Nutrition care plan

Components and development
Objectives

- To define the nutrition care plan
- To present the components of the nutrition care plan
- To discuss the different approaches in determining the contents of the nutrition care plan
Nutrition Support Program Design

Admission

Patient Screening

Patient Assessment

Not at Risk

At Risk

Development of Nutrition Care Plan

Implementation of Nutrition Care Plan

Patient Reassessment and Updating of Nutrition Care Plan

Patient Monitoring

Evaluation of Care Setting

Goals Achieved

Progressing Towards Goals

Termination of Therapy

In Patient Care No Longer Required

Discharge Planning

ASPN Board of Directors – Standards of nutrition support for hospitalized patients
What is the nutrition care plan

- **Structured way of:**
  - *Presenting the patient’s over-all capability in withstanding the injury or disease process (nutrition assessment and requirement)*
  - *Providing information on how much and what type of nutrient to give to the patient and rationale for the choices (nutrient formulation)*
  - *Giving suggestions on the nutrient delivery process and monitoring of key variables to determine the outcome or success of the management process*
Components of nutrition care plan

- **Nutritional assessment**
- **Nutritional requirements**
  - Macro and micronutrients
  - Fluid requirements
- **Access: oral, enteral, parenteral, or combinations**
- **Nutrient formulation**
- **Nutrient delivery**
- **Monitoring strategies**
1) Nutritional Assessment

- **Nutritional status determined through:**
  - Anthropometric, clinical, and laboratory data

- **Risk level determination**
  - Delineates the factors responsible for the risk level determination
2) Nutritional Requirements

Total calorie requirement

- **Gold standard: Indirect calorimetry**
- **No indirect calorimetry available - based on:**
  - Weight of the patient (kg)
  - Clinical status of the patient

- **Non-critical care, non obese:**
  - 30 kcal/kg/ actual body weight
  - 25 kcal/kg/ ideal or estimated body weight

- **Non-critical care, obese**
  - 25-30 kcal/ideal body weight
2) Nutritional Requirements

Total calorie requirement

- **Critical care, initial phase**
  - Non-obese: 15-20 kcal/actual, ideal, estimated body weight
  - Obese: 15-20 kcal/ideal body weight

- **Critical care, follow up phase**
  - Non-obese: 20-25 kcal/actual, ideal, estimated body weight
  - Obese: 20-25 kcal/ideal body weight
2) Nutritional Requirements

- **Total protein requirement**
  - **Non-critical care:** 0.8-2 gm/kg/actual body weight
  - **Critical care:** mainly dependent on the disease process:
    - **No renal problem:** 1-2 gm/kg/actual, estimated, or ideal body weight (burns reaches 2.5 gm/kg/body weight)
    - **With renal problem:**
      - **No dialysis:** 0.6-0.8 gm/kg/actual, estimated, or ideal body weight
      - **With dialysis:** normal requirements
Non-Protein Calories (NPC)

- **NPC = Total calorie requirement – Total protein requirement in calories**
- **Value in the ratios:**
  - Usual value: 60-70% carbohydrates, 40-30% fat
  - Diabetics: 40% carbohydrates, 60% fat
  - Pulmonary (e.g. COPD): 40-50% carbohydrates, 60-50% fat
# Energy requirements

<table>
<thead>
<tr>
<th>Category</th>
<th>Studies</th>
<th>Patient no.</th>
<th>Kcal range</th>
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<tbody>
<tr>
<td>Surgical</td>
<td>7</td>
<td>637</td>
<td>1300-1900</td>
</tr>
<tr>
<td>Oncology</td>
<td>5</td>
<td>269</td>
<td>1300-1500</td>
</tr>
<tr>
<td>Mixed</td>
<td>2</td>
<td>200</td>
<td>1300-1400</td>
</tr>
</tbody>
</table>

Nordenstrom & Thorne, E J Clin Nutr 1994; 48:531-537

### Critical care patients

<table>
<thead>
<tr>
<th></th>
<th>1st week</th>
<th>2nd week</th>
</tr>
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<tbody>
<tr>
<td>Total Energy Expenditure (TEE)</td>
<td>21-31 kcal/kg/day</td>
<td>47-59 kcal/kg/day</td>
</tr>
</tbody>
</table>


- 25-30 kcal/kg actual body weight
- 20-25 kcal/kg ideal body weight
- BEE x 1.5 or REE x 1.3-1.5

On the first week then increase after
Micronutrients

- Electrolytes (Na, K, Cl, Ca, Mg)
- Vitamins: water and fat soluble
- Trace elements
Nutraceuticals

- Glutamine (dose: 0.2-0.5 gm/kg/body weight)
- Omega-3-fatty acids (effective dose: 2-4 gm/day)
- Antioxidants
3) Fluid Requirements

- **Usual computation:** similar to the calorie requirements (usually 30 ml/kg actual, estimated, ideal body weight)
- **Sometimes the body surface area nomogram is used:** overestimates most of the time.
- **Mostly dependent on the fluid balance records.**
- **In critical care set up:** need to include the insensible water loss in the fluid balance sheet.
4) Access

- **Oral**
- **Enteral nutrition**
  - Nasogastric tube
  - PEG / Gastrostomy
  - Jejunostomy
    - PEG-J (Jejunostomy feeding passed through the PEG)
    - Surgical jejunostomy
- **Parenteral nutrition**
  - Peripheral
  - Central
5) Nutrient Formulation

- Regular or special diet
- Oral supplements
- **Enteral nutrition:**
  - Standard formulations
  - Modular formulations
  - Special (elemental or semi-elemental)
- **Parenteral nutrition:**
  - Individual (amino acids, fat, dextrose) or 3 in 1 combinations
  - Formulations for peripheral or central route
6) Nutrient Delivery

- **Oral (as in regular intake or as oral supplement)**

- **Gastric feeding:**
  - *Bolus (either manual or with a gravity tube) – for adequate gastric capacity and function*
  - *Intermittent or continuous using enteral pumps – for volume restricted or gastric dysfunction*

- **Small intestine feeding:**
  - *Intermittent or continuous using gravity drip, but with smaller volumes (30-80 ml/hour)*
  - *Enteral pumps are advised*
7) Monitoring Strategies

- **Calorie count** – gives a good grasp of patient’s overall status through the following information:
  - Tolerance and adequacy of intake – assessment of the gastrointestinal function
  - Completeness of feeding management – through use of oral, enteral, parenteral nutrition, and combinations
- **Regular weight determinations (once a week)** – to give adequate dosages
7) Monitoring Strategies

- Fluid balance
- Complete Blood Count
  - Total Lymphocyte Count
- Serum albumin (value as initial assessment tool, but not as protein build up; frequent determination for oncotic pressure issues only, not nutritional)
**Nutrition care plan form**

<table>
<thead>
<tr>
<th>LAST NAME</th>
<th>PIN</th>
</tr>
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<tbody>
<tr>
<td>FIRST NAME</td>
<td>ROOM</td>
</tr>
<tr>
<td>MIDDLE NAME</td>
<td>AGE</td>
</tr>
<tr>
<td>DATE ADMITTED</td>
<td>SEX</td>
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<tr>
<td>ATTENDING MD</td>
<td>WEIGHT (KG)</td>
</tr>
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</table>

**Total Calorie Requirement**

VW(kg) _______ x _______ = _______ (kcal/day)

**Total Protein Requirement**

VW(kg) _______ x _______ = _______ (gm/day)

**Electrolytes**

- Standard Dose
- Specific

**Vitamins**

- Standard Dose
- Specific

**Trace Elements**

- Standard Dose
- Specific

**Nutraceuticals**

- Glutamine
- Omega-3 Fatty Acid
- Antioxidants

**Formulation**

- Standard Diet
- Special Diet
- Oral supplement
- Enteral nutrition
- Parenteral nutrition

**Access/Route**

- Oral
- NGT
- PEG
- Peripheral parenteral
- Surgical Gastrostomy
- Jejunostomy (surgical)
- PEG-J
- Central parenteral

**Delivery Method**

- Enteral
- Volume and rate
- Bolus
- Gravity
- Enteral pump

**Monitoring**

- Calorie count
- Weight
- Serum Albumin
- Others

Performed By (Name/Sgn) Date