Paediatric Best Practice Guidelines

Eating Disorders

Background

Relatively common – 0.5-0.7% adolescent females have anorexia nervosa, 5-10% of eating disorders occur in males.

Anorexia nervosa associated with significant morbidity and 5% mortality.

Incidence increasing in younger children, where there is less predominance of female cases

Early recognition and management generally result in better outcomes

Children may be referred to the Assessment Unit by colleagues in the Child and Family Psychological Health Service for a physical health assessment, or they may be referred by the GP, or during assessment of other issues it may become apparent the child or young person has a potential eating disorder.

Diagnostic criteria used in adults, particularly for anorexia, are not fully applicable to children and adolescents whose weight may not fall to 85% ideal weight, and who may be pre-pubertal and therefore not attained menarche. NB. Adolescents can present with eating disorders at ‘normal’ body weights/ BMI, especially if there is a history of preceding obesity.

History

Weight – ask about duration and degree of weight loss, and whether trying to reach any target weight. Is anyone else (friends, teachers, parents) concerned about their weight?

Diet – 24 hour diet history, whether avoiding any food groups, calorie counting, history of bingeing or vomiting after meals. Include history of fluid intake.

Pubertal development – age at menarche, regularity of periods, LMP

Exercise – how frequent, what intensity?

Systems review – dizziness, syncope, cold intolerance, hair loss, easy bruising, constipation, abdominal pain, palpitations, poor concentration, tiredness

Family history – obesity, eating disorder, psychiatric illness

Other – any thoughts or history of self harm, substance misuse. Consider using HEADSSS assessment.

Examination

Accurate weight and height, plotted on growth chart
Plot BMI on growth chart (see instructions on new 2012 growth charts for doing this). If plotting on 2\textsuperscript{nd} centile or less, calculate percentage median BMI.

\[
\text{Percentage BMI} = \frac{\text{actual BMI (weight/height}^2\text{)}}{\text{median BMI (50}\text{th percentile) for age & gender}} \times 100
\]

General physical examination, paying particular attention to;

Temperature, hydration status, skin & hair

Cardiovascular system – bradycardia, cool peripheries, blood pressure, postural hypotension, arrhythmias

Signs of recurrent vomiting - gingivitis, dental caries, swollen parotid glands, callouses on hands, loss of tooth enamel

Pubertal development – prepubertal, entering puberty or completing puberty (see 2012 growth charts for definitions)

Signs to suggest alternative diagnosis – lymphadenopathy, mouth ulceration, abdominal tenderness or mass, hepatosplenomegaly

The Junior MARSIPAN report provides a framework for the medical assessment of risk;

<table>
<thead>
<tr>
<th>Risk assessment framework for young people with eating disorders</th>
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<tr>
<td><strong>Red</strong></td>
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<tr>
<td><strong>BMI &amp; weight</strong></td>
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<tr>
<td>Recent loss of weight of 1 kg or more/week for 2 consecutive weeks</td>
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<tr>
<td><strong>Cardiovascular health</strong></td>
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\textsuperscript{a} Normal sitting blood pressure for age and gender with reference to centile charts

\textsuperscript{b} Normal orthostatic cardiovascular changes
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Observation/Explanation</th>
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<tbody>
<tr>
<td>Irregular heart rhythm (does not include sinus arrhythmia)</td>
<td>Cool peripheries; prolonged peripheral capillary refill time (normal central capillary refill time)</td>
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<tr>
<td>or diastolic blood pressure fall of 10 mmHg or more within 3 min standing, or increase in heart rate of up to 30bpm</td>
<td>Normal heart rhythm</td>
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<tr>
<td>Temperature</td>
<td>Tympanic &lt; 35.5°C, axillary &lt; 35.0°C</td>
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<tr>
<td>Fluid refusal</td>
<td>Severe fluid restriction</td>
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<td>Severe dehydration (10%): reduced urine output, dry mouth, decreased skin turgor, sunken eyes, tachypnoea, tachycardia(^a)</td>
<td>Fluid restriction Mild dehydration (&lt;5%): may have dry mouth or not clinically dehydrated but with concerns about risk of dehydration with negative fluid balance</td>
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<tr>
<td>ECG abnormalities</td>
<td>QTc&gt;460 ms (girls) or 400 ms (boys) with evidence of bradyarrhythmia or tachyarrhythmia (excludes sinus bradycardia and sinus arrhythmia); ECG evidence of biochemical abnormality</td>
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<tr>
<td>Disordered eating behaviours</td>
<td>Severe restriction (less than 50% of required intake), vomiting, purging with laxatives</td>
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<td>Activity and exercise</td>
<td>High levels of uncontrolled exercise in the context of malnutrition (&gt;2 h/day)</td>
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<td>Biochemical abnormalities</td>
<td>Hypophosphataemia, hypokalaemia, hypocalcaemia</td>
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<td>Engagement with management plan</td>
<td>Some insight into eating problems, some motivation to tackle eating problems, ambivalent towards changes required to gain weight but not actively resisting</td>
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<tr>
<td>a. Patients with inappropriately high heart rate for degree of underweight are at even higher risk (hypovolaemia). Heart rate may also be increased purposefully through the consumption of excess caffeine in coffee or other drinks.</td>
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<td>c. Or inappropriate normal heart rate in an underweight young person.</td>
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Differential diagnosis

Diagnosis of eating disorders relies on evidence of abnormal eating behaviour plus disordered thinking and beliefs about weight and body shape. If these abnormal beliefs and behaviours are not present then alternative diagnoses should be considered including:

- Gastrointestinal – inflammatory bowel disease, malabsorption, coeliac disease
- Malignancy – leukaemia, lymphoma, intracerebral tumour
- Endocrine – diabetes, hyperthyroidism, hypopituitarism, Addison’s disease
- Chronic infection – TB, HIV
- CNS disease
- Other psychiatric disorders: depression, OCD

Investigations

- FBC (anaemia, leucopenia & thrombocytopenia can all occur in anorexia)
- U&E (low creatinine can occur due to low muscle mass & high urea due to catabolic state, rather than dehydration, but high creatinine can be seen if muscle breakdown. So results must be interpreted in light of clinical assessment)
- LFT (mildly raised bilirubin & liver enzymes are not uncommon)
- Bone profile, Magnesium, Glucose
- Vitamin D level
- TFT
- ECG
- Urinalysis – consider pregnancy test if amennorhoeic (with patient’s consent)

Management

Refer to shared care protocol for further information.

The need for admission to the paediatric ward should be based on history, examination and use of the Junior MARSIPAN risk assessment framework. No one factor predicts risk better than others. Admission should be considered for any young person with ‘red’ alerts on the assessment framework, but may also be needed for those with lower levels of risk depending on the circumstances.

Do not discharge home any young person with ‘red’ alerts on the assessment framework without discussing the patient beforehand with a senior paediatrician (specialty trainee ST4 or above, or a consultant).

At RGH, please inform Dr Morgan’s secretary on extension 8811 if a child or young person is admitted with an eating disorder or potential eating disorder.
For GP referrals or new presentations referral to CAMHS should be made using relevant referral form (available on shared care protocol) [LINK](#).

Inform paediatric dietitians of admission

Commence multivitamin supplement eg. Forceval 1 tablet daily

All young people admitted for re-feeding should be commenced on oral phosphate supplements, even if baseline phosphate level is normal. Please prescribe Phosphate Sandoz (each tablet contains 16.1mmol of phosphate) 1 tablet twice daily for first 5 days.

**NB. This dose may need to be increased if baseline phosphate low or phosphate level drops on re-feeding.**

Daily bloods for at least first 5 days of re-feeding, to include U&E, bone profile, magnesium

**Management of other electrolyte abnormalities**

1. **Hypokalaemia** – If K < 3.5mmol/l give Sando K (each tablet contains 12mmols of potassium) 2-4 tablets daily
   - If K < 3.0mmol/l consider need for intravenous KCl added to intravenous fluids (DO NOT EXCEED 0.4mmol/kg/hour). Admit to HDU, ECG monitoring

2. **Hypomagnesaemia** (serum Mg <0.6mmol/L) Correct with 0.2ml/kg 50% Magnesium sulphate (max 10ml) in 250ml 0.9% saline over 4 hours. Admit to HDU. Must monitor ECG & blood pressure.

3. **Hypoglycaemia** (glucose <2.5mmol/L). Encourage sugary drink or consider use of hypostop. Give 2mls/kg 10% glucose intravenously over at least over 5 minutes (Guys and St Thomas Paediatric Formulary) if altered conscious level or seizures, followed by glucose infusion of 0.1ml/kg/minute. Measure glucose concentration by dextrostix after 4-5 minutes and adjust glucose infusion to maintain the blood glucose at 5-8 mmol/L and no higher.

4. **Hypophosphataemia** (phosphate <0.32mmol/L). Admit to HDU. ECG & blood pressure monitoring. Use intravenous potassium dihydrogen phosphate (0.08 - 0.16 mmol/kg diluted appropriately over 6 hours). For peripheral intravenous administration the concentration of potassium should not exceed 40mmol/L (BNFC 2013/14).
Refeeding Syndrome

Re-introduction of nutrition to severely malnourished individuals can precipitate refeeding syndrome which may result in cardiac failure and death. The key biochemical abnormality is hypophosphataemia, due to total body phosphate depletion and a shift of extracellular to intracellular phosphate when the body changes from a catabolic state to anabolic. The risk is greatest in the initial stages of refeeding (first week). The incidence increases with decreasing BMI and if weight loss is rapid.

Features of the syndrome include:

- Delirium with visual and auditory hallucinations
- Respiratory compromise (dyspnoea, tachypnoea)
- Generalised weakness and fatigue
- Paraesthesia
- Signs of fluid overload eg peripheral oedema, cardiac failure
- Diarrhoea
- Seizures and reduced conscious level
- Electrolyte imbalances

Preventing refeeding syndrome

- Reintroduce nutrition gradually, as advised by dietitian
- Correct dehydration – usually over 48 hours as too rapid correction can result in cardiac decompensation
- Daily electrolyte monitoring
- Prophylactic phosphate supplementation, as above
- Start any multivitamins and mineral supplementations before feeding begins (NICE CG9)

If signs of refeeding syndrome

- Seek advice from senior paediatrician
- Ensure regular monitoring of blood pressure, ECG, cardiac status, neurological observations, weight, fluid balance and hydration status
- Urgent correction of any electrolyte abnormalities
- Inform dietitian – nutrition plan will need to be reviewed and may include reducing or stopping enteral feeds for a time.

Discharge/ Outpatient Management

Timing of discharge from the paediatric ward will be agreed at a multidisciplinary meeting between paediatrics and CAMHS. This will include whether ongoing paediatric follow up is required for monitoring of growth, pubertal development, bone health etc.
References


Eating Disorders in Children and Young People: Early Recognition, Assessment and Initial Management. Nottingham University Hospitals NHS Trust Paediatric Clinical Guideline January 2007 Damian Wood. Downloaded from; http://nottinghamchildhealth.org.uk/Guidelines/Adolescent/12.2%20Eating%20Disorders.doc

Doses, dilutions and rates of administration checked in BNFC/Medusa IV guide/Guys and St Thomas Paediatric Formulary/UCL IV Handbook.

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