# Nutrition Update

With a focus on the effects of vasopressors on nutrition in critical care and the ABCD of managing the obese patient

Abbey Kittrick

Lecturer Practitioner University of Huddersfield/Critical Care Sister Pinderfields Hospital

# Aims

- Provide an update on recent critical care issues regarding nutrition
- Introduce the ABCD approach to managing obese patients
- Discuss the effects of vasopressors in regards to nutrition
- Discuss possible solutions/things to consider in practice

# So what's new?

- Nutrition has been viewed as a support therapy, however due to research on the direct impact on outcomes it is now viewed as a therapeutic treatment
- Moving away from using residual gastric volumes as part of routine care
- Patients who are receiving some amount of enteral nutrition but not yet at full goal rate do not need to have supplemental parenteral nutrition administered earlier than 7 days - associated with added cost and no apparent benefit

# So what's new?

- Moving towards the use of a nutrition bundle - assessment of malnutrition, initiation and maintenance of enteral feeding, reduction of aspiration, implementation of enteral feeding protocols, avoidance of using gastric residual volumes (GRVs) as an assessment of tolerating enteral nutrition, and early initiation of parenteral nutrition when enteral feeding cannot be initiated
- Protein - supports wound healing and immune function and to maintain lean body mass.
- Detection and documentation of malnutrition in adults is now categorised into 3 types of malnutrition: starvation related, acute disease or injury related, and chronic disease related
- ABCD approach to managing obese patients

# A: Airway

## The ABCD approach to managing obese patients

Obese patients have an increased tongue size, a smaller pharyngeal area, redundant pharyngeal tissue, an increased neck circumference, and an increased chest girth

These changes are associated with obstructive sleep apnoea, obesity hypoventilation syndrome, and respiratory failure

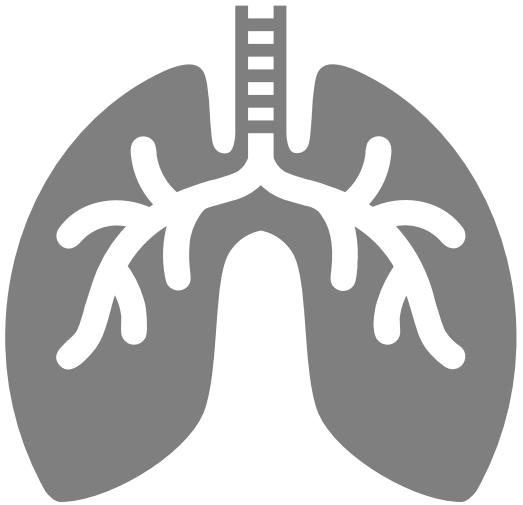
Increased abdominal girth reduces diaphragmatic expansion, resulting in hypoventilation and a reduction in total lung capacity and functional residual capacity. As a result, morbidly obese patients tend to have higher rates of respiratory failure and subsequent intubation compared with non-obese patients

The recommended method for bag-mask ventilation and oxygenation before intubation in morbidly obese patients is to place the patient in a 25° head-up position or reverse Trendelenburg position to shift the weight of the chest wall inferiorly

Consider the need for a difficult airway trolley

# B: Breathing

- Increased respiratory rates, increased oxygen consumption and metabolic requirements of excess tissue, increased work of breathing, and decreased tidal volume
- These changes can lead to decreased time to desaturation, increased oxygen requirements, and hypoventilation with supine spontaneous ventilation
- Ventilation should be based on IBW not ABW (increased risk of barotrauma)
- Bridging extubated patients with NIV reduces incidence of re- intubation



# B: Backs

Safe moving and handling techniques

# B: Bias

- Patients' views of being stigmatized by healthcare workers can lead to feelings of shame, marginalization, and anxiety
- -ve attitudes towards the morbidly obese can result in actions or lack of actions that may affect a patient's health
- Not having standard supplies and equipment, such as hospital gowns, chairs or blood pressure cuffs large enough, can create an uncomfortable environment
- Be aware of your own bias

# C: Circulation

- Patients who are morbidly obese have changes in the circulatory system including increased blood volume and increased blood viscosity
- High risk of thrombosis
- Gaining IV access can be challenging

# D: Decubitus Ulcers

- Several factors predispose bariatric patients to loss of skin integrity: decreased blood and oxygen supply due to increased adipose tissue and an increase in perspiration and skin moisture, increasing the risk for bacterial and fungal invasion

- Promote mobility

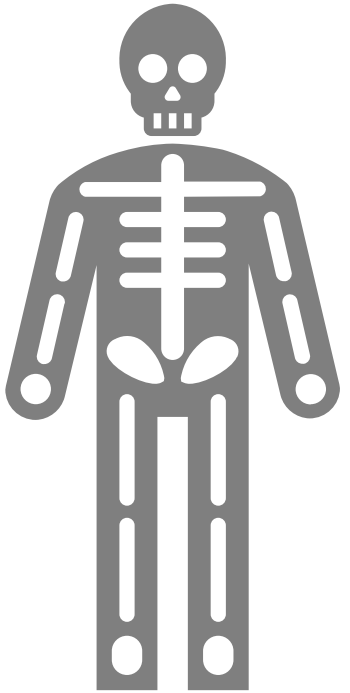
- Correct malnourishment for better wound healing

# D: Drugs

- Recommended doses are based on non-obese patients
- Differences in proportion of adipose and lean muscle tissue and fluid status can greatly affect pharmacokinetics, absorption, distribution, metabolism, and excretion of drugs.
- Hepatic clearance is usually normal or even increased in obese patients
- Renal clearance canrenal blood flow, and glomerular filtration rate. increase because of increases in kidney weight

# D: Diagnostics

- Thick layers of adipose tissue make imaging difficult
- Liaising with radiology for weight and diameter limits



# D: Diet

- Obesity is associated with increased energy expenditure, insulin resistance, protein breakdown, and rapid deterioration in muscle mass

- Consider malnutrition

# D: Durable Medical Equipment

- Availability of bariatric equipment
- Training on bariatric equipment is needed

# Early Enteral Feeding

Recommended within the first 24-48 hours

Maintains the structural integrity of the GI tract

Reduces gut permeability

increases GI blood flow

Improves outcomes – reduces infectious complications, decreases hospital stay, decreases costs and improves wound healing

Beneficial effect regardless of BMI

# Nutrition, vasopressors and septic shock

Questions around optimal time to feed when on vasopressors for septic shock, lack of consensus worldwide

Withholding feed until haemodynamically stable

Withholding feed until MAP >50 mm Hg

Not withholding feed until haemodynamically stable

Theoretically, reduced GI blood flow due to a vasopressor may limit oxygen delivery leading to further GI ischemia by increasing GI O2 needs

# Rationale for withholding feed for patients on Vasopressors

To avoid mesenteric ischemia, which is associated with an 80% mortality rate

However, the observed incidence of mesenteric ischemia in patients on EN and vasopressor therapy is infrequent (incidence is 0.3% to 3.8%)

Most cases of mesenteric ischemia related to enteral nutrition have been described in surgery, trauma, and burn patients who were fed via surgically placed jejunostomy tubes

# Residual Gastric Volumes

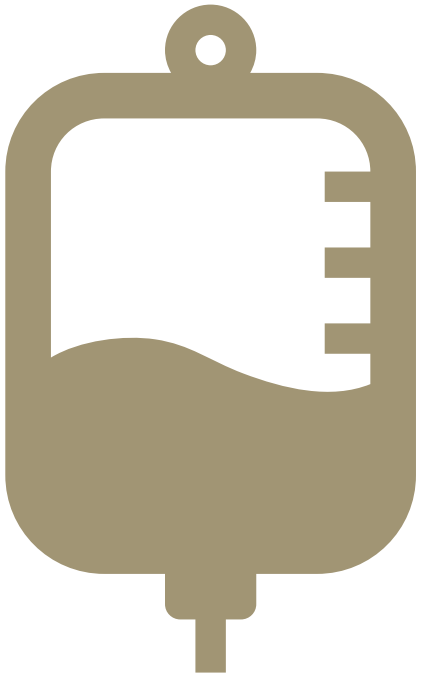
- Patients on vasopressors are more likely to have higher residual gastric volumes
- This is not an indication to stop feeding and evidence shows higher volumes do not affect the success of feeding
- Acceptable volumes varies across healthcare settings (usually around 250ml – 500ml)
- High volumes often mean feed is turned off despite research showing poor links between high volumes and aspiration, pneumonia and vomiting

# Residual Gastric Volumes

- Research shows no difference in the risk of pneumonia when comparing monitoring residual volumes and not, however it does reduce the amount of nutrition (caloric goal is higher in patients where monitoring is not done)
- Therefore are we doing more harm?
- Undernutrition in critically ill patients can often be related directly to nursing care!!

# Effects of vasopressors

- Phenylephrine, Adrenaline, and Vasopressin negatively decrease GI blood flow
- Noradrenaline has little effect and sometimes increases GI blood flow
- Also dependent on dosage



# Any Questions?

# References/ Useful Links

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