Nutritional management of patients with abdominal catastrophe in the ICU

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Nutritional management of the abdominal catastrophe in the ICU.............
Arabi et al. The intensive care medicine research agenda in nutrition & metabolism. 2017
2%/day
The intensive care medicine research agenda in nutrition and metabolism

Yaseen M. Arabi1, Michael P. Casaer2, Marianne Chapman3, Daren K. Heyland4, Carole Ichai5, Paul E. Marik6, Robert G. Martindale7, Stephen A. McClave8, Jean-Charles Preiser9, Jean Reignier10,11, Todd W. Rice12, Greet Van den Berghe2, Arthur R. H. van Zanten13 and Peter J. M. Weijs14,15
Areas of uncertainty

- Energy & protein dose (high vs. low) during acute and recovery phases
- Nutritional assessment
- Feeding in obesity
Areas of agreement

Early nutrition

Early aggressive nutrition (EN & PN) may not be beneficial

PN is not harmful
Early nutrition

EEN (<24hrs) reduces infections / pneumonia compared to delayed EN

No mortality difference between early EN and early PN

Reintam Blaser et al 2017, Tian et al 2018
Early aggressive nutrition (EN & PN) may not be beneficial
PN is not harmful
EN vs. PN conclusions

✓ EN offers multiple benefits, So should be first line
✓ If EN not possible, safe to use PN
✓ Calorie dose rather than route that is harmful
✓ Controversy exists over optimal dose for the different phases of critical illness
ESPEN Guideline

ESPEN guideline on clinical nutrition in the intensive care unit

Pierre Singer a,*, Annika Reintam Blaser b, c, Mette M. Berger d, Waleed Alhazzani e, Philip C. Calder f, Michael P. Casaer g, Michael Hiesmayr h, Konstantin Mayer i, Juan Carlos Montejo j, Claude Pichard k, Jean-Charles Preiser l, Arthur R.H. van Zanten m, Simon Oczkowski e, Wojciech Szczeklik n, Stephan C. Bischoff o
Phasic approach to Critical Illness

Day 1-2
- Early period of acute phase
  - < 70% of MEE
  - < 70% of EEE
  - 1.3g Protein increased progressively

Day 3-7
- Late period of acute phase
  - 80-100% MEE
  - < 70% of EEE
  - 1.3g protein

Day 8 +
- Late or chronic phase
  - No guidance for E or P
ESPEN’s take on PN

Recommendation 6

• In case of contraindications to oral and EN, PN should be implemented within three to seven days.
• Grade of recommendation: B – consensus (89 % agreement)

Recommendation 7

• Early and progressive PN can be provided instead of no nutrition in case of contraindications for EN in severely malnourished patients.
• Grade of Recommendation: 0 – strong consensus (95 % agreement)
Nutrition in abdominal catastrophe
What is an abdominal catastrophe?

- Anastomotic leakage
- Abdominal sepsis
- Nutritional dependence
- Multiorgan failure
- Emergency surgery
- Bowel loss or damage
- Open abdomen
- Re-operative surgery
- Multiple stomas & or fistulae
- Prolonged disability

Early enteral nutrition in critically ill patients: ESICM clinical practice guidelines
When we can use EEN

- After abdominal surgery with GI continuity
- After abdominal aortic surgery
- With abdominal trauma with GI continuity
When we should delay EEN

- After abdo surgery with no GI continuity
- Bowel obstruction
- Bowel ischemia
- Open abdo with bowel injury
- Unrepaired anastomotic leak, internal or external fistula
Key principles of nutrition support in patients with abdominal catastrophe

- Nutritionally complex
- PN + individualised bags
- Follow ICU guidance for E & P
- Optimisation of stoma output & electrolytes
- Leave fluids to the ICU team
- MDT approach is essential

Pironi et al 2018- ESPEN guidelines for Intestinal failure
ICU nutrition challenges
Case study
## ICU events

<table>
<thead>
<tr>
<th>ICU day</th>
<th>Event</th>
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<tbody>
<tr>
<td>1</td>
<td>Back to theatre x 3 in 24hrs for abdo bleeding Abdo packed &amp; left open. PEA arrest. MOF</td>
</tr>
<tr>
<td>4</td>
<td>Necrotic ischaemic colon Too hostile to operate so abdo left open</td>
</tr>
<tr>
<td>10</td>
<td>Caecum externalised &amp; can’t close abdo</td>
</tr>
<tr>
<td>20</td>
<td>Active colonic-cutaneous fistula. Intra-abdominal sepsis, open abdo</td>
</tr>
<tr>
<td>30</td>
<td>Transverse &amp; descending colon leaking bowel contents into abdo. Large infective collections. Surgery too risky</td>
</tr>
<tr>
<td>90</td>
<td>Leaves ICU</td>
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Anthropometrics

Adm to ICU
- Est 100kg, BMI 33, MUAC 36cm

ICU day 30
- MUAC 29cm suggestive of BMI 25 / 80kg
- Loss of 7cm & ~20kg

ICU discharge (3months)
- 60.6kg / BMI 20
- Loss of ~40kg !!!
Questions

What weight loss is acceptable?

Would you monitor weight loss & how?

What would success look like?

What route EN or PN?

BMI > 30 - what energy and protein targets to use?

How early would you start nutrition?

Septic, in MOF on ICU. Would this play a role?
What I actually did

✓ Obese – tx as ASPEN ICU guidelines 2016
  ✓ Energy – 25 kcal / IBW
  ✓ Protein 2g / IBW kg
  ✓ + 2-5gN² from abdominal wound losses

✓ Started with 20 kcal / IBW for 2-4 days
✓ Progressed to 25 kcal / IBW ~ 1800 kcals & 25g2 with a scratch bag to meet N2
Nutrition progression

Day 2-14
PN

Day 20-30
EN
Fistula & diarrhoea mgmt

Day 30-34
PN
Leaks
No nutrition

Day 35-90
PN
Muac suggest normal BMI
Increased calories

Day 35
Left ICU on PN

Day 90
6M
Off PN but unable to eat adequate amounts. RIG inserted to aid rehab

6M
Take home messages