Title	Eating Disorders in Children and Young People <18 years ***Early Recognition, Assessment and Initial Management***
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Equality & Diversity Impact Assessed	

Eating Disorders in Children and Young People <18 years
Early Recognition, Assessment and Initial Management

Eating Disorder identified in Primary (or Secondary) Care
Assess Medical RISK (see page 4 as a guide)

RED/AMBER FLAGS

NO 'FLAGS'

Up to 16 Years
Phonecall to Consultant Paediatrician on call via BGH switchboard
or Urgent letter to Paediatrics copied to Dietician and CAMHS

16-18 Year
Urgent medical referral copied to Dietician and CAMHS:
Dr J Manning (special interest)
or Dr Fletcher and Dr Evans
or Contact Medical Consultant on call

- DSM criteria met (see page 2) refer CAMHS
- Recent onset, DSM criteria not met, good reason to avoid CAMHS referral: refer Dietetics
- Differential diagnosis unclear seek secondary care advice

Further multidisciplinary assessment organised by secondary care

Agreed level of intervention involving Dietician, Paediatrician, Physician, CAMHS team, Primary Care and sometimes Tier 4 Inpatient service

NHS Borders guideline for the medical management of eating disorders in children and young people <18 years

1 Objectives

1. Promote early identification and referral of children and young people with Eating Disorders
2. Provide clear guidance for undertaking medical assessments in children and young people under 18 years with suspected eating disorders.
3. Define which group of patients require ward admission.
4. Identify key components for safe management of inpatients.
5. Provide clear guidelines for liaison between CAMHS and acute services including shared care for admitted patients within working hours.

2Introduction

A range of eating disorders may present in children and young people and the prevalence is increasing. The eating disorder spectrum includes anorexia nervosa which is characterised by:

A. Restriction of energy intake relative to requirements, leading to a significantly low body weight in the context of age, sex, developmental trajectory, and physical health.
B. Intense fear of gaining weight or becoming fat or persistent behaviour that interferes with weight gain
C. Body image disturbance, undue influence of weight and shape on self-confidence, or persistent lack of recognition of the seriousness of the illness

(DSM V criteria)

Anorexia nervosa has potential life threatening physiological effects, secondary endocrine and metabolic changes and enduring psychological disturbance. Early intervention improves the likelihood of recovery. However 20-25% develop a chronic eating disorder and the mortality is 5% due to suicide or medical complications of the disease. It is most common in adolescent girls occurring in up to 0.8% of this group.

Some patients with eating disorders which do not fit the classification of anorexia nervosa (DSM V) may have similar behavioural and risk issues. For this reason the guideline provides a framework for assessing patients with suspected eating disorders including anorexia nervosa.

Key points for Referral

- **Anorexia Nervosa is life threatening**
- **Early recognition and treatment improves outcome**
- **The Eating Disorder may have been hidden for some time**
- **Young people may continue to deny an eating disorder or minimise symptoms**
- **Once an ED is suspected assess risk and refer early**
- **Monitor weekly pending first appointment in secondary care**
- **Refer to CAMHS, Paediatrics/Adult Physician and/or Dietetics (see pathway above)**

If you suspect and Eating Disorder - Ask the SCOFF questions*

1. Do you make yourself **S**ick because you feel uncomfortably full?
2. Do you worry you have lost **C**ontrol over how much you eat?
3. Have you recently lost more than **O**ne stone in a 3 month period?
4. Do you believe yourself to be **F**at when others say you are too thin?
5. Would you say that **F**ood dominates your life?

(*One point for every "yes"; a score of ≥2 indicates a likely case of anorexia nervosa or bulimia)

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3 Medical Assessment

3.1 History

- **Weight –** ask about duration and degree of weight loss, and whether trying to reach any target weight. Is anyone else (friends, parents, teachers) 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, palpitations, cold intolerance, hair loss, easy bruising, constipation, abdominal pain, poor concentration, tiredness
- **Family history –** obesity, eating disorders, psychiatric illness
- **Other –** any thoughts or history of self harm, substance misuse.

3.2 Examination

- Accurate weight and height, plotted on growth chart
- Plot BMI on growth chart. If plotting on 2nd centile or less, calculate percentage BMI

Percentage BMI = $\frac{\text{actual BMI (weight (kg) /height (m}^2\text{) x 100}}{\text{median BMI (50}^{th}\text{ centile) for age and gender}}$

- **General physical examination, paying particular attention to**:
  - Temperature, hydration status, skin and hair
  - Cardiovascular system – bradycardia, cool peripheries, blood pressure, postural hypotension, arrhythmias
  - Signs of recurrent vomiting – gingivitis, dental caries, swollen parotid glands, loss of tooth enamel. Russell's sign (callous on back of hands)
  - Pubertal development – prepubertal, Tanner staging
  - Signs to suggest alternative diagnosis – lymphadenopathy, mouth ulceration, abdominal mass, hepatosplenomegaly

3.3 Differential Diagnoses

Diagnosis of eating disorders relies on evidence of abnormal eating behaviour plus disordered thinking and beliefs about weight and body shape. If psychogenically driven weight loss is 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

3.4 Investigations

- **FBC** (anaemia, leucopenia and thrombocytopaenia can all occur in anorexia)
- **U+E** (low creatinine can occur due to low muscle mass and high urea due to catabolic state, rather than dehydration, but high creatinine can be seen if muscle breakdown. Results must be interpreted in light of clinical assessment)
- **LFT** (mildly raised bilirubin and liver enzymes are not uncommon)
- **Bone profile (including vitamin D level), magnesium, zinc, phosphate, random glucose, TFT, Creatinine kinase, ECG, urinalysis and urine osmolality**

3.5 Medical Risk Assessment and Admission Criteria

The risk assessment tools provide a structured approach to examination of patients with a suspected eating disorder to identify red and amber flag signs which will guide management decisions.
Patients with anorexia nervosa can seem deceptively well; no one parameter mentioned is a good indicator of overall level of risk or illness.

- Patients who have one or more high risk (red flag) features will require immediate admission
- Patients with concerning features (amber flag) should be discussed with the patient's consultant paediatrician or the acute on call consultant paediatrician.

	ASSESSMENT	**Red flags (ADMIT)**	**Amber (Low threshold for admission)**
HISTORY	1. History of weight loss	Recent loss of weight of 1 kg or more/week for 2 consecutive weeks	Recent loss of weight of 500– 999 g/week for 2 consecutive weeks
	2.History of syncope	Recurrent syncope	Occasional
	3.Fluid and food intake	Fluid refusal Acute food refusal or estimated calorie intake 400-600kcal per day	Severe fluid restriction Severe dietary restriction (less than 50% of required intake), vomiting, purging with laxatives
	4. Exercise habits	High levels of uncontrolled exercise in the context of malnutrition (>2hours/day)	Moderate levels of uncontrolled exercise in the context of malnutrition (>1 hour/day)
	5. Suicidal ideation	Self-poisoning, suicidal ideas with moderate to high risk of completed suicide	Suicidal ideas with low risk of completed suicide
	6.Acute co-morbidity	Acute medical problems like uncontrolled diabetes	Major psychiatric co-diagnosis e.g. OCD, psychosis, depression, Mallory Weiss tear, gastritis, pressure sores

	ASSESSMENT	Red flags (ADMIT)	Amber (Low threshold for admission)
EXAMINATION	1. Percentage BMI	Percentage median BMI <70%	Percentage median BMI 70-80%
	2. Heart rate BP sitting then standing	Heart rate (awake) <40bpm Sitting systolic/diastolic BP below 0.4th centile for age / gender Marked orthostatic changes (fall in systolic BP of 20mmHg or more)	Heart rate (awake) 40-50bpm Sitting BP: systolic or diastolic <2nd centile for age/gender Moderate orthostatic cardiovascular changes(fall in systolic BP of 15mmHg or diastolic BP fall of 10mmHg or more within 3 minutes of standing
	3. Hydration status (reduced urine output, dry mouth, skin turgor, tachycardia)	Severe dehydration (10%)	Moderate dehydration
	4. Temperature	<35.5^{0}C tympanic or 35.0^{0}C axillary	<36^{0}C
	5. Muscle weakness (SUSS)	Severe muscle weakness: Unable to sit up at all from lying flat or unable to get up at all from squatting, unable to raise arm above head	Unable to sit up without using upper limbs or unable to get up without using upper limbs

	ASSESSMENT	Red flags (ADMIT)	Amber (Low threshold for admission)
INVESTIGATION	ECG	Irregular heart rhythm (excluding sinus arrhythmia) QTc >450ms (girls) QTc > 430ms (boys) with Bradyarrythmia or Tachyarrythmia ECG evidence of biochemical abnormality	QTc >450ms (girls) QTc >430ms (boys)
	Electrolyte disturbance	Hypophosphataemia (<0.5mmol/L) Hypokalaemia (<3mmol/L) Hypoglycaemia (<2.5mmol/L) Hyponatraemia (<130mmol/L) Corrected hypocalcaemia (<1.8mmol/L) Hypomagnesaemia (<0.6mmol/L)	Hypophosphataemia (0.5-0.7mmol/L) Hypokalaemia (<3.5mmol/L) Hypoglycaemia (< 4mmol/L) Hyponatraemia (<135mmol/L) Corrected hypocalcaemia (1.8-2.05mmol/L) Hypomagnesaemia (0.6-0.8mmol/L)

4 Management during admission and shared care arrangements

4.1General

1. Admit under shared care with Dietician and CAMHS Consultant
2. Establish the level of nursing supervision needed and the level of parental care if appropriate. Identify named ward nurse and core group of nurses to take care of an individual during an admission. Write management care plan to ensure continuity of care
3. Arrange daily multidisciplinary review and document in the notes. Document clearly the aims of the admission, how progress will be assessed and discharge plans.

4.2Cardiovascular Management

Bradycardia, hypotension and ECG abnormalities usually improve with active management of fluid balance, electrolyte abnormalities and nutrition and specific treatment is rarely required.
Specific management of patients with ‘red’ or ‘amber’ flags as below:

Cardiovascular Red Flags	Strict bed rest with continuous ECG monitoring, admit to HDU bed, and discuss ECG changes with local or tertiary cardiologist
Cardiovascular Amber Flags	Limited mobilisation with 1:1 support, continuous ECG monitoring, admit to HDU bed, discuss ECG changes with local or tertiary cardiologist

4.3Management of Fluids

Hypovolaemia
Due to increased risk of heart failure in severe malnutrition IV fluids should be used with **caution**.
Use sodium chloride 0.9% 10ml/kg bolus then review.

Dehydration
Oral rehydration solution (ORS) orally or via a nasogastric tube is the **preferred** treatment unless there is hypovolaemia or vomiting. If IV maintenance fluids are required use 0.9% saline / 5% dextrose with added electrolytes as determined by blood results.

Oedema
This will usually resolve as nutrition improves and rarely requires specific treatment. Albumin infusions should be avoided due to risks of heart failure and refeeding syndrome.

Hypoglycaemia
Correction should be orally where possible (sugar drink, Hypostop)
IV bolus if severe (altered conscious or mental state; seizures): 2ml/kg of 10% dextrose followed by glucose infusion of 0.1mg/kg/minute. Measure glucose concentration by dextrostix after 4-5 minutes and adjust glucose infusion to maintain the blood glucose at 5-8mmol/l **and no higher**.

4.4Management of Electrolyte Disturbance

Potassium
Hypokalaemia due to self-induced vomiting is associated with a metabolic alkalosis
Hypokalaemia and acidosis suggests the possibility of laxative misuse
Specific management of patients with 'red or 'amber' flags as below:

Red Flags	K < 2 mmol/L consider intensive care, may need central venous access for correction
	K 2-2.5mmol/L, admit to HDU institute ECG monitoring. Correct with the addition of intravenous KCl to IV 0.9% Saline (Do not exceed 0.4mmol/kg/hour)
	K 2.5-3.0 admit to HDU, ECG monitoring, oral supplementation

Amber Flag	Oral supplementation

Sodium

Hyponatraemia can be caused by water-loading to hide body mass loss, underlying sepsis, SIADH, excessive sodium loss due to diarrhoea/vomiting or iatrogenic

Serum levels should be above 135mmol/L. In general, plasma sodium is a poor indicator of total body sodium so measurement of urinary electrolytes on admission and daily serum electrolytes are needed. Specific management of patients with 'red' or 'amber' flags as below:

Red flags	Na <120-125mmol/L, HDU, continuous ECG monitoring If hyponatraemic seizure, partial rapid correction of the serum sodium level will be necessary to stop the fitting. Administration of 4ml/kg of 3% NaCl solution over 15 minutes will raise the serum sodium by 3mmol and will usually stop the seizure. If hyponatraemia is due to dehydration and IV fluids are required then 0.9% NaCl is an appropriate fluid. If hyponatraemia is due to excessive water intake or retention and the patient is not symptomatic then restriction of fluid intake to 50% of normal estimated requirements may be adequate therapy.
	Na 126-130mmol/L – admit; strict fluid balance

Amber flag	Na <135mmol/L - Daily monitoring until normal

Calcium and Magnesium

Hypocalcaemia (corrected) and hypomagnesaemia are unusual but increase the risk of arrhythmia. Specific management of patients with 'red' or 'amber' flags as below:

Red flags	Admit to HDU, ECG monitoring. Corrected Ca<1.8mmol/L should be treated with IV calcium gluconate following BNF or BNFc guidelines. Correct for hypomagnesaemia
	Mg <0.6mmol/L, Institute ECG monitoring and BP monitoring Correct with IV 0.2ml/kg 50% $MgSO_4$ (max 10ml) in 250ml 0.9% NaCl solution over 4 hours
Amber flags	Corrected Ca 1.8-2.05mmol/L ensure adequate intake or use of oral supplement
	Mg 0.6-0.8mmol/L ensure adequate intake or use oral supplement

Phosphate
Hypophosphataemia may occur secondary to starvation or refeeding syndrome.
Specific management of patients with 'red flags' as below:

Red flags	Phosphate <0.32mmol/L. institute ECG and BP monitoring IV potassium dihydrogen phosphate (0.08-0.16 mmol/kg) over 6 hours
	Phosphate 0.32-0.8mmol/L Start oral phosphate supplements See BNF or BNFc as appropriate
NB	All young people admitted for re-feeding should be commence on oral phosphate supplements, even if baseline phosphate level is normal. This dose may need to be increased if phosphate level drops on re-feeding

The following sections are for reference only in patients under 16 years as this service is currently not available on the paediatric ward.

5 Feeding Regime

5.1 Meal Plan
A safe meal plan should be overseen by the dietician and agreed with the team and the family to form the basis of a clear treatment plan.

5.2 Observation
Observe and document meal and snack times, the amount and the person who is present. This should include the length snack and meal taken.
If the patient is not able to meet the prescribed calorie intake within 24 hours of commencing the meal plan then a nasogastric tube insertion should be considered, balancing the level of risk and the wishes of the patient and parents. Such a discussion may help to improve the patient's cooperation in accepting either the normal diet or oral supplements.

5.3 NG Feeding
Nasogastric feeding is usually a short-term measure, tailed off as oral intake improves. Nasogastric feeds can be intermittent, bolus or continuous depending on the needs of the young person. Supplemental drinks or bolus NG feeds need to be closely monitored, even when given by pump feed.

5.4 Weight
Weighing should be on the same scales, in the morning before breakfast and after emptying the bladder, in underclothes only (twice per week). Supervision by a member of staff is essential. Occasional 'spot' weighing at random times and on random days will help to check for pre-weighing water loading.

6 Recognising and Avoiding Re-feeding Syndrome

Pathophysiology: Prolonged starvation causes protein breakdown with loss of skeletal and cardiac muscle mass. This is associated with loss of phosphate (the most abundant intracellular anion), potassium and water. The serum levels of phosphate and potassium may remain normal but the body as a whole may be depleted of these ions. When the malnourished patient receives a carbohydrate load, the body switches from catabolism to anabolism. This leads to a large increase in intracellular requirements for phosphate and causes hypophosphataemia. Phosphate is needed in many intracellular enzyme systems. Severe hypophosphataemia can lead to threatening neurological and cardiovascular consequences. The same applies to potassium and thiamine.

Patients at risk of re-feeding syndrome are those with very low weight for height, minimal or no nutritional intake for more than a few (3-4) days, weight loss of over 15% in the past 3 months, and those with abnormal electrolytes or ECG before re-feeding, active co-morbidities (such as diabetes, infections), signs of heart failure.

Re-feeding syndrome is most likely to occur in the first few days of re-feeding but may occur up to 2 weeks after. ***Blood tests (U+E, corrected calcium, phosphate and magnesium) should be done at least daily during the at-risk period, usually days 2-5***. In those with electrolyte disturbances the tests may need to be more frequent. Biochemical monitoring should continue for a fortnight or until electrolyte parameters are stable.

Features of the syndrome include:

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

Preventing refeeding syndrome

- Reintroduce nutrition gradually, advised by the dietician. Use phosphate rich diet and avoid high CHO diet
- Correct dehydration – usually over 48 hours as too rapid correction can result in cardiac decompensation
- At least daily electrolyte monitoring
- Prophylactic phosphate supplementation, as above
- Start a multivitamin/ mineral regime (Forceval, Vit B complex, Thiamine) and before feeding begins (NICE CG9)

If signs of refeeding syndrome

- Seek advice from senior clinician
- Ensure regular monitoring of blood pressure, ECG, cardiac status, neurological observations, weight, fluid balance and hydration status
- Urgent correction of any electrolyte abnormalities

7 Discharge from the Ward

Admission to the ward is reserved for patients who are physiologically unstable or at significant acute risk. Medium to long term management will be in a specialist eating disorders unit or the community as determined by the multidisciplinary medical/ dietetic/ CAMHS team.

The decision about discharge should only be made after multidisciplinary assessment of physical, nutritional and mental health needs of the patients.

8 References

1. Junior MARSIPAN: Management of Really Sick Patients under 18 with Anorexia Nervosa, Royal College of Psychiatry, College Report CR168 January 2012
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3. Norrington A. Stanley R. Tremlett M. Birrell G. Medical Management of acute severe anorexia nervosa, Arch Dis Child Educ Pract Ed 2012;97:48-54.
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5. Advance Paediatric Life Support: The Practical Approach 5th Edition (ALSG) 2011.BMJ Books - Publisher: John Wiley & Sons (Wiley-Blackwell)
6. National Institute for Clinical Excellence 2004.Core Interventions in the Treatment and Management of Anorexia Nervosa, Bulimia Nervosa and Related Eating Disorders. (Clinical Guideline 9) NICE

9 Useful Resources

Beat Eating Disorders:www.b-eat.co.uk
Academy for Eating Disorders:www.aedweb.org
Young Minds worried about eating problems and disorders: www.youngminds.org.uk