

***Clinical Nutrition Program:  
Key to World Class  
Healthcare***

# *Why a clinical nutrition program?*

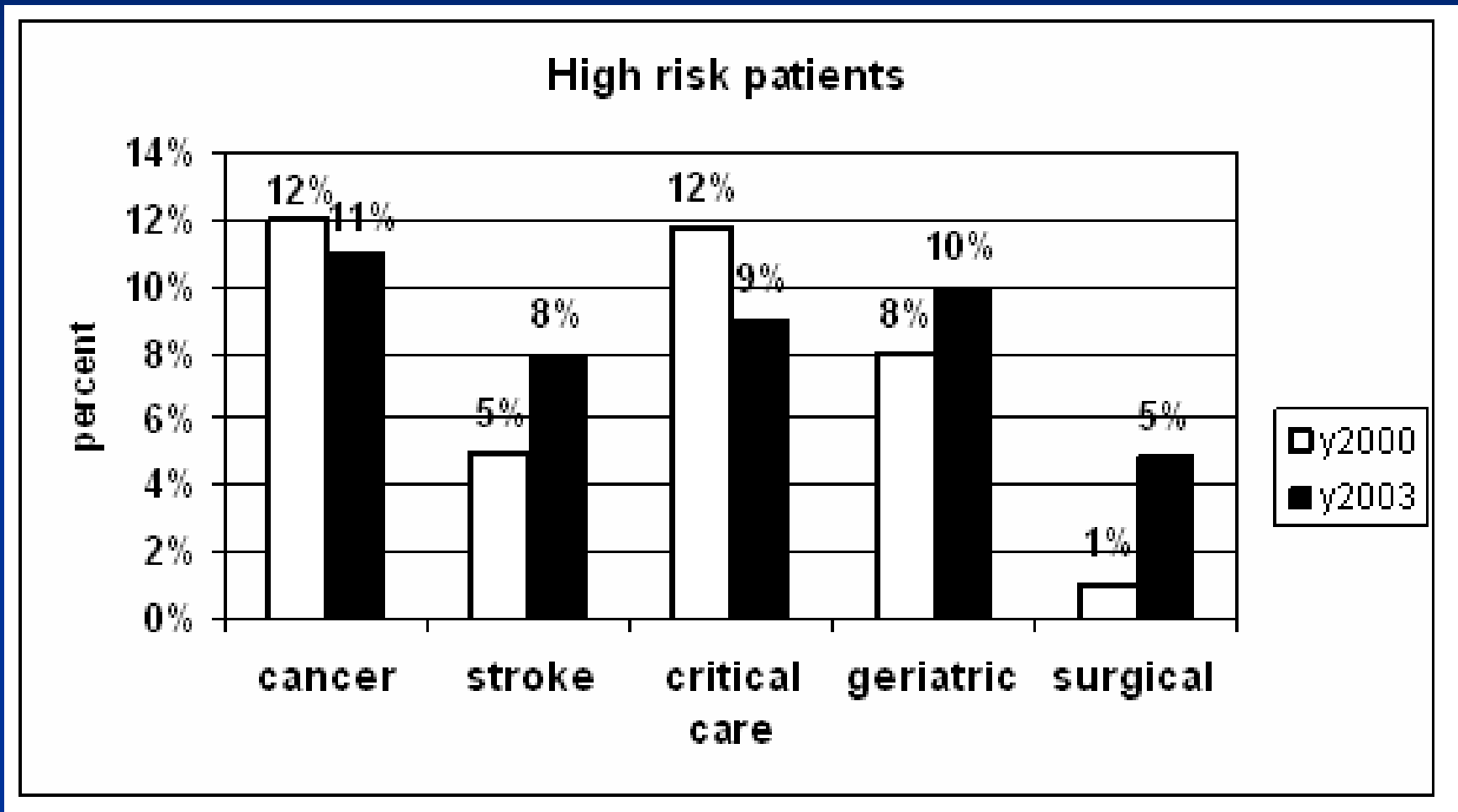
- *Malnutrition and complications:*
  - *Malnutrition in the hospital is 48 to 50% (1)*
  - *Patients at risk of developing nutrition related complications ranges between 15 to 18% of daily census (2)*
  - *Correction and/or prevention of the above saves lives and money (3,4)*
- *Only a focused nutrition management can provide best care to these patients (= optimum practice judged by international standards agencies like JCIA)*
  - *Clinical nutrition program (5)*
  - *Nutrition support team (6)*

# ***(1) Hospital malnutrition: Philippines***

<b><i>Hospital</i></b>	<b><i>BMI &lt; 18.5</i></b>	<b><i>BMI &gt; 30</i></b>	<b><i>SGA "C"</i></b>
<b><i>Marikina, Rizal</i></b>	<b><i>38%</i></b>	<b><i>15%</i></b>	<b><i>-</i></b>
<b><i>Lipa City, Batangas</i></b>	<b><i>48%</i></b>		<b><i>-</i></b>
<b><i>Quezon City</i></b>	<b><i>22%</i></b>	<b><i>20%</i></b>	<b><i>-</i></b>
<b><i>Manila</i></b>	<b><i>-</i></b>	<b><i>-</i></b>	<b><i>42%</i></b>

- Amang Rodriguez Medical Center (n = 61)***
- Mary Mediatrix Medical Center (n = 2,345)***
- St. Luke's Medical Center (n = 41,676)***
- Philippine General Hospital (n = 151)***

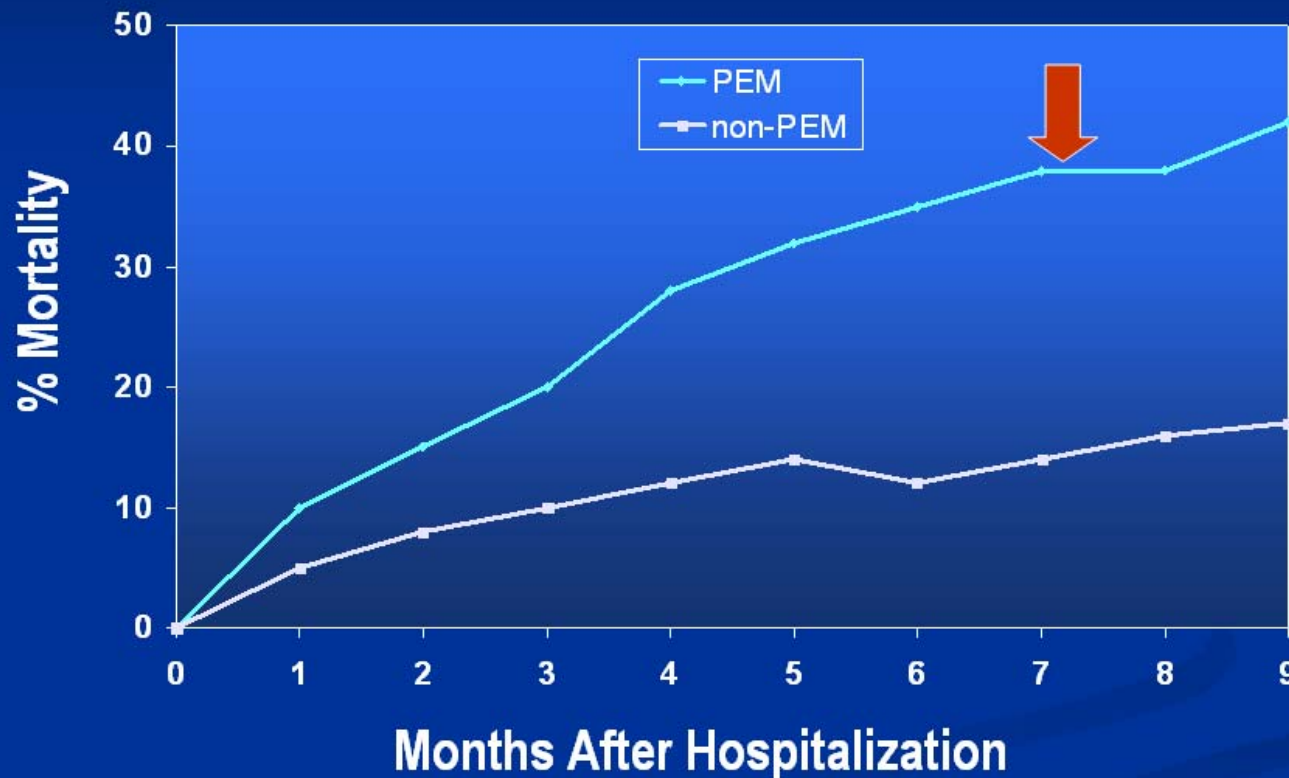
## *(2) Nutritionally at risk population*



*High risk patients in a tertiary care hospital, Quezon City, 2000 vs. 2003*

# (3) Malnutrition, nutrition support, and mortality

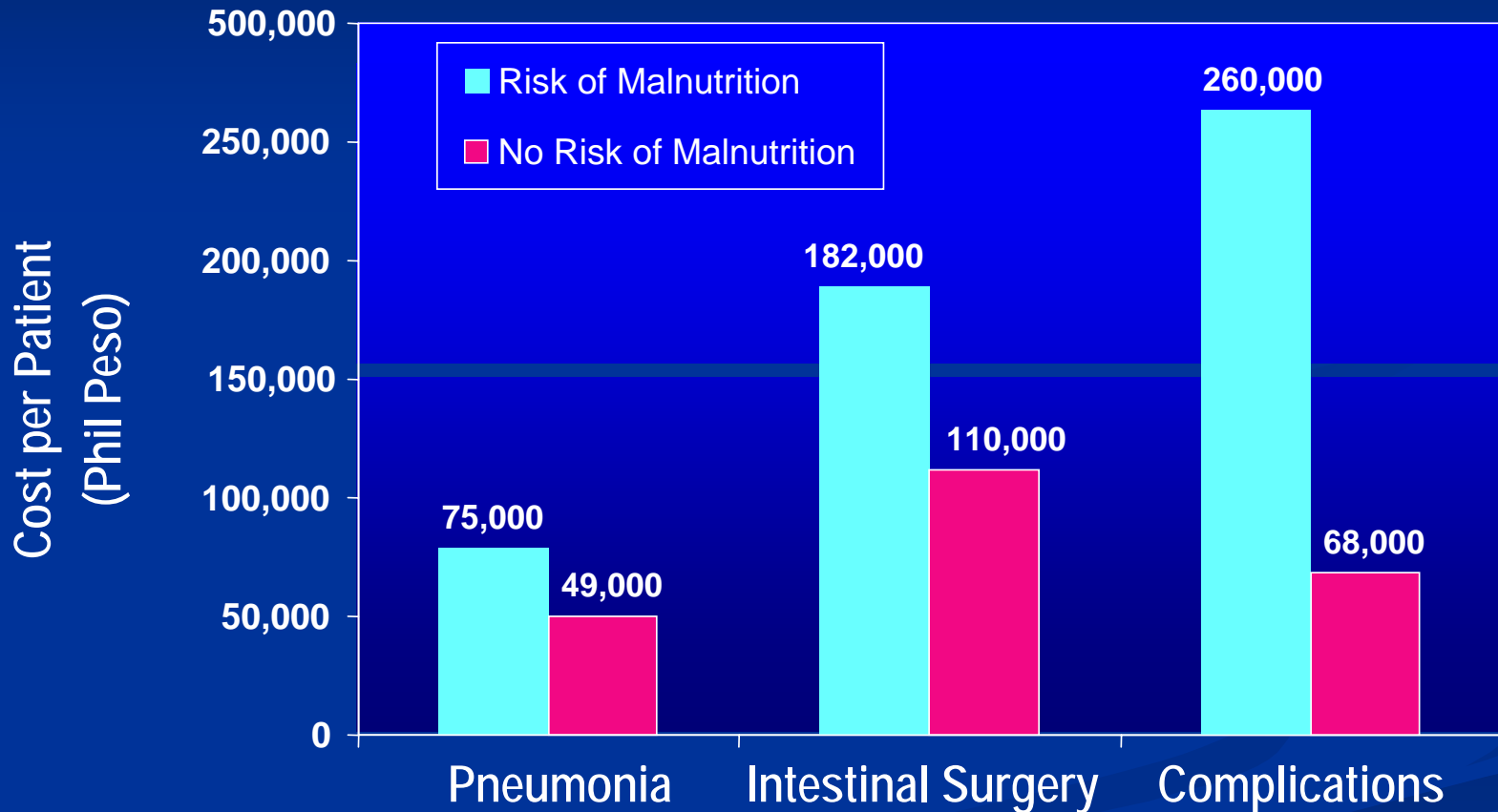
## Increased Mortality



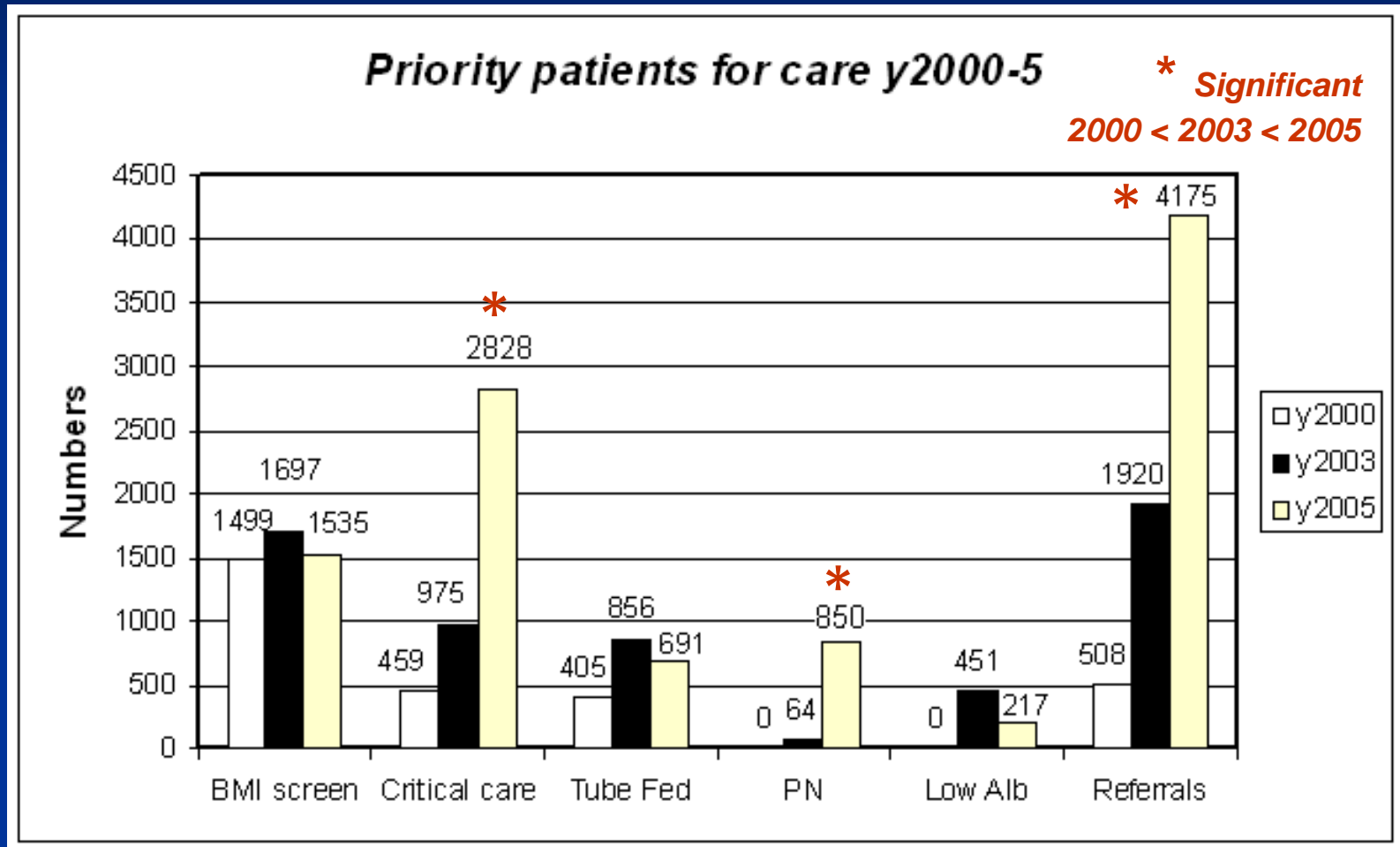
TOTAL NUTRITIONAL THERAPY  
VERSION 2.0

Reprinted from: *American Journal of Medicine* (Cederholm T, Jägrén C, Hellström K. Outcome of Protein-Energy Malnutrition in Elderly Medical Patients, 1995;98:67-74) with permission from Excerpta Medica Inc. Copyright 1995.

# (4) Malnutrition and cost

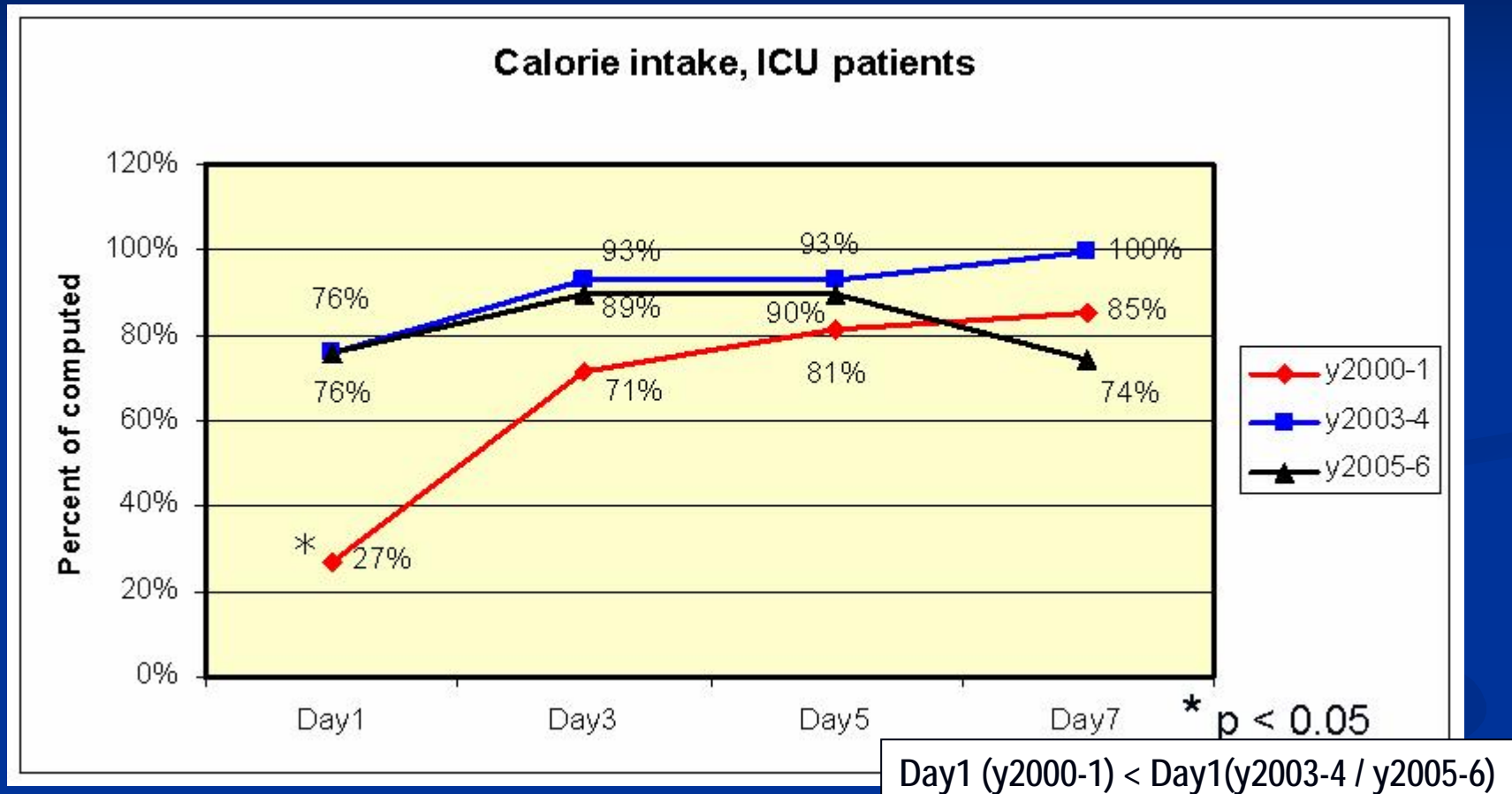


# (5) Clinical nutrition: quality of care



*Care of patients and quality management: focus on priorities is accomplished and more patients receive help when most needed*

# (6) NST and nutrition practice outcome



Sioson MS, Inciong JF, Reyes MCS, Navarrete DI, Llido LO. **Nutrition support team supervision** improves intake of critical care patients in a private tertiary care hospital in the Philippines: report from years 2000 to 2006; PENSA 2007 poster presentation



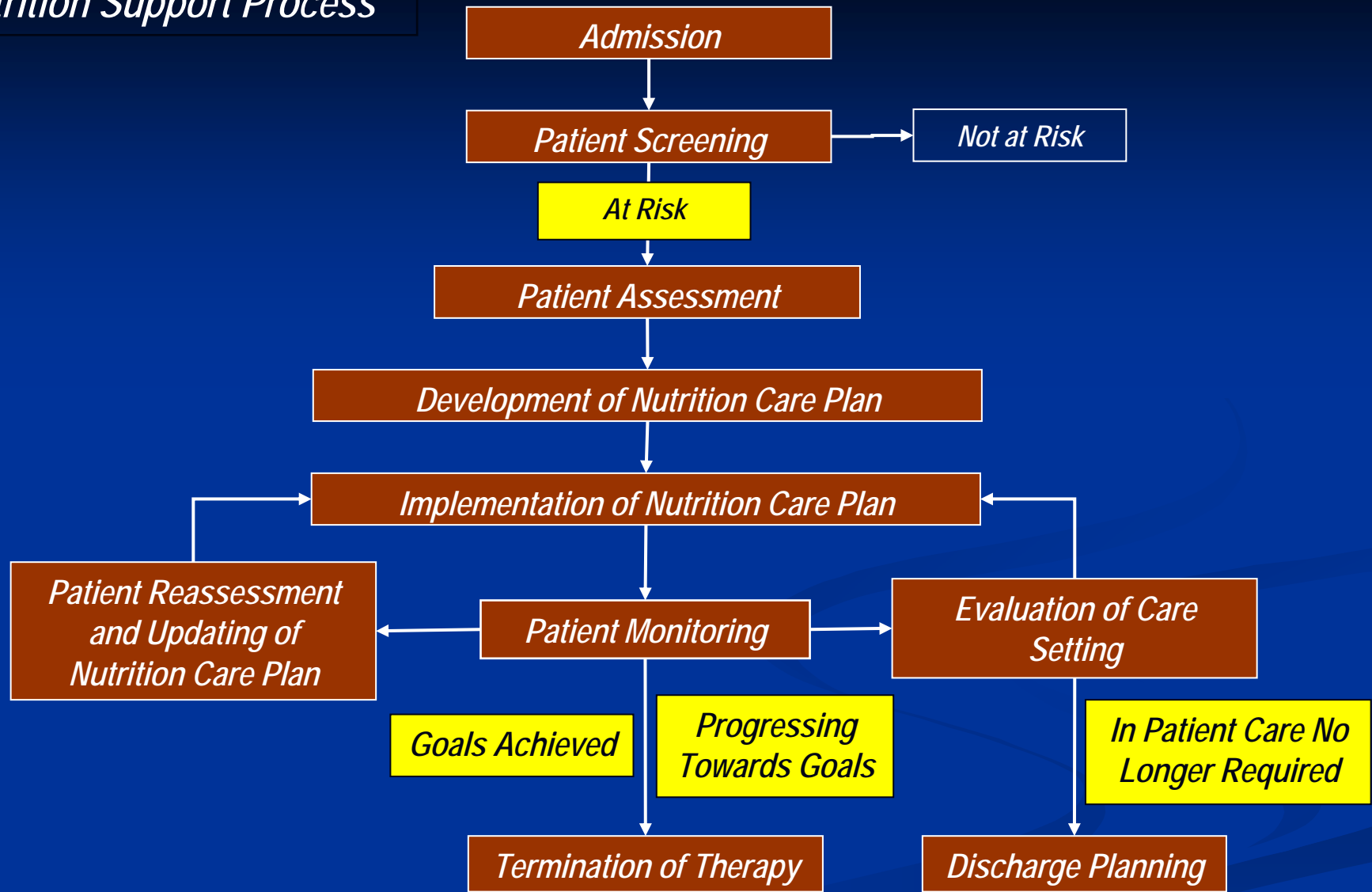
# *The problem*

- *Clinical nutrition practice requires training for at least two years*
  - *PHILSPEN has a fellowship training program in clinical nutrition (two years)*
  - *PWU-SLMC has a master of science in clinical nutrition program (33 units, thesis required for completion)*
- *The good news: PHILSPEN now has a pool of specialists in clinical nutrition who can provide this need*

# *Areas where help can be provided*

- *Resources and references on:*
  - *Standards and protocols on nutrition support*
  - *Delineation of competencies and responsibilities of different members of the nutrition support team*
  - *Time line of clinical nutrition program development*
- *Forms to be used*
- *Lectures and workshops on clinical nutrition*
  - *Basic*
  - *Advanced*

# Nutrition Support Process



# *Specific areas*

- *Nutrition screening for all patients*
- *Nutrition assessment of all identified malnourished and nutritionally at risk patients*
- *Development of nutrition care plans for patients determined to be priority for care*
- *Delivery of either enteral or parenteral nutrition or both*
- *Monitoring of patient response to care*
- *Regular discussions for total patient care management strategies*

# ***Nutrition screening***

- *What can PHILSPEN do to help?*
  - *Can provide the nutrition screening forms (adult and pediatric)*
  - *Can help the institution set up the system(s) and personnel training*
  - *Can supervise the implementation until such a time it deems the institution can do this on their own*

# ***Nutrition screening tool: NRS 2002***

<b>STEP 1 - Initial Screening</b>		
<b>Questions</b>	<b>Yes</b>	<b>No</b>
<ul style="list-style-type: none"><li>• <b>Is BMI &lt; 20.5?</b></li></ul>		
<ul style="list-style-type: none"><li>• <b>Has the patient lost weight within the last three (3) months?</b></li></ul>		
<ul style="list-style-type: none"><li>• <b>Did the patient have a reduced dietary intake in the last week?</b></li></ul>		
<ul style="list-style-type: none"><li>• <b>Is the patient severely ill (e.g. in intensive therapy)?</b></li></ul>		
<input type="checkbox"/> <b>Current Status: No nutritional risk</b>		
<input type="checkbox"/> <b>If YES to any question go to STEP 2</b>		

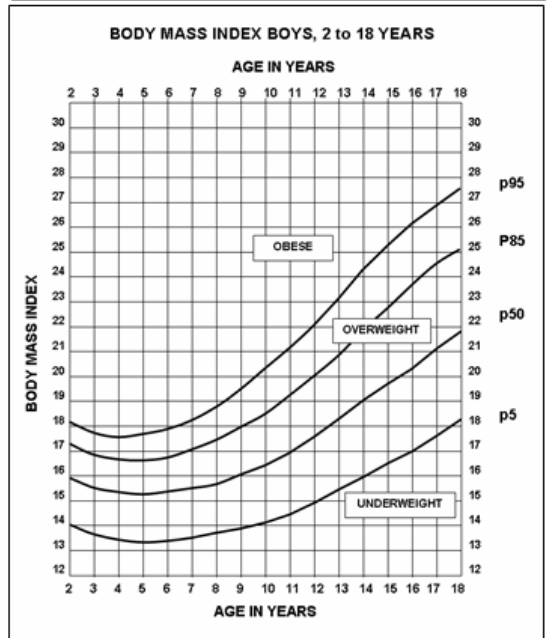
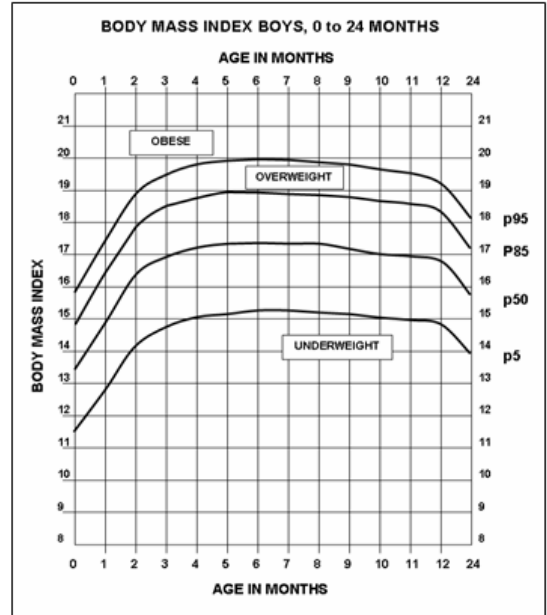
# Pediatric nutrition screening forms

## Body Mass Index based Nutrition Screening Pediatric Patients (Boys)

File Number	
PIN	
Room Number	
Family Name	
First Name	
Middle Name	
Age	
Sex	
Attending MD	
Date of Admission	

HEIGHT (meters)	
WEIGHT (kg)	
BMI (Body Mass Index)	

NUTRITIONAL STATUS (Please Check)	
UNDERWEIGHT	
NORMAL	
OVERWEIGHT	
OBESE	
COMMENTS:	
Done By:	



Reference: WHO Child Growth Standards; Interpretation: Underweight: < P5 / Overweight: between P85 and P95 / Obese: > P95 ([http://www.who.int/childgrowth/standards/bmi\\_for\\_age/en/index.html](http://www.who.int/childgrowth/standards/bmi_for_age/en/index.html)) accessed 9/9/07

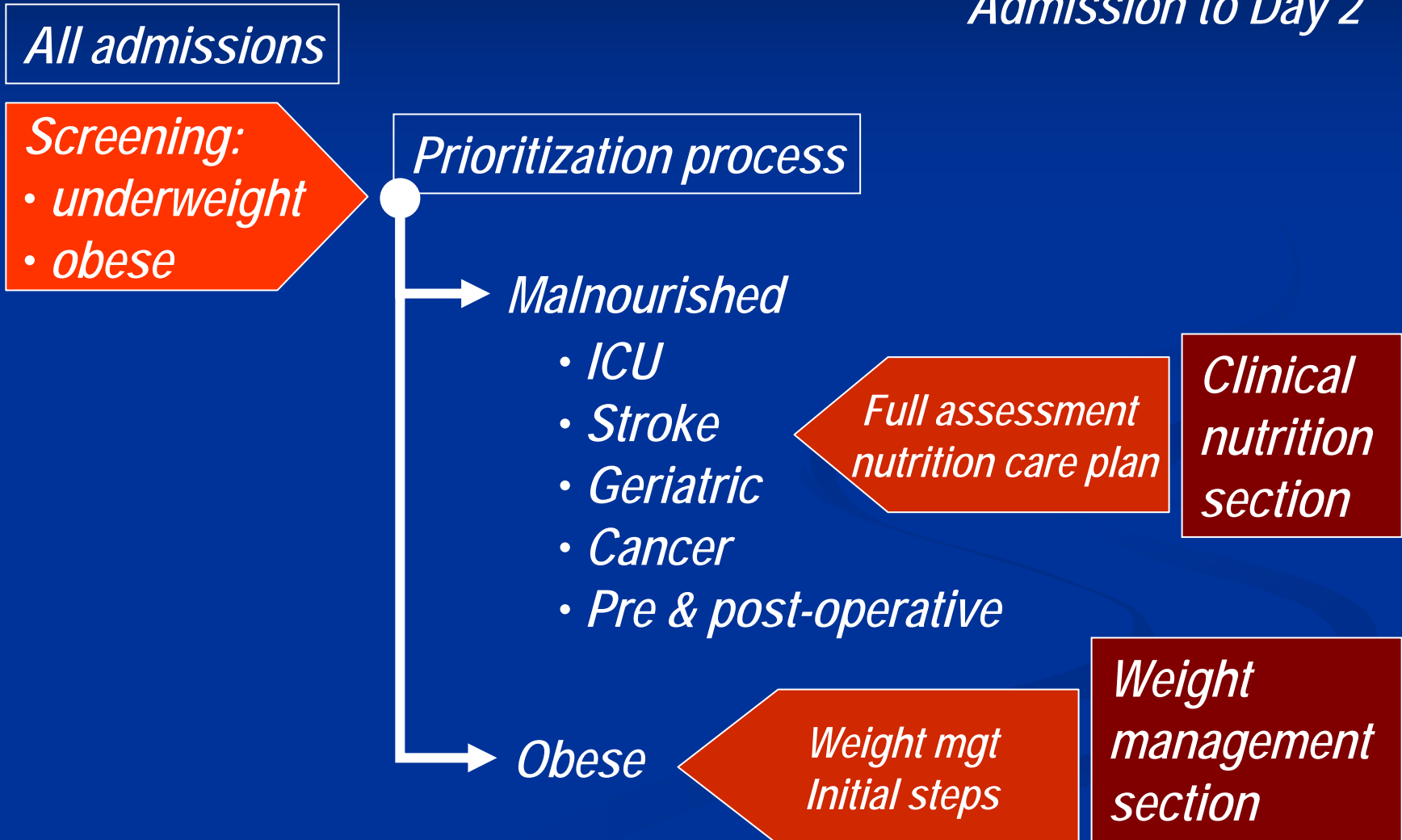
# *Nutrition assessment*

- *What can PHILSPEN do?*
  - *Can provide the form(s)*
  - *Can help in the training of personnel to have this done*
  - *Can set up the system where all data are utilized for prevalence and decision making on policy change or implementation*



# Nutrition assessment: who to see

*Admission to Day 2*



# Nutritional Assessment Form

LAST NAME		ROOM	
FIRST NAME		DATE ADMITTED	
MIDDLE NAME		AGE	
ATTENDING MD		SEX	
HEIGHT_MTR	<input type="text"/>	WEIGHT_KG	<input type="text"/>
		BMI	<input type="text"/> OB <input type="checkbox"/> LW <input type="checkbox"/>
DIAGNOSIS	<input type="text"/>		

CRITERIA	NORMAL / MILD	MODERATE	SEVERE
Weight Loss	none <input type="radio"/>	< 10% of usual wt. <input type="radio"/>	>10% of usual weight <input type="radio"/>
Food Intake (last 1-2 months)	no change <input type="radio"/>	suboptimal <input type="radio"/>	starvation <input type="radio"/>
Gastro symptoms > 2 weeks	none <input type="radio"/>	nausea, vomiting <input type="radio"/>	anorexia diarrhea, severe <input type="radio"/>
Functional capacity	no change <input type="radio"/>	• dysfunction < 3 wks • suboptimal work • bedridden < 2 wks <input type="radio"/>	bedridden > 2 wks <input type="radio"/>
Disease and relation to nutritional requirements	no or low stress <input type="radio"/>	moderate stress <input type="radio"/>	severe stress <input type="radio"/>
Physical examination	0 subcutaneous fat and/or muscle loss <input type="radio"/>	+1 to +2 subcutaneous fat and/or muscle loss <input type="radio"/>	+3 subcutaneous fat and/or muscle loss <input type="radio"/>
Edema / ascites	none <input type="radio"/>	none <input type="radio"/>	+1 or +2 <input type="radio"/>
SGA Grade <input type="radio"/>	A 0 <input type="checkbox"/>	B 1 <input type="checkbox"/>	C 3 <input type="checkbox"/>
BMI	18.5 - 25 0 <input type="checkbox"/>	25.1 - 30 1 <input type="checkbox"/>	<18.5 or >30 2 <input type="checkbox"/>
Albumin g/dL	>3.4 0 <input type="checkbox"/>	2.5 - 3.4 1 <input type="checkbox"/>	<2.5 2 <input type="checkbox"/>
TLC	≥ 1500 0 <input type="checkbox"/>	900 <1500 1 <input type="checkbox"/>	<900 2 <input type="checkbox"/>
TOTAL SCORE <input type="text"/>	NUTRITION RISK LEVEL	0 <input type="checkbox"/> LOW RISK (Level 1) 1-2 <input type="checkbox"/> MODERATE RISK (Level 2)	≥3 <input type="checkbox"/> HIGH RISK (Level 3)

NUTRITIONAL STATUS:  NORMAL  MODERATE MALNUTRITION  SEVERE MALNUTRITION

RISK LEVEL 1 or 2, WOULD YOU LIKE TO REFER YOUR PATIENT TO THE NUTRITION SUPPORT TEAM FOR FOLLOW UP?  YES  NO

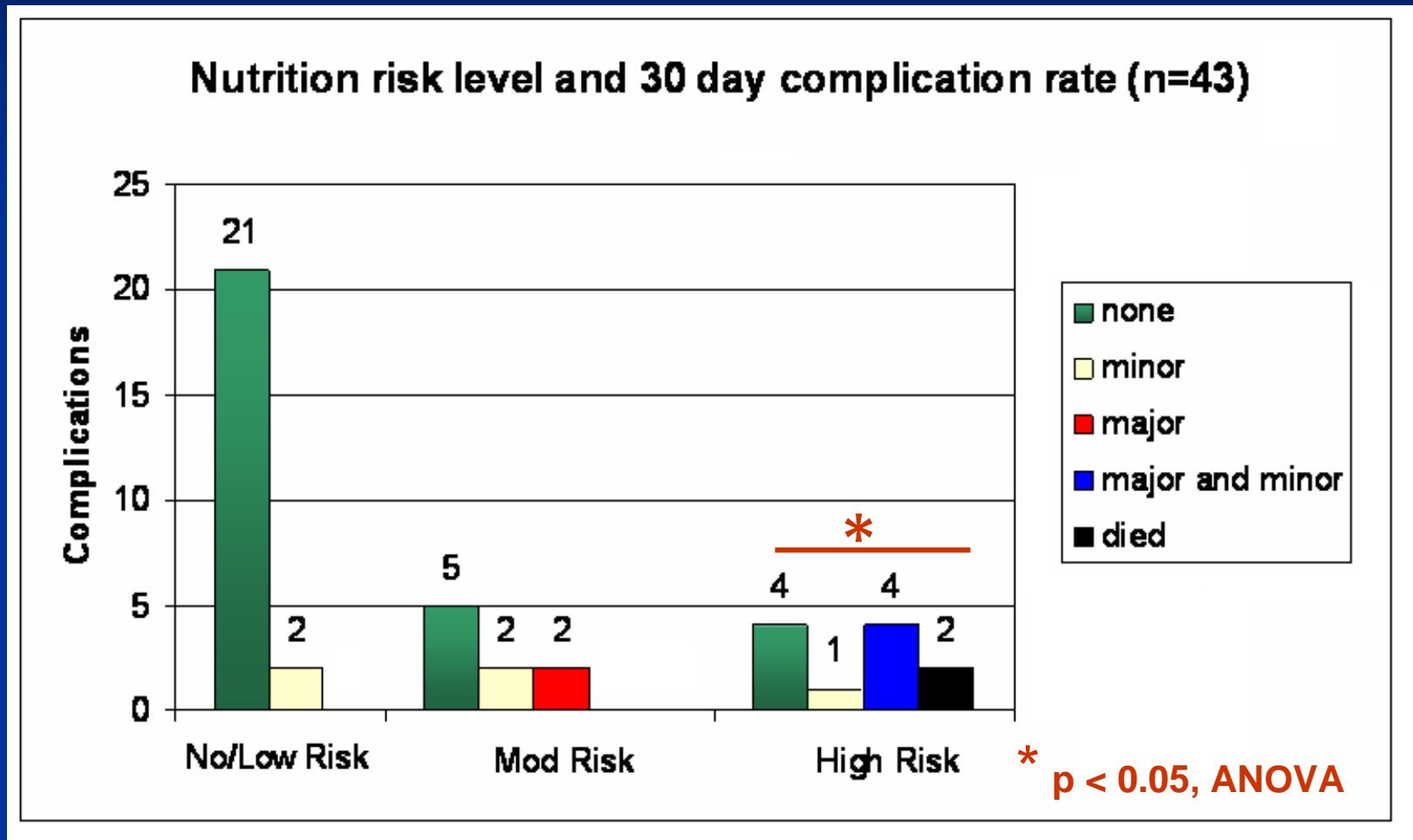
Name and Signature of ATTENDING MD

Date Signed

RISK LEVEL 3: REQUIRED TO BE FOLLOWED UP BY THE NUTRITION SUPPORT TEAM

Assessment performed by (Name/Signature):

# Nutrition risk assessment predicts outcome

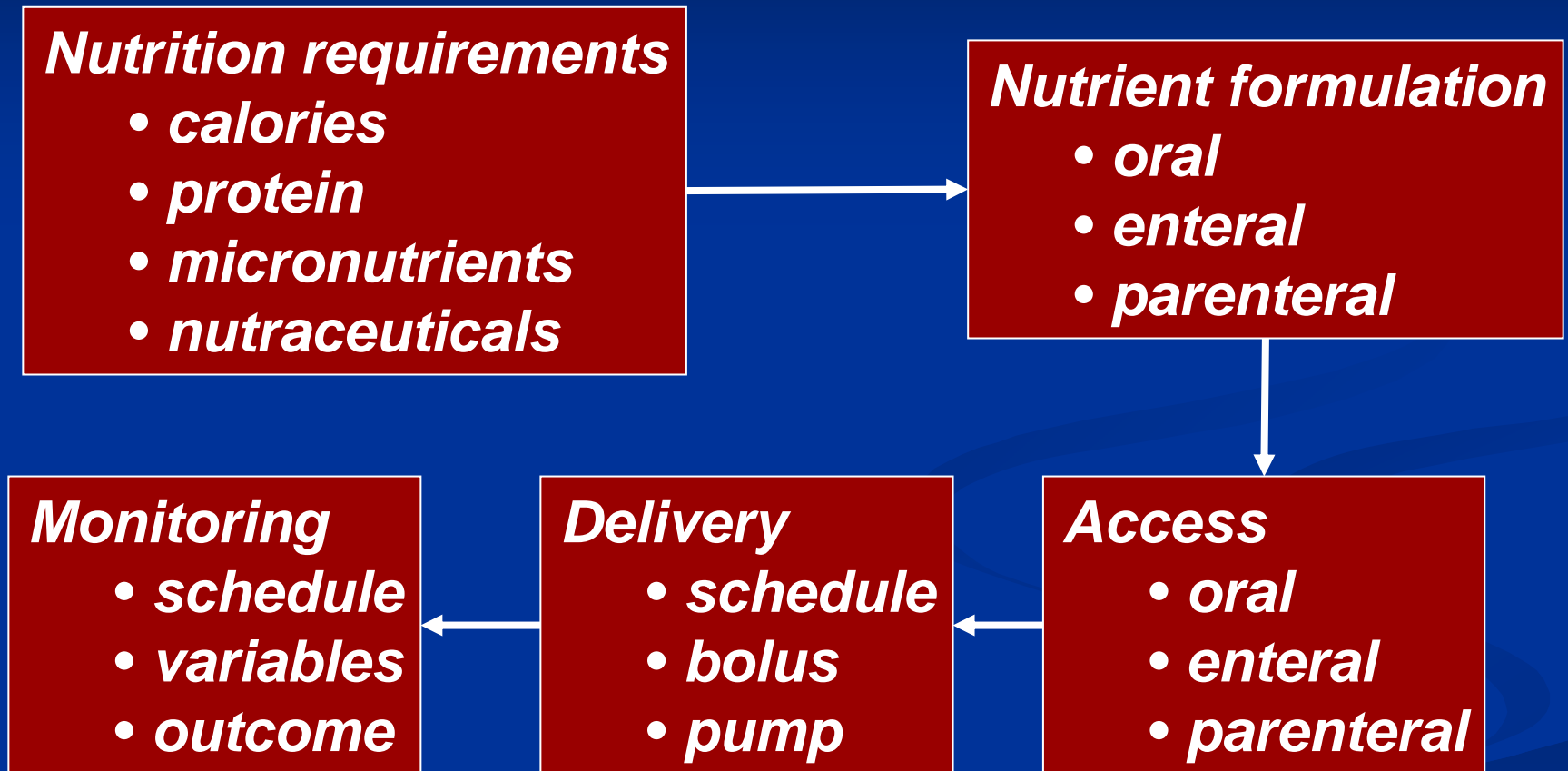


Predicting post-operative complications based on surgical nutritional risk level using the SNRAF in colon cancer patients - a Chinese General Hospital & Medical Center experience. Ocampo R B, Kadatuan Y, Torillo MR, Camarse CM, Malilay RB, Cheu G, Llido LO, Gilbuena AA.

# *Nutrition care plan development*

- *What can PHILSPEN do?*
  - *Can provide the forms*
  - *Can train the personnel and other involved staff to use this and to take part in the patient care discussions*

# ***Nutrition care plan***



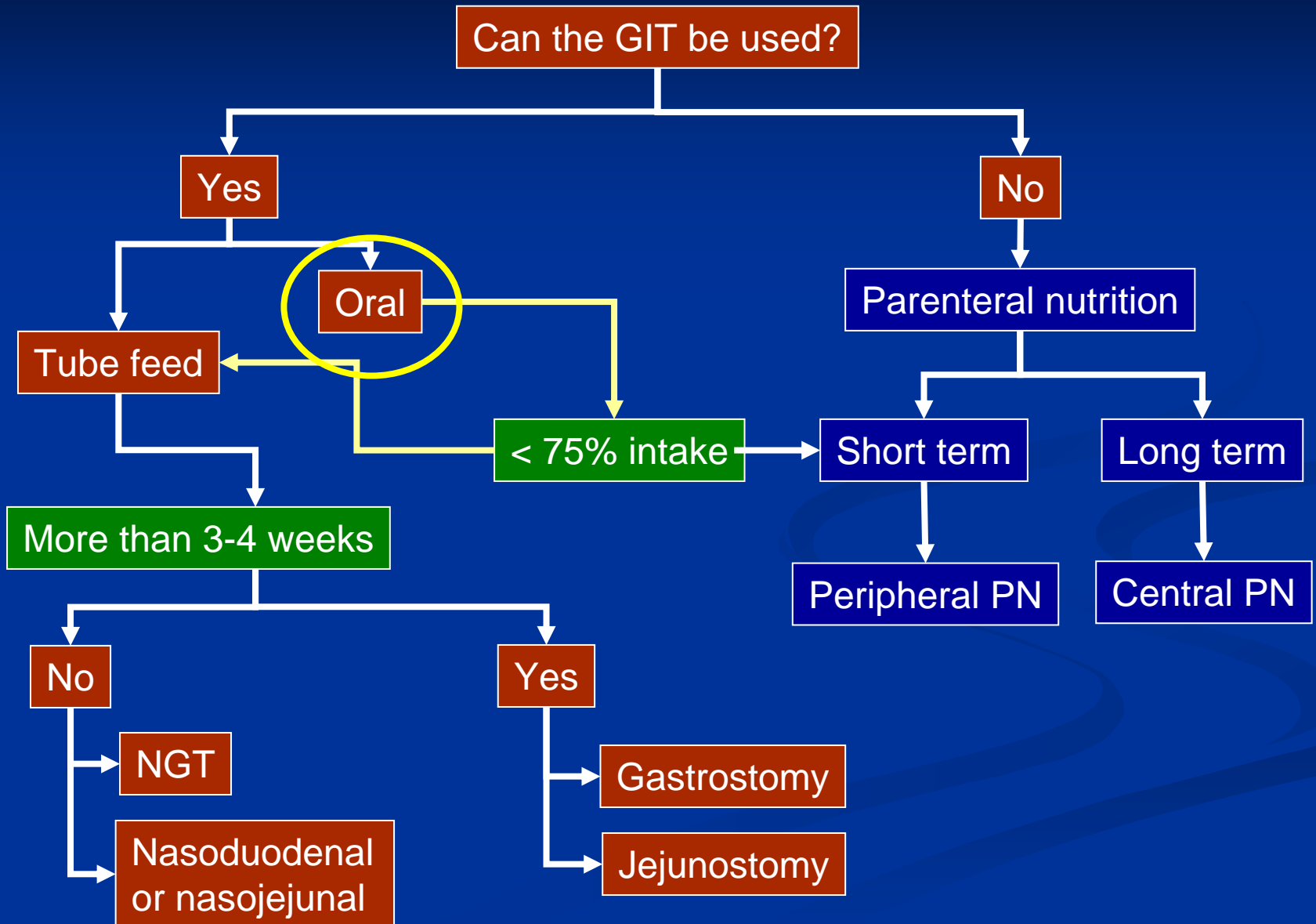
**Who fills these data?**

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 TCR		
<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"/> Omega-3-Fatty Acid <input type="checkbox"/> Antioxidants	<input type="checkbox"/> Standard Dose <input type="checkbox"/> Specific →	<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 Specifics	<input type="text"/>	
	Enteral <input type="checkbox"/> Bolus → <input type="checkbox"/> Gravity → <input type="checkbox"/> Enteral pump →	Volume and rate	<input type="text"/>
	Parenteral nutrition →	<input type="text"/>	
<b>MONITORING</b>	<input type="checkbox"/> Calorie count <input type="checkbox"/> Weight <input type="checkbox"/> Serum Albumin <input type="checkbox"/> Others	Frequency <input type="text"/> <input type="text"/> <input type="text"/>	
Performed By (Name/Sign)			Date

# *Nutrient delivery*

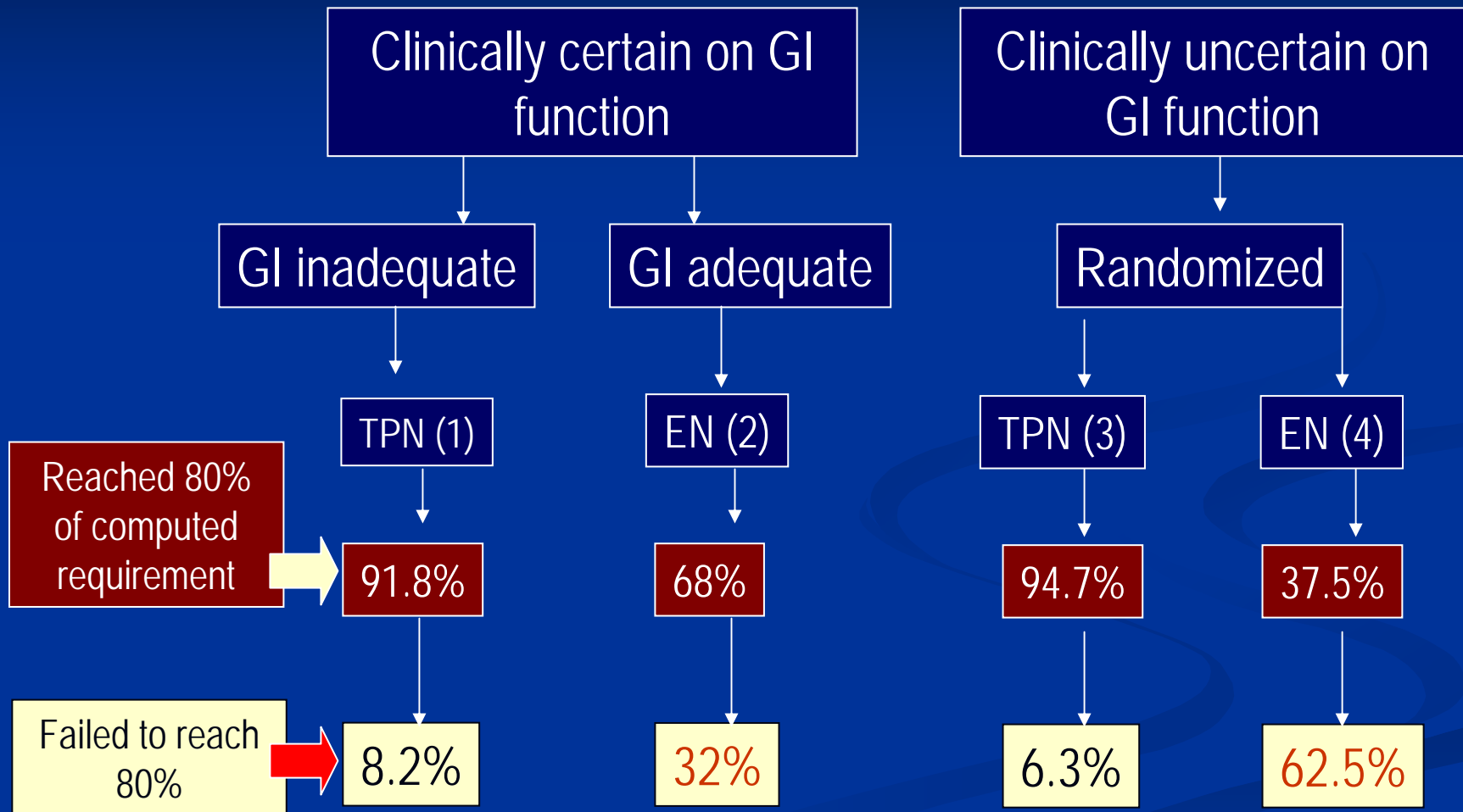
- *What can PHILSPEN do?*
  - *Can provide the algorithm(s), practice guidelines, and updates in both enteral and parenteral nutrition*
  - *Can supervise delivery from the formulation to the actual utilization of hardware*
  - *Can provide quality control information and actual performance of different quality control measures (including documentation for standards assessment on a regular basis)*

# Nutrition Algorithm





# Effective decision making



Woodcock NP et al. Enteral vs parenteral nutrition: a pragmatic study; Nutrition 2001; 17: 1-12

# *Monitoring of outcome*

- *What can PHILSPEN do?*
  - *Can provide the forms and the necessary training for correct form utilization and appropriate decision of what to do next*
  - *Can provide the correct methods of performing balances like:*
    - *Fluid and electrolyte balance*
    - *Calorie counting and nutrient balance*
    - *Nitrogen balance*

# Monitoring

**Nutrition and Fluid Balance Sheet**

**Figure 3**

Patient Name \_\_\_\_\_ Patient ID \_\_\_\_\_  
 Age \_\_\_\_\_ Sex \_\_\_\_\_ Attending MD \_\_\_\_\_  
 Height (meter) \_\_\_\_\_ Weight (kg) \_\_\_\_\_ Previous Weight (kg) \_\_\_\_\_  
 Impression \_\_\_\_\_

**Fluid Intake Record**

Date	Unit	Oral	Enteral	Tube Flush	Parenteral	IVDex	IVF2	Others	Total Intake

**Fluid Output Record**

Date	Unit	Urine	Drain1	Drain2	Stool	Insensible	Total Output	Fluid Balance

**Calorie Intake Record**

Date	Unit	Oral Calorie	Enteral Calorie	Parenteral Calorie	IVDex Calorie	Others	Total Calories	TCR	Calorie Balance

**FLUID BALANCES**

**Protein Intake Record**

Date	Unit	Oral Protein	Enteral Protein	Parenteral Protein	Others	Total Protein	TPR	Protein Balance

**Figure 4**

**CALORIE MONITORING FORM**

Patient Name \_\_\_\_\_  
 Age \_\_\_\_\_ Sex: \_\_\_\_\_  
 Hospital No. \_\_\_\_\_ Room No. \_\_\_\_\_  
 Attending Physician \_\_\_\_\_

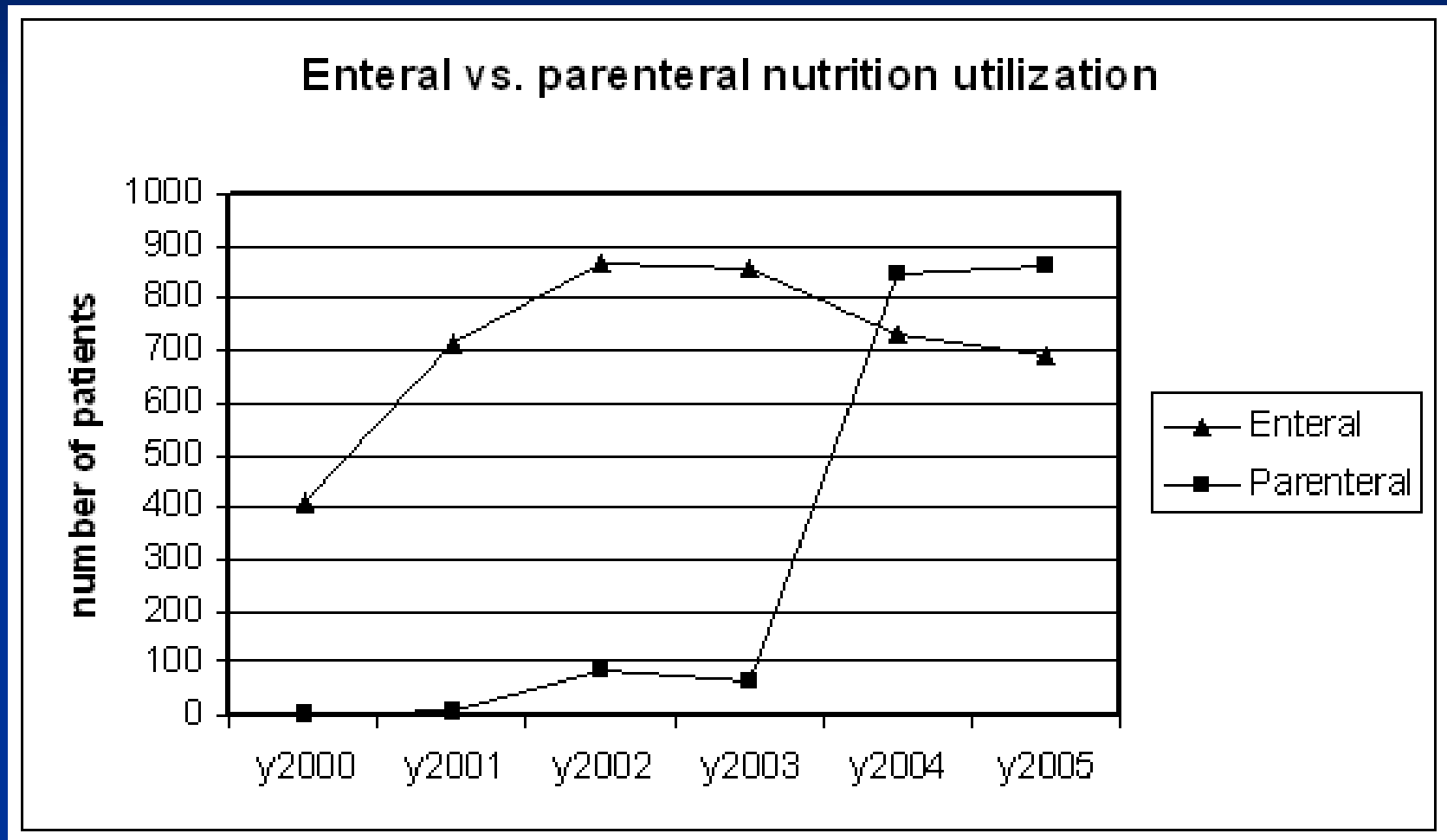
Date And Shift	Nutrient Source	Calorie Intake	TCR	% Calorie Intake	Protein Intake	TPR	% Protein Intake	Total Fluid Intake
	Oral							
	Tube Feed							
	IV Dextrose							
	Parenteral							
	<b>TOTAL</b>							
	Oral							
	Tube Feed							
	IV Dextrose							
	Parenteral							
	<b>TOTAL</b>							
	Oral							
	Tube Feed							
	IV Dextrose							
	Parenteral							
	<b>TOTAL</b>							
	Oral							
	Tube Feed							
	IV Dextrose							
	Parenteral							
	<b>TOTAL</b>							
	Oral							
	Tube Feed							
	IV Dextrose							
	Parenteral							
	<b>TOTAL</b>							

**CALORIE COUNT**

# *The bottom line*

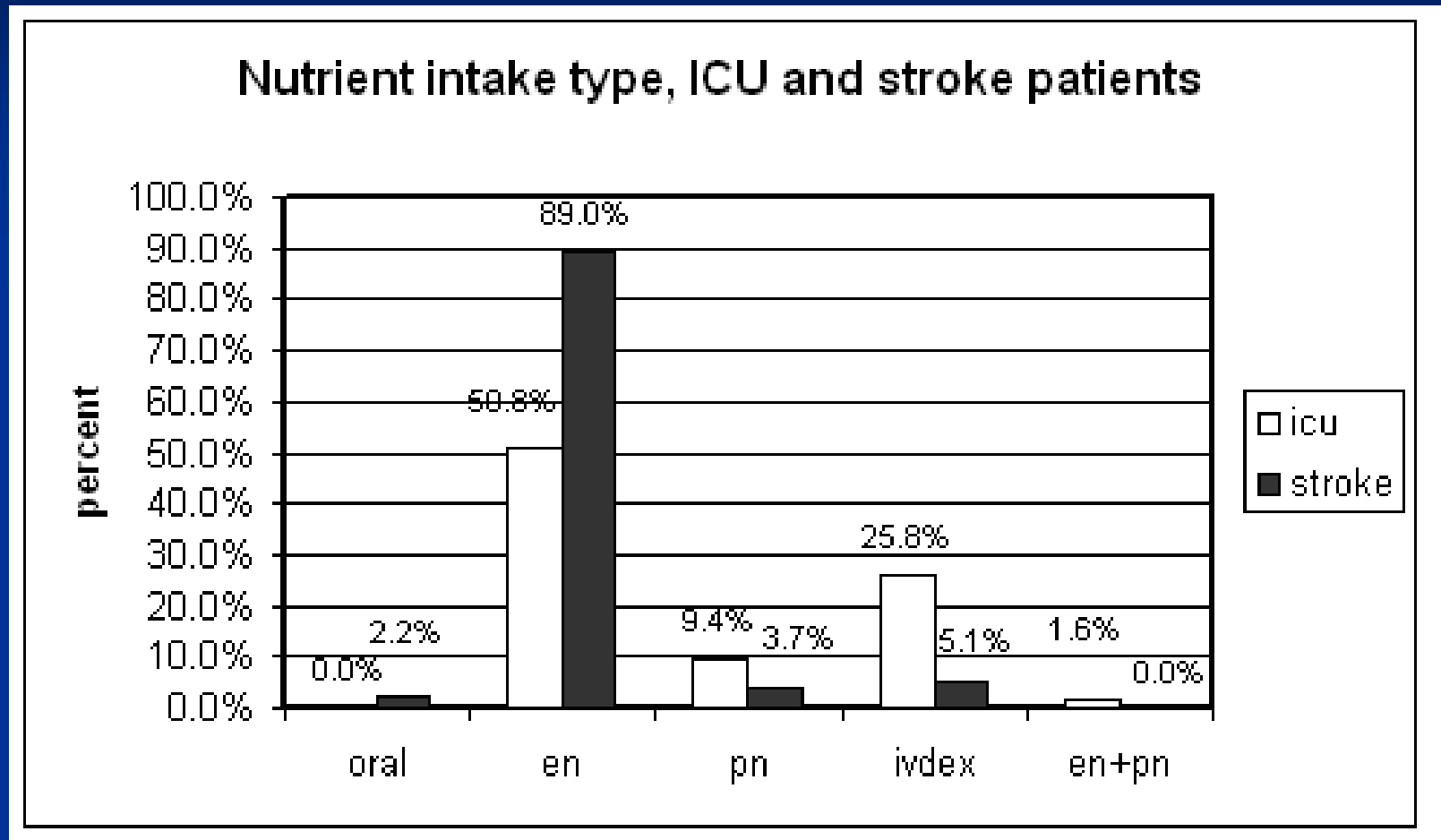
- *Patient care is optimized*
- *Professional growth is inevitable*
- *Hospital standard of practice is elevated to international standards*
- *Can this improvement translate to:*
  - *Improvement of hospital clinical nutrition practice in the country?*
  - *Adequate compensation for both hospital and practitioner of clinical nutrition?*
  - *Sharing of expertise in clinical nutrition to neighboring countries?*
  - *Good business?*

# *Effective nutrient utilization*



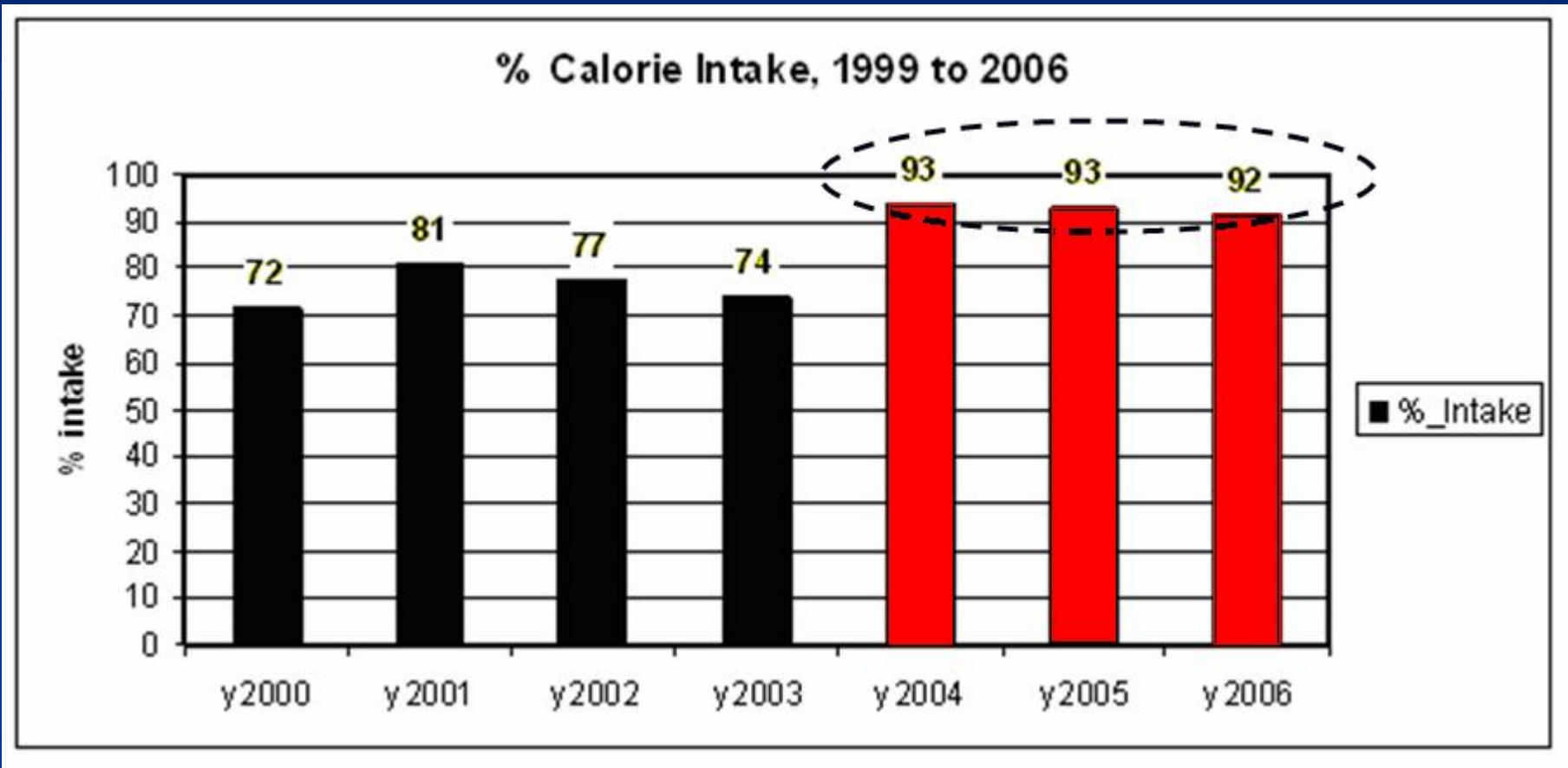
*Care of patients and quality of management: there is better utilization of tools for nutrition care delivery – enteral and parenteral nutrition*

# Optimum nutrition delivery



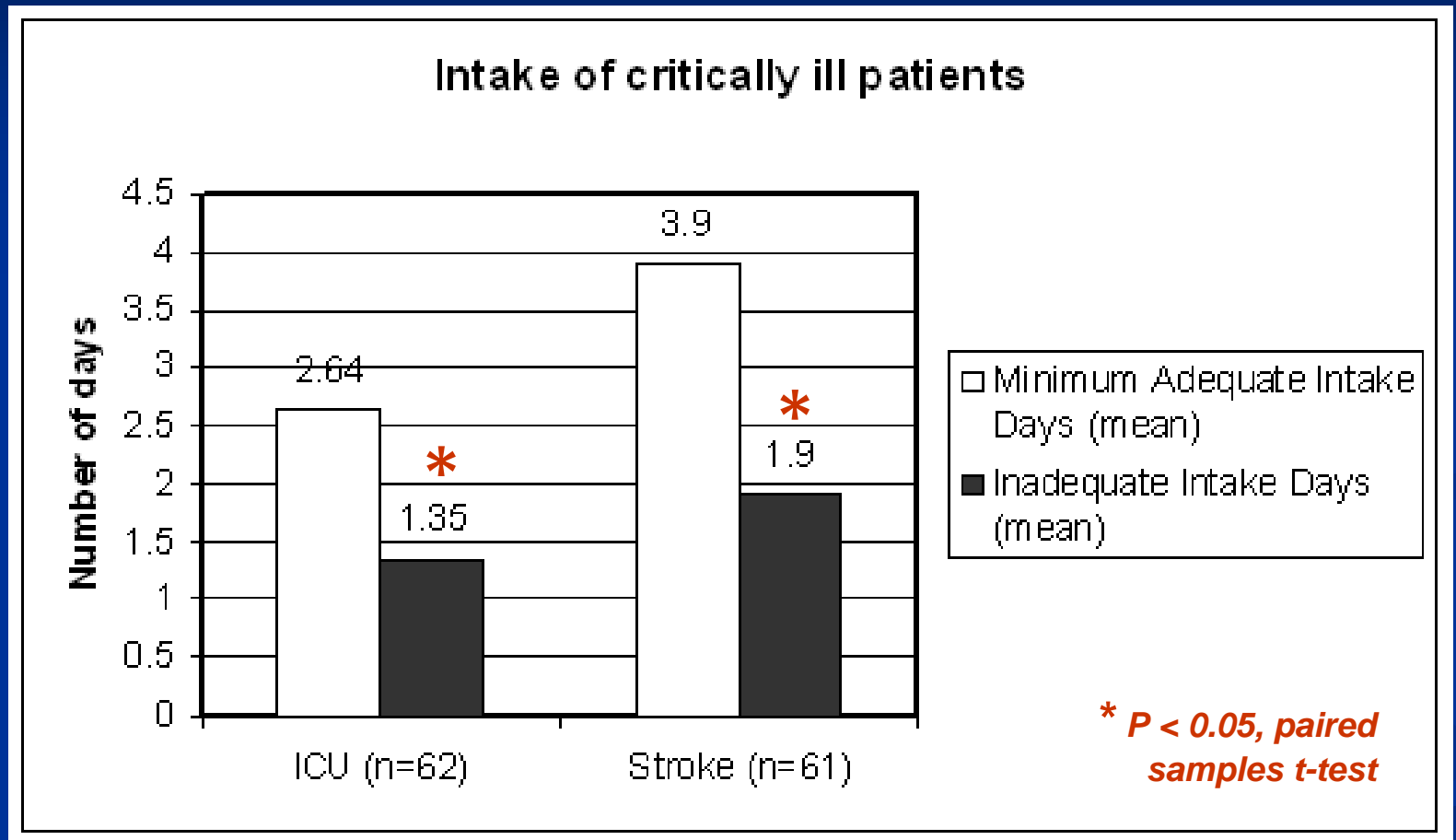
*Care of patients and quality management: critically ill patients are fed with priority on GIT feeding (logical and less costly), but usage of parenteral nutrition is done when GIT feeding is inadequate (<75% intake)*

# *Improved nutrient intake*



*Care of patient and quality management: Percent intake of admitted patients supervised by the nutrition support team has improved from 72% to 90% - now we know optimum intake in the hospital is possible.*

# Improved nutrient intake

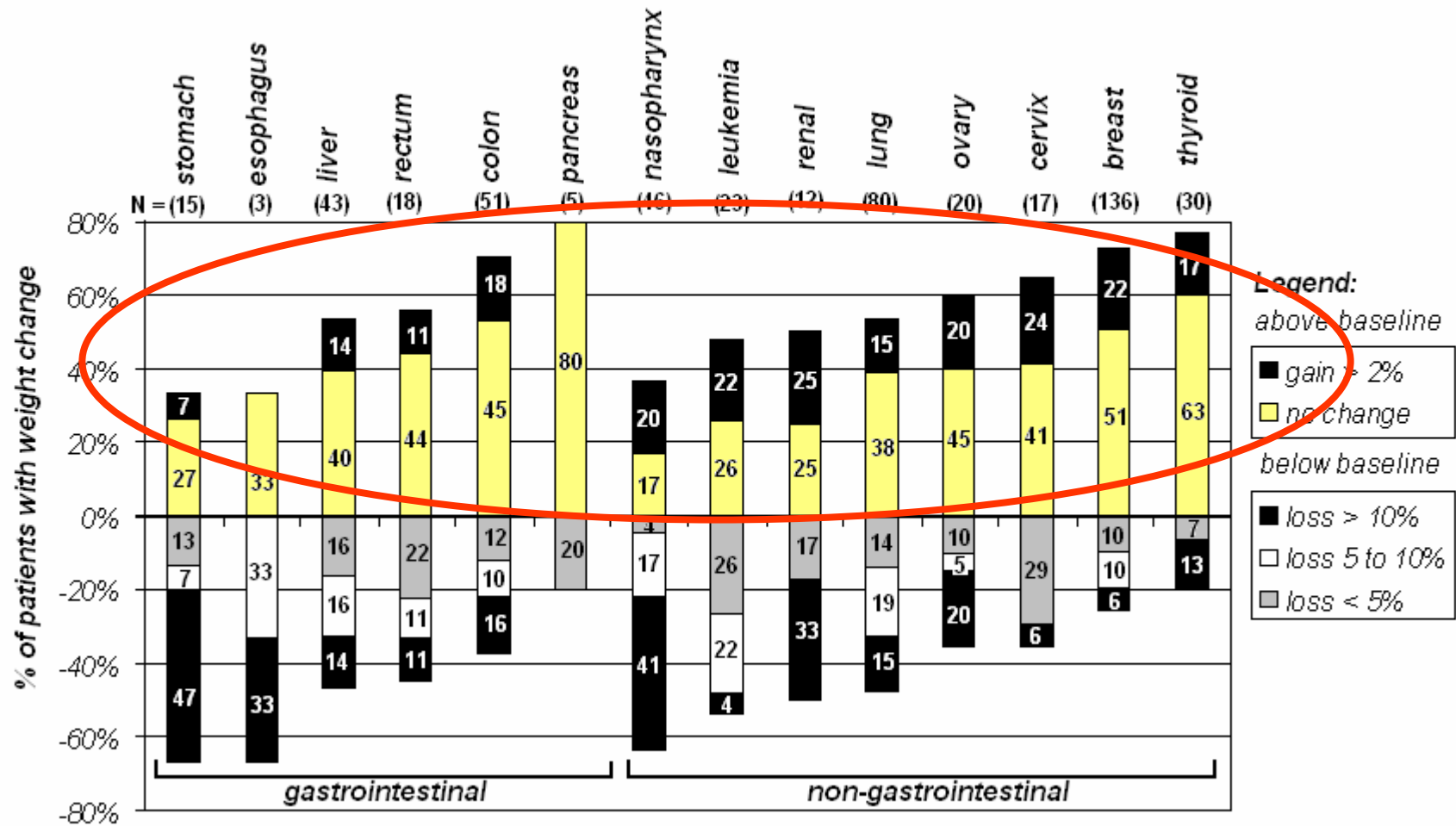


Care of patient and quality management: We have documented that nutrition support team supervision improves nutrition care delivery



# Improved body composition outcome

Weight change GI vs. Non-GI malignancy, 2003-4



Source: Cancer Center Registry and Nutrition Support Database, St. Luke's Medical Center

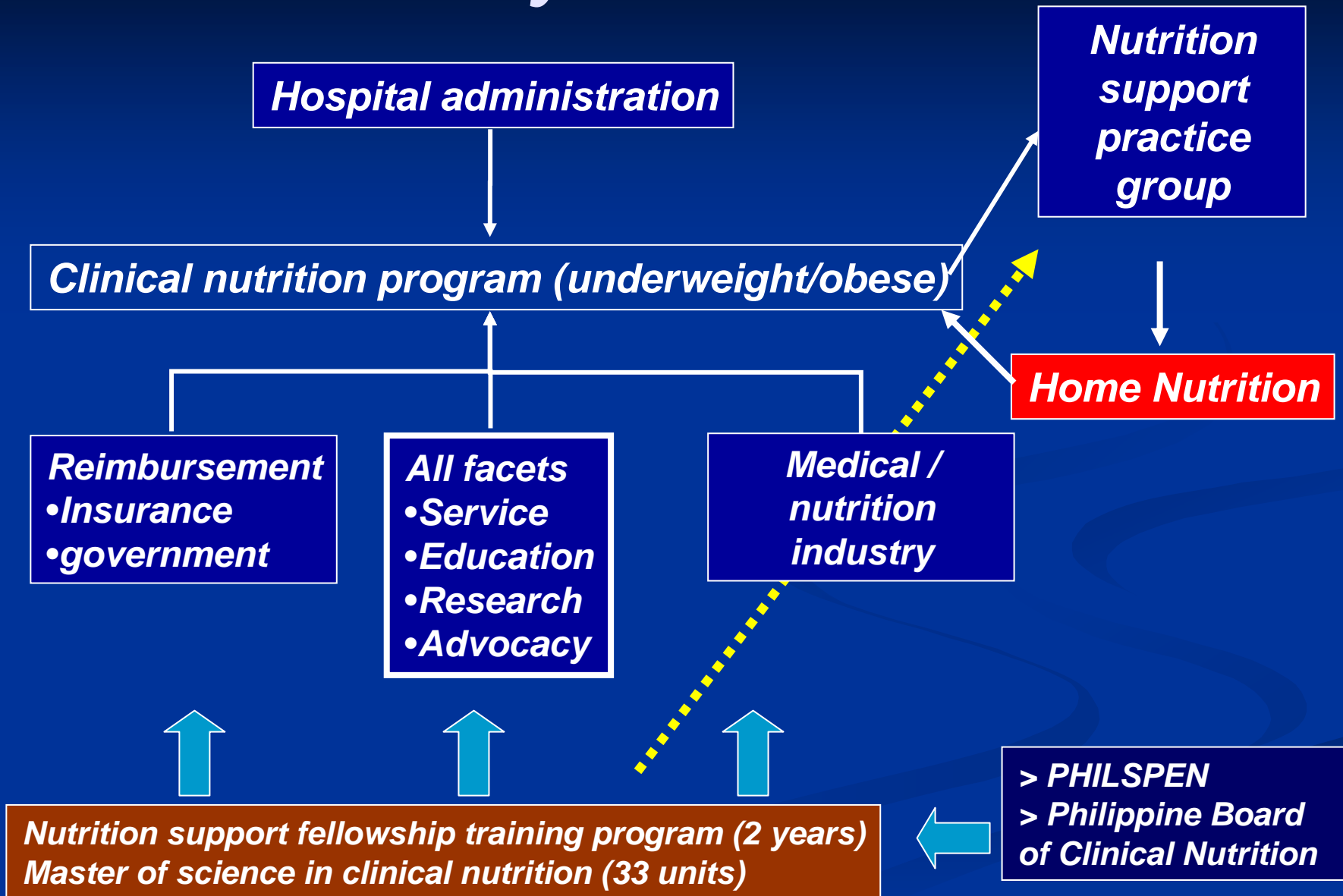
# ***For present NSTs there is still a lot of work to be done***

- *Incorporate nutrition support policy and guidelines in all departments' scope of responsibilities*
- *More focus on follow up of patients with nutrition related problems – to document impact of nutrition support on patient care*
- *Hold regular clinical nutrition updates and case discussions with the different departments*
- *Activate workshops in nutrition support for every department (more practice focused)*
- *Implement pediatric nutrition support*

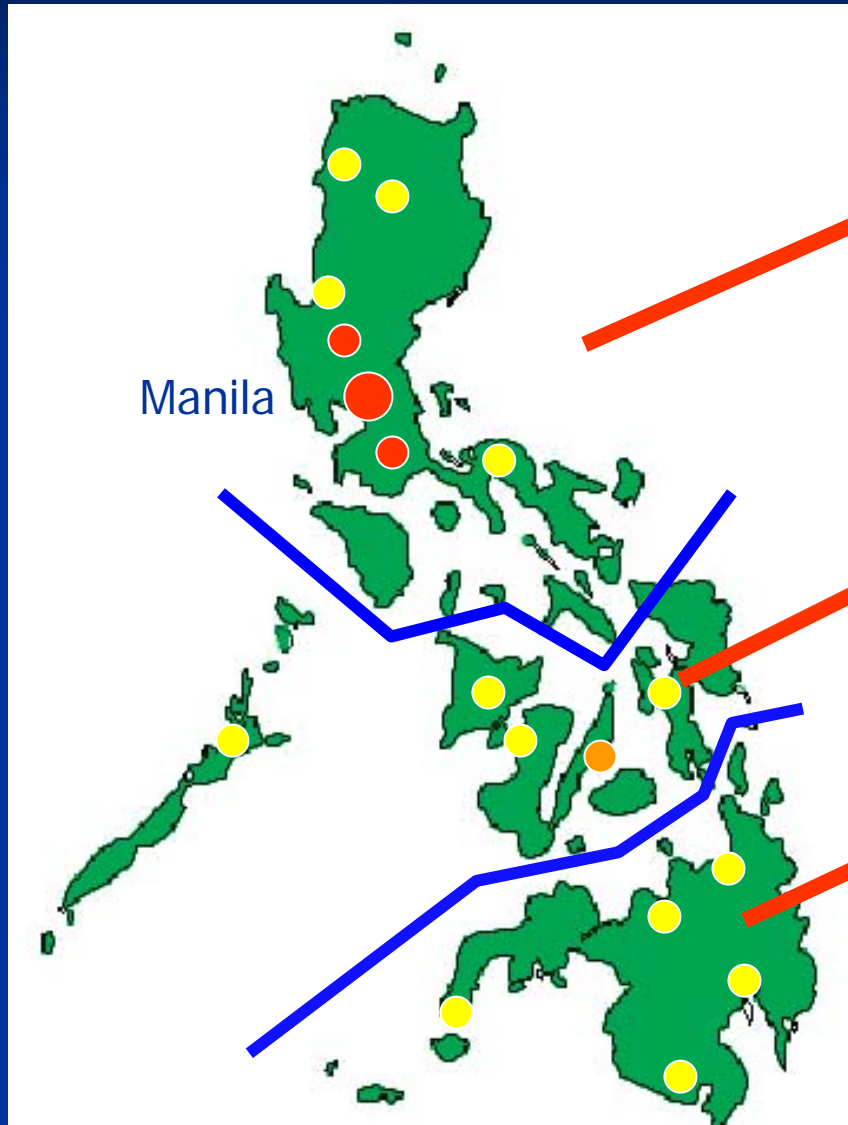
# *How to involve the administration in nutrition support implementation*

- *Show the evidence of the value of nutrition support teams (papers, reports, articles – especially local data)*
  - *Cost-effectiveness*
  - *Raising standards of care*
- *Let them attend workshops in nutrition support (especially those which emphasize the role of the administrators)*
- *Do a prevalence of malnutrition survey in the center/institution*

# Sustainability



# The PHILSPEN challenge: status of nutrition support programs and teams (y2005)



**NST active = 6/83 (7%)**

LUZON 915

- dietitian present 460 (50%)
- NST needed 58 (13%)
- NST active 6 (14%)

VISAYAS 247

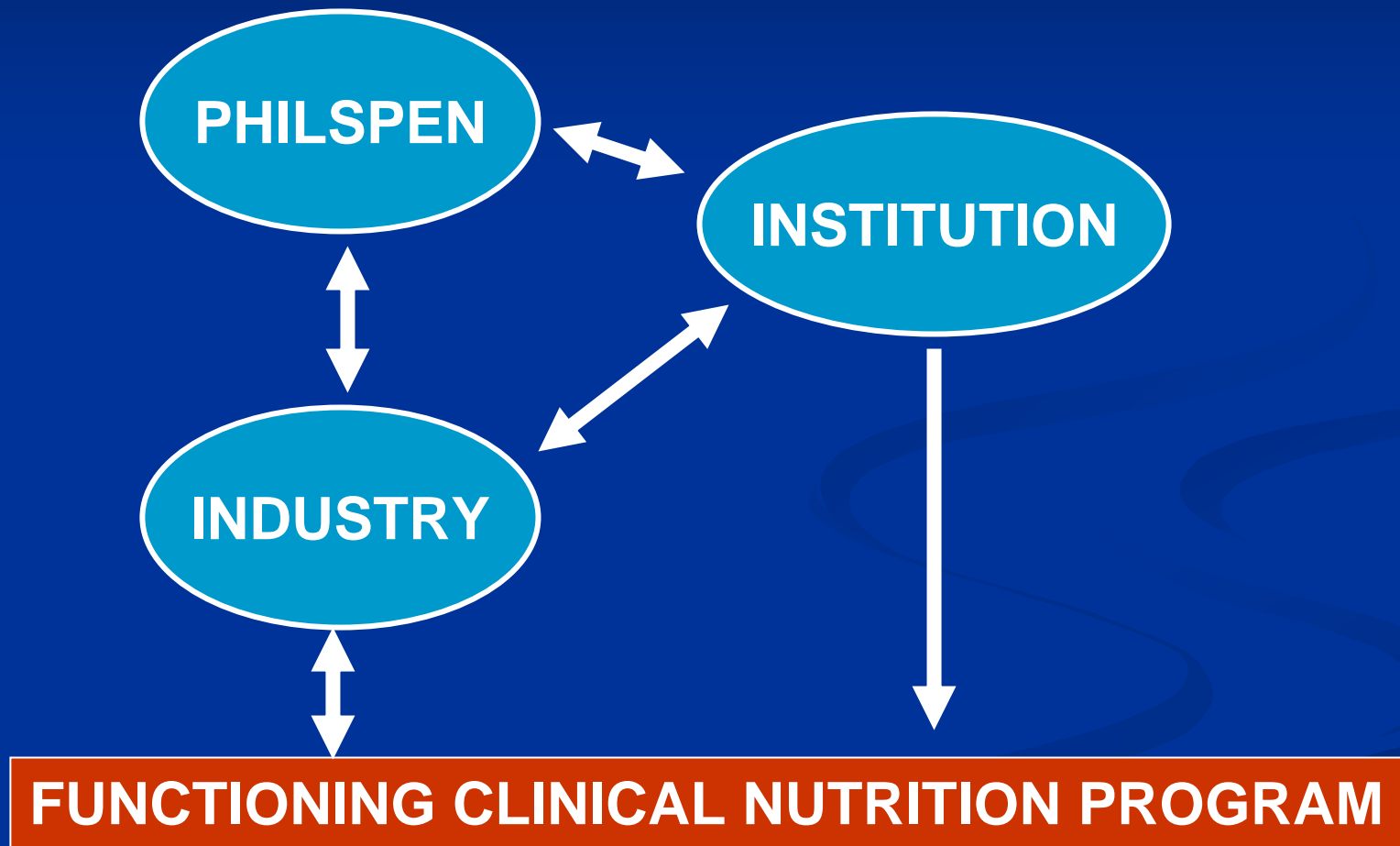
- dietitian present 157 (64%)
- NST needed 18 (7%)
- NST active 0 (0%)

MINDANAO 493

- dietitian present 203 (41%)
- NST needed 7 (1.5%)
- NST active 0 (0%)

**Total hospitals: 1,655**

# *Proposed cooperative venture*



***What hospital benefits can  
the NST program provide?***

# ***Hospital Benefits***

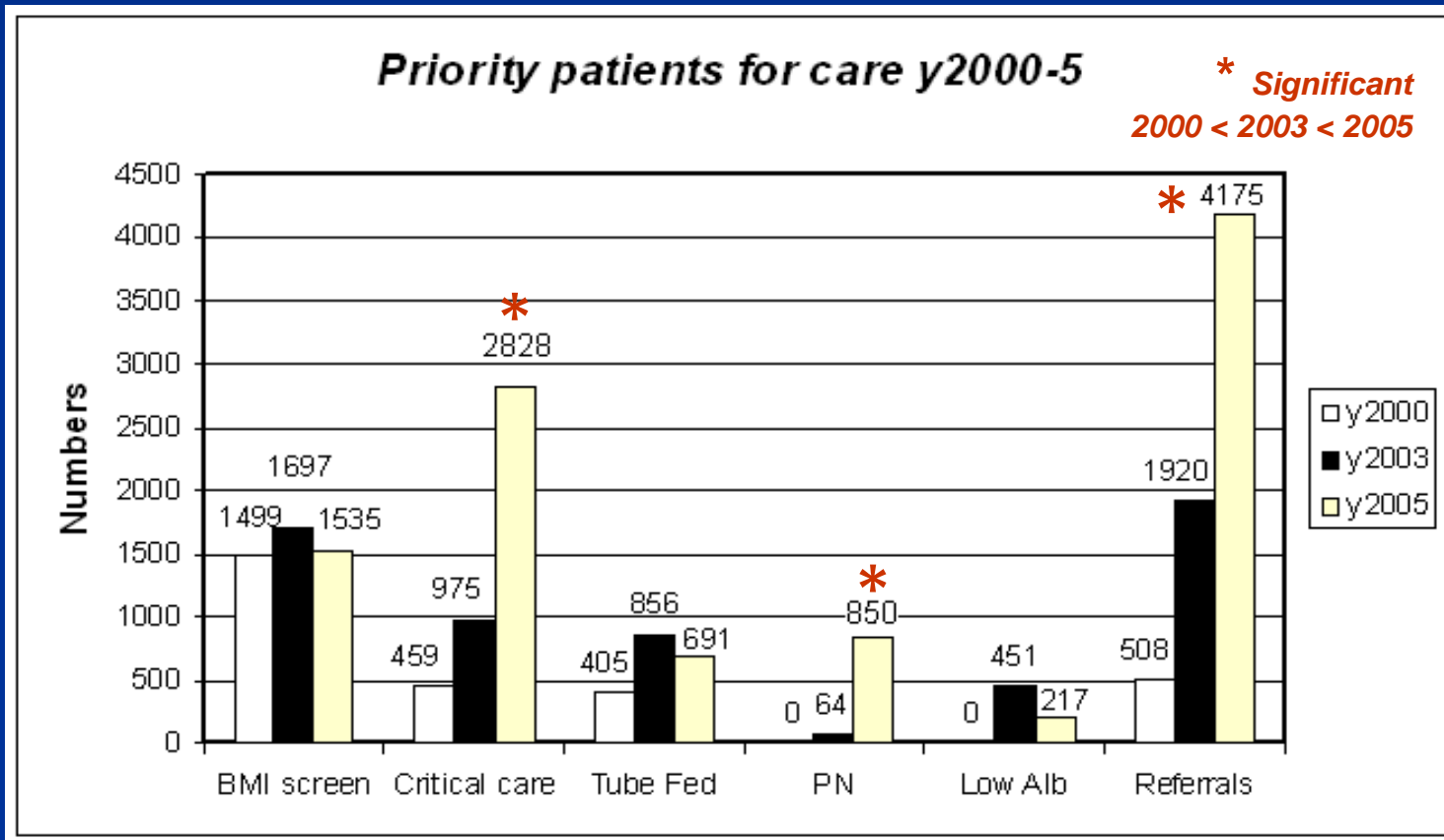
- *Quality Services on Nutrition Support*



# Hospital Benefits

- *High Earning Potential*

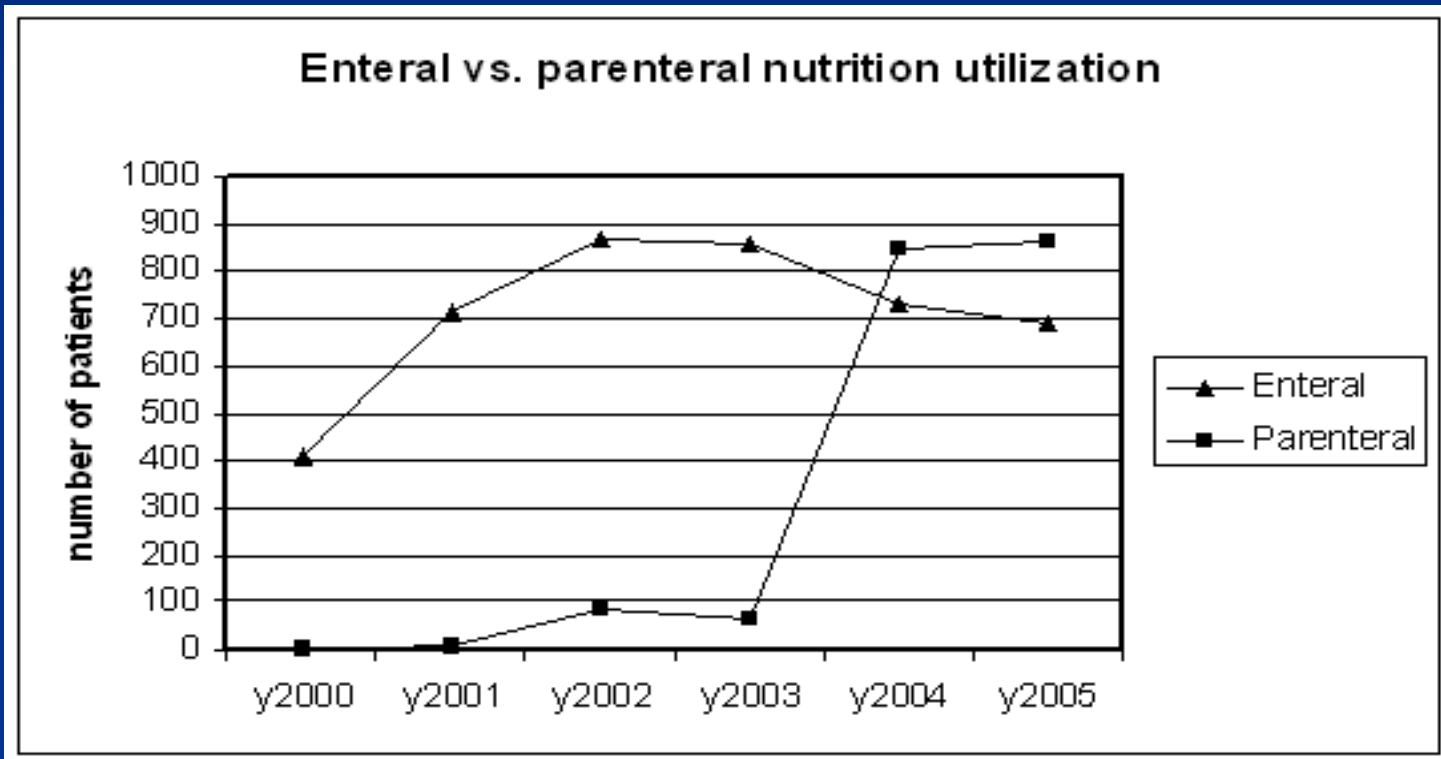
- *More patients are referred to the hospital because of the quality of care provided.*



*Care of patients and quality management: focus on priorities is accomplished and more patients receive help when most needed*

# Hospital Benefits

- *High Earning Potential*
  - *Utilization of nutritional products*



*Care of patients and quality of management: there is better utilization of tools for nutrition care delivery – enteral and parenteral nutrition*

# *Hospital Benefits*

- *High Earning Potential*
  - *Diagnostic and/or Laboratory procedures provided*
  - *NST professional fee*
- *Prestige of ISO/JCIA Recognition*
  - *Upgrades the hospital image to a Best Practice Standard that is World Class*

# ***NST Personnel Requirements***

- *(1) One NST Head (Physician) with a regular schedule to run the team*
- *(1) Dietitian and/or (1) Nurse (Pharmacist as an option) with NST function as part of job description*
- *General compensation of the NST*