

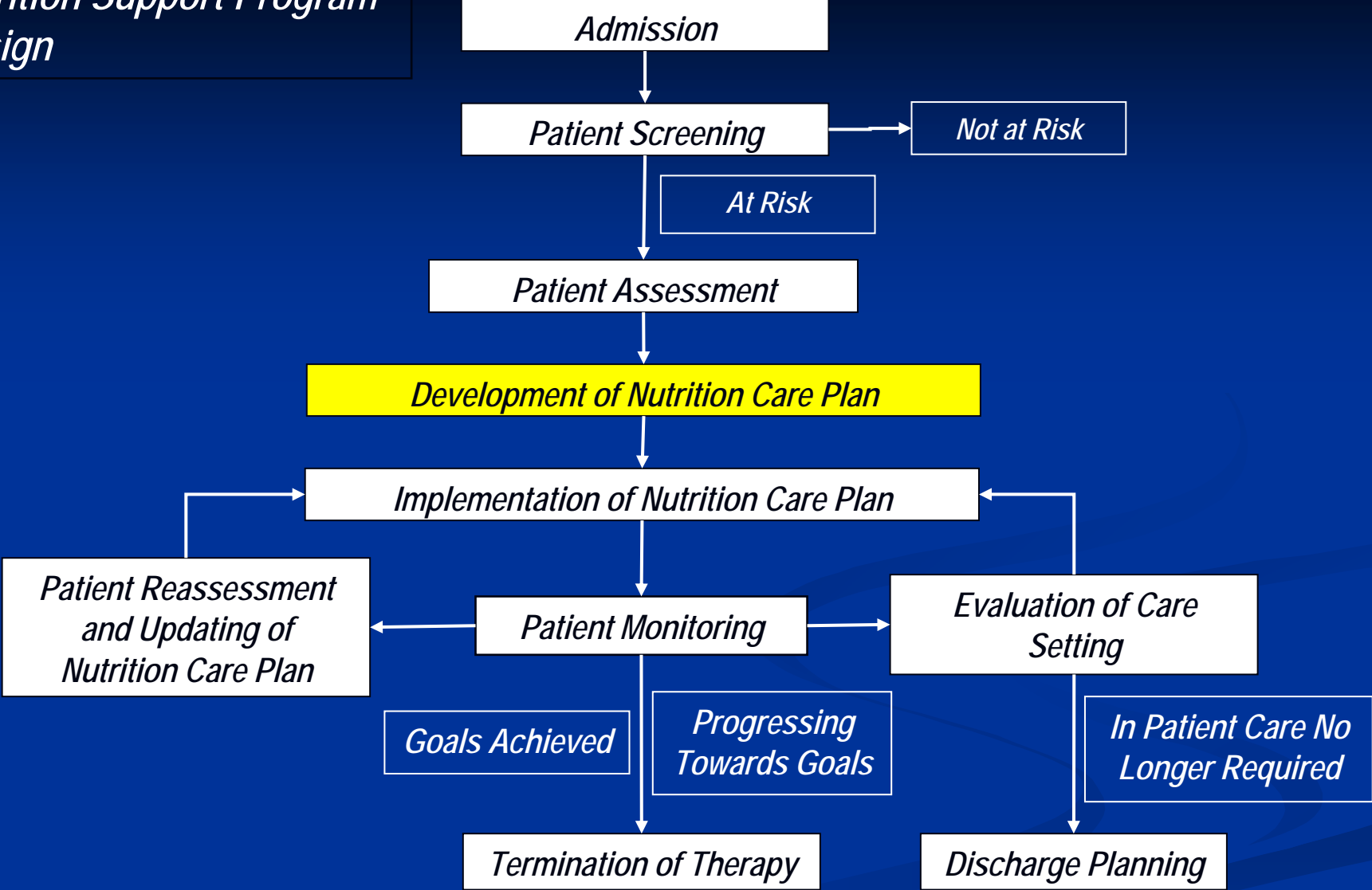
# ***Nutrition care plan***

*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*



# *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

Category	Studies	Patient no.	Kcal range
Surgical	7	637	1300-1900
Oncology	5	269	1300-1500
Mixed	2	200	1300-1400

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

Critical care patients	1 <sup>st</sup> week	2 <sup>nd</sup> week
Total Energy Expenditure (TEE)	21-31 kcal/kg/day	47-59 kcal/kg/day

*Uehara M, Plank LD, Hill GL. Components of energy expenditure in patients with severe sepsis and major trauma: a basis for clinical care Crit Care Med 1999; 27:1295*

- 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

LAST NAME		PIN	
FIRST NAME		ROOM	
MIDDLE NAME		AGE	
DATE ADMITTED		SEX	
ATTENDING MD		WEIGHT (KG)	
<b>TOTAL CALORIE REQUIREMENT</b>	Wt(kg) _____ x _____ = <input type="text"/> calorie factor kcal/day		
<b>TOTAL PROTEIN REQUIREMENT</b>	Wt(kg) _____ x _____ = <input type="text"/> calorie factor gm/day		
<b>ELECTROLYTES</b>	<input type="checkbox"/> Standard Dose <input type="checkbox"/> Specific →	<input type="text"/>	
<b>VITAMINS</b>	<input type="checkbox"/> Standard Dose <input type="checkbox"/> Specific →	<input type="text"/>	
<b>TRACE ELEMENTS</b>	<input type="checkbox"/> Standard Dose <input type="checkbox"/> Specific →	<input type="text"/>	
<b>NUTRACEUTICALS</b>	<input type="checkbox"/> Glutamine <input type="checkbox"/> Standard Dose <input type="checkbox"/> Omega-3-Fatty Acid <input type="checkbox"/> Specific → <input type="checkbox"/> Antioxidants	<input type="text"/>	
<b>FORMULATION</b>	<input type="checkbox"/> Standard Diet <input type="checkbox"/> Special Diet → <input type="checkbox"/> Oral supplement → <input type="checkbox"/> Enteral nutrition → <input type="checkbox"/> Parenteral nutrition →	Specifics <input type="text"/>	
<b>ACCESS / ROUTE</b>	<input type="checkbox"/> Oral <input type="checkbox"/> NGT <input type="checkbox"/> PEG <input type="checkbox"/> Peripheral parenteral	<input type="checkbox"/> Surgical Gastrostomy <input type="checkbox"/> Jejunostomy (surgical) <input type="checkbox"/> PEG - J <input type="checkbox"/> Central parenteral	
<b>DELIVERY METHOD</b>	Standard Diet <input type="text"/>	Specifics <input type="text"/>	
	Enteral <input type="checkbox"/> Bolus → <input type="checkbox"/> Gravity → <input type="checkbox"/> Enteral pump → Parenteral nutrition →	Volume and rate <input type="text"/>	
<b>MONITORING</b>	<input type="checkbox"/> Calorie count	Frequency	
	<input type="checkbox"/> Weight	<input type="text"/>	
	<input type="checkbox"/> Serum Albumin	<input type="text"/>	
	<input type="checkbox"/> Others	<input type="text"/>	
Performed By (Name/Sign)		Date	