1. Hospital outcomes for patients with obesity
2. Nutrition risk screening
3. Malnutrition diagnosis
4. Sarcopenia and sarcopenic obesity
5. Nutritional requirements and how to implement plans
6. Advocating appropriate care for patients with obesity

OBESITY IN AUSTRALIAN HOSPITALISED PATIENTS

- 31% of Australian adults are obese
- Obesity rates have steadily increased over past 10 years
- Obesity is a disease

References:
Obesity Australia. Obesity: It’s impact on Australia and a case for action. 2015.
Higher protein turnover and greater catabolism rate
Poor wound healing
Increased pressure injuries
Increased respiratory issues
Insulin resistance
Increased risk of post-op complications

Dickerson et al. Protein and calorie requirements associated with the presence of obesity. Nutr Clin Prac. 2017;32(suppl 1).

REPORTED OUTCOMES FOR PATIENTS WITH OBESITY IN HOSPITAL

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Outcome</th>
<th>Type</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obese vs optimal BMI</td>
<td>Mortality</td>
<td>3 OBS</td>
<td>1 increased</td>
</tr>
<tr>
<td>Obese vs healthy BMI</td>
<td>Healthcare costs</td>
<td>28 OBS</td>
<td>All increased</td>
</tr>
<tr>
<td>Severely obese vs non</td>
<td>ED admissions</td>
<td>1 OBS</td>
<td>All increased</td>
</tr>
<tr>
<td>Obese vs all other BMI</td>
<td>ICU admissions</td>
<td>1 OBS</td>
<td>All increased</td>
</tr>
<tr>
<td>Obese vs all other BMI</td>
<td>Hospital acquired bacterial</td>
<td>7 OBS</td>
<td>4 significantly worse</td>
</tr>
<tr>
<td>Obese vs all other BMI</td>
<td>infection outcomes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


NUTRITION RISK SCREENING

Comparison | Outcome | Type | Findings |
-----------|---------|------|----------|
Obese vs optimal BMI | Mortality | 3 OBS | 1 increased |
Obese vs healthy BMI | Healthcare costs | 28 OBS | All increased |
Obese vs all other BMI | Hospital acquired bacterial infection outcomes | 7 OBS | 4 significantly worse |
**DIAGNOSING MALNUTRITION**

**ESPEN**
- BMI ≤18.5 kg/m²
- >5% weight loss past 3/12 or >10% indefinite
- FFMI <17 kg/m² males or <15 kg/m² females

1 or more of these criteria fulfilled

**ASPEN**
- Insufficient energy intake
- Weight loss
- Loss of muscle mass
- Loss of subcutaneous fat
- Localized or generalized fluid accumulation
- Diminished functional status measured by hand grip strength

2 of these criteria fulfilled

---

**MALNUTRITION DIAGNOSIS**

**ESPEN**
- BMI ≤18.5 kg/m²
- >5% weight loss past 3/12 or >10% indefinite
- FFMI <17 kg/m² males or <15 kg/m² females

1 or more of these criteria fulfilled

**ASPEN**
- Insufficient energy intake
- Weight loss
- Loss of muscle mass
- Loss of subcutaneous fat
- Localized or generalized fluid accumulation
- Diminished functional status measured by hand grip strength

2 of these criteria fulfilled
**MALNUTRITION DIAGNOSIS**

**GLIM**
Phenotypic:
- weight loss: >5% within 6/12, or >10% beyond 6/12
- low BMI (age and race specific cut-points)
- reduced muscle mass

Etiologic:
- reduced food intake or assimilation
- inflammation

At least 1 of each criteria fulfilled

**SGA – Subjective Global Assessment**

| % weight loss |
| - weight change past 2/52 |
| Dietary intake |
| - gastrointestinal symptoms (including duration) |
| - functional capacity |
| - change past 2/52 |

Scores – A, B, C

**SARCOPENIA**

↓ muscle strength
↓ muscle function/physical performance
↓ muscle mass (quantity or quality)

Measured by:
- grip strength
- TUG
- chair stand test

Measured by:
- CT/DXA/BIA

**References:**

SARCOPENIC OBESITY

Lean body mass  Sarcopenic obesity  Excess adiposity


Sarcopenia is a term for muscle loss, diminution of muscle mass and function. It can lead to increased risk of falls and fractures, and decreased mobility.

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BODY COMPOSITION ASSESSMENT

METHODS: CT & DXA

Body composition assessment methods:

- CT & DXA
- Bioimpedance
- MRI

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BODY COMPOSITION ASSESSMENT

METHODS: BIOIMPEDANCE

Bioimpedance analysis (BIA) can measure body composition, including muscle mass, fat mass, and body water.

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BODY COMPOSITION SARCOPENIA CUTPOINTS

<table>
<thead>
<tr>
<th>Method</th>
<th>Reference cutpoint males</th>
<th>Reference cutpoint females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendicular skeletal muscle index by DXA</td>
<td>&lt;7.36</td>
<td>&lt;5.45</td>
</tr>
<tr>
<td>Appendicular lean muscle index by DXA</td>
<td>&lt;7.25</td>
<td>&lt;5.67</td>
</tr>
<tr>
<td>Lumbar skeletal muscle index by CT (Kroenke et al.), cm²/m²</td>
<td>&lt;52.4</td>
<td>&lt;38.5</td>
</tr>
<tr>
<td>Stature muscle index (length) by SF-BIA (Janssens et al.), %</td>
<td>Class II: &lt;31</td>
<td>Class II: &lt;22</td>
</tr>
<tr>
<td>Sartorial muscle index (height) by SF-BIA (Janssens et al.), kg²/m²</td>
<td>High risk: &lt;8.50</td>
<td>High risk: &lt;6.75</td>
</tr>
<tr>
<td>Handgrip strength</td>
<td>&lt;33 kg</td>
<td>&lt;20 kg</td>
</tr>
</tbody>
</table>

NUTRITIONAL REQUIREMENTS FOR PATIENTS WITH OBESITY

<table>
<thead>
<tr>
<th>Method</th>
<th>Reference cutpoint males</th>
<th>Reference cutpoint females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mifflin-St Jeor equation</td>
<td></td>
<td></td>
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</tbody>
</table>

INDIRECT CALORIMETRY

MIFFLIN-ST JEOR EQUATION
- Men (kcal/day) = 5 x weight(kg) + 6.25 x Ht(cm) - 5 x age(y)
- Women (kcal/day) = 161 + 10 x weight(kg) + 6.25 x Ht(cm) - 5 x age(y)
HYPOCALORIC, HIGH-PROTEIN FEEDING FOR THE OBESE PATIENT

- This is NOT permissive underfeeding.
- Hypocaloric feeding may be started with 50-70% of estimated energy requirements:
  - Or < 14kcal/kg actual weight
- High protein feeding may be started with 1.2g/kg actual weight or 2-2.5 g/kg ideal body weight.

HOW TO ACHIEVE THIS IN REALITY?

**Oral**
- ONS
- VLCD
- Protein powders
- Menu modifications

**Enteral**
- RTH feeds (1.26cal/ml + 100g P)
- Addition of protein bolus
HOW TO ACHIEVE THIS IN REALITY?

PN
• High protein formulation
• IV amino acids

DISCHARGE FROM ACUTE SERVICES

• Nutrition therapy does not just cease on d/c from acute setting.
• Can be used in sub-acute where weight loss benefits are often amplified in therapy gains (strength/function).
• Improvements in health outcomes and risk profile with 10% weight loss.

“FAT” PHOBIA AND THE OBESITY STIGMA

• SLRs show negative effects of discrimination on patients with obesity, limiting the initiation of anti-obesity treatments.
• >50% of HCPs view obese patients as lazy and non-compliant.
• Health professionals attribute obesity to individual causation.
• Impact = delayed nutrition initiation or poor nutrition plans.

ADVOCATING PLANS

LANGUAGE  EDUCATION  RISK SCREENING  DIAGNOSIS  APPROPRIATE PLANS

THANK YOU

QUESTIONS