



**Critical Care
Nutrition**

Instruction Manual:

***Improving the Practice of Nutrition Therapy in the Critically
ill:
An International Quality Improvement Project***

Project Leader:

Naomi Jones
Clinical Evaluation Research Unit,
Angada 4, Kingston General Hospital,
Kingston, ON. Canada K7L 2V7
Phone # (613) 549-6666 ext 2812
Fax # (613) 548-1351
e-mail: jonesn@kgh.kari.net

[Working Draft: 12.1.07]

Table of Contents

Table of Contents.....	1
Introduction	2
Eligibility Criteria	2
Ethics.....	2
User and Site Registration (Form A).....	3
Identification of Study Patients (Screening Log).....	5
Patient Registration (Form B)	6
APACHE II (Form C)	8
Nutrition Assessment (Form D)	9
Daily Nutrition Support Data (Form E).....	10
Outcomes (Form F)	12
Website Entry	13
Appendix: Data Collection Forms.....	15
User and Site Registration (Form A).....	
Identification of Study Patients (Screening Log).....	
Patient Registration (Form B)	
APACHE II (Form C)	
Nutrition Assessment (Form D)	
Daily Nutrition Support Data (Form E).....	
Outcomes (Form F)	

Introduction

This project involves a point-prevalence survey of nutrition therapies in critically ill patients in intensive care units (ICUs) across the world. This survey is to be conducted on **25 January 2007** or the nearest date practically possible.

Dietitians (or other healthcare practitioner) at the respective ICUs will collect data such as site characteristics, patient demographics, direct observational data (i.e. head of the bed elevation), baseline APACHE II variables, length of stay, duration of ventilation and mortality. In addition, nutrition practices such as route of nutrition, kilocalorie and protein levels prescribed and received, interruptions, supplementation, blood sugars, insulin, etc will also be collected on a daily basis from ICU admission onwards for a maximum of 12 days.

It is projected that the results of this survey will identify differences, highlight strengths and weaknesses, and hopefully illuminate opportunities to improve nutrition practices in Canada and throughout the world.

This document outlines the eligibility criteria, and provides detailed instructions on how to proceed with data collection and enter it online on our website www.criticalcarenutrition.com. The Appendix contains case report forms/worksheets that can be copied and used to assist you with data collection. These paper documents are for your own records, and we will not be asking you to forward them to us. However, we do ask that if you decide to complete these forms that you keep them in a secure location until you receive your benchmarked performance report. This will provide you with an opportunity to check your site report with the raw data and ensure that it is accurate. Please check with your hospital for local requirements regarding storage of data collection forms as this may differ by hospital site. Further copies of these case report forms/worksheets can be downloaded from our website.

Eligibility Criteria

Inclusion:

- Critically ill patients that are mechanically ventilated within the first 48 hours of admission to ICU.
- Are in the ICU ≥ 3 days.
- Adult patients (i.e. ≥ 18 years).

Exclusion:

- Patients on mask ventilation.
- Patients who were not ventilated within the first 48 hours of admission to ICU but became ventilated after.

Help Note:

Duration of Ventilation does not matter. Patients that were ventilated within the first 48 hours of admission to the ICU, then came off the ventilator and stay in the ICU > 3 days, still meet the eligibility criteria. If the patient is ventilated prior to admission to the ICU they meet the eligibility criteria.

Ethics

As this is a quality improvement (QI) project, ethical committee approval is not usually required. We have received ethics approval from Queen's University, Kingston, Ontario, Canada to conduct this survey and publish the results. However, you may still want to contact your local ethics committee to check if additional approval is needed.

User and ICU Site Registration

User and ICU Site Registration can be completed on or before 25 January 2007.

Prior to registering your ICU online, you will first need to create a user account for your ICU. This only needs to be completed once. Although several individuals can have access and enter data for your ICU site, we ask that the individual coordinating the survey at your ICU site take responsibility for this initial registration process. This involves the following steps:

1. Go to www.criticalcarenutrition.com and click on the International Survey 'Register' tab or access the registration site directly at <https://ceru.hpcvl.queensu.ca/CCN/>.
2. Complete the questions about yourself (Form A, Part A).
3. Complete your login information (i.e. select and confirm a password and complete human user verification).
4. You will be sent an e-mail confirming that you have successfully registered your ICU site and you will be provided with your username.
5. Remember your username and password, as these details are required to login to your account and start entering patient data on 25 January 2007.
6. Before you can start entering patient data, you must first register your ICU. Login and complete the questions about your hospital and ICU and click save (Form A, Part B).
7. You are now ready to begin entering patient data.
8. If you wish to grant permission for other users, on the ICU status page, click on 'grant permissions for this ICU to other users', enter their e-mail addresses and click on 'grant permissions'. This will generate an e-mail to new users with a username and temporary password to access the survey.

Help Notes:

- **Consent to participate:** Checking this box tells us that you have read the information about the study and understand its purpose. It will allow us to compute benchmarked site reports comparing your performance with other ICUs in the dataset. All data will be aggregated, so that individual patients will not be identifiable and other sites will not be able to identify your ICU. Consenting to participate also allows us to correctly acknowledge your participation on the website and other publications.
- **Password:** Select a password for your personal account. The password is case sensitive (i.e. it must be typed with the required capitalization) and must be at least 6 characters long. Do not type spaces between characters and do not use repeating characters (i.e. aaaaaa). To secure your password please select a combination of characters that will not be easily guessed by others, and don't write down your password or share it with anyone else.
- **Forget your Password? :** If you forget your password, click on the 'forget your password?' tab on the login page. Enter your e-mail address and complete the human user verification. You will be sent an e-mail with your username and a temporary password. Please change your password when you next login to the survey.
- **Human User Verification:** You must type the letters or numbers you see in the box to confirm that a person is trying to access the survey and not an automated program. This helps to prevent automated programs from misusing the survey.
- **Registration e-mail:** Please be aware that your username will be sent to you by e-mail shortly after you register (or after you are granted permissions), as the source of the e-mail may not be recognized by your provider please remember to also check your junk mail in the event that the survey e-mail is diverted to this folder.

- **ICU Registration:** Although you may be aware of the answers to these questions about your hospital and ICU, we request that you ask the medical or nursing director of your ICU to answer questions related to the type of ICU and case mix.
- **Multiple ICUs:** If your hospital has multiple ICUs, please enter YES when prompted, enter your ICU name. Make sure that you select a name for your ICU that is distinct from the other ICUs in your hospital (e.g. medical, surgical, trauma, neuro)
- **Type of Hospital:** A teaching hospital is a hospital that provides training to medical student and residents. If your hospital only has occasional medical students/residents, record your hospital as a non-teaching hospital.
- **ICU Structure:** Open ICUs are sites where patients are under the care of an attending physician (e.g. internist, family physician, surgeon) with intensivists (i.e. physician with training in critical care) consulted as necessary. Closed ICUs are sites in which patients are under the care of an intensivist, or care is shared between the intensivist and another attending physician.
- **Full Time Equivalent Dietitian:** This is a measure of the amount of time the dietitian is dedicated to the ICU relative to a full-time position e.g. a FTE of 1.0 means that the dietitian works in the ICU full-time and a FTE of 0.5 means that the dietitian is in the ICU half-time, or two and a half days a week.
- **Grant permissions:** If more than one person is entering data for your ICU, the primary user will be provided with an option to authorize other users to access your ICU site account. The new users will be sent an e-mail with their own username and password.
- You can edit your user profile and hospital / ICU details or change your password at any time.

Identification of Study Patients (Screening Log)

You must begin to identify study patients on 25 January 2007 (or nearest possible date thereafter).

The Screening Log is not part of the data collection process but has been developed as a tool to help you to identify which patients in the ICU meet the inclusion criteria. As the Screening Log is for your own personal use we will not be asking you to enter any of the data on this form online.

To identify the 20 eligible study patients, complete the following steps:

1. Go to your ICU and record the initials of ALL patients that are currently in your unit on this day in Column 1 of the Screening Log.
2. In Column 2, record only those patients from Column 1 that were intubated and ventilated within the first 48 hrs of admission to ICU.
3. In Column 3, list only those patients from Column 2 that were in ICU ≥ 3 days.
4. In Column 4, number the patients from Column 3 consecutively and these are your eligible study patients.
5. If you have less than 20 patients in your cohort of study patients on 25 January 2007, continue to screen daily until you get a minimum of 20 consecutive patients.
6. For those patients just admitted and are ventilated, please follow them up for 72 hours to see if they stay in the ICU ≥ 3 days, as they will also be included.
7. Since you will be providing us with the patient number (i.e. 1-20) and not the patient initials or hospital identification # (due to confidentiality issues), please keep the Screening Log to help track down which patient corresponds to which patient number in case we have data queries at a later date.

Help Notes

Consecutive Patient: the very next patient that was admitted that meets the criteria. Please do not 'pick and choose' patients randomly.

Inclusion Criteria:

- Include the patient if he/she is physically in the ICU at time of screening and meets the criteria even if they are ready for discharge from the ICU and are waiting for a bed on the ward.
- If the patient has had several admissions to the ICU, use the most recent admission.
- If a patient is discharged from the ICU but re-admitted within 24 hours consider that this patient never left the ICU.
- If there is a patient in the ICU on 25 January 2007, is ventilated and was admitted less than 72 hours ago, say January 24th, please follow the patient up and see if he/she stays in the ICU > 72 hours. If so, you will need to collect daily data from date of admission onwards to a maximum of 12 days (or discharge from the ICU). This can be done retrospectively at the end of the 12 days if you prefer.
- If the patient is in the ICU on January 25th 2007 and was admitted December 28th 2006, you need to collect daily from December 28th 2006 onwards until January 8th 2007.

Patient Registration (Form B)

This form is to be filled out **once** for each patient. Columns 2-10 can be completed retrospectively. Column 11 asks for Head of Bed elevation which should be observed and completed on **25 January 2007** or the first day of patient observation.

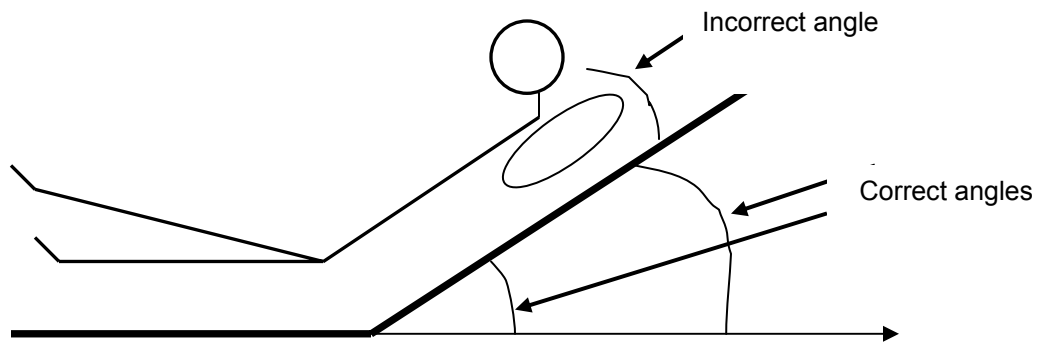
1. From your completed Screening Log, transfer the cohort of study patients (i.e. that meet the inclusion criteria) from your screening log column 4 to column 1 of the Patient Registration, Form B. There **must** be a minimum of 20 patients.
2. Complete the rest of the patient registration details (i.e. sex, age, date of hospital & ICU admission, admission category, diagnosis, start of mechanical ventilation, presence of ARDS, APACHE II, HOB elevation).
3. If you have less than 20 patients in your cohort of study patients on 25 January 2007, continue to register patients daily until you get a minimum of 20 consecutive patients.

Help Notes:

- **Column 5 (ICU Admission):** If a patient was admitted to the ICU, then discharged or transferred and then readmitted to the ICU, enter the data of the most recent admission to the ICU.
- **Column 6 (Admission Category):** Choose the most suitable from Medical or Surgical. If **surgical indicate if this is elective or emergency surgery.**
- **Column 7 (Admission Diagnosis):** Use the **ICU Admission Taxonomy** provided (see Appendix). **This is the diagnosis that resulted in the patient's admission to ICU.** If the patient's admission category is Medical, choose the most suitable diagnosis number from the **Non-Operative list** of the Taxonomy (i.e. 1 to 49). If the patient's admission category is Surgical, choose the most suitable diagnosis number from the **Post-Operative list** of the Taxonomy (i.e. from 50-86). If the Admission Diagnosis is not present in the taxonomy, look for the appropriate condition (based on admission category) and record the corresponding number (e.g. if Admission Category is Non-Operative and Admission Diagnosis is SARS, choose "Other Respiratory Disease (#20)" and write in "SARS". If Admission Category is Non-Operative and Admission Diagnosis is Acute Renal Failure, choose "Other Metabolic disease (#44)" and write in "Acute renal failure"). We are specifically interested in reporting on patients with sepsis, pancreatitis, bariatric surgery, ARDS, and burns, therefore if a suitable diagnosis for a patient includes one of these conditions please select in preference to other diagnoses (e.g. if a patient is admitted with pneumonia or sepsis, select sepsis).
- **Column 8 (Date and time of mechanical ventilation in ICU):** Record the first time the patient was ventilated in the ICU. If the patient came to the ICU ventilated, the date and time equals ICU admission date and time.
- **Column 9 (Presence of Acute Respiratory Distress Syndrome (ARDS)):** You only need to review the chart for the first 72 hrs from admission to the ICU for either a confirmed or suspected diagnosis of ARDS. If the chart says "? ARDS", this is suspected ARDS, say Yes.
- **Column 10 (APACHE II Score):** If routinely calculated directly enter score in column 10, if unavailable leave column blank and complete Form C.

- **Column 11 (Head of Bed Elevation):** For determining head of the bed elevation, use the device that the ICU bed is equipped with. If no such device is available, you will need to estimate the angle and we suggest that you do this with another team member i.e. RN, RT, etc. When you are estimating, please note if the patient has pillows under his/her head. If there are pillows, make sure that you record the angle at which the patient's trunk meets the bed instead of the angle between the head and the pillow.

See figure below:



APACHE II Score (Form C)

The APACHE II score is a severity of disease classification system, if APACHE II scores are not routinely calculated for patients in your ICU an APACHE II Worksheet (Form C) is provided to help collect the necessary information from the patient's chart before you enter all the necessary variables online and the score will be generated automatically for you.

1. Review the patient's lab values and nursing notes from the first 24 hours of admission to ICU to obtain the necessary variables.
2. This form is to be filled out once for every patient.
3. Enter the worst value for all variables within the first 24 hours from admission to ICU. The worst value is the value that is most abnormal or deranged.

Help Notes:

- **Temperature:** List the core temperature or rectal temperature.
 - If oral temperature is reported, add 0.5 °C to this to get the core temperature.
 - If axilla temperature is reported, add 1.0°C to this to get the core temperature.
- **Blood Pressure:** Record the lowest documented systolic blood pressure and the corresponding diastolic blood pressure. The Mean Arterial Pressure (MAP) value will automatically be calculated when this information is entered on the web.
- **Heart Rate:** record the most extreme value.
- **Respiratory rate:** record either ventilated or non-ventilated rates.
- **Oxygenation:** only record if arterial blood gases are available.
 - If (a) FiO_2 is ≥ 0.5 , record the FiO_2 , $PaCO_2$, and the PaO_2 . The A-a DO_2 (alveolar arterial gradient) value will automatically be calculated when you enter this information on the web.
 - If (b) FiO_2 is < 0.5 , record the PaO_2 value.
- **Serum Creatinine:** Double the points score for acute renal failure.
- **Hematocrit:** enter this value as a percentage.
- **White Blood Cells:** record units as (total/L)($\times 10^9$).
- **Glasgow Coma Score (GCS):** If GCS is calculated at your ICU, enter the score directly. Alternatively, to determine the GCS choose the best response from each of the 3 categories for the previous 24 hours from screening. If the patient is sedated, then go back to the period when the patient was not receiving sedation or approximate what the score would be if the sedation were to be removed. Enter the values in the 3 separate categories i.e. Eye Opening, Verbal Response and Best Motor Response and the GCS will automatically be calculated.
- **Serum HCO₃:** should only be used if there are no arterial blood gases available in the previous 24 hours.
- **Acute Physiology Score (APS):** This will be calculated automatically online.
- **Age Points:** This will be calculated automatically online from the age.
- **Chronic Health Points:** Choose one of the 3 categories for patients with a history of severe organ system insufficiency or immunocompromised. Refer to legend on APACHE II form for definitions. When online, click on the "Explain" box on the left hand side of the screen for definition.
- **Total APACHE II Score** = sum of the APS points, Age points and the Chronic Health Points. This will be calculated automatically online when you press the "SUBMIT" box.

Nutritional Assessment (Form D)

This form is to be filled out **once** for each patient. This will be done retrospectively by chart review. If you do not have enough patients (<20) on 25 January 2007, continue to register each consecutive patient and complete the Nutrition Assessment form until you have 20 patients.

1. Record height in metres and weight in kilograms. If unable to obtain “actual” height or weight, use estimated height and weight or that obtained from family members.
2. For weight used to determine prescribed energy requirements, choose from the taxonomy and enter the corresponding code.
3. For determination of energy requirements choose from the taxonomy and enter the corresponding code.
4. For prescribed energy intake enter the kilocalories provided by the goal regimen (i.e. maximum rate/volume) for EN/PN according to the dietitians or physicians recommendation.
5. For prescribed protein intake enter the grams provided by the goal regimen (i.e. maximum rate/volume) for EN/PN according to the dietitians or physicians recommendation.
6. For those on EN and PN, please record the kilocalories and protein from the combined prescription of EN and PN.

Help Notes:

- **Column 3 (Weight):** Use “dry weight” (i.e. weight in the absence of fluid overload) if fluid retention is present.
- **Column 6 (Prescribed Energy Intake):** Record total kilocalories i.e. include the kilocalories from protein.

Daily Nutrition Support Data (Form E)

This form is to be filled out for each patient daily. This will be done retrospectively by chart review. If you do not have enough patients (<20) on 25 January 2007, continue to register each consecutive patient and complete the daily data form until you have 20 patients.

1. For each patient, complete all relevant parts of the form for each study day (i.e. from the point of the patient's admission to ICU (Day 1) onwards until discharge from ICU or a maximum of 12 days).
2. Complete Part A and B, on type of Nutrition Support and miscellaneous daily data for ALL patients.
3. If patient received EN (either EN only, or EN and PN), complete Part C.
4. If patient received PN (either PN only, or PN with EN), complete Part D.

Note:

Part A

- **Study Days:** Day 1 = from the time of admission to ICU until the end of the 24 hr day according to your site's flow sheets (e.g. if a patient was admitted to ICU on May 2nd at 20:30 hrs and your flow sheets run from 7:00 am to 7:00 am, then day 1= from 20:30 hrs May 2nd until 7:00 am May 3rd). Day 2 = a 24 hour period according to your institution's flow sheet (e.g. if your ICU nursing flow sheets run from 7:00 am until 7:00 am, then day 2 for the above patient would be from 7:00 am May 3rd until 7:00 am May 4th). Given the inconsistencies amongst the flow sheets from different ICUs this was felt to be the easiest for data collection.

Part B

- **Blood sugars:** record first blood sugar reading closest to 08:00 hrs. This can be either serum or capillary.
- **Hypoglycemic episodes:** Record any blood sugar reading <3.5mmol/l (63 mg/dL) and time episode occurred. If reading is in mg/dL multiply by 0.0555 to convert to mmol/L.
- **Insulin:** Add up the total number of units of insulin over the 24 hr period. If the patient is receiving 2 different types of insulin add together to provide total units of insulin. If the patient did not receive insulin enter 0.
- **Supplemental Glutamine:** This refers to glutamine given as a supplement over and above what would normally be present in the standard enteral or parenteral formula.
- **Propofol:** Indicate Yes if continuous infusion \geq 6 hrs and No if no propofol given or if continuous < 6hrs or provided intermittently. If Yes, indicate kilocalories received from propofol (provides 1.1Kcal/ml). Do not count propofol in kilocalories from EN/PN.

Part C: EN

- **EN Formula:** For the type of formula received for the day, you may enter up to 3 codes for different formula choices from the taxonomy.
- **Kilocalories received:** Record the actual kilocalories received. Record all kilocalories (include kilocalories from protein in EN formula and supplements, but not from propofol or dextrose).
- **Protein received:** Record the actual protein received (include protein from glutamine and supplements if applicable).
If patient also received PN, record kilocalories and protein SEPERATELY in Part C and D.
- **EN interrupted today due to intolerance:** Only say YES if the feeds were interrupted due to gastric residuals or vomiting, no other reasons (e.g. diarrhea).

- **Motility Agents:** Choose from the taxonomy. We are not asking you to record the route of administration or dose. If patient has been prescribed combination therapy, please select all motility agents prescribed.
- **Location of Feeding Tube:** Feeding tube refers to **any** oro/naso-gastric or feeding tube. Please record the location that is used for **most** of the day. If gastric was used for half the day and post-pyloric for the other half, choose post-pyloric for that day. Select “confirmed” feeding tube placement if placement was confirmed by an x-ray on **that** day. Select “presumed” placement if placement was confirmed by an x-ray earlier but not on that day.

Part D: PN

- **Contraindication to EN:** Choose from taxonomy. If patient receiving EN, select ‘none’, if reason for PN not listed, select ‘other’ and specify.
- **Kilocalories received:** Record the actual kilocalories received. Record all kilocalories (include kilocalories from protein and supplements but not from propofol).
- **Protein received:** Record the actual protein received (include protein from glutamine and supplements if applicable).
If patient also received PN, record kilocalories and protein SEPERATELY in Part C and D.

Outcomes (Form F)

This form is to be completed upon discharge from ICU, or hospital. This form is to be completed once for each patient. You may need to wait until day 60 (from admission to ICU) to complete some of the questions. You can enter the outcomes data online until **4 June 2007**.

1. Enter the date and time of start of EN (and/or PN)
2. Enter the date and time that the patient was taken off ventilation permanently in the ICU.
3. Enter the date and time of date of patient death (if applicable).
4. Enter date and time of ICU and/or hospital discharge.

Note:

- **Start of EN and/or PN:** If EN (or PN) was started before admission to ICU, when entering data online click on “EN initiated prior to ICU admission” or “PN initiated prior to ICU admission”, and initiation of feeding will be evaluated as equal to ICU admission date. If EN (or PN) was started after the 12 day period OR was not started at all, when entering data online click on “EN not initiated during the first 12 days from admission to ICU” (or same for PN).
- **Mechanical ventilation discontinued:** If the patient discontinues ventilation and then restarts within 24 hours, ignore this and record the date the patient permanently comes off the ventilator.
- If the patient is discharged from the ICU and is readmitted to ICU and re-ventilated within 24 hrs, and is ventilated again, consider this patient as still being in the ICU and record the date that the patient comes off the ventilator after the re-admission.
- **ICU/Hospital discharge:** if the patient is still alive at day 60, when entering data online click on “check this box if patient still in ICU or hospital at day 60 (from admission to ICU). If the patient died in hospital or ICU, when entering data online click ICU or hospital discharge = death date, then the date will automatically change to the same date as patient death date.
- Death or ICU/hospital discharge marks the end of data collection. We are not asking you to follow-up for 60 days after discharge home or transfer to another healthcare facility.

Website Entry

You are encouraged to start entering the data online as soon as you have collected the site registration and patient registration data. You will need to wait for up to 60 days to obtain data on outcomes, but all the other data should be entered soon after collection.

Please enter all the available registration and daily data by **20 April 2007** and the 60 days outcomes data can be entered after this date as it becomes available. Outcome data can be entered until **4 June 2007**.

1. Go on internet explorer and enter the following website address:
www.criticalcarenutrition.com and click on the **International Survey - Register** tab.
2. If you have participated in the survey previously **or** you are new to this survey you will first need to register yourself
3. Complete the personal and login information (Form A, Part A). You will then receive your username via e-mail. You will be provided with a weblink to complete site registration and grant permission to other users (if applicable). **PLEASE REMEMBER YOUR USERNAME AND PASSWORD.**
4. After completing the Site Registration (Form A, Part B) online you will be taken to the **ICU Status Page** of the website. To register new patients click on **Register New Patient** and you will end up in the Patient Registration section. Transfer the details from Form B to here.
5. To start entering patient data, select the patient that you just registered and click on **Click Here to enter Nutrition Assessment**. You can now start transferring the data from the Form D.
6. To start entering daily nutrition support data, select the patient number to be transferred to the **Patient Status Page**. Under Daily Observation click on **New Observation**. You can now start transferring the data from Daily Nutrition Support (Form E) to the respective web pages.
7. Once the Outcomes (Form F) is complete, you can transfer this onto the website under the Patient Status Page, under Outcomes and then **Finalize Patient**.
8. Patients will not be finalized until outcome data is entered or any outstanding data queries are corrected.
9. To edit patient information click on **edit** tab, to edit daily observation data click on day number or type of nutrition support, you will be transferred to the relevant forms.

Help Notes:

- Please ensure that **only one** person at a time from your site is entering the data online.
- Please keep all your completed data collection worksheets until you receive your benchmarked performance report so that you can verify the data in your report.
- You can register and enter patient data from **25 January until 20 April 2007** and 60 day outcomes data until **4 June 2007**.
- At each stage of data entry there is an option to save and exit the secure area of the International Nutrition Survey.
- At each stage of data entry there is an option to edit existing data.
- At each stage of data entry there is a **help** tab to assist with data entry.

For any questions regarding the online international survey or the study please contact:

Naomi Jones

*Project Leader for Dr. Daren Heyland
Clinical Evaluation Research Unit
Kingston General Hospital
Kingston, Ontario, Canada
Phone # (00)1-613-549-6666 ext 2812
email: jonesn@kgh.kari.net*

Appendix: Data Collection Forms

User and Site Registration (Form A)**Part A.**

Before completing the site registration process, please answer a few questions about yourself:

1. First Name _____ Last Name _____

2. Address _____

City _____ State/Province/County _____

Country _____

Telephone: _____ Fax: _____

Email: _____

3. What is your role in the ICU?

Dietitian

Registered Nurse

Research Co-ordinator

Doctor

Pharmacist

Other, please specify _____

4. What is your gender? Male Female

5. What is your age?

18-24 years

25-34 years

35 -44 years

45-54 years

55-64 years

65 years and over

Hospital _____

6. How did you hear about the study?

Professional Society Please specify _____

Internet

Conference Please specify _____

Colleague

Other, Please specify _____

7. Did you require ethics approval to participate in this survey? Yes No

if yes, please specify:

expedited review without patient consent

expedited review with patient consent

full review without patient consent

full review with patient consent

Part B.

To register your site, please provide the following information.

You may need to ask your ICU Medical Or Nursing Director to help you with some responses

1. Hospital Name: _____

2. Does your hospital have multiple ICUs? Yes No

If yes, name of your individual ICU _____

3. City: _____

4. Country: _____

5. Type of Hospital: Teaching Non-Teaching

6. Size of hospital (number of beds): _____

7. ICU Structure: Open (Attending physician remains in charge, ICU physician consults)

 Closed (Care transferred or shared with ICU physician)

 Other please specify _____

8. Case Mix: (check all that apply)

 medical neurological

 surgical neurosurgical

 trauma cardiac surgery

 pediatrics burns

 other (specify) _____

9. Presence of designated ICU Medical Director? Yes No

10. Number of beds in ICU: _____

11. Do you have a Dietitian working in the ICU? Yes No

If yes, amount of FTE (full time equivalent) dietitian _____

12. Do you use a bedside feeding protocol/algorithm that allows the nurse to advance or withhold tube feedings as specified by the protocol/algorithm?

Yes No

If yes, please answer the following:

a) Do you use a gastric residual volume threshold to adjust feeds? Yes No

If yes, what gastric residual volume threshold do you use? _____ mls

b) Does your feeding protocol include an algorithm for: (please check ALL that apply)

Motility agents

Small Bowel Feeding

Withholding for procedures

Head Of Bed elevation

Other (Please Specify):_____

13. Do you use a protocol to monitor blood sugar control or the administration of insulin?

(for the average ICU patient and NOT for those with Diabetic Ketoacidosis (DKA) or hyperosmolar non-ketotic coma)

Yes No

If yes, what range of blood glucose do you target? Lower:_____ Upper:_____mmol/L

Patient Registration (Form B)

Columns 2-10 can be completed retrospectively. Column 11 needs to be recorded on Day 1 of data collection.

Patient #'s (column 1) here correspond to the patient #'s from Screening Log (column 4)

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11
Patient number	Sex (Male or Female)	Age (Years)	Hospital Admission (Date & Time)	ICU Admission (Date & Time)	Admission Categories Choose one (MOST suitable): Medical OR Surgical If Surgical choose Elective Surgery OR Emergency Surgery	Admission Diagnosis Refer to Taxonomy and record the number corresponding to the most suitable diagnosis. Choose only ONE.	Start of Mechanical Ventilation in ICU (Date & Time)	Presence of ARDS (within 72 hrs from admission to the ICU). (Yes or No) Say yes if suspected or confirmed ARDS	APACHE II Score If un-available complete Form C	Head of Bed Elevation (degrees) (0-90) (see figure)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

ICU Admission Diagnosis Taxonomy

NON-OPERATIVE CONDITIONS

Choose from this list if admission category is medical

Cardiovascular / vascular:

1. Cardiogenic shock
2. Cardiac arrest
3. Aortic aneurysm
4. Congestive heart failure
5. Peripheral vascular disease
6. Rhythm disturbance
7. Acute myocardial infarction
8. Hypertension
9. Other CV disease: _____

Respiratory:

10. Parasitic pneumonia (ie.pneumocystis carinii)
11. Aspiration pneumonia
12. Respiratory neoplasm (inc. larynx, trachea)
13. Respiratory arrest
14. Pulmonary edema (non-cardiogenic)
15. Bacterial / Viral pneumonia
16. Chronic obstructive pulmonary disease
17. Pulmonary embolism
18. Mechanical airway obstruction
19. Asthma
20. Other respiratory disease: _____

Gastrointestinal:

21. Hepatic failure
22. GI perforation/obstruction
23. GI bleeding due to varices
24. GI inflammatory disease (ulcerative colitis, crohn's disease)
25. GI bleeding due to ulcer/laceration
26. GI bleeding due to diverticulosis
27. Pancreatitis
28. Other GI disease: _____

Neurologic:

29. Intracerebral hemorrhage
30. Subarachnoid hemorrhage
31. Stroke
32. Neurologic infection
33. Neurologic neoplasm
34. Neuromuscular disease
35. Seizure
36. Other neurologic disease: _____

Sepsis:

37. Sepsis (other than urinary tract)
38. Sepsis of urinary tract origin

Trauma:

39. Head trauma (with/without multiple trauma)
40. Multiple trauma (excluding head trauma)

Metabolic:

41. Metabolic coma
42. Diabetic ketoacidosis
43. Drug overdose
44. Other metabolic disease: _____

Hematologic:

45. Coagulopathy //neutropeniathrombocytopenia
46. Other hematologic condition: _____

Other:

47. Renal disease: _____

48. Burns
49. Other medical disease: _____

POST-OPERATIVE CONDITIONS:

Choose from this list if admission category is surgical

Vascular / cardiovascular:

50. Dissecting/ruptured aorta
51. Peripheral vascular surgery (no bypass graft)
52. Valvular heart surgery/CABG
53. Elective abdominal aneurysm repair
54. Peripheral artery bypass graft
55. Carotid endarterectomy
56. Other CV disease: _____

Respiratory:

57. Respiratory infection
58. Lung neoplasm
59. Respiratory neoplasm (mouth, sinus, larynx, trachea)
60. Other respiratory disease: _____

Gastrointestinal:

61. GI perforation/rupture
62. GI inflammatory disease
63. GI obstruction
64. GI bleeding
65. Pancreatitis
66. Liver transplant
67. GI neoplasm
68. GI cholecystitis / cholangitis
69. Other GI disease: _____

Neurologic:

70. Intracerebral hemorrhage
71. Subdural/epidural hematoma
72. Subarachnoid hemorrhage
73. Laminectomy/other spinal cord surgery
74. Craniotomy for neoplasm
75. Other neurologic disease: _____

Trauma:

76. Head trauma (with/without multiple trauma)
77. Multiple trauma (excluding head trauma)

Renal:

78. Renal neoplasm
79. Other renal disease: _____

Gynecologic:

80. Hysterectomy

Orthopedic:

81. Hip or extremity fracture

Bariatric Surgery:

82. Laparoscopic Banding
83. Laparoscopic Gastric Bypass
84. Open Gastric Bypass (Roux-en-Y)
85. Vertical Banded Gastroplasty

Other:

86. Other surgical condition: _____

APACHE II Worksheet (Form C)

Patient _____

Record values from the first 24 hours from admission to ICU.

1	Temperature – rectal or core (°C) (If °F, use conversion factor: $- 32 \div 1.8$)				
2	a. Systolic Blood Pressure (mmHg) b. Diastolic Blood Pressure (mmHg)				
3	Heart Rate (Ventricular Response)				
4	Resp. Rate (non-ventilated or ventilated)				
5	Oxygenation: a. If $FiO_2 \geq 0.5$ record the FiO_2 , $PaCO_2$, and the PaO_2 b. If $FiO_2 < 0.5$ record only PaO_2 If NO arterial blood gases check here <input type="checkbox"/> (assumes normal oxygenation and scores "0")				
6	Arterial pH				
7	Serum Sodium (mmol/L or mEq/L)				
8	Serum Potassium (mmol/L or mEq/L)				
9	Serum Creatinine (μ mol/L) (If mg/dl, use conversion factor: $\times 88.4$) <input type="checkbox"/> If patient is in acute renal failure, check here <input type="checkbox"/>				
10	Hematocrit (%) (If fraction, use conversion factor $\times 100$)				
11	White Blood Count (total/ mm^3) (in 1000s)				
12.	Glasgow Coma Score (GCS) (Choose one option for each box) <table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; padding: 5px; width: 33%; vertical-align: top;"> Eye Opening 4 – Spontaneous 3 – To speech 2 – To pain 1 – None </td> <td style="border: 1px solid black; padding: 5px; width: 33%; vertical-align: top;"> Verbal Response 5 – Oriented 4 – Confused 3 – Inappropriate words 2 – Incomprehensible words 1 – Incomprehensible sounds </td> <td style="border: 1px solid black; padding: 5px; width: 33%; vertical-align: top;"> Best Motor Response 6 – Obeys commands 5 – Localizes to pain 4 – Withdraws from pain 3 – Abnormal flexion 2 – Extension 1 – None </td> </tr> </table>		Eye Opening 4 – Spontaneous 3 – To speech 2 – To pain 1 – None	Verbal Response 5 – Oriented 4 – Confused 3 – Inappropriate words 2 – Incomprehensible words 1 – Incomprehensible sounds	Best Motor Response 6 – Obeys commands 5 – Localizes to pain 4 – Withdraws from pain 3 – Abnormal flexion 2 – Extension 1 – None
Eye Opening 4 – Spontaneous 3 – To speech 2 – To pain 1 – None	Verbal Response 5 – Oriented 4 – Confused 3 – Inappropriate words 2 – Incomprehensible words 1 – Incomprehensible sounds	Best Motor Response 6 – Obeys commands 5 – Localizes to pain 4 – Withdraws from pain 3 – Abnormal flexion 2 – Extension 1 – None			
13	Serum HCO₃ (venous-mmol/L or mEq/L) If NO arterial blood gases, replaces arterial pH and assumes normal oxygenation.				
14.	Age				
15.	Chronic Health Points. If the patient has a history of severe organ system insufficiency (see definitions below) or is immuno-compromised assign points as follows. <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> 5- For non-operative or emergency postoperative patients 2- For elective postoperative patients 0- If patient does NOT have a history of severe organ system insufficiency and is NOT immuno-compromised. </div> <p>Chronic Health Definitions Organ insufficiency or immuno-compromised state evident prior to this hospital admission and are consistent with the following criteria: Liver: Biopsy-proven cirrhosis and documented portal hypertension; prior episodes of upper GI bleeding attributed to portal hypertension; or prior episodes of hepatic failure/encephalopathy/coma Cardiovascular: New York Heart Association Class IV Respiratory: Chronic restrictive, obstructive, or vascular disease resulting in severe exercise restriction (i.e., unable to climb stairs or perform activities of daily living or household duties; or documented chronic hyposia, hypercapnia, secondary polycythemia, severe pulmonary hypertension (>40 mmHg), or ventilator dependency Renal: Receiving chronic dialysis Immuno-Compromised: The patient has received therapy that suppresses resistance to infection (i.e., immuno-suppressive treatment, chemotherapy, radiation, long term or recent high dose steroids, or has a disease that is sufficiently advanced to suppress resistance to infection (i.e., leukaemia, lymphoma, AIDS)</p>				

Patient Nutrition Assessment (Form D)

This form can be completed retrospectively

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Patient number	Height (meters)	Weight (kg)	Weight used in calculating requirements Refer to taxonomy and record the number corresponding to most suitable weight	Determination of energy requirements Refer to taxonomy and record the number corresponding to the method	Prescribed energy intake (Kcal/day)	Prescribed protein intake (grams / day)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Nutrition Assessment Taxonomy

Column 4:

What body weight did you use in calculating nutritional requirements? Choose from the following.

Code	Weight
1	Actual (ABW)
2	Ideal (IBW) based on Hamwi formula
3	Ideal (IBW) based on BMI 20-25 Kg/m ²
4	Adjusted by 25% (ABW x 0.25 + IBW)
5	Adjusted by 40% (ABW x 0.4 + IBW)
6	Adjusted average ((ABW + IBW) x 0.5)
7	Other, please specify

Column 5: Energy Requirements

What predictive equation do you use to determine energy requirements? Choose from the following.

Code	Predictive Equation
1	Harris Benedict Equation
	Schofield Equation with no adjustment for stress and activity
2	Schofield Equation with adjustment for stress and/or activity
3	Mifflin-St. Jeor Equation
4	Ireton-Jones Equation
5	19-21 Kcal/Kg
6	25-30 Kcals/kg
7	Provide 1200 – 1500 Kcal as standard
8	Indirect calorimetry
9	Other, please specify

Daily Nutrition Support (Form E)

To be filled out daily for each patient.

Part A: Type of Nutrition Support (All patients)

Study Day #	1 ICU Admit	2	3	4	5	6	7	8	9	10	11	12
Date: dd/mm/yy:												
1. Did the patient receive Nutrition Support today? Yes or No If no, only complete Part A												
2. If yes, what was the type of Nutrition Support received?												
2a. Received EN only? Yes or No If yes, complete Part A & B												
2b. Received PN only? Yes or No If yes, complete Part A & C												
2c. Received both EN and PN today? Yes or No If yes, complete Part A, B, & C												
2d. Received oral intake only today? Yes or No Only complete Part A												
2e. Did NOT receive EN, PN or oral intake? Yes or No Only complete Part A												

Hospital _____

Patient _____

Daily Nutrition Support (Form E)

Part B: Miscellaneous (All Patients)

Page 2 of 7

Study Day #	1	2	3	4	5	6	7	8	9	10	11	12
1. Morning blood sugar (mmol/l) (If in mg/dL, x0.0555 to convert to mmol/L)												
2a. Hypoglycemic event? Yes or No												
2b If yes, blood sugar (mmol/L) (If in mg/dL, x0.0555 to convert to mmol/L)												
3. Units of insulin received												
4a Is the patient on supplemental glutamine? Yes or No.												
4b. If yes, dose of glutamine (gms)												
4c. If yes, route of glutamine: EN or IV/PN												
5a Is the patient on continuous propofol ≥ 6 hrs? Yes or No												
5b If yes, kilocalories received from propofol												

Hospital _____

Patient _____

Daily Nutrition Support (Form E)

Part C: Enteral Nutrition

Page 3 of 7

Study Day #	1	2	3	4	5	6	7	8	9	10	11	12
1. EN formula name(s) Choose code# from taxonomy												
2a. Kilocalories actually received from EN												
2b. Protein actually received from EN (grams)												
3. Location of feeding tube Choose from taxonomy												
4. EN interrupted today due to intolerance? Yes or No												
5. Motility agents Choose from taxonomy												

Part D: Parenteral Nutrition

Study Day #	1	2	3	4	5	6	7	8	9	10	11	12
1. Contraindication to EN? Choose from taxonomy												
2a Kilocalories actually received from PN												
2b Protein actually received from PN (grams)												
3a Lipids received? Yes or No												
3b If yes, type of lipids provided? Choose from taxonomy												

A. Abbott International

Code	Formula Name	Code	Formula Name
A1	AlitraQ	A24	Osmolite High Protein
A2	Edanec	A25	Oxepa
A3	Edanec HN	A26	Optimental
A4	Glucerna	A27	Optimental 1.0
A5	Glucerna Tube Feeding	A28	Perative
A6	Glucerna Select	A29	Pivot 1.5 Cal
A7	Jevity	A30	Promote
A8	Jevity 1 Cal	A31	Promote with Fiber
A9	Jevity 1.2 Cal	A32	Pulmocare
A10	Jevity 1.5 Cal	A33	Pulmocare II
A11	Jevity Plus 1.5 k/cal	A34	Suplena
A12	Jevity 2 with FOS	A35	TWO Cal HN
A13	Jevity with FOS	A36	Vital
A14	Jevity HiCal	A37	Vital HN
A15	Jevity Plus	A38	Supplement: Juven
A16	Nepro	A39	Supplement: Polycose powder
A17	Osmolite	A40	Supplement: Polycose Liquid
A18	Osmolite 1 Cal	A41	Supplement: Promod
A19	Osmolite 1.2 Cal	A42	Supplement: Prosure
A20	Osmolite 1.5 Cal	A43	Other
A21	Osmolite with Fiber		
A22	Osmolite HN		
A23	Osmolite HN Plus		

B. Fresenius Kabi

Code	Formula Name
B1	1000 complete
B2	1200 complete
B3	1800 complete
B4	Diben
B5	Fresubin Original
B6	Fresubin Original Fibre
B7	Fresubin Energy
B8	Fresubin Energy Fibre
B9	Fresubin HP Energy
B10	Fresubin Soya Fibre
B11	Fresubin HEPA
B12	Intestamin
B13	Reconvan
B14	Supportan
B15	Survimed Renal
B16	Survimed OPD
B17	Other

C. Nestle

Code	Formula Name
C1	Crucial
C2	Peptamen with Prebio 1
C3	Peptamen
C4	Peptamen 1.5
C5	Peptamen VHP
C6	Nutren 2.0
C7	Nutren 1.5
C8	Nutren VHP
C9	Nutren VHP fibre
C10	Nutren Fibre with Prebiol 1
C11	Nutrihep
C12	Supplements - Caloreen
C13	
C14	
C15	

D Novartis

Code	Formula Name	Code	Formula Name
D1	Compleat	D21	Peptinex DT
D2	Diabetisource AC	D22	Peptinex DT with Prebiotics
D3	Fibersource	D23	Resource 2.0
D4	Fibersource HN	D24	Resource Plus
D5	Impact	D25	Resource Standard
D6	Impact Glutamine	D26	Resource Diabetic
D7	Impact with Fiber	D27	Subdue Plus
D8	Impact 1.5	D28	Tolerex
D9	Isocal	D29	Trauma-cal
D10	Isocal HN	D30	Ultracal
D11	Isosource	D31	Vivonex TEN
D12	Isosource HN	D32	Vivonex Plus
D13	Isosource HN with fibre	D33	Vivonex RTF
D14	Isosource VHN	D34	Supplements- Beneprotein Instant Protein Powder
D15	Isosource 1.5	D35	Supplements - Microlipid
D16	Novasource Renal	D36	Supplements -Benecalorie
D17	Novasource Pulmonary	D37	Supplements - MCT oil
D18	Novasource GI Control	D38	Supplements-Resource Glutasolve
D19	Peptinex	D39	Supplements: Resource Arginaid
D20	Peptinex HN	D40	Other

E Nutricia

Code	Formula Name	Code	Formula Name
E1	Cubison	E13	Nutrison Low Sodium
E2	Diason	E14	Nutrison Concentrated
E3	Nutrison Standard	E15	Nutrison Pre
E4	Nutrison Multi Fibre	E16	Nutrison Low Energy Multi Fibre
E5	Nutrison Protein Plus Multi Fibre	E17	Nutrisorb Low Energy
E6	Nutrison Protein Plus	E18	Nutrisorb Low Energy Soy Multi Fibre
E7	Nutrison1000 Complete Multi Fibre	E19	Peptisorb
E8	Nutrison 1200 Complete Multi Fibre	E20	Supplement: Calogen
E9	Nutrison Energy Multi Fibre	E21	Supplement: Protifar
E10	Nutrison Energy	E22	Supplement: Polycal Powder / Fantomalt
E11	Nutrison Soya	E23	Supplement: Polycal Liquid
E12	Nutrison MCT	E24	Other;

F. Miscellaneous Companies

Code	Formula Name
F1	Baxter: Restore-X
F2	MEAD JOHNSON: Portagen
F3	Hormel Health: Immun-Aid
F4	Hormel Health: Hepatic-Aid
F5	Hormel Health: Glutasorb
F6	Hormel Health: Propass
F7	National Nutrition: Argiment
F8	National Nutrition: Argitein
F9	Other

Part B (3)

Location of feeding tube

1. Gastric confirmed
2. Gastric presumed
3. Post-pyloric duodenal confirmed
4. Post-pyloric duodenal presumed
5. Post-pyloric jejunal confirmed
6. Post-pyloric jejunal presumed
7. No tube in place

Part B (5)

Motility agents

1. Metoclopramide
2. Motilium
3. Erythromycin
4. Other: Specify_____
5. None

Part C (1)

Contraindication to EN

1. None
2. Mechanical bowel obstruction
3. Bowel ischemia
4. Hemodynamic instability
5. Small bowel ileus
6. Small bowel fistulae
7. Bowel anastomosis
8. Other, specify _____

Part C (3b)

Type of lipids

1. Soybean oil based (LCTs)
2. MCT/LCT physical mixture
3. MCT/LCT structured form
4. Olive Oil based
5. Fish Oil based (10-20% of total lipid emulsion)
6. Mixture of soy oil, MCTs, and fish oil
7. Mixture of soy oil, MCTs, olive oil, and fish oil (SMOF)
8. Other, specify _____

Outcomes (Form F)

To be filled out once for each patient

1. Date and time EN first initiated in ICU

Month	Day	Year	hh:mm

Check here if:
EN initiated prior to ICU admission

OR

Check here if:
EN not initiated during the
first 12 days of ICU stay

2. Date and time PN first initiated in ICU

Month	Day	Year	hh:mm

Check here if:
PN initiated prior to ICU admission

OR

Check here if:
PN not initiated during the first 12
days of ICU stay

You may need to wait until day 60 (from admission to ICU) to complete the following questions:

3. Date and time mechanical ventilation discontinued (final) in ICU

Month	Day	Year	hh:mm

4. Did the patient die within 60 days (from admission to ICU)?

Yes No

If yes, Date and time of patient death

Month	Day	Year	hh:mm

5. Date and time of ICU discharge

Month	Day	Year	hh:mm

check this box if patient still
in ICU at day 60 (from
admission to ICU)

OR

check this box if ICU d/c date
is same as date of death

6. Date and time of hospital discharge

Month	Day	Year	hh:mm

check this box if patient
still in hospital at day 60
from admission to ICU

OR

check this box if hospital d/c
date is same as date of death