Nutritional management of eating disorders

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- Measuring height and weight
Refeeding syndrome
Refeeding syndrome

Definition

- Shifts in electrolytes, fluid and glucose when nutrition is re-introduced following prolonged starvation (Kohn, 2011)
- Electrolytes: magnesium, potassium, phosphate, sodium etc
- Balance of electrolytes in blood and cells
# Refeeding syndrome - symptoms

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<th>Hypokalaemia</th>
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<th>Thiamin Deficiency</th>
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<td>Respiratory failure</td>
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<td>Areflexic paralysis</td>
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<td>Cardiac Arrhythmias</td>
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*From SDHB Dietitian’s Guide to Refeeding Syndrome (n.d.)*
Refeeding syndrome - risk

- Reported incidence of refeeding hypophosphatemia in AN is 14% (O’Connor and Nicholls, 2013)

- Those at <70% IBW at most risk (Golden et al, 2013)
Re-feeding syndrome - risk

- Low body weight (BMI <18 or BMI centile)
- Unintentional weight loss (10-15% over past 3-6 months)
- Minimal recent nutritional intake (5-10 days)
- Low levels of potassium, phosphate or magnesium (electrolytes) prior to refeeding
Refeeding protocol

Energy intake
- Range of recommendations from 5 kcal/kg/day to 60 kcal/kg/day to 2000 kcal/day regardless of body weight
- “Start low, go slow” philosophy
- Guidelines based on 25-75% energy requirement
- No empirical evidence (Kohn et al, 2011; O’Connor & Goldin, 2011 & Katzman, 2012)
- Refeeding syndrome can occur at low rates of refeeding (Gaudiani et al., 2012)

Potential consequences of this approach
- Weight loss (Garber, 2012)
- Increased length of stay (Golden, 2013; Garber, 2012)
- “Underfeeding syndrome”
Refeeding protocol

Re-thinking the traditional guidelines

Kohn et al (2011)

- Carbohydrate should only comprise 40% or less of total energy intake
- Re-feeding should be initiated more aggressively
- At least 2000 kcal/day initial energy intake to 2700 kcal/day at end of first week

Golden et al (2013)

- Higher calorie group (>1400 kcal/day) vs low calorie group (<1400 kcal/day)
- Higher calorie group had reduced length of stay
- No indication of refeeding syndrome in either group
- 40-50% carbohydrate
Refeeding protocol

**Re-thinking the traditional guidelines**

Whitelaw et al (2010)
- 1900 kcal/day
- Mild hypophosphatemia but no other refeeding syndrome symptoms
- Oral feeding - High protein and high fat diet

Junior MARSIPAN (2012)
- Initially no more than 50% carbohydrate
Food vs nasogastric feeding

**Recommendations**
  - Parenteral feeding rarely necessary
  - Short-term NG feeding might be necessary
  - No evidence supporting long-term NG feeding
- Nice (2004) TPN should not be used in AN unless GI dysfunction
- ADA (2011) and AAP (2003) do not state preferred route of feeding
- Junior MARSIPAN (2012) - Food first then if unable to meet calorie requirements consider NG feeding (short-term)
- Adult MARSIPAN (2013) - Food first
- RANZCP clinical practice guidelines (2014)
  - “least intrusive” and “most normal” method should be used for adults
  - Food or supplements orally or via NG tube for adolescents (usually NG feeding)
  - Gastrostomy or parenteral nutrition should not be used as the norm
Meal plans

- Re-feeding syndrome meal plan
  - Small meals and snacks (~1800 kcal/day)
  - Low carbohydrate (Kohn, 2011; Junior MARSIPAN, 2012; Adult MARSIPAN, 2013)
  - High in dietary phosphate (Junior MARSIPAN, 2012)
- 3000 kcal+ meal plan
  - 3000 kcal then increase calories as required
  - To meet weight gain expectations
- Weight gain expectations
  - Ranges in literature: 500g-1400g/week (RANZCP, 2014)
  - C ward: 1-1.5kg/week
Meal plans

- Parents choose menu options for those under 18 years
- Up to 3 dislikes (Junior MARSIPAN, 2012)
  - Parents choose for those under 18
- Vegetarianism/Veganism
- Supported eating environment
  - Clear expectations
  - Support from staff
- Binge eating disorder meal plan
  - Regular meals and snacks
  - Importance of sufficient carbohydrate, protein, fat and micronutrients
Nasogastric feeding

- Continuous 24 hour feed
  - Usually only a few days
- Overnight feed
- Bolus feeding
  - If not managing 100%
  - Usually short term
Calculating target weight range
Calculating target weight range

- Factors to consider

BMI norms are not stable over age

A BMI of 17.5 would be on the 3rd percentile for a 19-year-old girl but on the 50th percentile for an 11-year-old girl.
Calculating target weight range

- Factors to consider
  - Rate and tempo of puberty varies for individuals
  - During puberty adolescents do not necessarily follow population-based growth curves
  - Malnutrition can cause growth retardation
  - Need to re-assess weight every 3 months due to linear growth
  - Consider return of regular menstruation
Calculating target weight range

- Pre-morbid growth trajectory
- BMI percentiles
- Weight-for-height
  - Percentage BMI (or percentage WFH) = \( \frac{\text{Actual BMI} \times 100}{\text{Median BMI (50th percentile) for age and gender}} \)
  - 100% weight-for-height is weight which places BMI on 50\(^{th}\) percentile for age and gender
Body mass index-for-age percentiles:
Girls, 2 to 20 years
Calculating target weight range

The evidence

- Weight for height and BMI centiles
  - Weight-for-height 100%
  - Therefore BMI centile needs to be 50%
Calculating target weight range

Information required

- Pre-morbid weights and heights
  - GP
  - plunket book
  - patient/parent recall

- Weight at which ammenorrhea occurred
Weight: 55kg
Height: 167cm
BMI 20.4 (50th centile)
Calculating target weight range

- Match pre-morbid weight percentile
- Aim for BMI around 50\textsuperscript{th} percentile
- Target weight range
Measuring weight and standing height
The importance of precise measurements

- Height historically imprecise
- Clinical decisions based on BMI
- Example
  - 50kg patient at 158cm = BMI 19.2
  - 50kg patient at 160cm = BMI 20
- Acceptable tolerance
Sources of error

- Instrument
  - Calibration
  - Installation
  - Maintenance

- Positioning
  - Body
  - Head
  - Feet

- Measurement
  - Parallax
  - Headboard

- Diurnal variation
Equipment

- Recommended:
  - Backboard
  - Non-carpeted floor
  - Inflexible material
  - Even floor
Correct measurement procedure

1. Ensure patients remove their shoes and hair ornaments or hair styles which could impede measurement
2. Have patients stand up straight against the backboard or measuring rod with body weight evenly distributed
3. Ensure heels are together and toes apart (at a ~60° angle)
4. Check 4 points of contact (heels, buttocks, shoulder blades and head)
5. Align head in the Frankfurt plane
6. Lower the headpiece onto the head firmly enough to flatten the hair
7. Instruct patients to take a deep breath and hold this position
8. Read the measurement at eye level
Figure 1. Standing height position (Adapted from NHANES [2007])
Measuring weight

- On the ward
  - In the morning
  - After PU
  - In light pyjamas
- Outpatients
  - Light clothing and no shoes
- Manipulating weight
  - Drinking water
  - Weights on body
Questions
References

References


References

- O’Connor and Nicholls (2013)
- SDHB guide to refeeding syndrome (n.d)