



**The REDOX<sup>®</sup> Study**  
REducing Deaths due to OXidative Stress

**A randomized trial of glutamine and antioxidant supplementation in  
critically ill patients**

# Pharmacy Manual

This study is registered at [Clinicaltrials.gov](http://Clinicaltrials.gov).  
Identification number NCT00133978

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## Introduction

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The Pharmacy Manual provides details on the randomization process, the storage, dispensing of study supplements and the logs to be kept by the pharmacist(s) involved in the REducing Deaths due to OXidative Stress Study (The REDOX<sup>®</sup> Study).

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## Study Contacts

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## Delegation of Authority Logs and Pharmacy Web Access Signature Log

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### **Investigator Delegation of Authority Log**

- The Pharmacist most responsible for the REDOXS<sup>®</sup> study procedures will sign the ***Site Investigator Delegation of Authority Log (Appendix A)***. This is to confirm that the Site Investigator has delegated the pharmacy related tasks to the most responsible pharmacist. The completed log and subsequent updates to the log is to be faxed to the Clinical Evaluation Research Unit (CERU) at (613)548-2428 by the Research Coordinator.

### **Pharmacy Training/Delegation Log**

- In addition, the most responsible pharmacist will be responsible for further delegating tasks to the various pharmacy staff and for training. This will be done by completing the ***Pharmacy Training/Delegation of Authority Log (Appendix B)*** or a similar document. The completed log is to be faxed to the Clinical Evaluation Research Unit (CERU) at (613)548-2428 by the main pharmacist.

### **Pharmacy Web Access Signature Log**

- The main Pharmacist(s) most responsible for the REDOXS<sup>®</sup> Study procedures must sign the ***Pharmacy Web Access Signature Log (Appendix C)*** provided by CERU (Clinical Evaluation Research Unit).
- Completed signature logs are to be faxed to the Project Leader at CERU at (613)548-2428 before a username and password to the web based system can be assigned.
- CERU will assign one password for each pharmacy. To maintain blinding, the password is to be changed by the main pharmacist immediately after being assigned. This password is to be shared with any site pharmacy staff involved in the preparation/checking of the dispensing.

The site Pharmacist will be responsible for notifying the CERU Project Leaders with any changes in pharmacy personnel that may have an effect on the pharmacy procedures. Updates to the Delegation Logs are to be faxed to the CERU Project Leader at (613)548-2428.

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## Randomization and Web Log in

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The Study Coordinator will enroll a patient and this is followed by the randomization process that occurs automatically online.

The Study coordinator, who is blinded to the treatment arm, will contact the Pharmacist with the following patient details:

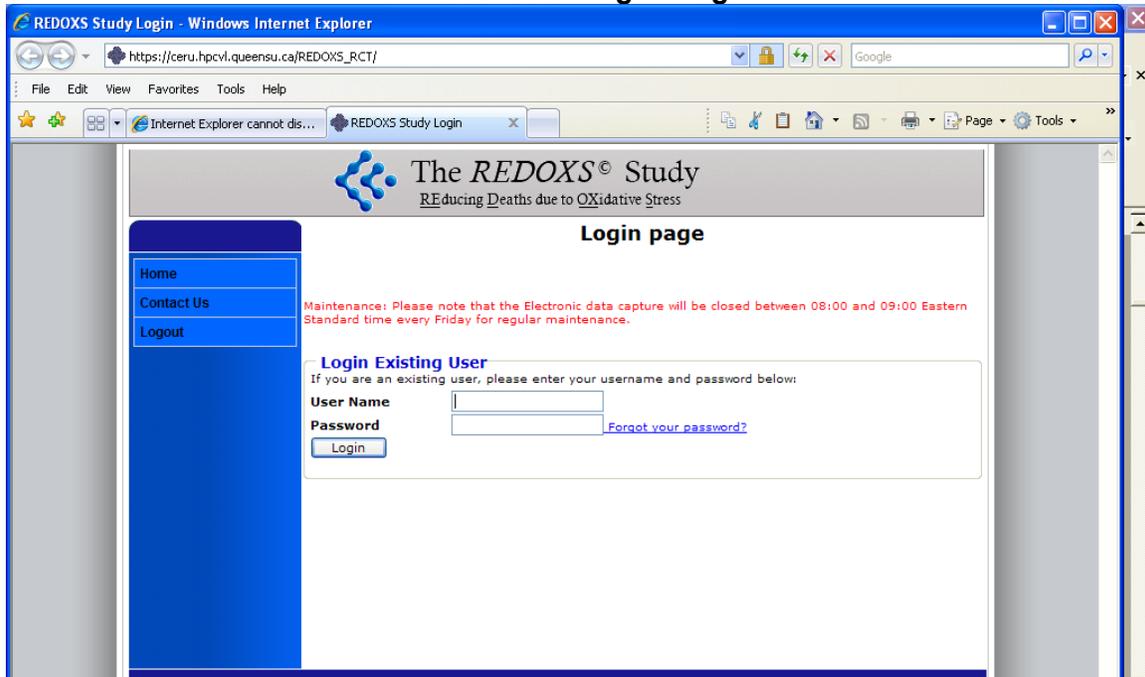
- patient's name
- initials
- DOB
- enrollment #
- height (in cms)

Refer to the ***Randomization Process on Web (Appendix D)*** for more details.

The Pharmacist, who will be unblinded, will **check** the treatment arm the patient is allocated to by following these steps:

1. Log on to the website for the REDOX<sup>®</sup> study [www.criticalcarenutrition.com](http://www.criticalcarenutrition.com) go to REDOX<sup>®</sup> Study tab on the left hand side of the page and click on REGISTER/LOGIN or directly to [https://ceru.hpcvl.queensu.ca/REDOXS\\_RCT](https://ceru.hpcvl.queensu.ca/REDOXS_RCT)
2. Enter Username
3. Enter Password (please change this password after the first time you log in).

### Webshot of Log in Page



- Click the “Login” button. If the login information is correct, you will automatically be brought to the Welcome Page that shows the treatment allocation for every patient enrolled at your site.

### Webshot of Welcome Page showing Treatment Assignment

The screenshot shows the 'Welcome, Rupinder PharmacistLastName' page for the REDOX Study. The page title is 'The REDOX<sup>®</sup> Study' with the tagline 'REDucing Deaths due to OXidative Stress'. The site name is 'TEST KGH'. A table lists 20 patients with their randomization assignments. A yellow callout box notes that this is not the list used for the study.

| Site ID | Screening No | Enrolment No | Age   | Height                           | Arm Randomized to                |
|---------|--------------|--------------|-------|----------------------------------|----------------------------------|
| 4       | 42           | 23           | 69    | 178.0                            | Antioxidants+Glutamine (AOX+GLN) |
| 4       | 41           | 22           | 87    | 182.0                            | Placebo                          |
| 4       | 39           | 21           | 43    | 167.0                            | Antioxidants (AOX)               |
| 4       | 38           | 19           | 56    | 155.0                            | Antioxidants (AOX)               |
| 4       | 37           | 18           | 43    | 165.0                            | Glutamine (GLN)                  |
| 4       | 36           | 16           | 90    | 178.0                            | Glutamine (GLN)                  |
| 4       | 35           | 15           | 18    | 250.0                            | Glutamine (GLN)                  |
| 4       | 34           | 20           | 67    | 145.0                            | Antioxidants+Glutamine (AOX+GLN) |
| 4       | 33           | 17           | 67    | 158.0                            | Placebo                          |
| 4       | 32           | 14           | 43    | 178.0                            | Antioxidants (AOX)               |
| 4       | 31           | 13           | 67    | 164.0                            | Glutamine (GLN)                  |
| 4       | 30           | 12           | 56    | 176.0                            | Antioxidants (AOX)               |
| 4       | 27           | 11           | 19    | 160.0                            | Glutamine (GLN)                  |
| 4       | 26           | 10           | 159.0 | Antioxidants+Glutamine (AOX+GLN) |                                  |
| 4       | 25           | 9            | 45    | 187.0                            | Glutamine (GLN)                  |
| 4       | 24           | 8            | 43    | 165.0                            | Placebo                          |
| 4       | 23           | 7            | 56    | 165.0                            | Antioxidants+Glutamine (AOX+GLN) |
| 4       | 22           | 6            | 55    | 150.0                            | Antioxidants (AOX)               |
| 4       | 21           | 5            | 123.0 | Placebo                          |                                  |
| 4       | 18           | 3            | 78    | 145.0                            | Antioxidants+Glutamine (AOX+GLN) |
| 4       | 1            | 4            | 25    | 188.0                            | Placebo                          |
| 4       | 1            | 4            | 22.0  | Placebo                          |                                  |

*This page MUST be signed by two pharmacists to verify the randomization. Keep signed copy for your records.*

Signature of Pharmacist \_\_\_\_\_ Signature of Pharmacist \_\_\_\_\_

- This page will show the Pharmacist with 1 of 4 treatment assignments:
  - Antioxidants (AOX)
  - Glutamine (GLN)
  - Antioxidants and Glutamine (AOX+GLN)
  - Placebo
- Only these patient identifiers will be shown on the web page: Site ID, Screening #, Enrolment #, Age and Height. The Pharmacist will obtain other identifiers from the Study Coordinator (initials, DOB, CR#, etc).
- The Pharmacist must print off a copy of the randomization list (showing patient’s treatment assignment) and have it signed by two pharmacists to ensure that the correct treatment arm has been noted. Please keep this signed randomization list in the pharmacy study binder.***
- Click on “Logout” button on the top left hand of the screen.

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## Study Supplements

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THE DURATION OF THE STUDY SUPPLEMENTS SHOULD NOT EXCEED A TOTAL OF 28 DAYS.  
*Study supplements will be discontinued in the event that the patient is discharged from ICU or dies before 28 days (exception: patients with ICU stay < 5 days and transferred to ward; duration of study supplements should be 5 days in total).*

- The enteral study supplements (EN REDOXS® formula) and the parenteral glutamine supplement (Dipeptiven) will be provided by Fresenius Kabi.
- The parenteral selenium (Selenase) will be supplied by BIOSYN.



Dipeptiven



Selenase



Enteral REDOXS formulas

For details on the Study Supplements, refer to the **Administration of Study Supplements Manual**.

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## Inventory of Study Supplements

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- An adequate amount of both the enteral and parenteral supplements, including the parenteral selenium, will be shipped to each pharmacy by Fresenius Kabi and Biosyn, Germany before the start of the trial.
- To ensure uninterrupted enrolment to the study, the Pharmacist at each site will complete a **Monthly Site Inventory Log** (see next page) to determine the amount of supplies needed at the end of every month.
- When determining the amount of supplies needed, the Pharmacist is to consider the minimum supply needed (as specified on the Log) and the projected need for the products based on patient enrollment.
- The Pharmacist will then fax this form to the Project Assistant at CERU who will arrange for ordering the supplies. The original **Monthly Site Inventory Log** *must be kept by the pharmacist*.

### **URGENT Orders: Instructions for Site Pharmacists:**

- Occasionally the site may have extra enrollments and suddenly require immediate product replenishment. The Pharmacist should follow the steps listed below to ensure URGENT ORDERS are addressed in a timely fashion. Please note that to maintain the study blind, contact only those persons listed below:
  1. Fill out the Monthly Inventory Log as per usual, with the number of bottles/vials indicated in the “amount needed” column.
  2. Write the word “URGENT” on the monthly inventory form, preferably on the bottom right hand corner, where it will be most visible.
  3. Fax the Monthly Inventory Form to the REDOXS Methods Centre  
ATTENTION: Suzanne Biro and Susan Campbell at (613) 548-2428.
  4. Please contact Suzanne Biro (613) 549-6666 extension 6686, [biros@kgh.kari.net](mailto:biros@kgh.kari.net) or Susan Campbell (613) 549-6666 extension 4847, [campbes3@kgh.kari.net](mailto:campbes3@kgh.kari.net) to initiate shipping as soon as possible.

Please be advised that shipping to some sites may take two to three days. If you need study supplements sooner, it may be possible to initiate an inter-hospital transfer from a site that is geographically closer to your own.



**Monthly Site Inventory Log**

Month \_\_\_\_\_ Year \_\_\_\_\_

To be filled out by Site Pharmacy monthly and faxed to Clinical Evaluation Research Unit (CERU).

Name of Site: \_\_\_\_\_  
 Pharmacist: \_\_\_\_\_  
 Phone: \_\_\_\_\_

| Product   | Supplier            | Minimum Supply needed   | Actual supplies | Amount needed | Checked by CERU Project Assistant |
|---|---------------------|-------------------------|-----------------|---------------|-----------------------------------|
| Dipeptiven (100 ml bottles)<br>(10 bottles per carton)            | Fresenius Kabi (FK) | 80 bottles*             | ___ bottles     | ___ bottles   |                                   |
| EN REDOXS formula<br>(500 mls bottles)<br>(12 bottles per carton) |                     |                         |                 |               |                                   |
| AOX + GLN   | FK                  | 36 bottles <sup>a</sup> | ___ bottles     | ___ bottles   |                                   |
| AOX   | FK                  | 36 bottles <sup>a</sup> | ___ bottles     | ___ bottles   |                                   |
| GLN   | FK                  | 36 bottles <sup>a</sup> | ___ bottles     | ___ bottles   |                                   |
| Placebo   | FK                  | 36 bottles <sup>a</sup> | ___ bottles     | ___ bottles   |                                   |
| Selenase(10 ml vials)   | Biosyn              | 40 vials <sup>b</sup>   | ___ vials       | ___ vials     |                                   |

\* based on 4 patients, each needing 2 bottles per day for 10 days  
<sup>a</sup> based on 4 patients, each needing 1 bottle per day for 9 days  
<sup>b</sup> based on 4 patients, each needing approximately 1 vials/day per day for 10 days

|   |   |
|---|---|
| Signature of person completing log: _____<br>Date _____ | Fax completed form to: CERU (613) 548-2428<br>Attention: REDOX <sup>®</sup> Study (613) 549-6666 ext 6686 or 4847 |
|---|---|

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## Storage of Study Supplements

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- The study supplements are to be stored in the pharmacy and should be kept separate from regular stock.
- Both the enteral and parenteral products are to be stored at room temperature between 15-25°C. ***It is imperative that the temperature does not drop below 15 °C.***
- Dipeptiven: once opened, is to be mixed into the other parenteral components immediately.
- Selenium: once opened, is to be used within 24 hrs if refrigerated.
- Parenteral mixtures: once the parenteral products are mixed, they are stable at room temperature (15-25 °C) for ***96 hours (as per stability and compatibility studies performed on the various mixtures).***
- Enteral products: once opened, they are to be used within 24 hours. The enteral products may show precipitation over time in the form of red or orange coloured particles floating in solution. Please shake these bottles vigorously before use. Statements from the manufacturer, Fresenius Kabi, regarding the safety and efficacy of the Enteral products with these precipitates are available from the Project Assistant. Contact the Project Assistant if you have any questions or concerns about the products.
- The pharmacist MUST keep a **temperature log** (see attached) to show that the products have been stored at the specified temperature ranges. The log is to be completed monthly and faxed to the Project Leader. These logs will be checked by the study monitor. You may use the temperature log that is currently being used at your pharmacy as long as it identifies that the products checked are related to the REDOXS<sup>®</sup> Study.



The REDOX<sup>®</sup> Study  
Reducing Deaths due to Oxidative Stress

**Monthly Site Temperature Log**

Month \_\_\_\_\_ Year \_\_\_\_\_

To be filled out by Site Pharmacy daily and faxed to Clinical Evaluation Research Unit (CERU) monthly.

Name of Site: \_\_\_\_\_ Pharmacist: \_\_\_\_\_ Phone: \_\_\_\_\_

| Date | Temperature Low<br>Température Bas | Temperature Current<br>Température Présent | Temperature High<br>Température Haut | Date | Temperature Low<br>Température Bas | Temperature Current<br>Température Présent | Temperature High<br>Température Haut |
|------|------------------------------------|--|--------------------------------------|------|------------------------------------|--|--------------------------------------|
| 01   |                                    |  |                                      | 16   |                                    |  |                                      |
| 02   |                                    |  |                                      | 17   |                                    |  |                                      |
| 03   |                                    |  |                                      | 18   |                                    |  |                                      |
| 04   |                                    |  |                                      | 19   |                                    |  |                                      |
| 05   |                                    |  |                                      | 20   |                                    |  |                                      |
| 06   |                                    |  |                                      | 21   |                                    |  |                                      |
| 07   |                                    |  |                                      | 22   |                                    |  |                                      |
| 08   |                                    |  |                                      | 23   |                                    |  |                                      |
| 09   |                                    |  |                                      | 24   |                                    |  |                                      |
| 10   |                                    |  |                                      | 25   |                                    |  |                                      |
| 11   |                                    |  |                                      | 26   |                                    |  |                                      |
| 12   |                                    |  |                                      | 27   |                                    |  |                                      |
| 13   |                                    |  |                                      | 28   |                                    |  |                                      |
| 14   |                                    |  |                                      | 29   |                                    |  |                                      |
| 15   |                                    |  |                                      | 30   |                                    |  |                                      |
|      |                                    |  |                                      | 31   |                                    |  |                                      |

Signature of person submitting log: \_\_\_\_\_

Fax completed form to: CERU (613) 548-2428  
Attention: REDOX<sup>®</sup> Study (613) 549-6666 ext 6686 or 4847

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## Dispensing of Study Supplements

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The Pharmacist at each site will be responsible for dispensing the study supplements. Hence he/she will be unblinded to the treatment assignment. To maintain blinding and to avoid a potential for bias, every attempt should be made to ensure that the Pharmacist dispensing the drugs is NOT the Pharmacist that participates in ICU rounds.

### **Enteral Products**

1. After checking the treatment allocation online and verifying this with a second pharmacist, the primary pharmacist will obtain the appropriate enteral study supplement (as indicated on the company label AOX+GLN, AOX, GLN or Placebo).
2. The Pharmacist will then generate **two** labels for the enteral product as per template **Enteral Study Supplement Template (Appendix E)** (may be adapted to each site's needs but MUST contain all the elements shown).
3. He/she will remove the company label from the enteral bottle and place this on the **Enteral Product Label Log**, daily, and complete this form, including the date. He/she will place one of the pharmacy-generated label on the bottle.

*CR# or ID# refers to the unique ID# that is assigned to each patient that is hospitalized.*

4. The other label will be sent with the enteral study supplement to the ICU. The label and the enteral study supplement bottle **must** be placed together in the same bag to avoid confusion with the supplements for other patients. The bedside nurse will be instructed to place this label on the feeding bag.
5. For each patient, the Pharmacist will then record the batch # of the bottle, the expiry date and their signature on the **Enteral Study Supplement Dispensing Log**. This will be verified by a second Pharmacist. This is to be done for every patient daily.

*For Study Day 1, the rate of the enteral and parenteral study supplements will likely be running at double rate to make up for the hours missed.*

*Depending upon the timing of the scheduled preparation for the next day, you may need to prepare an additional bag of the parenteral solution and send an additional enteral formula bottle.*

*Please ensure that there is enough volume prepared so that there is no interruption in the infusion of the supplements.*



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Evaluating the role of Oxidative Stress

**Enteral Product Label Log**

Page \_\_\_ of \_\_\_

**Pharmacist to place removable labels here daily** (use one page is for 3 days)

Patient ID #: \_\_\_\_\_ Patient Initials: \_\_\_\_\_ Enrollment#: \_\_\_\_\_

Treatment Group (circle one): AOX      GLN      AOX+ GLN      Placebo

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Date dd/mm/yyyy

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Date dd/mm/yyyy

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Date dd/mm/yyyy



### **For Parenteral Products**

- The Pharmacist will need to prepare the parenteral solutions according to the study group the patient has been assigned to. The parenteral products will be mixed using aseptic techniques in a laminar hood flow. (See below for the study groups).

### **Study Groups for REDOXS<sup>®</sup>**

| <b>Group</b> | <b>Enteral Supplement</b> | <b>Parenteral Supplement</b>          |
|--------------|---------------------------|---------------------------------------|
| AOX          | AOX only                  | Selenium + Normal Saline              |
| GLN          | Glutamine only            | Dipeptiven + Normal Saline            |
| GLN + AOX    | Glutamine + AOX           | Dipeptiven + Selenium + Normal Saline |
| Placebo      | Placebo                   | Placebo (Normal Saline)               |

- Both the parenteral supplements (Dipeptiven and Selenium) will be mixed in normal saline according to the group allocation.

The parenteral study supplements are to be mixed with saline but in the event of concerns of hypernatremia, the supplements can be mixed with D5W instead of saline. Compatibility studies of Dipeptiven and Selenium show that they are compatibility with saline and D5W.

- The final parenteral solution will run at 10 mL/hour in most cases.  
**Exception: the patient is  $\geq 196$  cms tall (6 feet 5 inches)** in which case the final infusion rate will need to be calculated by the Pharmacist. This rate will need to appear on the pharmacy-generated label. (**See Dosages according to Height section and Worksheets, Appendix F**)

### **Instructions for preparing the Parenteral Study Supplement mixture** (see **Parenteral Study Supplement Worksheets for each group, Appendix F**)

- 1) Obtain patient's height (in cm) from Study Coordinator.
- 2) Determine the patient's Normal Body Weight using Broca Formula as follows:  
Normal Weight (kg) = Patients height \_\_\_\_\_ cm minus 100 cm.
- 3) Determine the Volume of Dipeptiven to be given (for patients in the GLN +AOX and GLN groups). This equals:  
Glutamine 0.35g/ kg/day =  
L-alanyl-L-glutamine 0.5gm/kg/day =  
**Dipeptiven 2.5 mL/kg/day.**  
For patients in the AOX or Placebo group, this volume is zero.

#### **Example:**

- 1) Patient's height =170 cm and is assigned to GLN+AOX group.
- 2) Normal body weight = 170-100 = 70 kg.
- 3) Dose of Glutamine = 0.35 gm x 70 = 24.5 gm glutamine or  
Dose of L-alanyl-L-glutamine = 0.5 gm x 70 = 35 gm L-alanyl-L-glutamine  
or

**Dose of Dipeptiven = 2.5 mL x 70 = 175 mL.**

- 4) Dosage of Selenium (only for patients in the GLN +AOX and AOX groups) = 500 micrograms/day = 10 mL/day. For patients in the GLN or Placebo groups this volume is zero.
- 5) **Using an empty sterile bag, create a bag of normal saline that has exactly 250 mL (accounting for overfill). (e.g. Viaflex bag).** You may be able to bulk manufacture these bags using a compounder.
- 6) Calculate the total volume of saline to be removed from this 250 mL bag of normal saline by adding the volume of dipeptiven and selenium. This is the volume of normal saline that will need to be removed from this 250 mL bag of normal saline before adding the dipeptiven and/or selenium.
- 7) Replace the normal saline with the Dipeptiven and Selenium. The final volume of the Parenteral Study Supplement is the combination of the volumes of Dipeptiven, Selenium and normal saline and should equal to 250 mL.
- 8) Record the volume of each component dispensed (Selenium, Dipeptiven and Normal Saline) on the **Parenteral Study Supplement Dispensing Log**. The batch # and the expiry dates of all the components will be recorded daily and will be signed by the Pharmacist and co-signed by a second Pharmacist.
- 9) Any unused product(s) returned to pharmacy or expired products should be recorded on the appropriate **Nutrient Accountability Log** and should be disposed of according to your pharmacy's drug destruction policy.
- 10) The Pharmacist will then generate a label for the final parenteral product as per template titled **Parenteral Study Supplement Label (Appendix G)** (may be adapted to each site's needs but must contain the shown elements) and attach this to a normal saline bag. If the volume of the parenteral supplement is to exceed 250 mls, the correct rate will need to be calculated and should appear on the label.
- 11) Partially used vials of selenium should be refrigerated and should be used within 24 hrs for subsequent doses.
- 12) The Dipeptiven bottles can be shared between multiple patients if needed. For e.g. if one patient needs 150 mL Dipeptiven and the next patient needs 130 mL, please use 3 bottles (100 mL each) for both instead of using 4 bottles (100 mL each) for both patients. Once opened, the Dipeptiven is to be mixed into the other parenteral components immediately.

*Weekend Hint: To help reduce workload on weekends, the parenteral study supplements can be dispensed ahead of time in batches of a "three-day supply" for each patient. For example, three parenteral bags can be prepared on Friday and given the expiry of 96 hours, these can be used for Saturday, Sunday and Monday (will expire Tuesday).*



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## Dosages According to Height

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**If the patient's height is  $\geq 196$  cms tall (6 feet 5 inches),** the volume of the parenteral supplements increases and hence the volume of normal saline to be added decreases. Refer to ***Height and Dose of Dipeptiven (Appendix H)*** for volumes according to height.

- The final volume of the parenteral solution will be between 250 mL-300 mL. The 250 mL bag of normal saline can still be used, as it is able to hold up to 300 mL of fluid. In the event that there is no normal saline needed, you may use an empty sterile bag and add the supplements to this bag (instead of emptying an entire 250 mL bag of normal saline).
- The final rate of infusion will exceed 10 mL/hour and will need to be calculated by the Pharmacist and to appear on the pharmacy-generated label.
- Every attempt should be made to infuse the parenteral study supplements via a central line. Peripheral infusion is only recommended (for a maximum of 72 hours) in the event that there is no access to a central line.

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## Nutrient Accountability Log

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The Pharmacist will keep track of the amount of each product dispensed (or destroyed) on the **Nutrient Accountability Log** (see next page). This log will be used by the study monitor to ensure that the patient actually received the right product.

Please note that there are a total of 6 logs, one for each of the products used (i.e. 1 each for the 4 enteral products and 1 each for the Dipeptiven and Selenium).

This will be done by cross-checking the patient enrollment #, product name and the batch # on **Nutrient Accountability Log** with the patient's initials/CR# or ID# and enrollment # on the **Dispensing Logs**.

- Record the Product Name on the Log. Use one separate log for each product i.e. Enteral products, Dipeptiven and Selenium.
- Record the date and the amount of product received (enteral products, Dipeptiven and Selenium) along with batch numbers and expiry dates.

Record the amount of product dispensed, the patient(s) enrollment # and the balance of the product remaining DAILY. Record your signature.













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## Keeping Records

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The Pharmacist will keep the following signed records in addition to all other logs described in the manual above and others specified by the pharmacy.

- Randomization record showing treatment assignment
- Study Orders
- Temperature Logs
- All worksheets for each patient enrolled in the study.

These will be reviewed by an external monitor for quality assurance purposes.

## Appendix A.



### Delegation of Authority Log

This log is used by the Qualified Investigator (i.e. Site Investigator) to indicate the Site Staff that have a material effect on the conduct of the Study and to whom the Investigator has delegated significant Study related duties/tasks. The signatures and details on this log will also facilitate tracking of edits/changes of the Site records. This log is to be kept by the Qualified Investigator and the Sponsor.

Name of Qualified Investigator: \_\_\_\_\_ Signature of Qualified Investigator: \_\_\_\_\_

| Print Name | Signature | Initials | Study Role<br>(Qualified Investigator*, sub-<br>QP, Research Coordinator<br>(RC), Pharmacist, Technician,<br>Dietitian | Key Delegated Tasks<br>(see next page) | Dates |     |
|------------|-----------|----------|--|--|-------|-----|
|            |           |          |  |  | Start | End |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |
|            |           |          |  |  |       |     |

\*Qualified Investigator: the Site Investigator responsible for the conduct of the REDOX<sup>®</sup> study at your site.  
 \*Sub QI: Investigator other than the Qualified Investigator that is responsible for tasks related to the REDOX<sup>®</sup> study at your site.



## Appendix C



### Pharmacy Web access Signature Log

|                      |                     |
|----------------------|---------------------|
| <b>INSTITUTION:</b>  | <b>SITE NUMBER:</b> |
| <b>INVESTIGATOR:</b> |                     |

Please complete the Electronic Data Capture (EDC) System Access Signature Sheet for each Pharmacist/technician at your site who will be checking the randomization or dispensing/checking study supplements. A signature and email address is required to create user accounts for the web based system for the REDOX<sup>®</sup> Study.

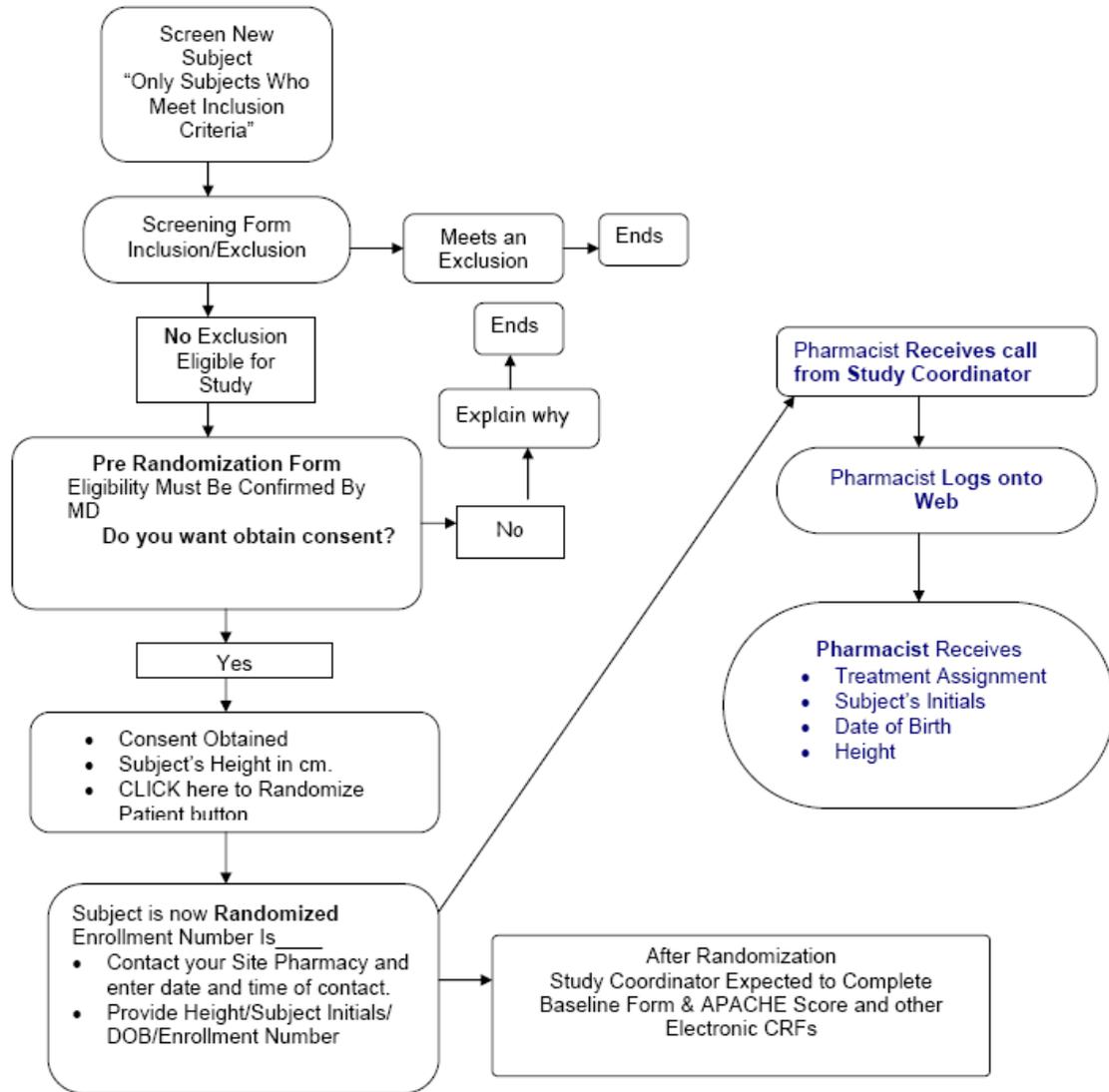
| NAME | TITLE | SIGNATURE | EMAIL | DATE |
|------|-------|-----------|-------|------|
|      |       |           |       |      |
|      |       |           |       |      |
|      |       |           |       |      |
|      |       |           |       |      |
|      |       |           |       |      |

NOTE:

By completing the information in the table above, the individual confirms they have been delegated the responsibility of checking the randomization and dispensing/verifying study supplements for the REDOX<sup>®</sup> Study.

Reference: ICH GCP 5.5.3

## Appendix D Randomization Process on Web



## Appendix E. Enteral Study Supplement Label Template

**Enteral Study Supplement**  
**Study: REDOXS<sup>®</sup>**  
*Enteral Component*  
*For Clinical trial Use Only*

**Enrollment #:**  
**Patient ID/CR#:**  
**Patient Name:**  
**Physician:**

**Directions:**  
Infuse at 20 mL/hr  
**Storage:** keep between 15-25 C  
**Expiry:** use within 24 hours

**Date:**

## **Appendix F. Parenteral Study Supplement Worksheets**

Use the appropriate worksheet according to the group the patient has been randomized to.

These worksheets will assist in calculating the volumes of the parenteral study supplements and normal saline (or D5W) needed.

**Worksheet for AOX (Antioxidant) group**

**Worksheet for GLN (Glutamine) group**

**Worksheet for GLN +AOX (Glutamine + Antioxidant) group**

**Worksheet for Placebo group**

# Parenteral Supplements Worksheet

| Patient CR# / ID# | Patient Initials | Enrolment # |
|-------------------|------------------|-------------|
|                   |                  |             |

## Antioxidants (AOX)

Patient will receive Selenium (Antioxidants) and normal saline (or if hypernatremic D5W)

**Begin with a bag containing exactly 250 mL of normal saline (i.e. account for overfill):**

1. Volume of Dipeptiven† to be added = 0 mL
2. Volume of Selenium to be added = 10 mL
3. Total Volume to be removed from 250 mL normal saline bag before adding study supplements:

$$\frac{\text{(# 1)}}{\text{volume of dipeptiven}} + \frac{\text{(# 2)}}{\text{volume of selenium}} = \underline{10} \text{ mL}$$

4. Add (#1) + (#2) + normal saline = 250 mL
5. Record the volumes of Selenium and Normal Saline on the Parenteral Study Supplement Log for this patient daily.
6. Generate a label and attach to bag.

†Dipeptiven not required for this treatment arm

Note: Height of the patient not required to calculate the AOX dose

# Parenteral Supplements Worksheet (Patients > 196 cm tall)

| Patient CR# / ID# | Patient Initials | Enrolment # |
|-------------------|------------------|-------------|
|                   |                  |             |

## Antioxidants (AOX)

Patient will receive Selenium (Antioxidants) and normal saline (or if hypernatremic D5W)

### Dosing:

1. Dosage of Selenium = 500mcg/day = 10mL/day regardless of height
2. Rate of infusion determined from chart below.
3. Dose will be diluted in a NS bag to a final volume indicated in the chart below.
4. You **must account for overfill** in the normal saline bags as per table below.

### Beginning with a bag of exactly 250 mL of normal saline:

Go to height chart (see below). Record:

1. Patient height = \_\_\_\_\_ cm
2. Final total volume of the bag (from chart below) = \_\_\_\_\_ mL
3. Rate to be infused (from chart below) = \_\_\_\_\_ mL/hr
4. Volume of Selenium to be added = 10 mL

| Height | Final Total Volume of Bag | Rate to be Infused | Volume of Selenium to be Added | Amount of Normal Saline |             |
|--------|---------------------------|--------------------|--------------------------------|-------------------------|-------------|
|        |                           |                    |                                | To be removed           | To be added |
| 196 cm | 250 mL                    | 10.4 mL/hr         | 10 mL                          | 10.0 mL                 |             |
| 198 cm | 255 mL                    | 10.6 mL/hr         | 10 mL                          | 15.0 mL                 |             |
| 201cm  | 263 mL                    | 11.0 mL/hr         | 10 mL                          |                         | 3.0 mL      |
| 203 cm | 268 mL                    | 11.2 mL/hr         | 10 mL                          |                         | 8.0 mL      |
| 206 cm | 275 mL                    | 11.5 mL/hr         | 10 mL                          |                         | 15.0 mL     |
| 208 cm | 280 mL                    | 11.7 mL/hr         | 10 mL                          |                         | 20.0 mL     |
| 211 cm | 288 mL                    | 12.0 mL/hr         | 10 mL                          |                         | 28.0 mL     |
| 213 cm | 293 mL                    | 12.2 mL/hr         | 10 mL                          |                         | 33.0 mL     |

5. Volume of NS to be removed or added to bag = \_\_\_\_\_ mL
6. Add Selenium (#4), as per chart, to normal saline bag. Mix.
7. Record the volumes of Selenium and Normal Saline on the Parenteral Study Supplement Log for this patient daily.
8. Generate a label and attach to bag.

# Parenteral Supplements Worksheet

| Patient CR# / ID# | Patient Initials | Enrolment # |
|-------------------|------------------|-------------|
|                   |                  |             |

## Glutamine (GLN)

Patient will receive Dipeptiven (Glutamine) and normal saline (or if hypernatremic DSW)

**Begin with a bag containing exactly 250 mL of normal saline (i.e. account for overfill):**

1. Patient's height = \_\_\_\_\_ cm
2. Normal Body Weight = (#1) – 100 cm = \_\_\_\_\_ kg
3. Volume of Dipeptiven† to be added = (#2) x 2.5 mL = \_\_\_\_\_ mL
4. Volume of Selenium§ to be added = 0 mL
5. Total Volume to be removed from 250 mL normal saline bag before adding study supplements:

$$\frac{\text{(# 3)}}{\text{volume of dipeptiven}} + \frac{\text{(# 4)}}{\text{volume of selenium}} = \text{_____ mL}$$

7. Add (#3) + (#4) + normal saline = 250 mL
8. Record the volumes of Dipeptiven and Normal Saline on the Parenteral Study Supplement Log for this patient daily.
9. Generate a label and attach to bag.

†Dipeptiven 2.5 mL/kg/day = Glutamine 0.35 g/kg/day = L-alanyl-L-glutamine 0.5 g/kg/day

§Selenium not required for this treatment arm

# Parenteral Supplements Worksheet (Patients > 196 cm tall)

| Patient CR# / ID# | Patient Initials | Enrolment # |
|-------------------|------------------|-------------|
|                   |                  |             |

## Glutamine (GLN)

Patient will receive Dipeptiven (Glutamine) and normal saline (or if hypernatremic D5W)

### Dosing:

1. **Dosage of Glutamine** = 0.35g/kg/day = L-alanyl-L-glutamine 0.5g/kg/day= **Dipeptivan®2.5mL/kg/day**
2. **Dosing will be based on patient's Normal Body Weight using Broca Formula as follows:**  
Normal Weight (kg)= Patient's Height (cm) - 100
3. Dose will be diluted in a NS bag to a final volume indicated in the chart below.
4. **Rate of infusion determined from chart below.**
5. You **must account for overfill** in the normal saline bags as per table below.

### Beginning with a bag of exactly 250 mL of normal saline:

Go to height chart (see below). Record:

1. Patient height = \_\_\_\_\_ cm
2. Final total volume of the bag (from chart below) = \_\_\_\_\_ mL
3. Rate to be infused (from chart below) = \_\_\_\_\_ mL/hr
4. Volume of Glutamine (Dipeptiven®) to be added = \_\_\_\_\_ mL

| Height | Final Total Volume of Bag | Rate to be Infused | Volume of Glutamine to be Added | Amount of Normal Saline to be removed |
|--------|---------------------------|--------------------|---------------------------------|---------------------------------------|
| 196 cm | 253 mL                    | 10.5 mL/hr         | 240 mL                          | 237 mL                                |
| 198 cm | 258 mL                    | 10.8 mL/hr         | 245 mL                          | 237 mL                                |
| 201cm  | 266 mL                    | 11.1 mL/hr         | 253 mL                          | 237 mL                                |
| 203 cm | 271 mL                    | 11.3 mL/hr         | 258 mL                          | 237 mL                                |
| 206 cm | 278 mL                    | 11.6 mL/hr         | 265 mL                          | 237 mL                                |
| 208 cm | 283 mL                    | 11.8 mL/hr         | 270 mL                          | 237 mL                                |
| 211 cm | 291 mL                    | 12.1/mL/hr         | 278 mL                          | 237 mL                                |
| 213 cm | 296 mL                    | 12.3 mL/hr         | 283 mL                          | 237 mL                                |

5. Volume of NS to be removed from bag = \_\_\_\_\_ mL
6. Add Dipeptiven® (#4), as per chart, to normal saline bag. Mix.
7. Expiry dating = 96 hours at room temperature.
8. Generate a label and attach to bag.

# Parenteral Supplements Worksheet

| Patient CR# / ID# | Patient Initials | Enrolment # |
|-------------------|------------------|-------------|
|                   |                  |             |

## Antioxidants + Glutamine (AOX+GLN)

Patient will receive Selenium (AOX), Dipeptiven (GLN) and normal saline (or if hypernatremic DSW)

**Begin with a bag containing exactly 250 mL of normal saline (i.e. account for overfill):**

1. Patient's height = \_\_\_\_\_ cm
2. Normal Body Weight = (#1) – 100 cm = \_\_\_\_\_ kg
3. Volume of Dipeptiven† to be added = (#2) x 2.5 mL = \_\_\_\_\_ mL
4. Volume of Selenium to be added = 10 mL
5. Total Volume to be removed from 250 mL normal saline bag before adding study supplements:

$$\frac{\text{( #3 )}}{\text{volume of dipeptiven}} + \frac{\text{( #4 )}}{\text{volume of selenium}} = \text{_____ mL}$$

6. Add (#3) + (#4) + normal saline = 250 mL
7. Record the volumes of Dipeptiven, Selenium and Normal Saline on the Parenteral Study Supplement Log for this patient daily.
8. Generate a label and attach to bag.

†Dipeptiven 2.5 mL/kg/day = Glutamine 0.35 g/kg/day = L-alanyl-L-glutamine 0.5 g/kg/day

# Parenteral Supplements Worksheet (Patients > 196 cm tall)

| Patient CR# / ID# | Patient Initials | Enrolment # |
|-------------------|------------------|-------------|
|                   |                  |             |

Normal Saline on the Parenteral Study Supplement Log for this

## Antioxidants + Glutamine (AOX+GLN)

Patient will receive Selenium (AOX), Dipeptiven (GLN) and normal saline (or if hypernatremic D5W)

### Dosing:

1. **Dosage of Selenium = 500mcg/day = 10mL/day regardless of height;**
2. **Dosage of Glutamine** 0.35g/kg/day = L-alanyl-L-glutamine 0.5g/kg/day= **Dipeptivan®2.5mL/kg/day**
3. Dosing will be based on patient's Normal Body Weight using Broca Formula as follows: Normal Weight (kg) = Patient's Height(cm) - 100
4. Dose will be diluted in a NS bag to a final volume indicated in the chart below.
5. **Rate of infusion determined from chart below.** ( rate may be increased up to 2x the amount on day 1 for hours missed to conform to standard dosing times)
6. You **must account for overflow** in the normal saline bags as per table below.

### Beginning with a bag of exactly 250 mL of normal saline:

Go to height chart (see below). Record:

1. Patient height = \_\_\_\_\_ cm
2. Final total volume of the bag (from chart below) = \_\_\_\_\_ mL
3. Rate to be infused (from chart below) = \_\_\_\_\_ mL/hr
4. Volume of Selenium to be added = 10.0 mL
5. Volume of Glutamine (Dipeptiven®) to be added = \_\_\_\_\_ mL

| Height | Final Total Volume of Bag | Rate to be Infused | Volume of Selenium to be Added | Volume of Glutamine to be Added |
|--------|---------------------------|--------------------|--------------------------------|---------------------------------|
| 196 cm | 250 ml                    | 10.4 mL/hr         | 10 mL                          | 240 mL                          |
| 198 cm | 255 ml                    | 10.6 mL/hr         | 10 mL                          | 245 mL                          |
| 201cm  | 263 ml                    | 11.0 mL/hr         | 10 mL                          | 253 mL                          |
| 203 cm | 268 ml                    | 11.2 mL/hr         | 10 mL                          | 258 mL                          |
| 206 cm | 275 ml                    | 11.5 mL/hr         | 10 mL                          | 265 mL                          |
| 208 cm | 280 ml                    | 11.7 mL/hr         | 10 mL                          | 270 mL                          |
| 211 cm | 288 ml                    | 12.0 mL/hr         | 10 mL                          | 278 mL                          |
| 213 cm | 293 ml                    | 12.2 mL/hr         | 10 mL                          | 283 mL                          |

6. Begin with an empty sterile bag, draw up: Selenium (#4) and Glutamine (#5). Add to the bag and mix.
7. Expiry dating = 96 hours at room temperature.
8. Generate a label and attach to bag.

# Parenteral Supplements Worksheet

| Patient CR# / ID# | Patient Initials | Enrolment # |
|-------------------|------------------|-------------|
|                   |                  |             |

**Placebo** Patient will only receive normal saline (or if hypernatremic D5W)

**Begin with a bag containing exactly 250 mL of normal saline (i.e. account for overfill):**

1. Volume of Dipeptiven† to be added = 0 mL
2. Volume of Selenium§ to be added = 0 mL
3. No mixing needed. The patient will receive a 250 mL bag of normal saline.
4. Record the volume of Normal Saline (=250 mL) on the Parenteral Study Supplement Log, for this patient daily.
5. Generate a label and attach to bag.

†§Dipeptiven and Selenium not required for this treatment arm.

| Patient CR# / ID# | Patient Initials | Enrolment # |
|-------------------|------------------|-------------|
|                   |                  |             |

# Parenteral Supplements Worksheet (Patients > 196 cm tall)

1 Dipeptiven on the Parenteral Study Supplement Log for this

## Placebo Patient will only receive normal saline (or if hypernatremic D5W)

### Dosing:

1. Dose will consist of a 250mL NS bag with added NS to a final volume as indicated in chart below.
2. **Rate of infusion determined from chart below**

### Beginning with a bag of exactly 250 mL of normal saline:

### Go to height chart (see below). Record:

1. Patient height = \_\_\_\_\_ cm
2. Final total volume of the bag (from chart below) = \_\_\_\_\_ mL
3. Rate to be infused (from chart below) = \_\_\_\_\_ mL/hr
4. Volume of normal saline to be added = \_\_\_\_\_ mL

| Height | Final total volume of bag | Rate to be infused | Amount of normal saline to be added |
|--------|---------------------------|--------------------|-------------------------------------|
| 196 cm | 250 mL                    | 10.4 mL/hr         |                                     |
| 198 cm | 255 mL                    | 10.6 mL/hr         | 5 mL                                |
| 201 cm | 263 mL                    | 11.0 mL/hr         | 13 mL                               |
| 203 cm | 268 mL                    | 11.2 mL/hr         | 18 mL                               |
| 206 cm | 275 mL                    | 11.5 mL/hr         | 25 mL                               |
| 208 cm | 280 mL                    | 11.7 mL/hr         | 30 mL                               |
| 211 cm | 288 mL                    | 12.0 mL/hr         | 38 mL                               |
| 213 cm | 293 mL                    | 12.2 mL/hr         | 43 mL                               |

5. Record the volume of Normal Saline (as per final volume on chart above) on the Parenteral Study Supplement Log, for this patient daily.
6. Generate a label and attach to the bag.

## Appendix G. Parenteral Study Supplement Label Template

|   |                                     |
|---|-------------------------------------|
| <b>Parenteral Study Supplement</b><br><b>Study: REDOXS<sup>®</sup></b><br><i>Parenteral Component</i><br><i>For Clinical trial Use Only</i> |                                     |
| <b>Enrollment #:</b>  | <b>Directions:</b>                  |
| <b>Patient CR#/ID#:</b>   | Infuse at 10 mL/hr                  |
| <b>Patient Name:</b>  | <b>Storage:</b> keep between 15-25C |
| <b>Physician:</b>   | <b>Expiry:</b>                      |
| <b>Date:</b>  |                                     |

## Appendix H. Height and Dose of Dipeptiven

| Ht (ft in) | Ht (cms) | Dipeptiven<br>mls | Se<br>mls | N/S<br>mls | Total<br>mls |
|------------|----------|-------------------|-----------|------------|--------------|
| 6'0"       | 183      | 208               | 10        | 32         | 250          |
| 6'1"       | 185      | 212               | 10        | 28         | 250          |
| 6'2"       | 188      | 220               | 10        | 20         | 250          |
| 6'3"       | 191      | 228               | 10        | 12         | 250          |
| 6'4"       | 193      | 233               | 10        | 7          | 250          |
| 6'5"       | 196      | 240               | 10        | ---        | 250          |
| 6'6"       | 198      | 245               | 10        | ---        | 255          |
| 6'7"       | 201      | 253               | 10        | ---        | 263          |
| 6'8"       | 203      | 258               | 10        | ---        | 268          |
| 6'9"       | 206      | 265               | 10        | ---        | 275          |
| 6'10"      | 208      | 270               | 10        | ---        | 280          |
| 6'11"      | 211      | 278               | 10        | ---        | 288          |
| 7'0"       | 213      | 283               | 10        | ---        | 293          |