NUTRITION SUPPORT IN SEVERE POST-OP COMPLICATIONS:

ENTERAL VS PARENTERAL FEEDING AND HOW TO DO IT.

Dr. Nazy Zarshenas

PhD. MND. BSc.

Accredited Practicing Dietitian

I have no potential conflict of interest to report

Acknowledgement

UPPER GASTRO INTESTINAL & METABOLIC RESEARCH FOUNDATION
promoting health through education & research

Introduction

- Complications do occur following all bariatric procedures
- This may lead to malnutrition
- Providing nutrition support may be challenging

These related to:

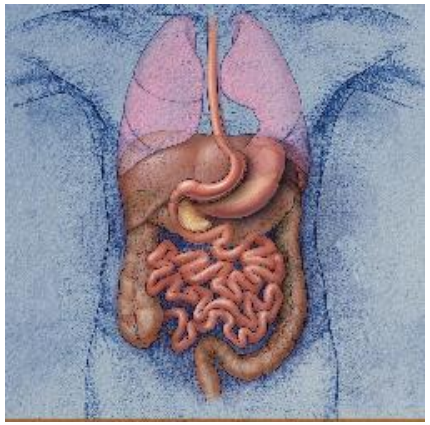
- screening and diagnosis
- planning and delivery of nutrition support
- Metabolic and nutritional complications - Refeeding risk
- inconsistent recommendations for energy and protein provision
- Psychology of patients

Complications following bariatric surgery

Adjustable Gastric Banding

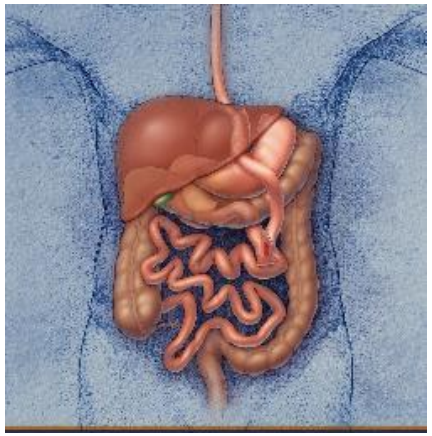
- Perforation
- GIT Hemorrhage
- Gut ischaemia

- Band erosion
- Band slippage



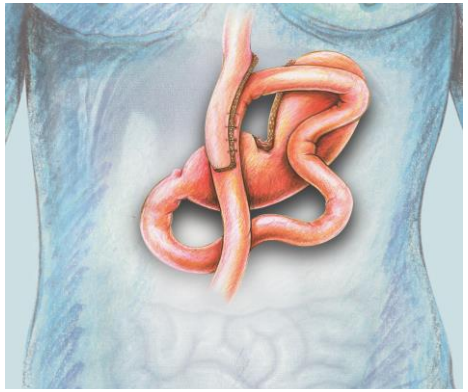
Sleeve Gastrectomy

- Perforation
- GIT Hemorrhage
- Anastomotic leaks
- Strictures
- Gut ischaemia



Roux-en-Y Gastric Bypass

- Perforation
- GIT Hemorrhage
- Anastomotic leaks
- Gastrogastric fistulas
- Gut ischaemia
- Anastomotic strictures
- Bowel Obstruction



One Anastomosis Gastric Bypass
OAGB-MGB

Early: <30 days

Late: >30 days

Segaran E Proc of the NS 2010

Acknowledgement: Medtronic Australasia Pty Ltd.

Nutrition Care Process

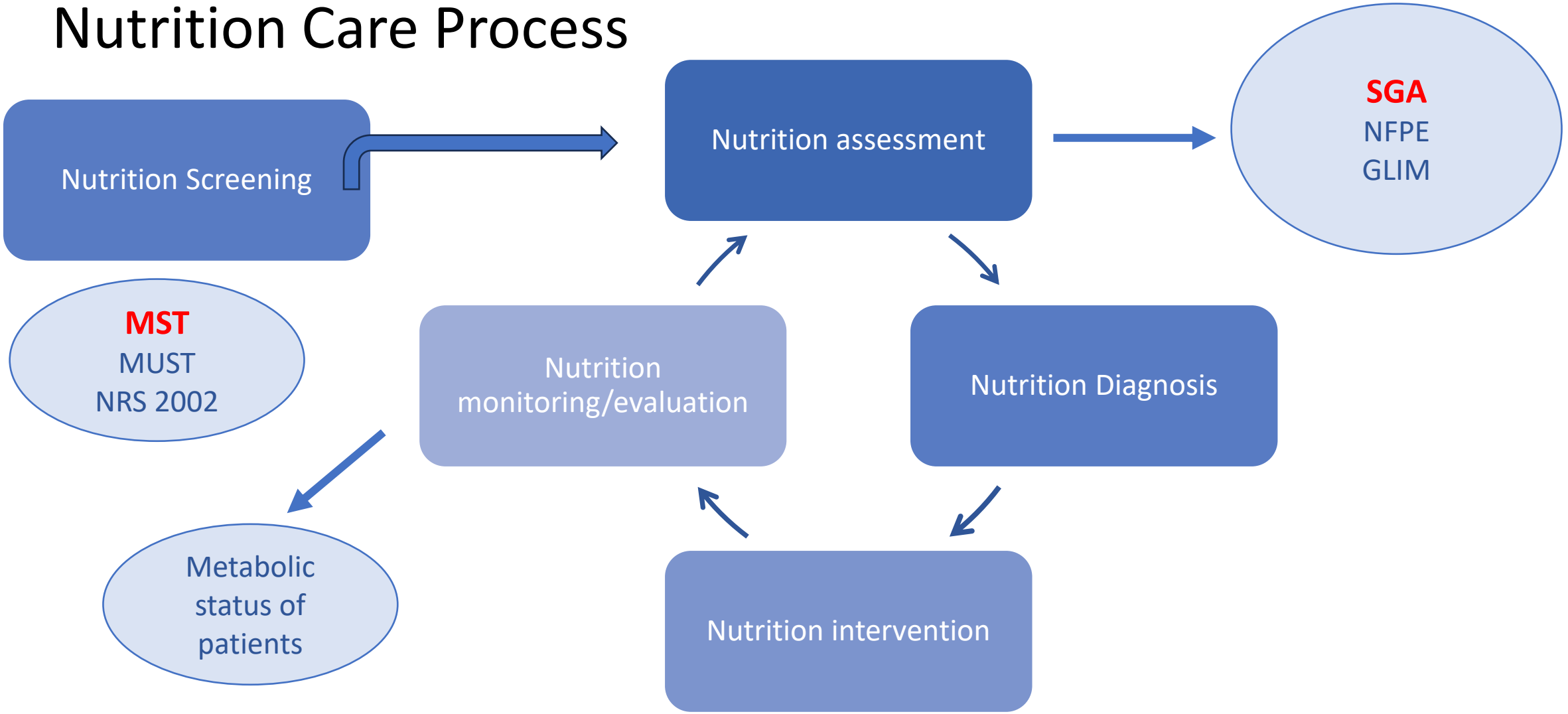
Nutrition Screening

"He has had nausea & vomiting for a week but he does have plenty of reserves"

"They had bariatric surgery so of course there will be complications"

"she has been NBM for 10 days but had bariatric surgery, so just feed her protein not the fat"

Nutrition Care Process

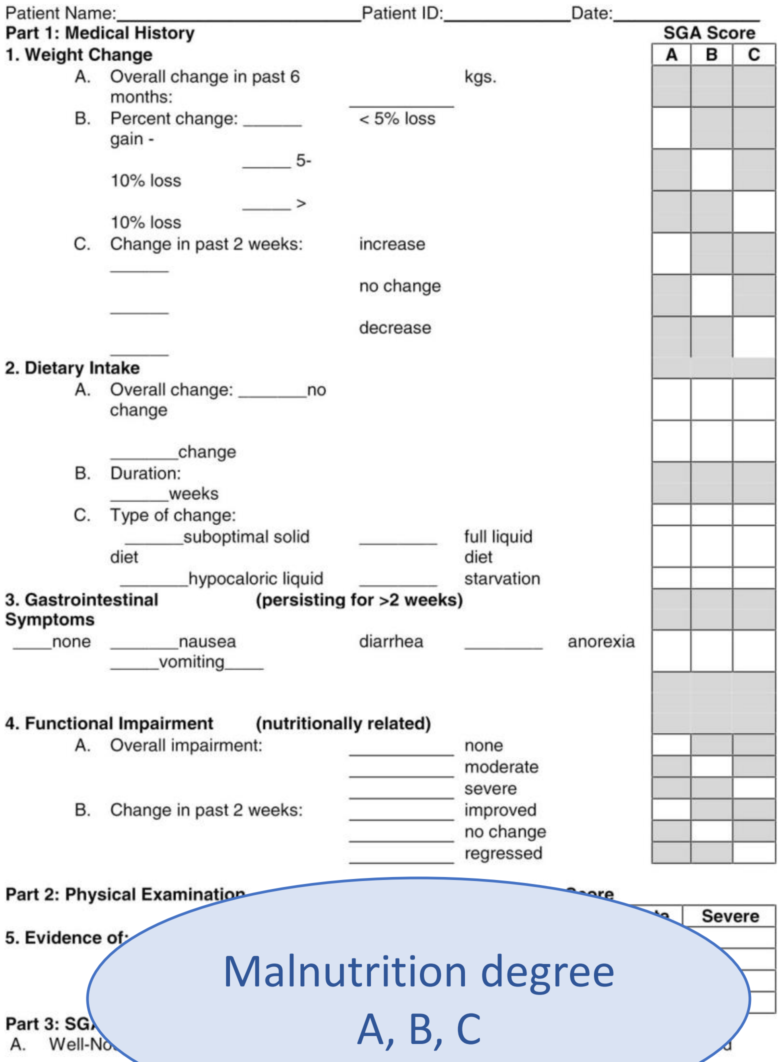


Nutrition Assessment

Metabolic status of patients

SGA

- Wight history
- Dietary intake
- Gastrointestinal symptoms
- Functional status
- Physical assessment


Patient Name:________ Patient ID:________ Date:________

Part 1: Medical History

SGA Score: A B C

1. Weight Change
   A. Overall change in past 6 months: ______ kgs.
   B. Percent change: ______ gain - ______ < 5% loss
      ______ 5-10% loss
      ______ > 10% loss
   C. Change in past 2 weeks: ______ increase
      ______ no change
      ______ decrease

2. Dietary Intake
   A. Overall change: ______no change
      ______change
   B. Duration: ______weeks
   C. Type of change: ______suboptimal solid diet ______ full liquid diet
      ______hypocaloric liquid ______ starvation

3. Gastrointestinal Symptoms (persisting for >2 weeks)
   ____none ______nausea ______vomiting____ diarrhea ______ anorexia

4. Functional Impairment (nutritionally related)
   A. Overall impairment: ______ none
      ______ moderate
      ______ severe
   B. Change in past 2 weeks: ______ improved
      ______ no change
      ______ regressed

Part 2: Physical Examination

Severe

5. Evidence of:

Part 3: SG

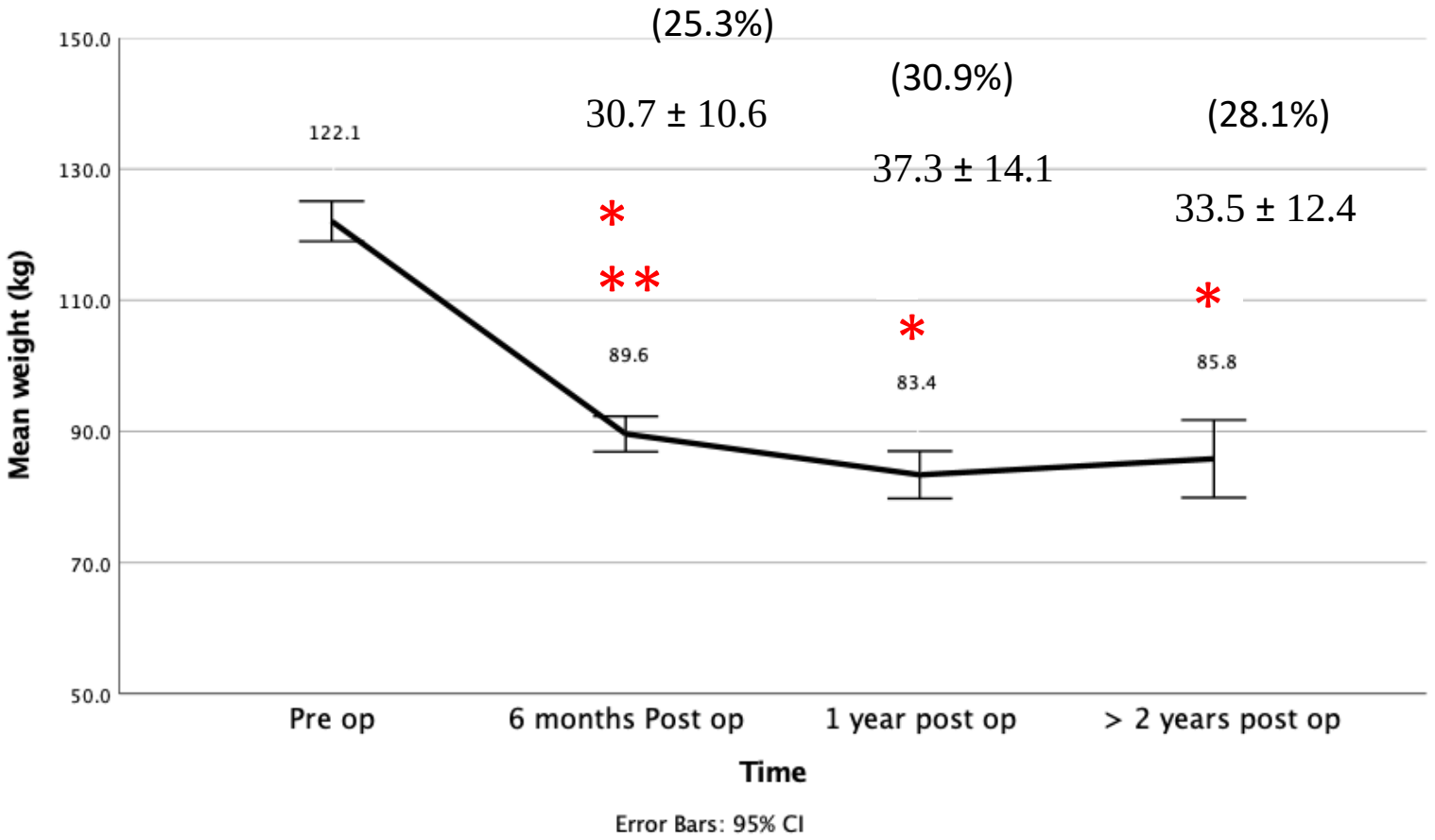
A. Well-No

Malnutrition degree A, B, C

Nutrition Assessment

SGA

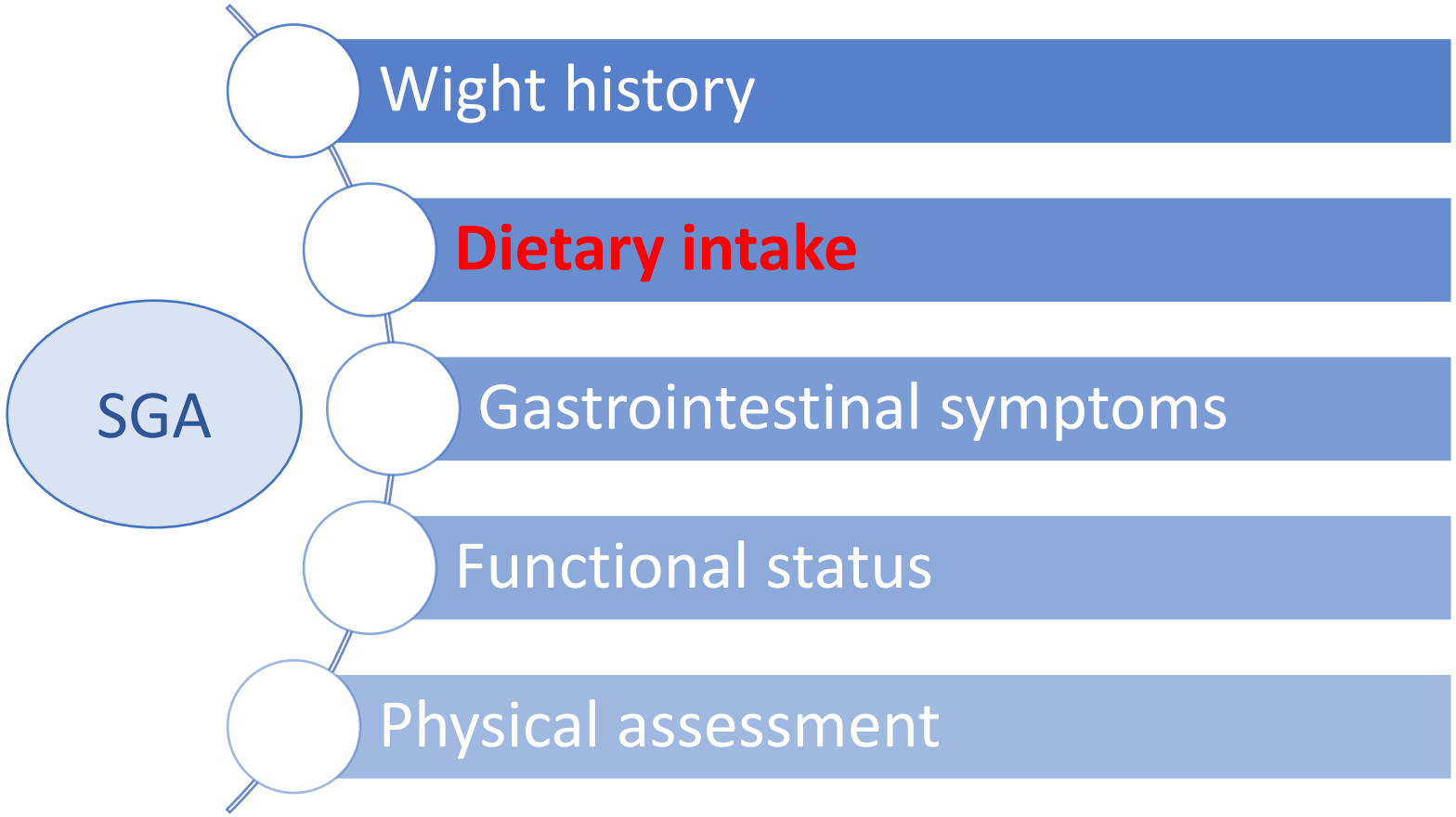
- Wight history
- Dietary intake
- Gastrointestin
- Functional stat
- Physical assessme



* *Statistically different to pre op weight P= <0.001*

** *Statistically different to >2 years post op weight P= 0.009*

Nutrition Assessment

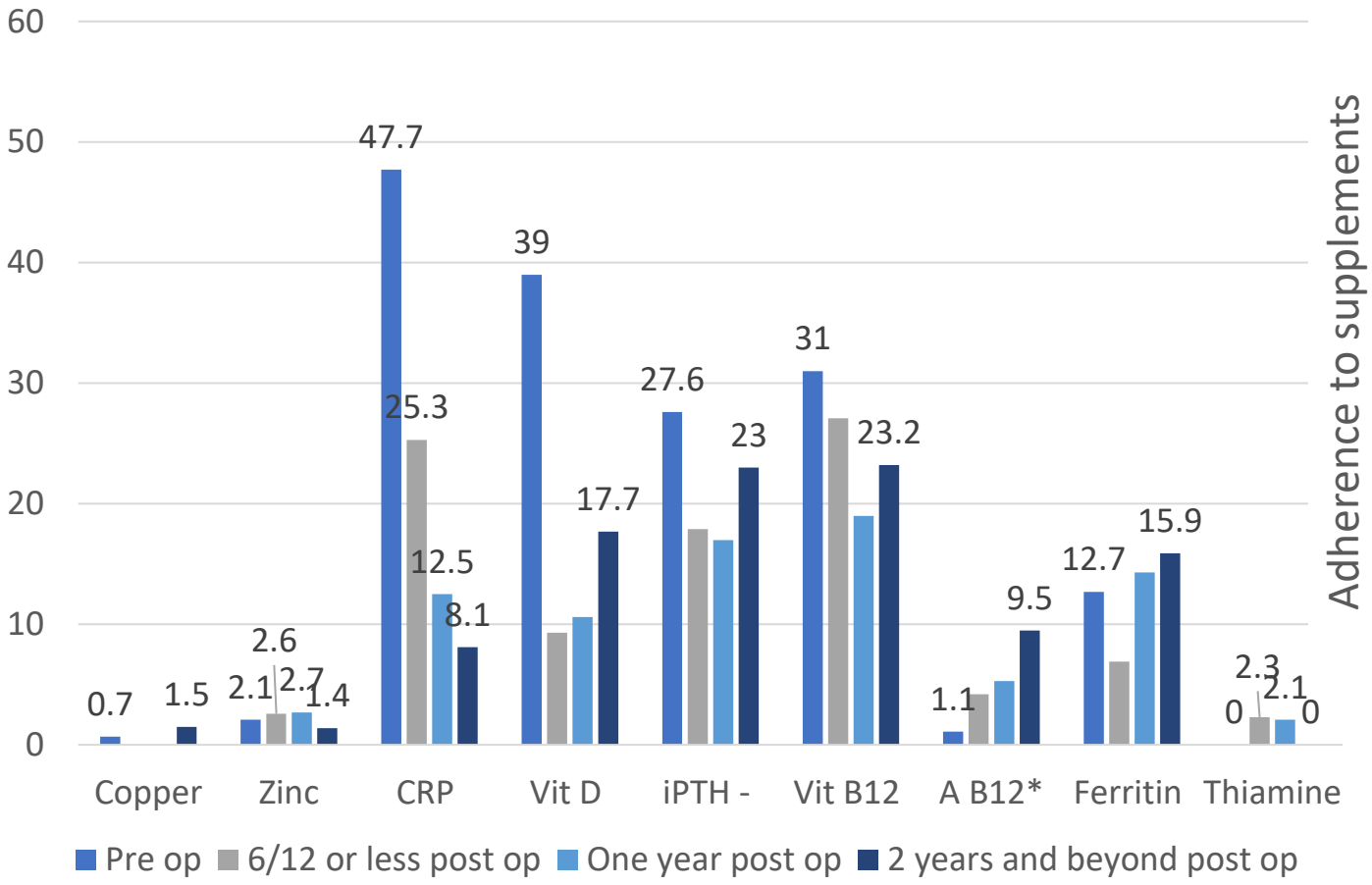


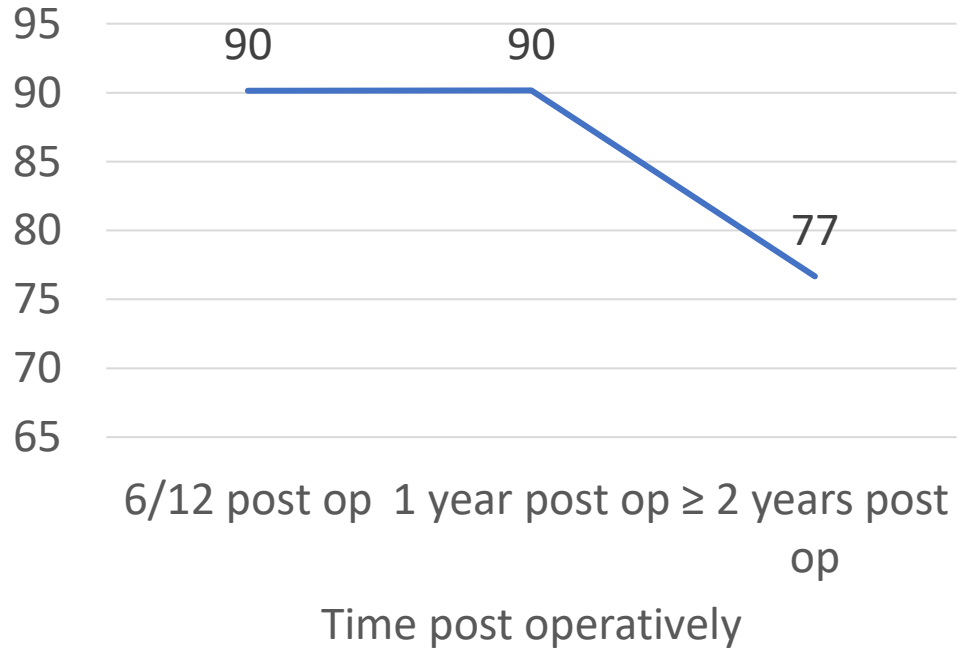
Pre-op:
Chronic dieting
Poor diet quality

Post-op:
Not meeting requirements in the initial stages

Complications can lead to:
Intolerance of diet and supplements

Micronutrients

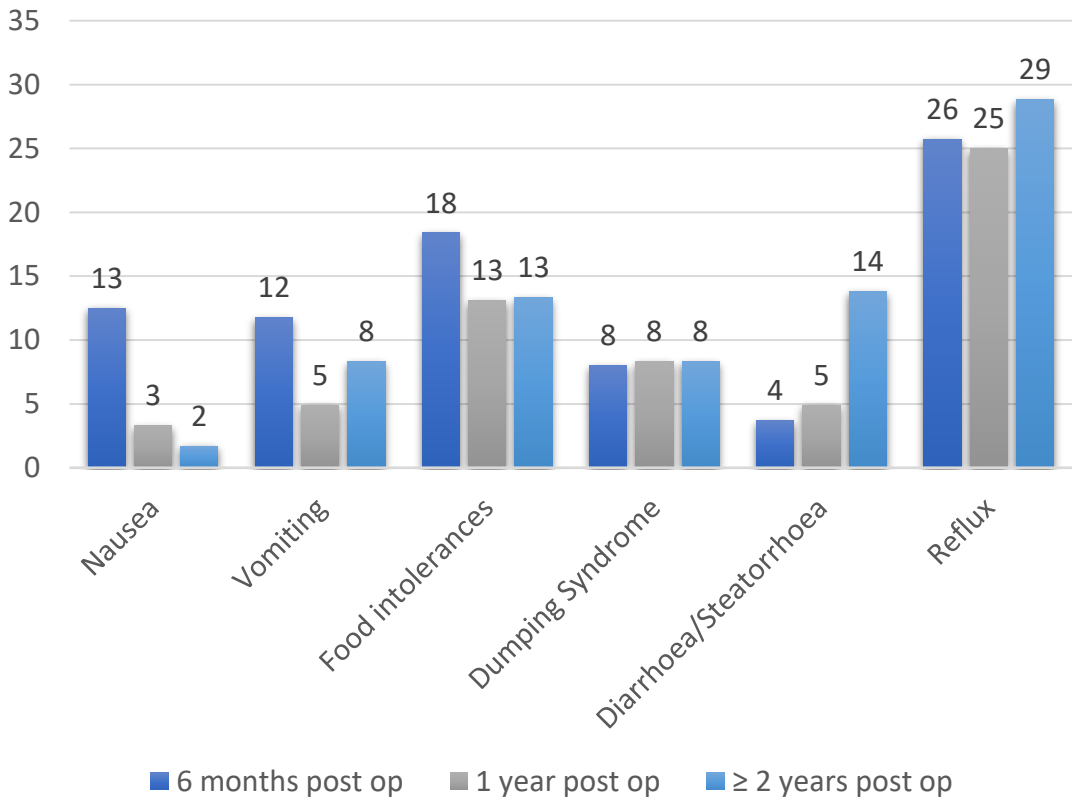




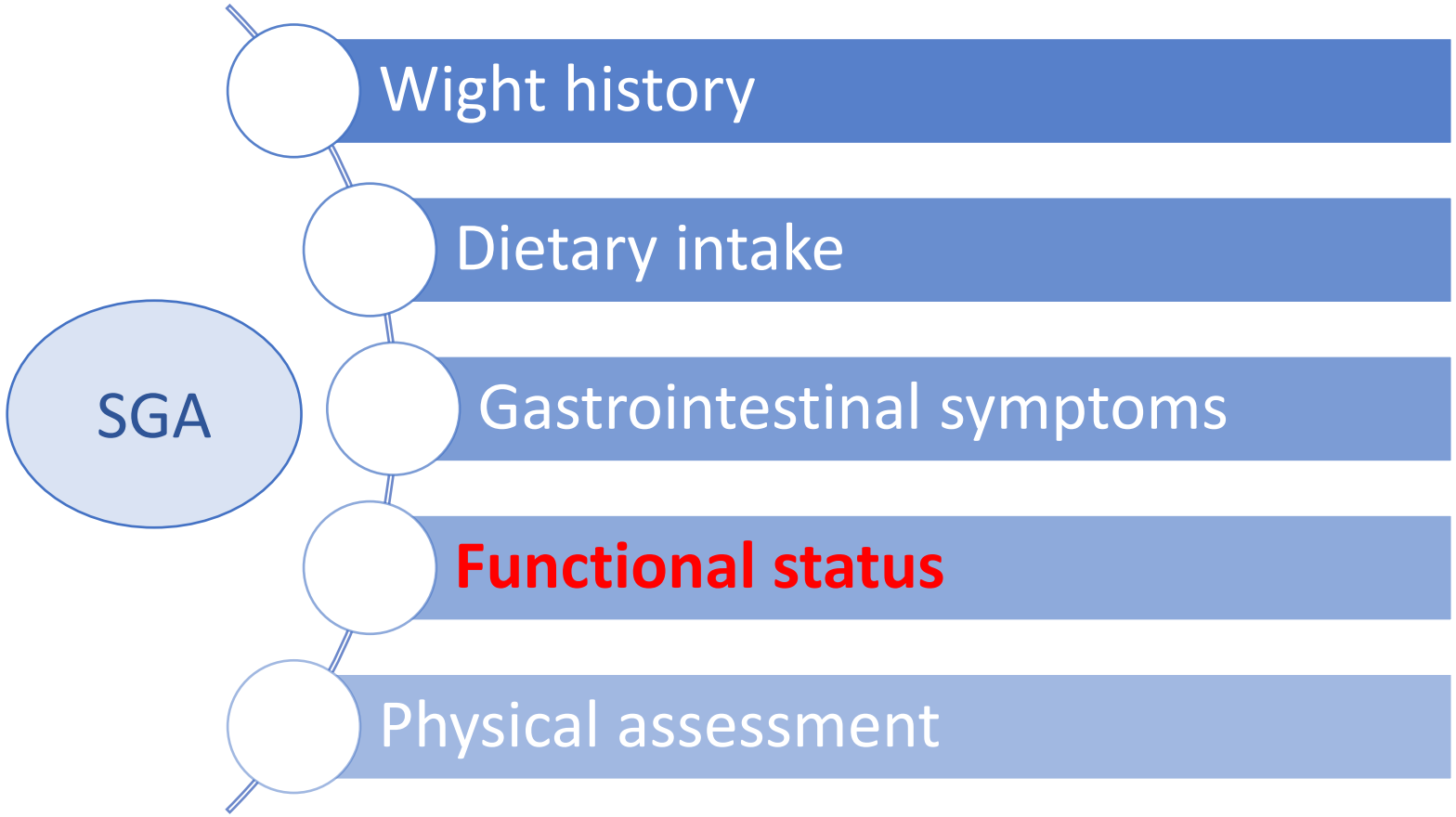
Nutrition Assessment

SGA

- Wight history
- Dietary intake
- **Gastrointestinal symptoms**
- Functional status
- Physical assessment

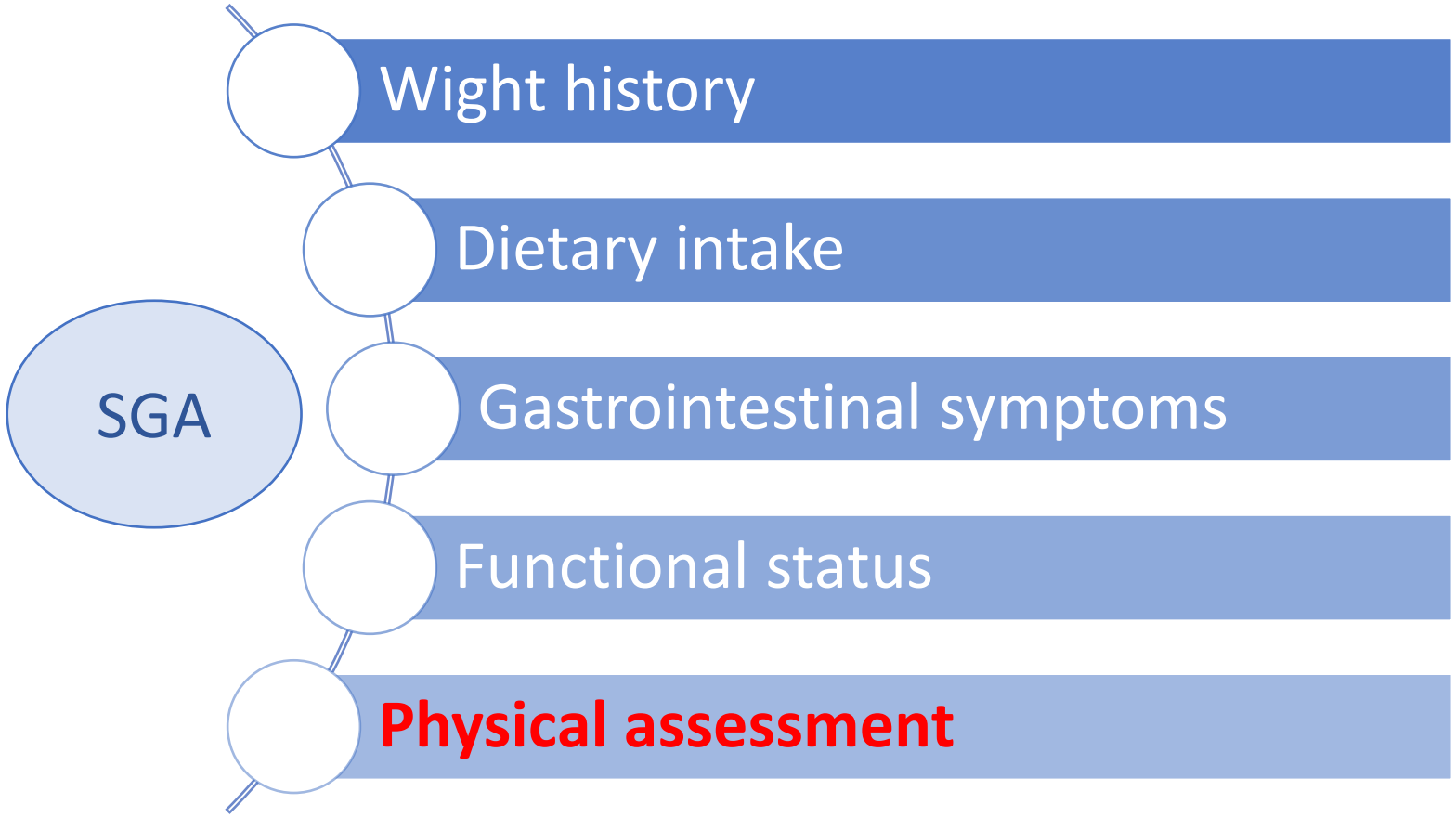


Nutrition Assessment



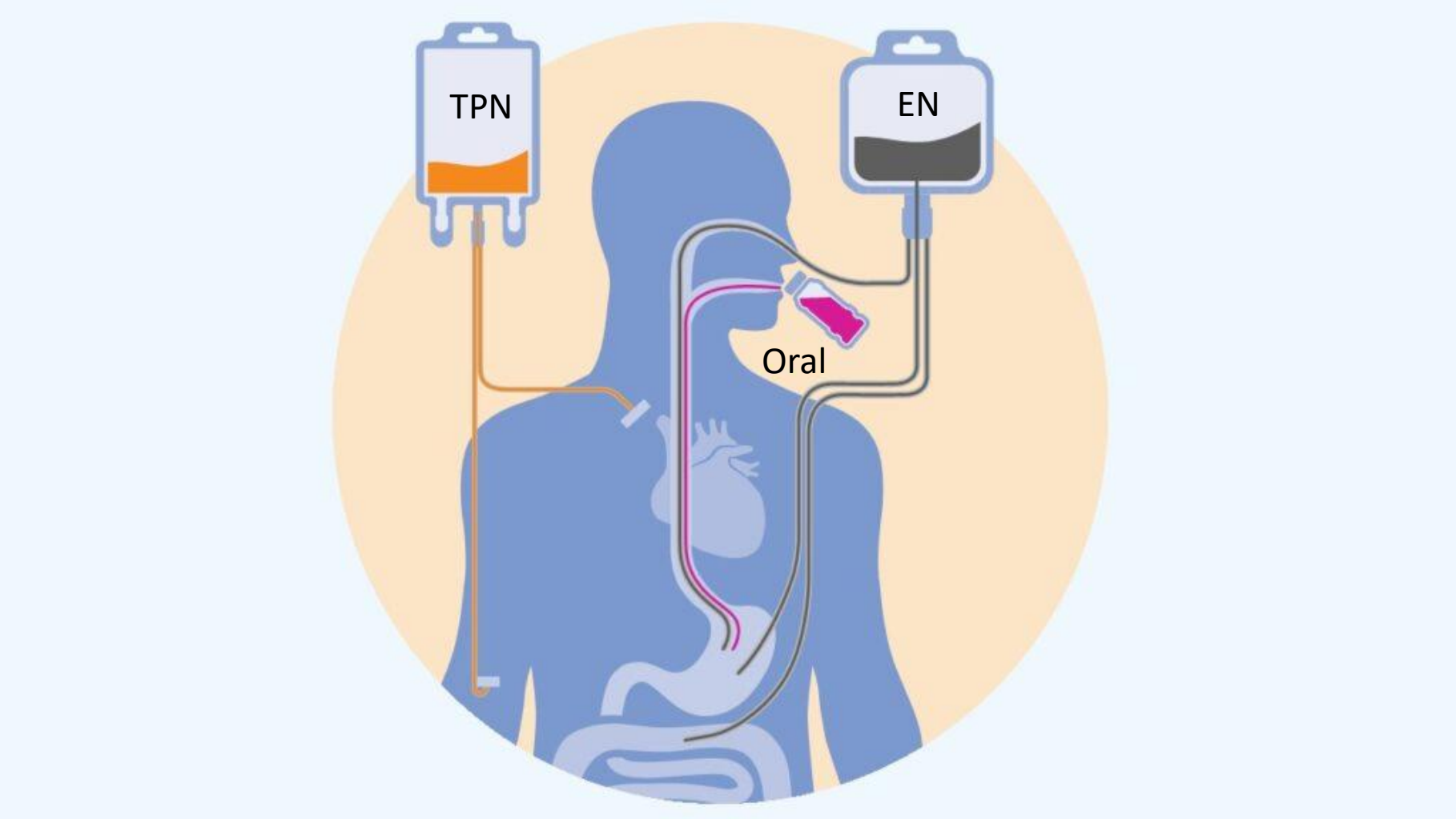
Reduced energy levels
Unable to exercise
Sarcopenia may be present before surgery

Nutrition Assessment



Difficult to assess:
Sarcopenia may be under-recognised
Nutritional-focused physical examination

Nutrition Support

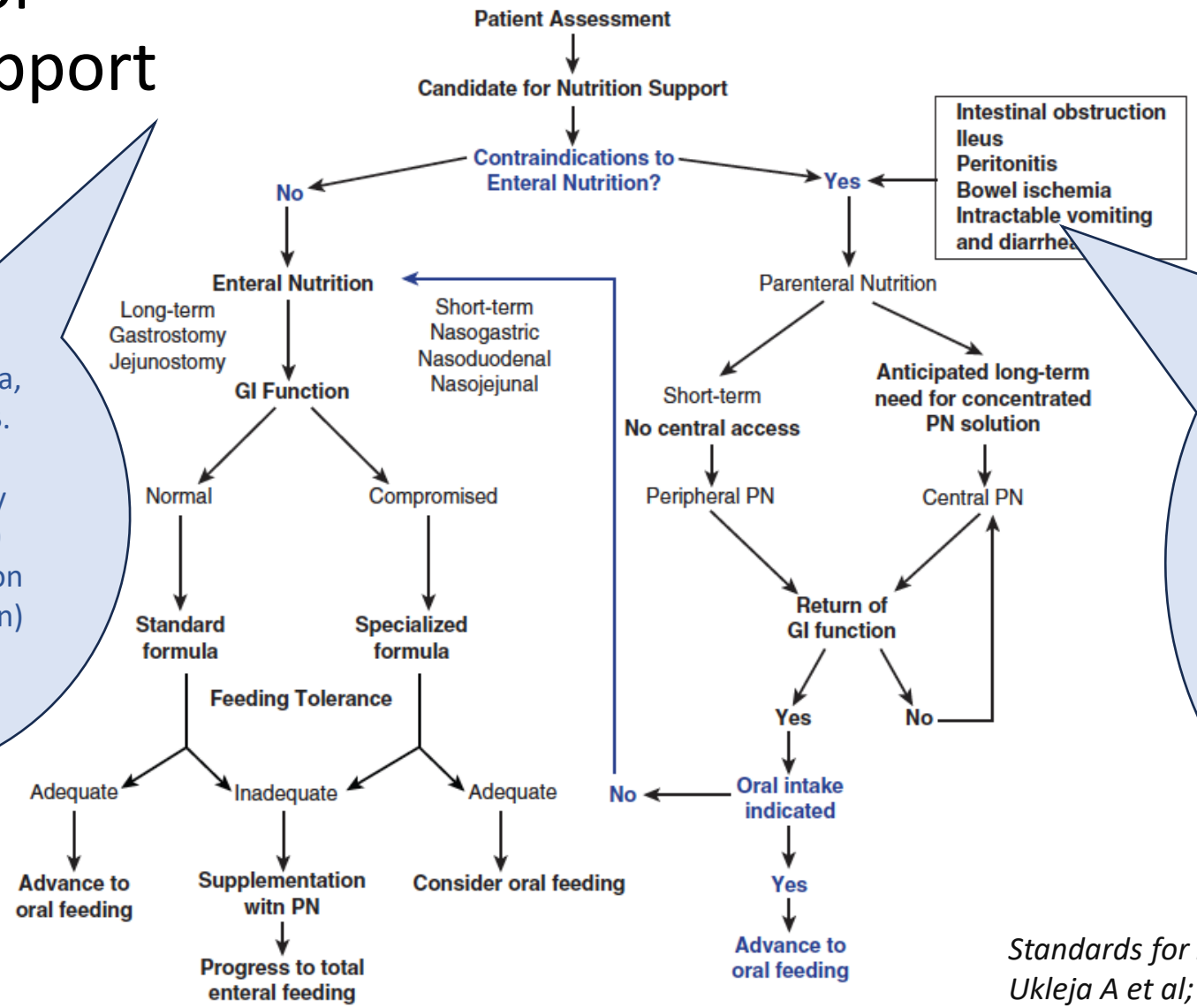


Algorithm for nutrition support

32 yo female re-admitted with nausea, vomiting post OAGB.

Gastro-enterostomy anastomosis (8 - 10 mm); stenosis, dilation (16.5 - 18 mm balloon)

I/O NG tube



50 yo female
Admitted with nausea, vomiting and chronic diarrhoea.
Significant and unintentional weight loss (20%) in 3/52.

Hx of SG 2020, RYGB 2022

Dx: Gastrocolic fistula

TPN

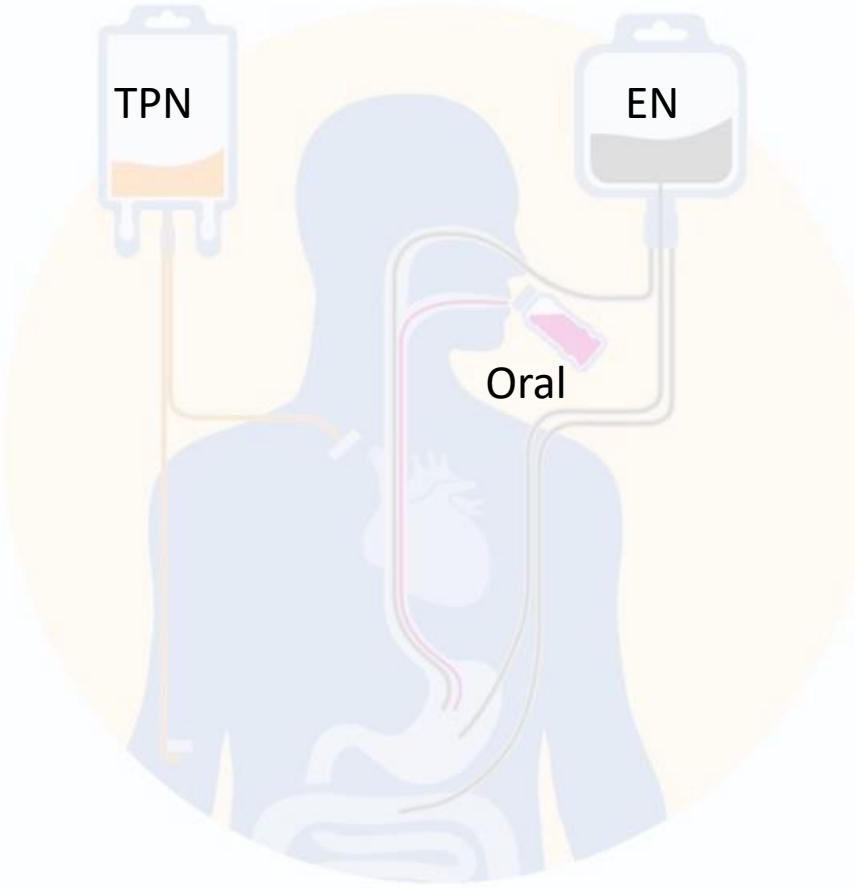
OT: DOA, repair of gastrocolic fistula & extended R) hemicolectomy

Standards for nutrition support: adult hospitalized patients. Ukleja A et al; Nutr Clin Pract. 2010;25(4):403-414.

Enteral Nutrition Support

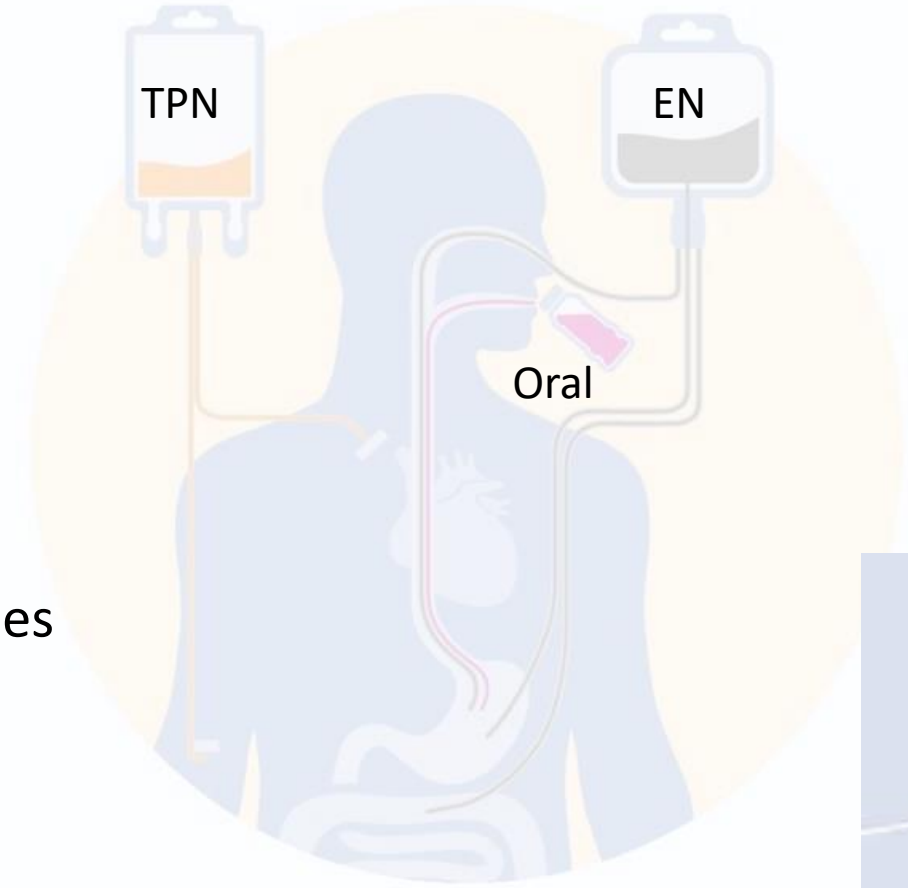
- Physiological
- Fewer complications
- Easier established
- Patients can go home with them
- Various formula available
- $$ vs TPN

- Consider:
- Access may be an issue
- Patients dislike of tube
- Additional multivitamins
- Additional protein
- $$



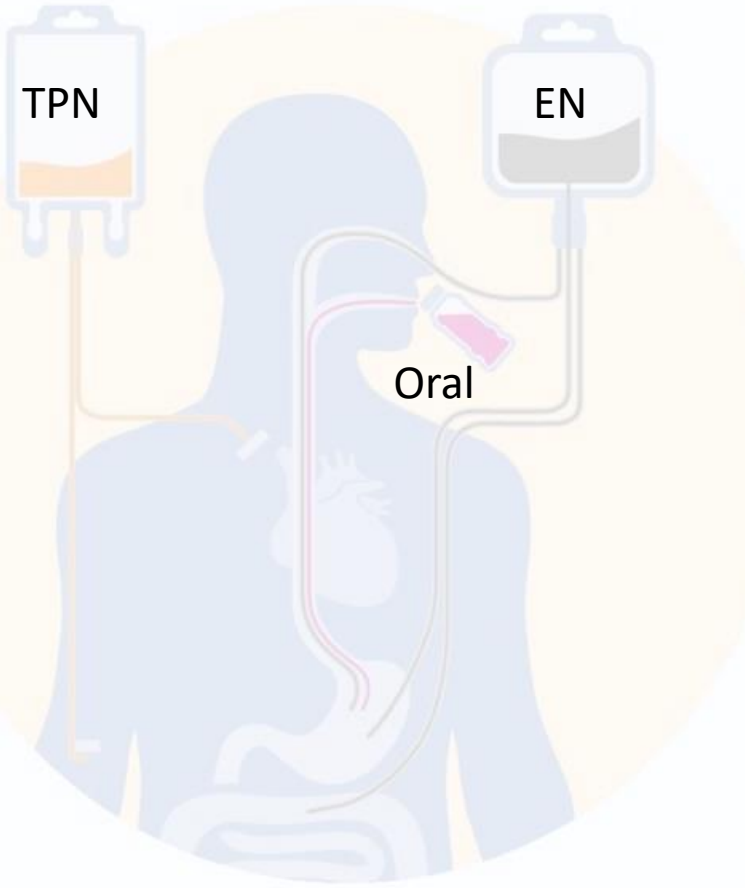
HOME Enteral Nutrition (HEN)

- Consider
  - Route of access
  - Administration method
  - Patients capabilities
  - Practicalities
  - $$
- Training in hospital
- Nutrition support companies
  - Subsidised cost
  - Home Nurse
- Follow up?



Parenteral Nutrition Support

- Patients may prefer this
- Consider:
  - Access → CVC line
  - Increase risk of infection
  - Unique complications
  - $$ vs Enteral
  - Consider LOS



Estimating requirements - Energy

- Gold standard: Indirect calorimetry *(ASPEN 2013)*

- Predictive equations
  - Mifflin-St Jeor
  - Penn State, Modified Penn State (age >60) (Critically ill cohort)
  - Wt. based equation:
    - 11 – 14 kcal/kg actual body weight (BMI: 30 – 50 kg/m^2)
    - 22 – 25 kcal/kg ideal body weight (BMI: > 50 kg/m^2)

Mifflin MD, St Jeor ST Hill LA et al. AJCN 1990
Frankenfield DC et al. JPEN 2011
McClave et al. JPEN 2016
McClave et al. JPEN 2009

Estimating requirements - Protein

- Increased protein requirements - especially in critically ill
  - Leading to loss of lean body mass, development of sarcopenic obesity
- Gold standard: Use urinary nitrogen losses, lean body assessment
- Alternatively:
  - 1.3 g/kg adjusted body weight (*Singer P et. al. ESPEN 2019)*
  - 1.2 g/kg actual body weight, 2 – 2.5 g/kg ideal body weight (BMI > 25) (*Choban P et. al.ASPEN JPEN 2013)*
  - 2 g/kg ideal body weight (BMI 30 -40 kg/m^2), 2.5 g/kg ideal body weight (BMI > 40) (*McClave SA et. al. ASPEN / SCCM 2016)*

Estimating requirements - Micronutrients

- Standard enteral formulas do not provide adequate micronutrients
- High risk of vitamin B1 deficiency – supplement daily
- Do not forget the risk of refeeding syndrome
- Iv and if oral: Liquid/chewable supplements
- Priorities the micronutrient supplementations

ASMBS, BOMSS

RYGB

Multivitamins bd – 200 % RDI
Ca with D (1500 mg/d)
18 mg Fe
50-100 mg Fe – menstruating
B12

SG

Multivitamins bd – 200 % RDI
Ca with D (1200 mg/d)
B12

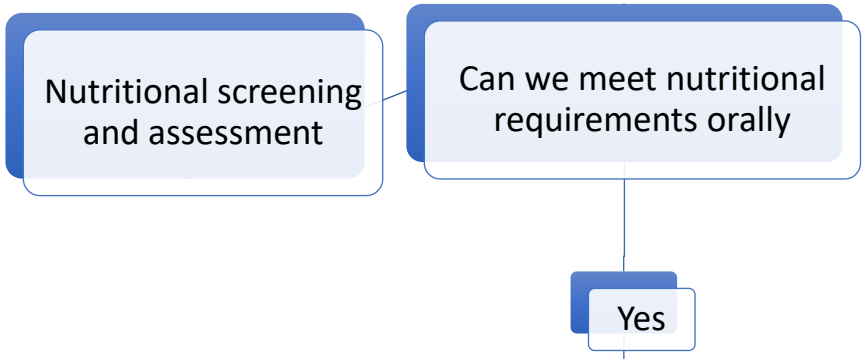
Selection of formulas

- High amino acid, low dextrose formulas

- High protein, low energy enteral formulas
- Add protein modules/supplements

Consider renal and hepatic function
Review and monitor

Nutrition support in MBS complications



Dickerson et. al. Critical care 2022, 26(1): 283
Segaran E Proc to Nut Soc 2010
Choban P et. al. JPEN 2013
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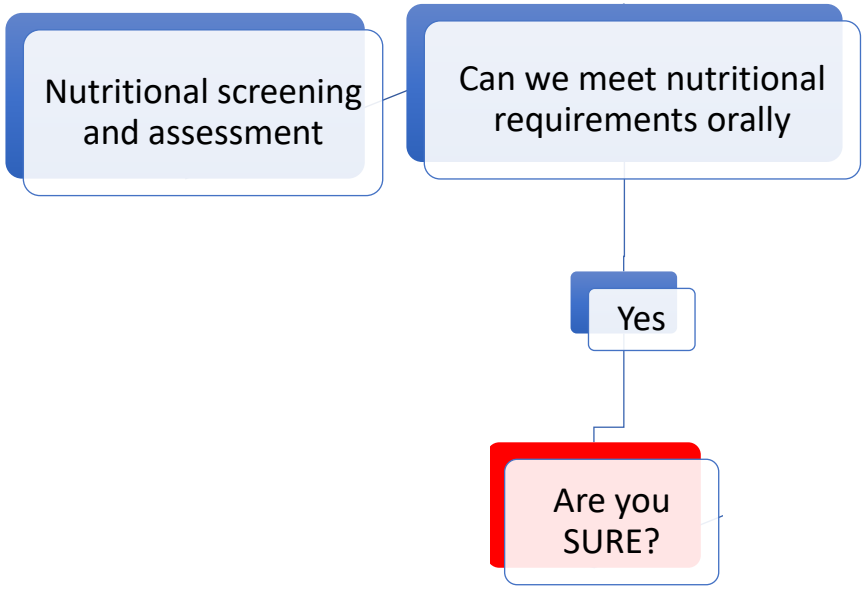
ASMBS 2008, 2013

Nutrition support in MBS complications



Consider the challenges

- Pre-op nutritional status – chronic dieters
- Imposed challenges by the MBS
  - Anorexia and early satiety
  - Maldigestion and malabsorption
- Clinical symptoms related to complications:
  - Exacerbation nausea, vomiting,
  - Hypermetabolism
    - Change In substrate fuel utilization in acute phase response
- Psychological aspects

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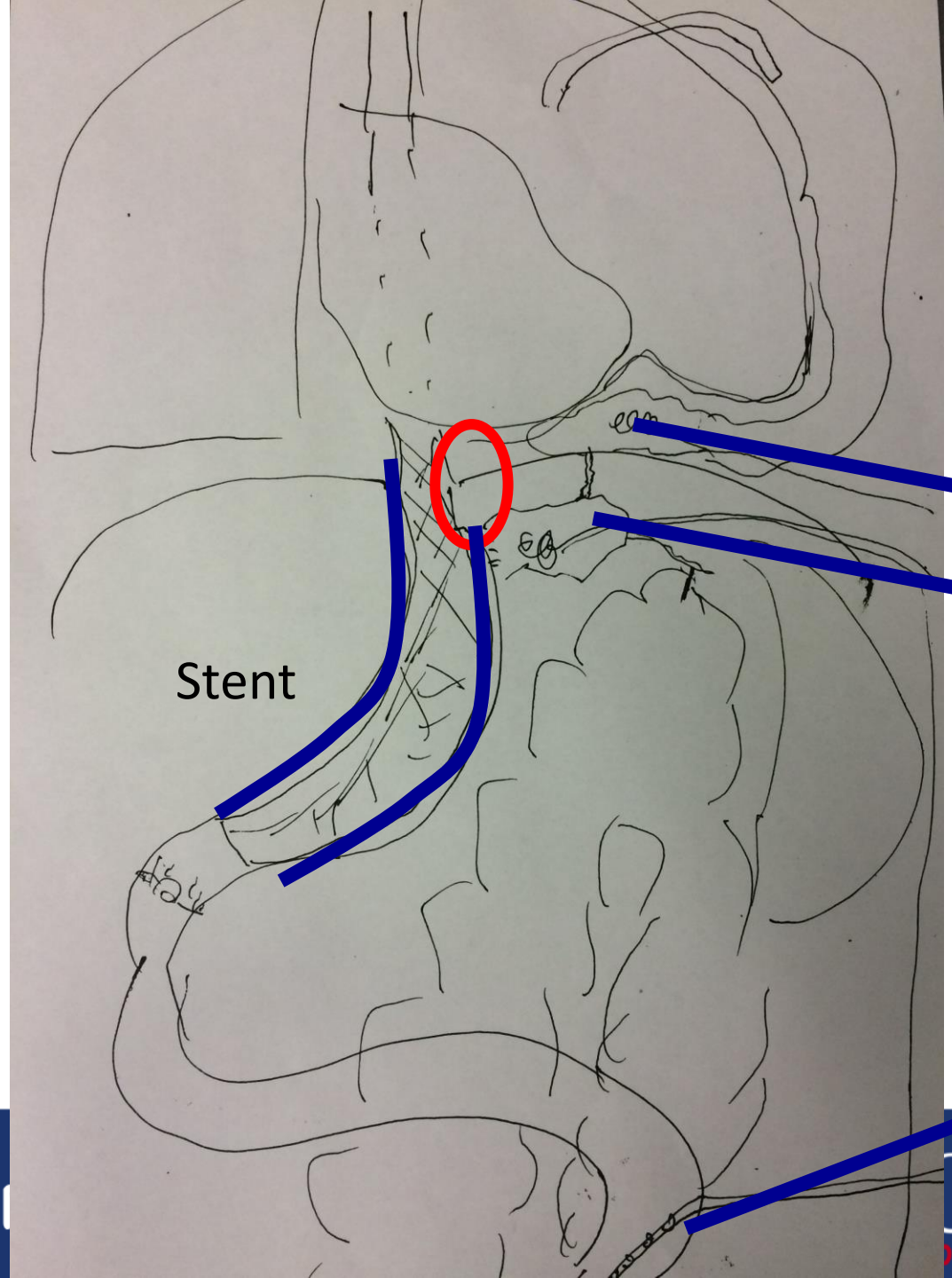
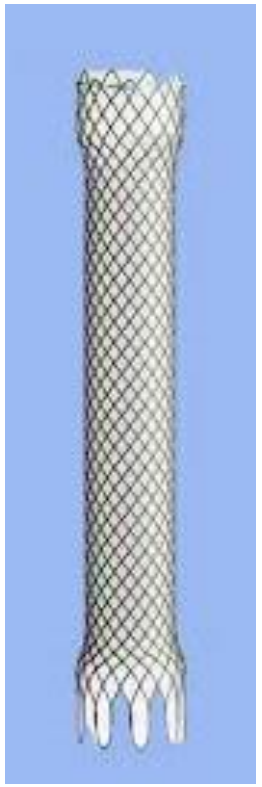
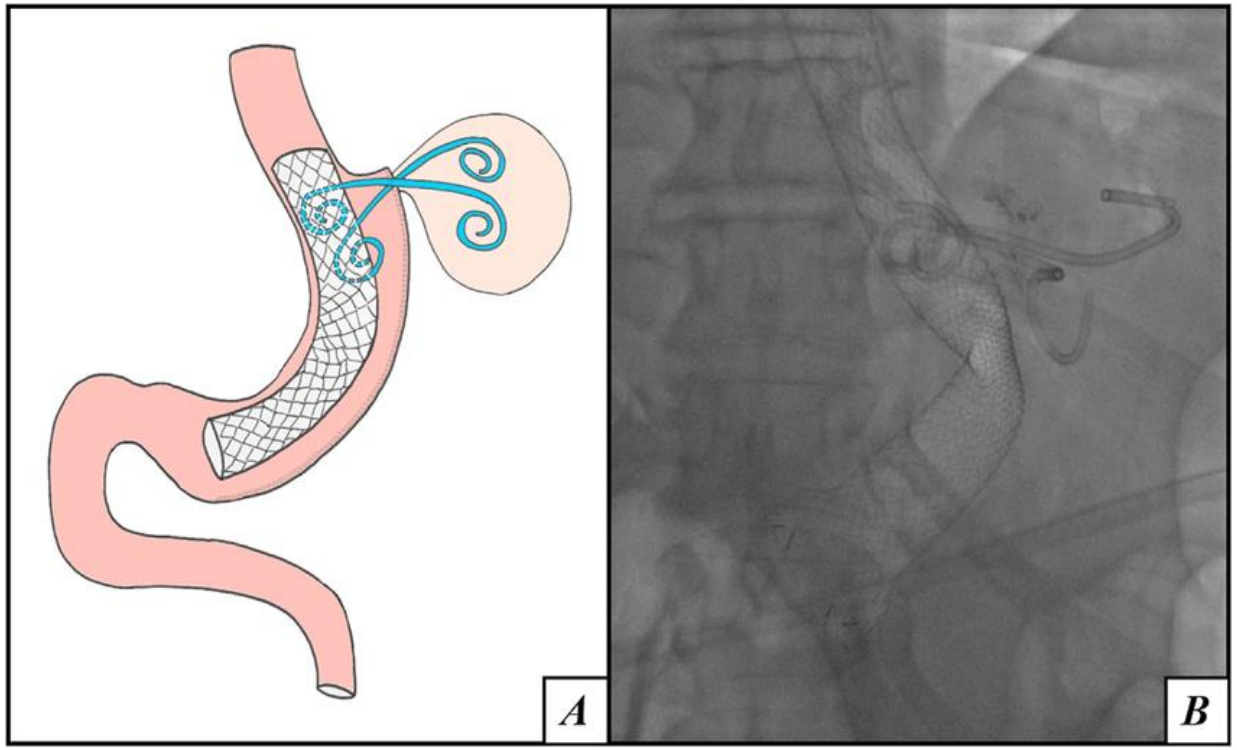


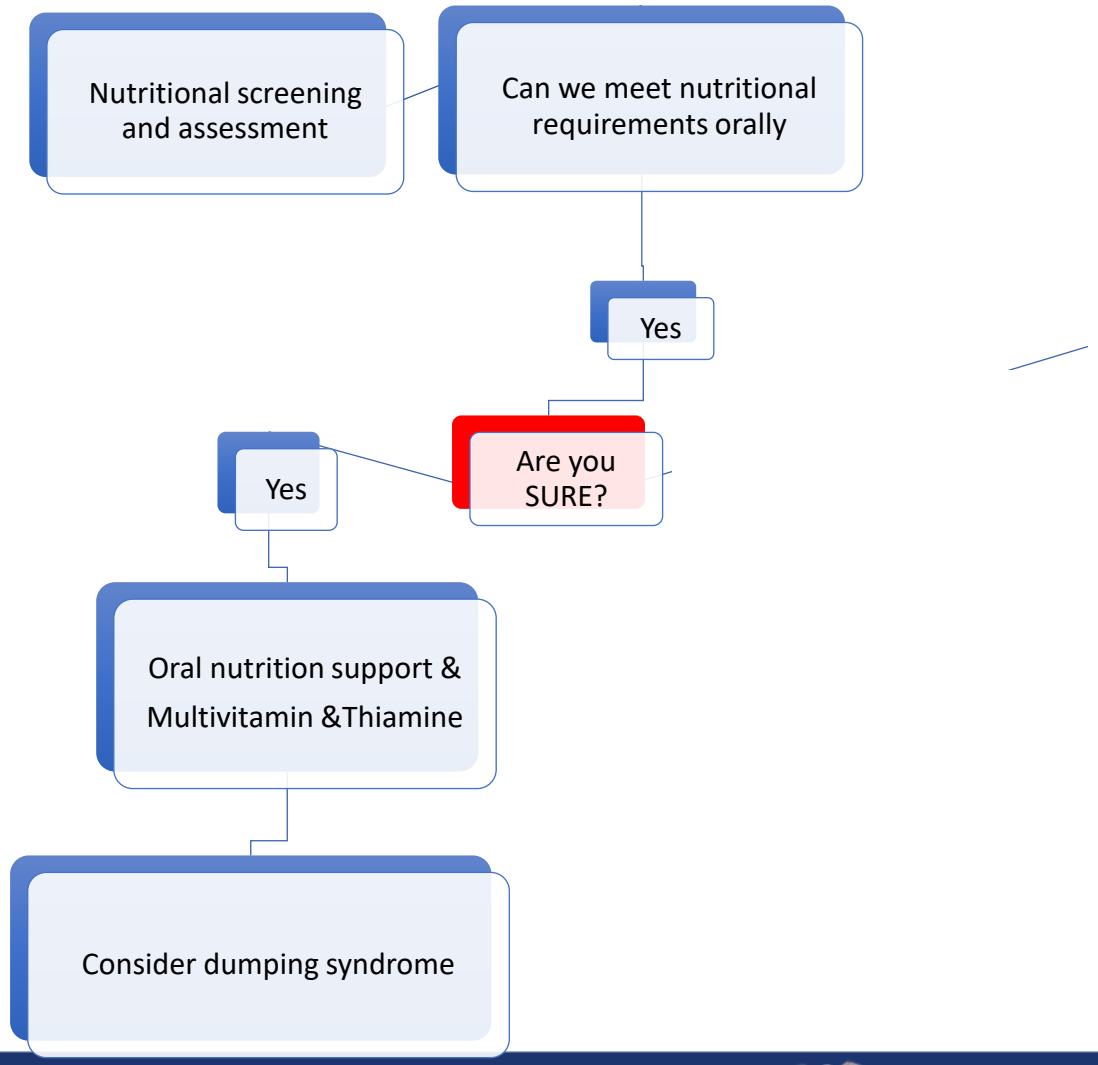
Pigtail drains

Feeding Jejunostomy

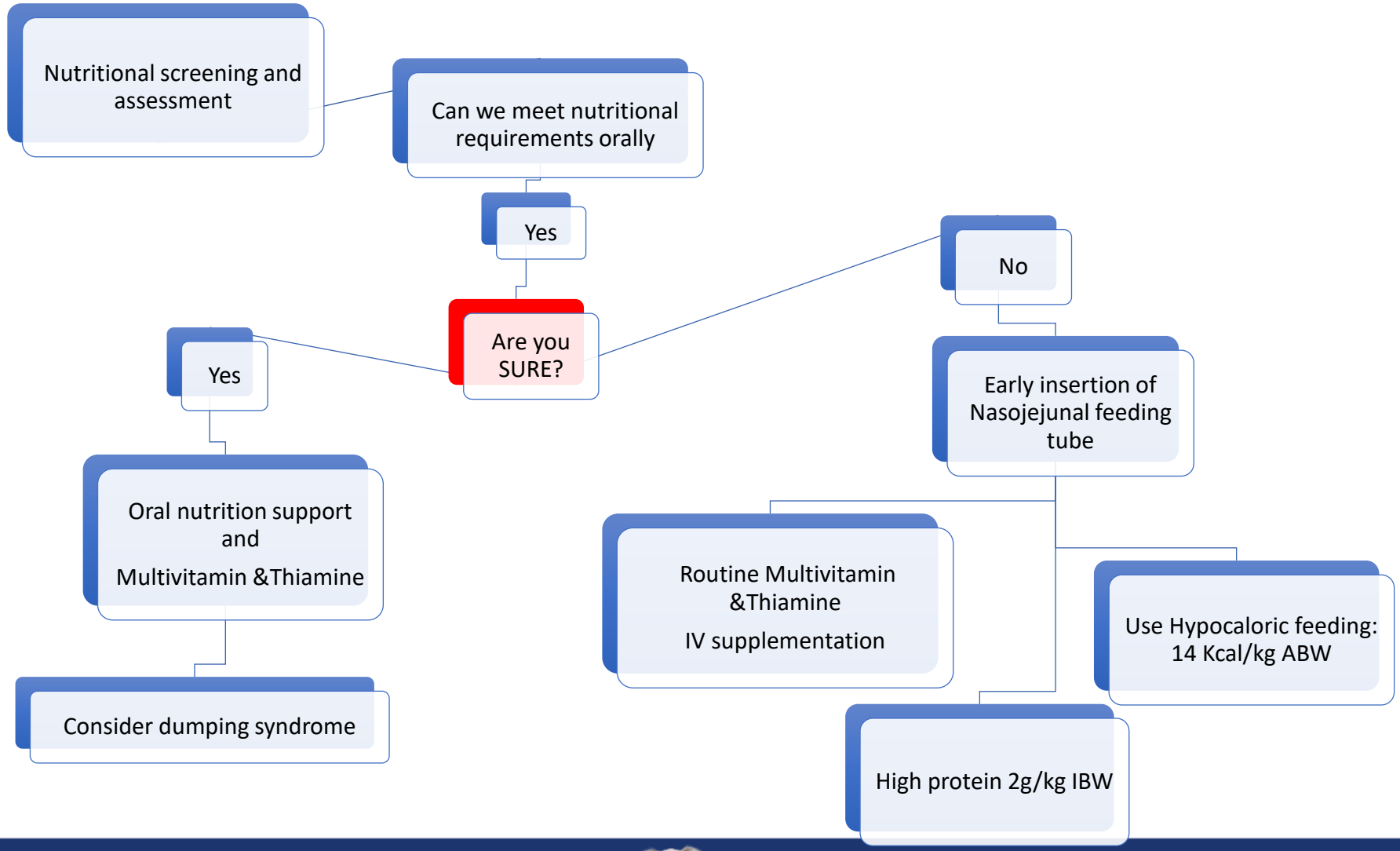



A
B

Nutrition support in MBS complications



Nutrition support in MBS complications



What about the psychological aspects

"I had this surgery for weight loss"

"I DO NOT want to gain weight"

"I never want to go back"

"How many calories are you giving me?"

Unique clinical challenges

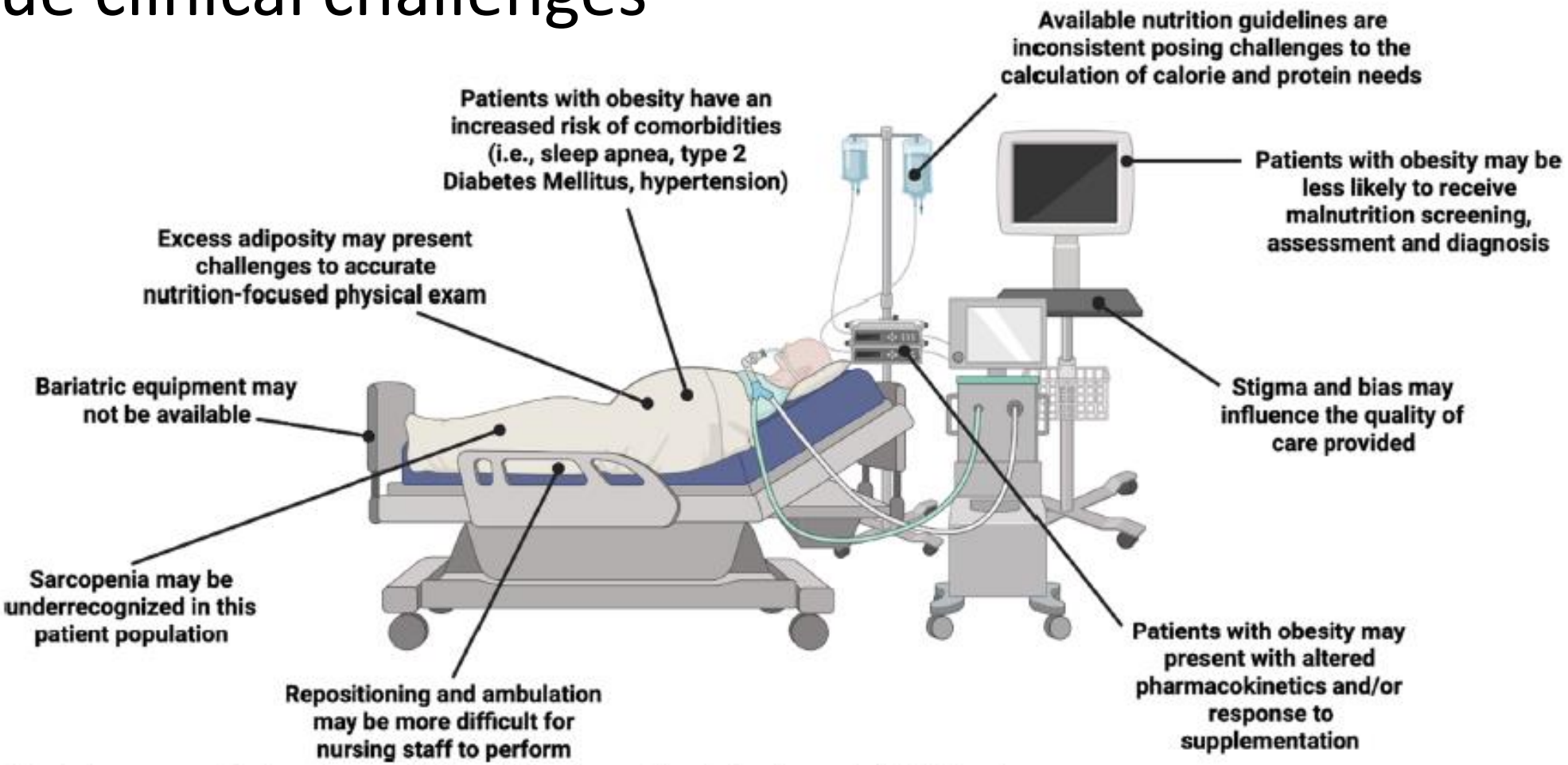


Fig. 1 Factors complicating the care of critically ill patients with obesity. Created with BioRender.com

Dickerson et. al. Critical care 2022, 26(1): 283

CONCLUSION

- Malnutrition does not discriminate
- Establish nutrition support early
- Low threshold → the risk of vitamin B1 deficiency
- Consider the risk of refeeding syndrome
- Enteral feeding is preferred if possible
- Avoid under or over-feeding

- INTEGRATED TEAM CARE


Thank you
for listening.