 12/01/2018 05:00 PM

	Content / kg	Content / bag
Volume (ml)	38.75	3100
Calorie (kCal)	48	3840
Protein (g)	2	160
Carbohydrate (g)	3	240
Lipid (g)	1	80
Sodium (mmol)	1	80
Potassium (mmol)	1	80
Calcium (mmol)	0.1	8
Magnesium (mmol)	0.1	8
Phosphate (mmol)	0.6	48
Chloride (mmol)	NA	NA
Acetate (mmol)	NA	NA
Trace Element (ml)	NA	NA
Combine Vitamin (ml)	NA	NA
Water Soluble Vitamin (ml)	0.09	7
Fat Soluble Vitamin (ml)	0.06	5
L-Glutamin (ml)	2.5	200

Infusion Over: 24 hr **Frequency:** OD

Prescriber: [REDACTED] **Infusion Route:** Central

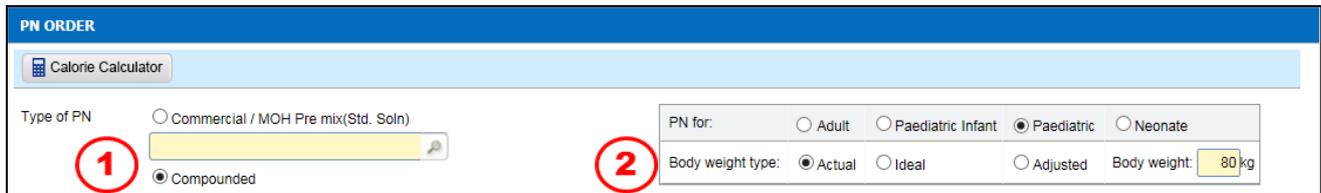
Designation: Pegawai Perubatan **Remarks:**

Department: General Medicine

Figure 3.2.4-11 PN Order Prescription

3.2.5 Compounded for Pediatric

PN Compounded allow user to order PN drug with certain information for patient between 3 years old to 12 years old.



The screenshot shows the 'PN ORDER' form. At the top left is a 'Calorie Calculator' button. Below it, the 'Type of PN' section has two radio buttons: 'Commercial / MOH Pre mix(Std. Soln)' and 'Compounded'. A red circle with the number '1' is around the 'Compounded' radio button. To the right, the 'PN for:' section has four radio buttons: 'Adult', 'Paediatric Infant', 'Paediatric', and 'Neonate'. A red circle with the number '2' is around the 'Paediatric' radio button. Below this, the 'Body weight type:' section has three radio buttons: 'Actual', 'Ideal', and 'Adjusted'. The 'Actual' radio button is selected. To the right of these is a 'Body weight:' field with the value '80 kg'.

Figure 3.2.5-1 PN Order

STEP 1

Select on **Type of PN** as Compounded

Note

PN for: will be automatically based on the patient age;

- Adult : age from 13 years to 150 years
- Paediatric : age from 3 years to 12 years
- Paediatric-infant : 31 days to 2 years
- Neonate : from 1 day to 30 days

STEP 2

Select on the **Body Weight Type** radio button to use for calculation either as:

- Actual
- Ideal
- Adjusted

Note

By default **Body Weight Type** show the **Actual** body weight of the patient. Value for **Body Weight (kg)** will be change base on selected **Body Weight Type**.

PN COMPONENT			
Use Fluid Calculator	<input checked="" type="checkbox"/>	By weight	Per day
Total volume required	100 ml		200 ml
Total oral feeding	0 ml		ml
TPN Volume	100 ml/kg		200 ml
Energy required	48 kcal/kg		96 kcal
Macronutrient		Recommended range(per kg)	Energy(per day)
Carbohydrate	3 g/kg	3.00 - 10.50 g/kg	6 g / 24 kcal
Lipid	1 g/kg	1.00 - 2.00 g/kg	2 g / 18 kcal
Protein	2 g/kg	1.00 - 3.00 g/kg	4 g / 16 kcal
L-Glutamin	ml/kg	0.00 - 0.00 ml/kg	0 ml / 0 kcal
Carbohydrate:Lipid(kcal)	57 : 43	Nitrogen Content	
		1 g	NPC:NRatio
			42 : 1
Electrolytes			Total
Sodium(Natrium),Na+	1 mmol/kg	1.00 - 3.00 mmol/kg	2 mmol / 58 kcal
Potassium(Kalium),K+	1 mmol/kg	1.00 - 3.00 mmol/kg	2 mmol
Calcium,Ca2+	1 mmol/kg	0.50 - 1.25 mmol/kg	2 mmol
Magnesium,Mg+	0.15 mmol/kg	0.15 - 0.25 mmol/kg	0.3 mmol
Phosphate,(PO4)2-	0.5 mmol/kg	0.50 - 1.00 mmol/kg	1 mmol
Chloride,Cl+	2 mmol/kg	2.00 - 5.00 mmol/kg	4 mmol
Acetate(CH3COO)	mmol/kg	0.00 - 0.00 mmol/kg	mmol
Trace elements	ml/kg	0.00 - 15.00 ml	ml
Vitamin			
<input type="radio"/> Single Vitamin			
<input checked="" type="radio"/> Combine Vitamin			
Water and Fat Soluble	ml/kg	0.00 - 0.00 ml	ml

Figure 3.2.5-2 PN Component

STEP 3

Select **Use Fluid Calculator** check box

Note

By selecting **Use Fluid Calculator** check box, system will be auto calculate **Total volume required per day** based on the **Body Weight Type**

STEP 4

Enter value for **Total volume required by weight** and **Total Oral Feeding per day**

Note

- TPN Volume on '**Per Day**' (in ml) will be auto calculate and TPN Volume on '**By Weight**' (in ml/kg) field editeble.
- TPN Volume whis is edited value (in ml) will impact to the final bag volume required which is same value will be displayed.
- If changing the value '**Total volume required**' or '**Total Oral Feeding**', edited '**TPN Volume**' value will recalculate back based on existing calculation

STEP 5

Enter value for **Energy Required**

STEP 6

Enter value of the **Macronutrient** that applicable for the PN Component.

Note

- All entered value must between the **Recommended Range (per kg)**.
- All value **Per day** and **Energy(per day)** will automatically calculate and display.
- L-Gutamin is an optional component. Value of **By weight** and **Energy(per day)** will automatically display.
- Value of **Carbohydrate:Lipid(kcal)**, **Nitrogen Content** and **NPC:Ratio** will automatically calculate and display.

STEP 7

Enter value of the **Electrolytes** that applicable for the PN Component

Note

- All entered value must between the **Recommended Range (per kg)**.
- **Chloride ,Cl⁻** and **Acetate (CH₃COO)** is optional component.
- All value **Per day** will automatically calculate and display.
- Enter value of the **Trace elements Per day**. Value **By Weight** will be automatically calculated and displayed after enter the **Trace elements Per day** value.

Vitamin			
<input checked="" type="radio"/> Single Vitamin	<input type="radio"/> Combine Vitamin		
Water soluble	<input type="text" value="0"/> ml	<input type="text" value=""/> ml	<input type="text" value="0"/> ml
Fat soluble	<input type="text" value="0"/> ml	<input type="text" value=""/> ml	<input type="text" value="0"/> ml

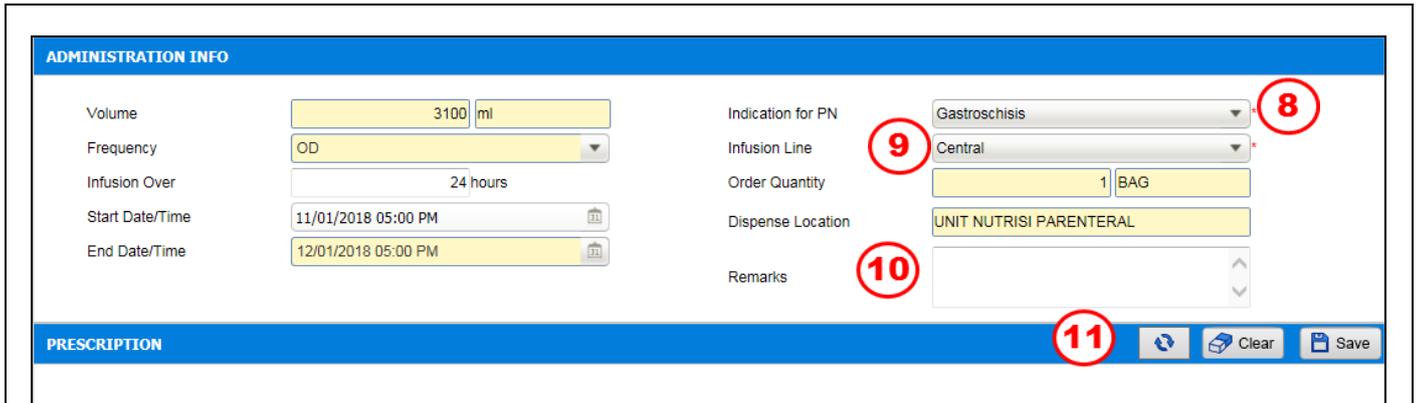
Figure 3.2.5-3 PN Component

Vitamin			
<input type="radio"/> Single Vitamin	<input checked="" type="radio"/> Combine Vitamin		
Water and Fat Soluble	<input type="text" value="0"/> ml	<input type="text" value=""/> ml	<input type="text" value="0"/> ml

Figure 3.2.5-4 PN Component

Note

- Select either **Single Vitamin** or **Combine Vitamin** radio button.
- Vitamin have 2 types vitamin:
 - Single Vitamin
 - Combine Vitamin
- If user select **Single Vitamin** radio button; **Water soluble** and **Fat soluble** field will automatically display by system as per Figure 3.2.5-3.
- If user select **Combine Vitamin** radio button; **Water and Fat Soluble** field will automatically display by system as per Figure 3.2.5-4.



ADMINISTRATION INFO

Volume	<input type="text" value="3100"/> ml	Indication for PN	<input type="text" value="Gastroschisis"/>
Frequency	<input type="text" value="OD"/>	Infusion Line	<input type="text" value="Central"/>
Infusion Over	<input type="text" value="24 hours"/>	Order Quantity	<input type="text" value="1"/> BAG
Start Date/Time	<input type="text" value="11/01/2018 05:00 PM"/>	Dispense Location	<input type="text" value="UNIT NUTRISI PARENTERAL"/>
End Date/Time	<input type="text" value="12/01/2018 05:00 PM"/>	Remarks	<input type="text"/>

PRESCRIPTION

Figure 3.2.5-5 Administration Info

STEP 8

Enter **Indication for PN** by select from drop down box

STEP 9

Enter **Infusion Line** by select from drop down box

Note

- **Infusion Over** will be automatically default to 24 hours but user is allow to change at this field.
- **Volume** will be automatically displayed based on value of TPN Volume 'Per day'.
- **Order Quantity** will be automatically displayed by system and user is not allow to edit this field.
- **Start Date/Time** will be automatically default to current date and defaulted to 5.00pm but still can be change by the user if applicable.
- **End Date/Time** will be displayed according to infusion over
- **Dispense Location** will be automatically default by system based on order routing setting.

STEP 10

Enter **Remarks** if applicable

STEP 11

Click on the  button to add prescription details into prescription section

PN ORDER

Calorie Calculator

Type of PN: Commercial / MOH Pre mxb(Std. Soln) Compounded

PN for: Adult Paediatric Infant Paediatric Neonate

Body weight type: Actual Ideal Adjusted Body weight: 80 kg

PN COMPONENT

ADMINISTRATION INFO

PRESCRIPTION Clear Save

Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)	24	1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.5-6 PN Prescription

STEP 12

Click on the button to save prescription

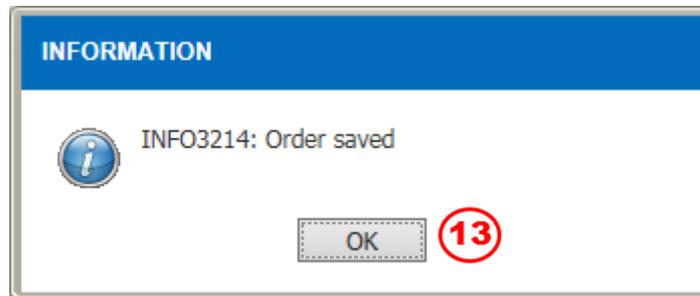


Figure 3.2.5-7 Information Alert Message

STEP 13

Click on the button to save order record

Note

After saving the record, button, button, button and button will be displayed as per Figure 3.2.5-8.

PN ORDER

Calorie Calculator

Type of PN Commercial / MOH Pre mix(Std. Soln) Compounded

PN for: Adult Paediatric Infant Paediatric Neonate

Body weight type: Actual Ideal Adjusted Body weight: 80 kg

PN COMPONENT

ADMINISTRATION INFO

PRESCRIPTION

Confirm Order Delete Prescription Modify

Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)	24	1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.5-8 PN Prescription

STEP 14

Click on the Confirm Order button to confirm prescription

Note

- The Delete button to delete prescription.
- The Prescription button to print prescription.
- The Modify button to edit information after saved record

CONFIRMATION



CONF3219: Are you sure want to confirm the order?

Cancel Yes No

Figure 3.2.5-9 Confirmation Alert Message

STEP 15

Click on the Yes button to confirm record order

PN ORDER

Calorie Calculator

Type of PN Commercial / MOH Pre mix(Std. Soln) Compounded

PN for: Adult Paediatric Infant Paediatric Neonate

Body weight type: Actual Ideal Adjusted Body weight: 80 kg

PN COMPONENT

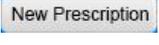
ADMINISTRATION INFO

PRESCRIPTION New Prescription Prescription

Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)		24 1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.5-10 PN Order

Note

- Click on the  button to view/print PN prescription as Figure 3.2.5-11
- Click on the  button to order a new prescription

Ministry Of Health, Malaysia
Hospital Pakar Sultanah Fatimah, Muar
PARENTERAL NUTRITION

Patient Name: [REDACTED] Patient ID: [REDACTED]
 Age: [REDACTED] MRN: HPSF00190582
 Gender: Male Prescription : W2L0001087884
 Height / Weight / : 169 cm/80 kg/1.97 m² Order Date / Time 11/01/2018 02:33 PM
 Room No / Bed: [REDACTED] Location: [REDACTED]
 Diagnosis: rheumatic fever Allergy: [REDACTED]

TPN Order: PN Compounded : Order 1 bag
 Start 11/01/2018 05:00 PM End 12/01/2018 05:00 PM

	Content / kg	Content / bag
Volume (ml)	38.75	3100
Calorie (kCal)	48	3840
Protein (g)	2	160
Carbohydrate (g)	3	240
Lipid (g)	1	80
Sodium (mmol)	1	80
Potassium (mmol)	1	80
Calcium (mmol)	0.1	8
Magnesium (mmol)	0.1	8
Phosphate (mmol)	0.6	48
Chloride (mmol)	NA	NA
Acetate (mmol)	NA	NA
Trace Element (ml)	NA	NA
Combine Vitamin (ml)	NA	NA
Water Soluble Vitamin (ml)	0.09	7
Fat Soluble Vitamin (ml)	0.06	5
L-Glutamin (ml)	2.5	200

Infusion Over: 24 hr Frequency: OD
 Prescriber: [REDACTED] Infusion Route: Central
 Designation: Pegawai Perubatan Remarks:
 Department: General Medicine

Figure 3.2.5-11 PN Order Prescription

3.2.6 Compounded for Pediatric Infant

PN Compounded allow user to order PN drug with certain information for patient between 31 days old to 2 years old.



The screenshot shows the 'PN ORDER' interface. At the top left is a 'Calorie Calculator' button. Below it, the 'Type of PN' section has two radio buttons: 'Commercial / MOH Pre mix(Std. Soln)' and 'Compounded'. A red circle with the number '1' is around the 'Compounded' radio button. To the right, the 'PN for:' section has four radio buttons: 'Adult', 'Paediatric Infant', 'Paediatric', and 'Neonate'. A red circle with the number '2' is around the 'Paediatric Infant' radio button. Below these are 'Body weight type:' radio buttons for 'Actual', 'Ideal', and 'Adjusted', and a 'Body weight:' input field with '80 kg'.

Figure 3.3.6-1 PN Order

STEP 1

Select on **Type of PN** as Compounded

Note

PN for: will be automatically based on the patient age;

- Adult : age from 13 years to 150 years
- Paediatric : age from 3 years to 12 years
- Paediatric-infant : 31 days to 2 years
- Neonate : from 1 day to 30 days

STEP 2

Select on the **Body Weight Type** radio button to use for calculation either as:

- Actual
- Ideal
- Adjusted

Note

By default **Body Weight Type** show the **Actual** body weight of the patient. Value for **Body Weight (kg)** will be change base on selected **Body Weight Type**.

PN COMPONENT					
	By weight		Per day		
Use Fluid Calculator	<input checked="" type="checkbox"/>				
Total volume required	100 ml/kg		260 ml		
Total oral feeding	0 ml/kg		ml		
TPN Volume	100 ml/kg		260 ml		
Energy required	56 kcal/kg		143 kcal		
Macronutrient		Recommended range(per kg)		Energy(per day)	
Carbohydrate	3 g/kg	8.00 - 18.00 g/kg	7.8 g	31.2 kcal	
Lipid	1 g/kg	0.50 - 3.00 g/kg	2.6 g	23.4 kcal	
Protein	2 g/kg	1.00 - 2.50 g/kg	5.2 g	20.8 kcal	
L-Glutamin	ml/kg	0.00 - 0.00 ml/kg	0 ml	0 kcal	
Carbohydrate:Lipid(kcal)	57 : 43	Nitrogen Content	1 g	NPC:NRatio	54 : 1
Electrolytes					
Sodium(Natrium),Na+	1 mmol/kg	2.00 - 6.00 mmol/kg	2.6 mmol		
Potassium(Kalium),K+	1 mmol/kg	1.00 - 3.00 mmol/kg	2.6 mmol		
Calcium,Ca2+	1 mmol/kg	0.50 - 1.25 mmol/kg	2.6 mmol		
Magnesium,Mg+	0.15 mmol/kg	0.15 - 0.25 mmol/kg	0.39 mmol		
Phosphate,(PO4)2-	0.5 mmol/kg	0.50 - 1.00 mmol/kg	1.3 mmol		
Chloride,Cl+	2 mmol/kg	2.00 - 5.00 mmol/kg	5.2 mmol		
Acetate(CH3COO)	mmol/kg	0.00 - 0.00 mmol/kg	mmol		
Trace elements					
Vitamin					
<input type="radio"/> Single Vitamin					
<input checked="" type="radio"/> Combine Vitamin					
Water and Fat Soluble	ml/kg	0.00 - 0.00 ml	ml		

Figure 3.2.6-2 PN Component

STEP 3

Select **Use Fluid Calculator** check box

Note

By selecting **Use Fluid Calculator** check box, system will be auto calculate **Total volume required per day** based on the **Body Weight Type**

STEP 4

Enter value for **Total volume required by weight** and **Total Oral Feeding per day**

Note

- TPN Volume on '**Per Day**' (in ml) will be auto calculate and TPN Volume on '**By Weight**' (in ml/kg) field editeble.
- TPN Volume whis is edited value (in ml) will impact to the final bag volume required which is same value will be displayed.
- If changing the value '**Total volume required**' or '**Total Oral Feeding**', edited '**TPN Volume**' value will recalculate back based on existing calculation

STEP 5

Enter value for **Energy Required**

STEP 6

Enter value of the **Macronutrient** that applicable for the PN Component.

Note

- All entered value must between the **Recommended Range (per kg)**.
- All value **Per day** and **Energy(per day)** will automatically calculate and display.
- L-Gutamin is an optional component. Value of **By weight** and **Energy(per day)** will automatically display.
- Value of **Carbohydrate:Lipid(kcal)**, **Nitrogen Content** and **NPC:Ratio** will automatically calculate and display.

STEP 7

Enter value of the **Electrolytes** that applicable for the PN Component

Note

- All entered value must between the **Recommended Range (per kg)**.
- **Chloride ,Cl⁻** and **Acetate (CH₃COO)** is optional component.
- All value **Per day** will automatically calculate and display.
- Enter value of the **Trace elements Per day**. Value **By Weight** will be automatically calculated and displayed after enter the **Trace elements Per day** value.

Vitamin			
<input checked="" type="radio"/> Single Vitamin	<input type="radio"/> Combine Vitamin		
Water soluble	<input type="text" value="0"/> ml	<input type="text" value=""/> ml	<input type="text" value="0"/> ml
Fat soluble	<input type="text" value="0"/> ml	<input type="text" value=""/> ml	<input type="text" value="0"/> ml

Figure 3.2.6-3 PN Component

Vitamin			
<input type="radio"/> Single Vitamin	<input checked="" type="radio"/> Combine Vitamin		
Water and Fat Soluble	<input type="text" value="0"/> ml	<input type="text" value=""/> ml	<input type="text" value="0"/> ml

Figure 3.2.6-4 PN Component

Note

- Select either **Single Vitamin** or **Combine Vitamin** radio button.
- Vitamin have 2 types vitamin:
 - Single Vitamin
 - Combine Vitamin
- If user select **Single Vitamin** radio button; **Water soluble** and **Fat soluble** field will automatically display by system as per Figure 3.2.6-3.
- If user select **Combine Vitamin** radio button; **Water and Fat Soluble** field will automatically display by system as per Figure 3.2.6-4.

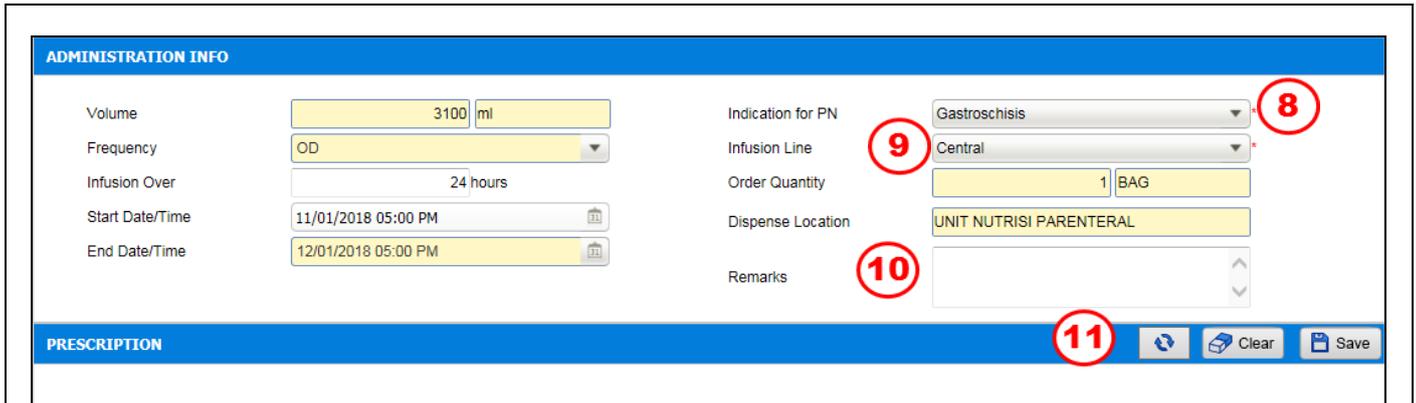


Figure 3.2.6-5 Administration Info

STEP 8

Enter **Indication for PN** by select from drop down box

STEP 9

Enter **Infusion Line** by select from drop down box

Note

- **Infusion Over** will be automatically default to 24 hours but user is allow to change at this field.
- **Volume** will be automatically displayed based on value of TPN Volume 'Per day'.
- **Order Quantity** will be automatically displayed by system and user is not allow to edit this field.
- **Start Date/Time** will be automatically default to current date and defaulted to 5.00pm but still can be change by the user if applicable.
- **End Date/Time** will be displayed according to infusion over
- **Dispense Location** will be automatically default by system based on order routing setting.

STEP 10

Enter **Remarks** if applicable

STEP 11

Click on the  button to add prescription details into prescription section

PN COMPONENT									
ADMINISTRATION INFO									
PRESCRIPTION									
Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)	24	1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.6-6 PN Prescription

STEP 12

Click on the button to save prescription

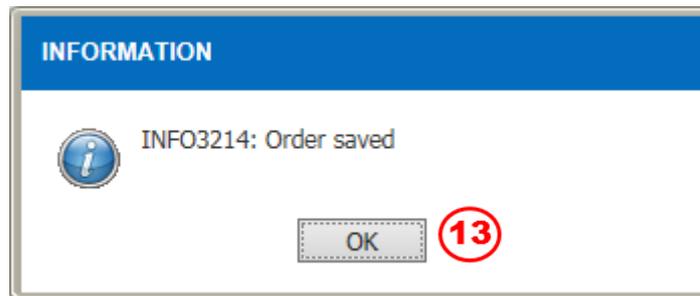


Figure 3.2.6-7 Information Alert Message

STEP 13

Click on the button to save order record

Note

After saving the record, button, button, button and button will be displayed as per Figure 3.2.6-8.

PN COMPONENT									
ADMINISTRATION INFO									
PRESCRIPTION									
Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)	24	1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.6-8 PN Prescription

STEP 14

Click on the button to confirm prescription

Note

- The button to delete prescription.

- The  button to print prescription.
- The  button to edit information after saved record

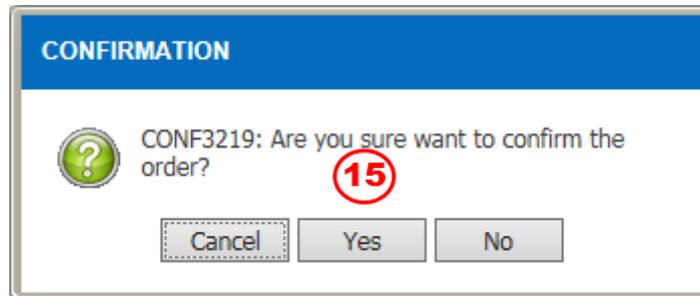
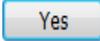


Figure 3.2.6-9 Confirmation Alert Message

STEP 15

Click on the  button to confirm record order

PN ORDER



Type of PN Commercial / MOH Pre mix(Std. Soln) Compounded

PN for: Adult Paediatric Infant Paediatric Neonate

Body weight type: Actual Ideal Adjusted Body weight: kg

PN COMPONENT

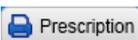
ADMINISTRATION INFO

PRESCRIPTION   

Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)	24	1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.6-10 PN Order

Note

- Click on the  button to view/print PN prescription as Figure 3.2.6-11
- Click on the  button to order a new prescription

Ministry Of Health, Malaysia
Hospital Pakar Sultanah Fatimah, Muar
PARENTERAL NUTRITION

Patient Name: [REDACTED] Patient ID: [REDACTED]
 Age: [REDACTED] MRN: HPSF00190582
 Gender: Male Prescription : W2L0001087884
 Height / Weight / : 169 cm/80 kg/1.97 m² Order Date / Time 11/01/2018 02:33 PM
 Room No / Bed: [REDACTED] Location: [REDACTED]
 Diagnosis: rheumatic fever Allergy: [REDACTED]

TPN Order: PN Compounded : Order 1 bag
 Start 11/01/2018 05:00 PM End 12/01/2018 05:00 PM

		Content / kg	Content / bag
Volume	(ml)	38.75	3100
Calorie	(kCal)	48	3840
Protein	(g)	2	160
Carbohydrate	(g)	3	240
Lipid	(g)	1	80
Sodium	(mmol)	1	80
Potassium	(mmol)	1	80
Calcium	(mmol)	0.1	8
Magnesium	(mmol)	0.1	8
Phosphate	(mmol)	0.6	48
Chloride	(mmol)	NA	NA
Acetate	(mmol)	NA	NA
Trace Element	(ml)	NA	NA
Combine Vitamin	(ml)	NA	NA
Water Soluble Vitamin	(ml)	0.09	7
Fat Soluble Vitamin	(ml)	0.06	5
L-Glutamin	(ml)	2.5	200

Infusion Over: 24 hr Frequency: OD
 Prescriber: [REDACTED] Infusion Route: Central
 Designation: Pegawai Perubatan Remarks:
 Department: General Medicine

Figure 3.2.6-11 PN Order Prescription

3.2.7 Compounded for Neonate

Compounded (Neonate) allow user to add ingredients under PN component based on patient nutrition level for patient 1 day old to 30 days old.



Figure 3.2.7-1 PN Order

STEP 1

Select on **Type of PN** as Compounded

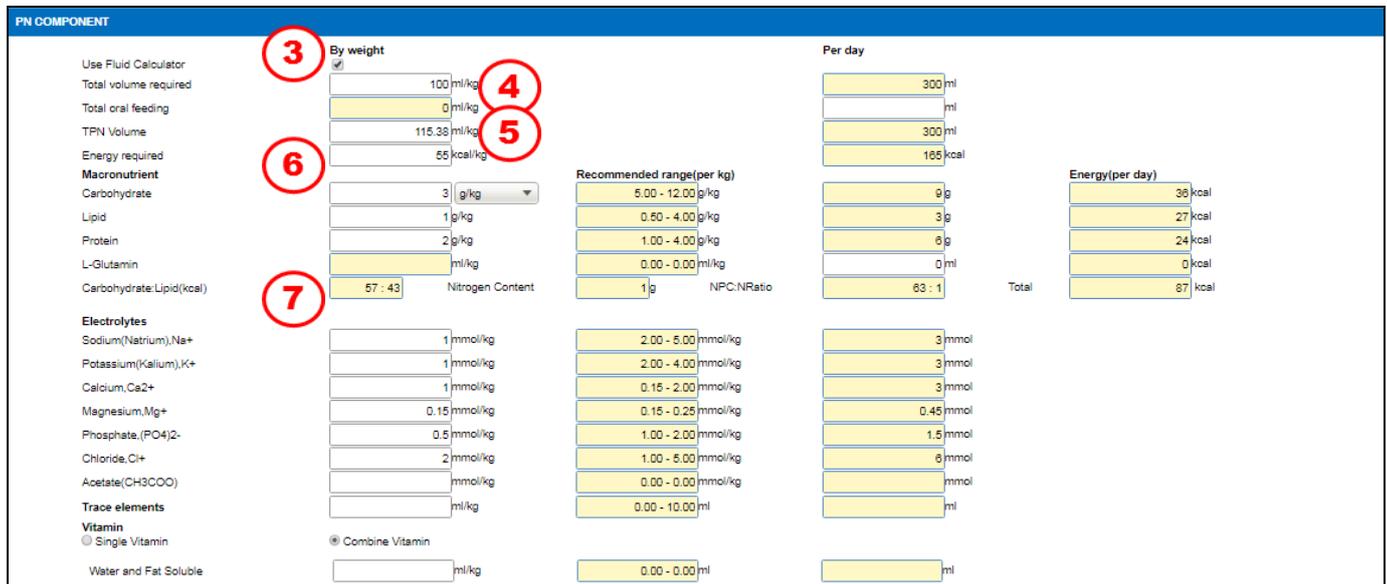
Note

PN for: will be automatically based on the patient age;

- Adult : age from 13 years to 150 years
- Paediatric : age from 3 years to 12 years
- Paediatric-infant : 31 days to 2 years
- Neonate : from 1 day to 30 days

STEP 2

Enter value for **Birth weight** and **Current weight**



PN COMPONENT	By weight	Recommended range(per kg)	Per day	Energy(per day)
Use Fluid Calculator	<input checked="" type="checkbox"/>			
Total volume required	100 ml/kg		300 ml	
Total oral feeding	0 ml/kg		ml	
TPN Volume	115.38 ml/kg		300 ml	
Energy required	55 kcal/kg		165 kcal	
Macronutrient				
Carbohydrate	3 g/kg	5.00 - 12.00 g/kg	9 g	36 kcal
Lipid	1 g/kg	0.60 - 4.00 g/kg	3 g	27 kcal
Protein	2 g/kg	1.00 - 4.00 g/kg	6 g	24 kcal
L-Glutamin	ml/kg	0.00 - 0.00 ml/kg	0 ml	0 kcal
Carbohydrate:Lipid(kcal)	57 : 43	Nitrogen Content	1 g	NPC:NRatio
			63 : 1	Total
				87 kcal
Electrolytes				
Sodium(Natrium),Na+	1 mmol/kg	2.00 - 5.00 mmol/kg	3 mmol	
Potassium(Kalium),K+	1 mmol/kg	2.00 - 4.00 mmol/kg	3 mmol	
Calcium,Ca2+	1 mmol/kg	0.15 - 2.00 mmol/kg	3 mmol	
Magnesium,Mg+	0.15 mmol/kg	0.15 - 0.25 mmol/kg	0.45 mmol	
Phosphate,(PO4)2-	0.5 mmol/kg	1.00 - 2.00 mmol/kg	1.5 mmol	
Chloride,Cl+	2 mmol/kg	1.00 - 5.00 mmol/kg	6 mmol	
Acetate(CH3COO)	mmol/kg	0.00 - 0.00 mmol/kg	mmol	
Trace elements				
Vitamin				
<input type="radio"/> Single Vitamin				
<input checked="" type="radio"/> Combine Vitamin				
Water and Fat Soluble	ml/kg	0.00 - 0.00 ml	ml	

Figure 3.2.7-2 PN Component

STEP 3

Select **Use Fluid Calculator** check box

Note

By selecting **Use Fluid Calculator** check box, system will be auto calculate **Total volume required per day** based on the **Body Weight Type**

STEP 4

Enter value for **Total volume required by weight** and **Total Oral Feeding per day**

Note

- TPN Volume on '**Per Day**' (in ml) will be auto calculate and TPN Volume on '**By Weight**' (in ml/kg) field editeble.
- TPN Volume whis is edited value (in ml) will impact to the final bag volume required which is same value will be displayed.
- If changing the value '**Total volume required**' or '**Total Oral Feeding**', edited '**TPN Volume**' value will recalculate back based on existing calculation.

STEP 5

Enter value for **Energy Required**

STEP 6

Enter value of the **Macronutrient** that applicable for the PN Component.

Note

- All entered value must between the **Recommended Range (per kg)**.
- All value **Per day** and **Energy(per day)** will automatically calculate and display.
- L-Gutamin is an optional component. Value of **By weight** and **Energy(per day)** will automatically display.
- Value of **Carbohydrate:Lipid(kcal) Content, Nitrogen and NPC:Ratio** will automatically calculate and display.

STEP 7

Enter value of the **Electrolytes** that applicable for the PN Component

Note

- All entered value must between the **Recommended Range (per kg)**.
- **Chloride ,Cl+** and **Acetate (CH3COO)** is optional component.
- All value **Per day** will automatically calculate and display.
- Enter value of the **Trace elements Per day**. Value **By Weight** will be automatically calculated and displayed after enter the **Trace elements Per day** value.

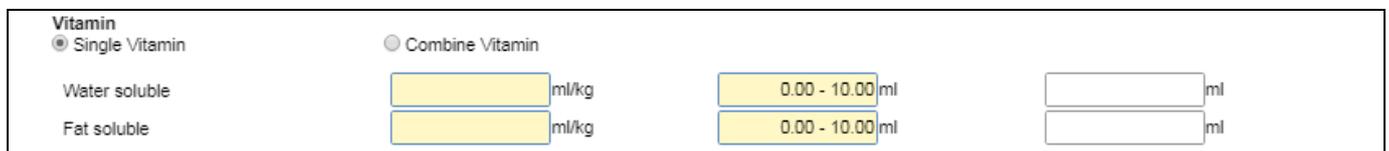


Figure 3.2.7-3 PN Component

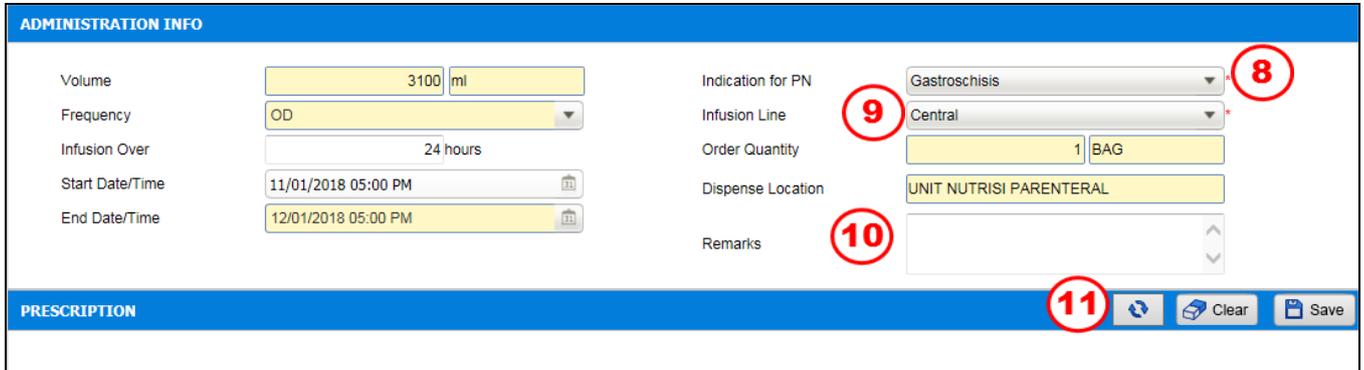


Figure 3.2.7-4 PN Component

Note

- Select either **Single Vitamin** or **Combine Vitamin** radio button.

- *Vitamin have 2 types :*
 - *Single Vitamin*
 - *Combine Vitamin*
- *If user select **Single Vitamin** radio button; **Water soluble** and **Fat soluble** field will automatically display by system as per Figure 3.2.7-3.*
- *If user select **Combine Vitamin** radio button; **Water and Fat Soluble** field will automatically display by system as per Figure 3.2.7-4.*



ADMINISTRATION INFO	
Volume	3100 ml
Frequency	OD
Infusion Over	24 hours
Start Date/Time	11/01/2018 05:00 PM
End Date/Time	12/01/2018 05:00 PM
Indication for PN	Gastrochisis
Infusion Line	Central
Order Quantity	1 BAG
Dispense Location	UNIT NUTRISI PARENTERAL
Remarks	

PRESCRIPTION

11 [Refresh] [Clear] [Save]

Figure 3.2.7-5 Administration Info

STEP 8

Enter **Indication for PN** by select from drop down box

STEP 9

Enter **Infusion Line** by select from drop down box

Note

- **Infusion Over** will be automatically default to 24 hours but user is allow to change at this field.
- **Order Quantity** will be automatically displayed by system and user is not allow to edit this field.
- **Volume** will be automatically displayed based on value of TPN Volume 'Per day'.
- **Start Date/Time** will be automatically default to current date and 5.00pm but still can be change by the user if applicable.
- **End Date/Time** will be displayed according to infusion over
- **Dispense Location** will be automatically default by system based on order routing setting.

STEP 10

Enter **Remarks** if applicable

STEP 11

Click on the  button to add prescription details into prescription section

Note

Prescription will display as per Figure 3.2.7-6

PN COMPONENT									
ADMINISTRATION INFO									
PRESCRIPTION									
Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)	24	1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.7-6 PN Prescription

STEP 12

Click on the button to save prescription

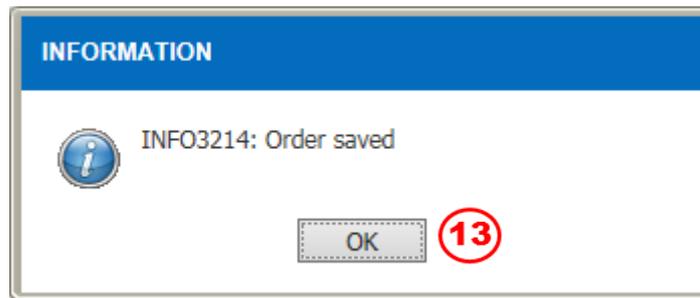


Figure 3.2.7-7 Information Alert Message

STEP 13

Click on the button to save order record

Note

After saving the record, button, button, button and button will be displayed as per Figure 3.2.7-8.

PN COMPONENT									
ADMINISTRATION INFO									
PRESCRIPTION									
Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)	24	1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.7-8 PN Prescription

STEP 14

Click on the button to confirm prescription

Note

- The button to delete prescription.
- The button to print prescription.

- The  button to edit information after saved record

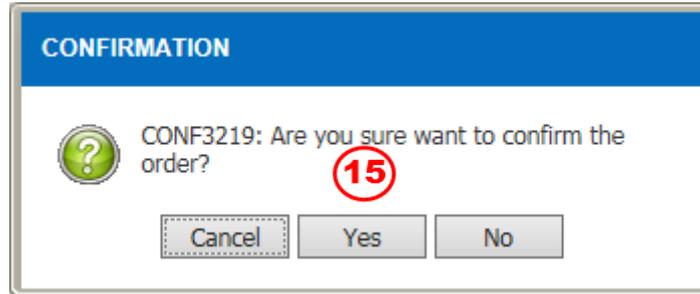
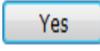


Figure 3.2.7-9 Confirmation Alert Message

STEP 15

Click on the  button to confirm record order

PN ORDER

Calorie Calculator

Type of PN Commercial / MOH Pre mix(Std. Soln) Compounded

PN for: Adult Paediatric Infant Paediatric Neonate

Body weight type: Actual Ideal Adjusted Body weight: 80 kg

PN COMPONENT

ADMINISTRATION INFO

PRESCRIPTION  

Drug Name	Total Volume ml per kg (ml)	Total calorie kcal per kg (kcal)	Infusion Over (hour)	Quantity	Freq	Duration	Start date	End date	
PN Compounded Adult	38.75 (3100)	31 (2480)	24	1 BAG	OD	1 Days	11/01/2018 05:00 PM	12/01/2018 05:00 PM	
Phosphate mmol per kg (mmol)	Sodium mmol per kg (mmol)	Potassium mmol per kg (mmol)	Calcium mmol per kg (mmol)	Magnesium mmol per kg (mmol)	Acetate mmol per kg (mmol)	Trace Element ml per kg (ml)	Fat Soluble Vit. ml per kg (ml)	Water Soluble Vit. ml per kg (ml)	Combine Vitamin ml per kg (ml)
0.6 (48)	1 (80)	1 (80)	0.1 (8)	0.1 (8)	NA	NA	0.06 (5)	0.09 (7)	NA
Protein g per kg (g)	Carbohydrate g per kg (g)	Carbohydrate %	Lipid g per kg (g)	L-Glutamin ml per kg (ml)	Calorie Calculator	Infusion Line			
2 (160)	3 (240)	NA	1 (80)	2.5 (200)	NA	Central			

Figure 3.2.7-10 PN Order

Note

- Click on the  button to view/print PN prescription as Figure 3.2.7 -11
- Click on the  button to order a new prescription

Ministry Of Health, Malaysia
Hospital Pakar Sultanah Fatimah, Muar
PARENTERAL NUTRITION

Patient Name: [REDACTED] Patient ID: [REDACTED]
Age: [REDACTED] MRN: HPSF00190582
Gender: Male Prescription : W2L0001087884
Height / Weight / : 169 cm/80 kg/1.97 m² Order Date / Time 11/01/2018 02:33 PM
Room No / Bed: [REDACTED] Location: [REDACTED]
Diagnosis: rheumatic fever Allergy: [REDACTED]

TPN Order: PN Compounded : Order 1 bag
Start 11/01/2018 05:00 PM End 12/01/2018 05:00 PM

		Content / kg	Content / bag
Volume	(ml)	38.75	3100
Calorie	(kCal)	48	3840
Protein	(g)	2	160
Carbohydrate	(g)	3	240
Lipid	(g)	1	80
Sodium	(mmol)	1	80
Potassium	(mmol)	1	80
Calcium	(mmol)	0.1	8
Magnesium	(mmol)	0.1	8
Phosphate	(mmol)	0.6	48
Chloride	(mmol)	NA	NA
Acetate	(mmol)	NA	NA
Trace Element	(ml)	NA	NA
Combine Vitamin	(ml)	NA	NA
Water Soluble Vitamin	(ml)	0.09	7
Fat Soluble Vitamin	(ml)	0.06	5
L-Glutamin	(ml)	2.5	200

Infusion Over: 24 hr Frequency: OD
Prescriber: [REDACTED] Infusion Route: Central
Designation: Pegawai Perubatan Remarks:
Department: General Medicine

Figure 3.2.7-11 PN Order Prescription

4.0 Acronyms

Abbreviation	Definition
PhIS	Pharmacy Information System
CPS	Clinical Pharmacy System
MOH	Ministry Of Health
PN	Parenteral Nutrition Order

5.0 Links to Clinical Modules

No	Module	PDF Links	No	Module	PDF Links
1	Inpatient	Click Here	12	CDR Dispensing	Click Here
2	CDR Order	Click Here	13	Methadone Dispensing	Click Here
3	TDM Order	Click Here	14	PN Dispensing	Click Here
4	PN Order	Click Here	15	Order Management	Click Here
5	IV Order	Click Here	16	Patient Management	Click Here
6	Prepacking	Click Here	17	Radiopharma	Click Here
7	Galenical	Click Here	18	Outpatient	Click Here
8	MTAC	Click Here	19	Special Drug Request	Click Here
9	ADR & DAC	Click Here	20	MAR	Click Here
10	Medication Counselling	Click Here	21	DICE	Click Here
11	Ward Pharmacy	Click Here	22		