

ICU Dietetics: Impact on rehab

Nutrition in ICU

- Weights in ICU
- What influences it?
- Additional considerations
- Barriers to receiving nutrition

Routes of Feeding

- Oral
- Enteral
- Parenteral

Nutrition and Rehab

- Keep the tube!
- Delay in meeting requirements orally

Contents

Weights in ICU

Weights in ICU patients can be very difficult to interpret with patients often struggling with fluid retention, fluid losses through the use of diuretics and filtration, loss of lean muscle mass and often being too unstable to weigh. Therefore we often have to use subjective measures or estimates.

Weights are important to ensure there isn't under or over dosing of medications and we as dietitians can ensure we are meeting a patient's requirements.

Even though they are difficult to interpret, a weight is vital to helping inform our assessment



Requirements and additional kcal sources



Propofol

Lipid based emulsion

1kcal/mL

10ml/hr = 240kcal



CVVHD

Citrate

0.59kcal/mmol

Average filter settings
provide ~200-350kcal/day



Glucose

Maintenance fluids,
Noradrenaline, Infusions

1L 5% Dextrose ~200kcal

Often dietitians are asked “why is the feed rate so low?”

Non-nutritional sources of energy need to be taken into account as can increase the risk of overfeeding

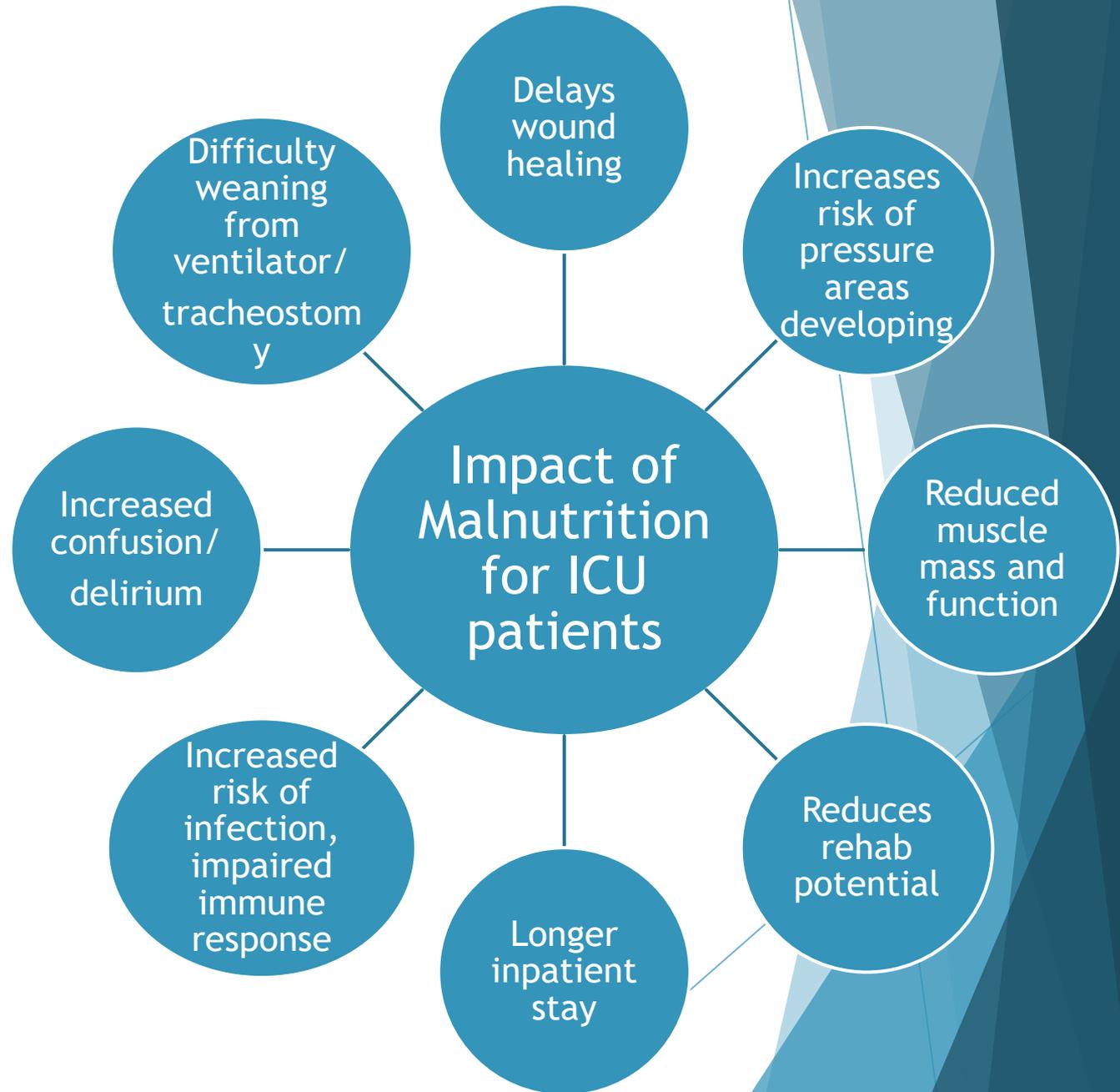
(Symptoms may include hyperglycaemia, hypercapnia and impact on respiratory wean)

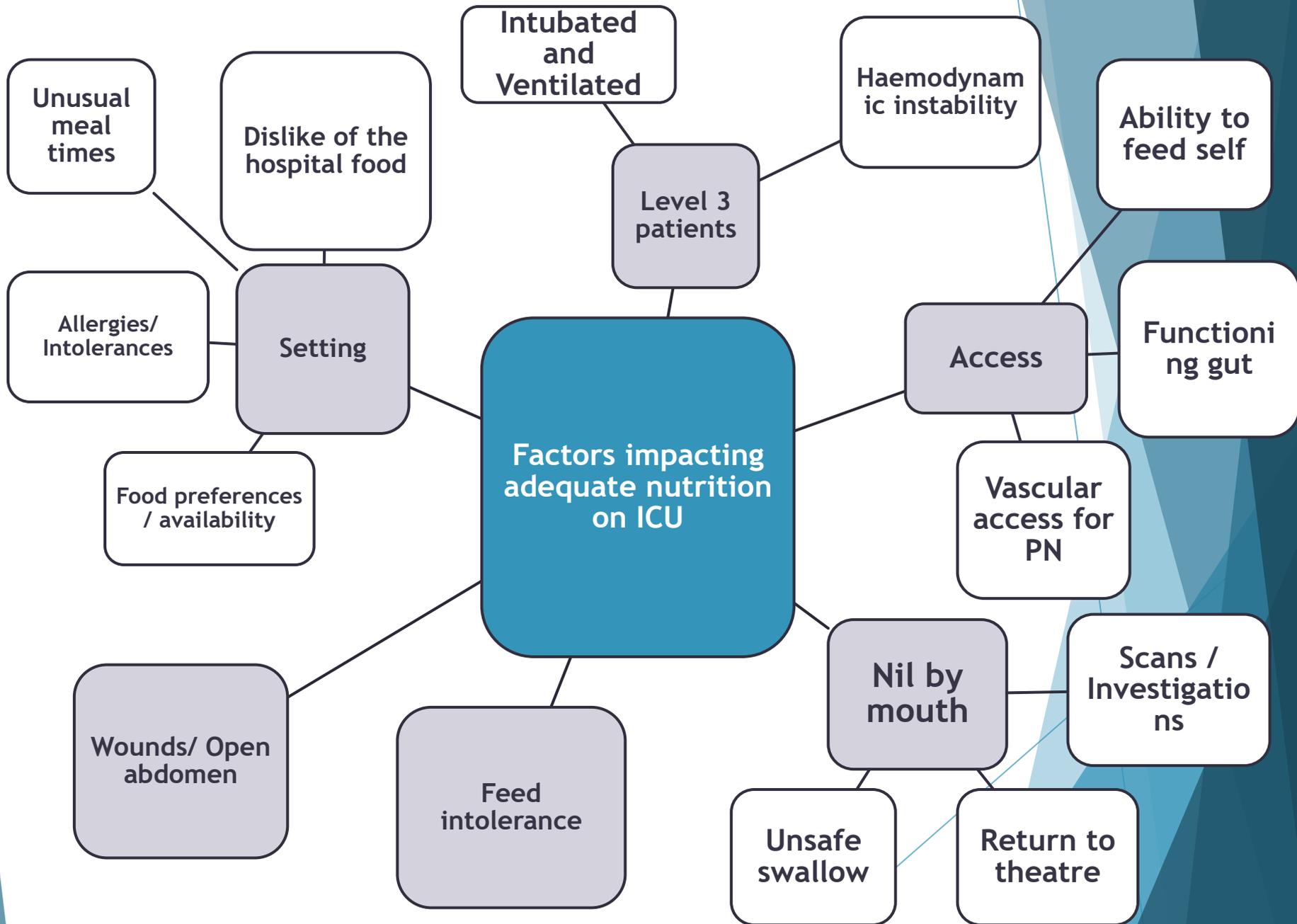
Malnutrition is a huge cost to the NHS

- the cost of treating someone who is malnourished is about 2-3 x more than someone who is not malnourished.

Complication rates are increased by 40% post surgery, and mortality rates by 30%.

(BAPEN, 2022)





Early Enteral Feeding

If patients are unable to meet their nutritional requirements orally they should be considered for artificial feeding in a timely manner.

Guidelines recommend referral for enteral nutrition within 48 hours

Creating 'survivors' not victims!
50% return to work a year later
33% never return (including young)

How can we do this?

Intense catabolic stress- cannot be STOPPED but we have had some impact in reducing the significance of depletion

Early EN feedings- delay ileus, increase gut motility, decrease risk of infection
Associated with a significant reduction in mortality and infectious morbidity compared with withholding EN

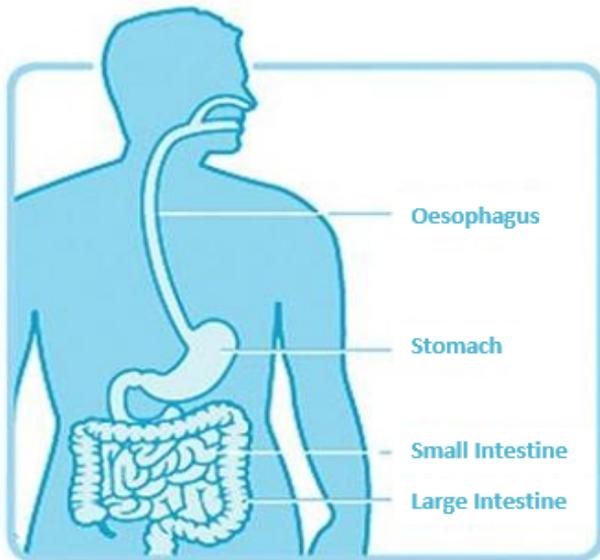
Singer et al, ESPEN, 2019

Remember: A patients journey doesn't begin on ICU
Just how many days have they been with minimal nutrition?

ESPEN (2019) also suggest that any patient on ICU >48hrs is at risk of malnutrition and therefore should be referred to a dietitian who can review th indication for enteral feeding. If you are unsure refer and speak with your dietetic team.

Alternative routes of Enteral Feeding

Types of Feeding Tubes



NASOGASTRIC (OR NG TUBE)

The feeding tube passes through the nose, down the throat and oesophagus and ends in the stomach.

NASOJEJUNAL (OR NJ TUBE)

The feeding tube passes through the nose, throat and oesophagus, continues through the stomach, and ends in the first section of the small intestine.

PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (OR PEG TUBE)

The feeding tube is inserted directly into the stomach.

JEJUNOSTOMY (OR J TUBE)

The feeding tube is surgically inserted into the jejunum, the middle section of the small intestine.

Different tubes and feed routes require different care management– Liaise with dietitians and enteral feeding nurses if you have any questions

What happens if we cant use the gut? Parenteral Nutrition

Parenteral feeding (feeding intravenously) may be indicated if we are unable to meet patients requirements through the enteral route.

This should be considered if unable to meet patients requirements via PO intake/Enterally within 5 days:

Indications for PN:

- ▶ Inadequate gut function
 - High GRVs despite prokinetics
 - Ileus
 - Small/Large bowel mechanical obstruction
 - Short bowel syndrome
 - Bowel Ischemia
 - Crohn's/Malabsorption

- ▶ Inaccessible GI tract
 - Obstruction
 - Anastomotic leak
 - NIV dependence - unable to site NG tube

If you are unsure whether your patients would benefit from parenteral nutrition please discuss it with your dietetic team

We must ask ourselves:

“Will patients leaving the ICU be able to consume adequate calories and protein to optimally recover?”

The answer is almost always a resounding NO!

References

<https://www.bapen.org.uk/malnutrition-undernutrition/introduction-to-malnutrition?start=4>

(Singer et al., 2019) ESPEN guideline on clinical nutrition in the intensive care unit. *Clinical Nutrition*, 38(1), pp.48-79.

Check your understanding...

Q1. Why do Dietitians account for non-nutritional sources of energy in critically ill patients? Choose 1 answer

- a. Patients shouldn't gain weight on ICU
- b. Excess carbohydrates can lead to symptoms of hyperglycaemia, CO₂ retention and can impact respiratory wean
- c. Propofol is more important than feeding

Q2. What impact can malnutrition have for ICU patients? Choose 1 answer

- a. Increased risk of infection, morbidity and mortality
- b. Reduced muscle mass and rehab potential
- c. Delayed wound healing and increased risk of pressure sores
- d. All of the above

Q3. When should Enteral feeding be initiated? Choose 1 answer

- a. Within 24 hours of admission**
- b. Within 48 hours of admission**
- c. Within 5 days of admission**

Q4. What is the average intake of nutritional requirements in the first week of extubation?

- a. Less than 20% nutritional requirements**
- b. Less than 80% nutritional requirements**
- c. Less than 50% of nutritional requirements**

Q5. In which of the following should Parenteral Nutrition be initiated?

- a. Within 48 hours of admission to ICU**
- b. Post colostomy formation**
- c. Small/large bowel mechanical obstruction or ileus**

Answers

Q1. (b) Excess carbohydrates can lead to symptoms of hyperglycaemia, CO₂ retention and can impact respiratory wean.

Dietetic feeding plans take into account all infusions that can provide non-nutritional energy and deduct these to avoid symptoms that can negatively impact respiratory function/BGL control.

Q2. (d) All of the above.

Complications for malnourished ICU patients are significantly higher compared to well-nourished patients. It is important to consider how long a patient has been struggling with their nutrition prior to admission as this will impact on their functional recovery

Answers cont..

Q3.(b) Within 48 hours of admission

International guidelines state early enteral feeding is associated with a significant reduction in mortality and infectious morbidity compared with withholding Enteral Nutrition

Q4.(c) Less than 50% of nutritional requirements

Several studies have demonstrated overall poor nutrition in the first week of extubation, highlighting the need to involve the dietitian in post extubation nutritional care. Ensure oral nutritional supplements are prescribed and avoid hasty removals of NG tubes as this is hindering not helping their recovery

Q5.(c) Small/large bowel mechanical obstruction or ileus

Parenteral Nutrition is indicated when the gut is inaccessible or not functioning correctly. All patients prescribed PN will require a dedicated lumen and suitable CVC line