Anorexia Nervosa within the Inpatient Paediatric setting: Protocol for Medical / Nursing management (including dietetic guidelines)

Royal United Hospital, Bath
Great Western Hospital, Swindon
Salisbury District Hospital, Salisbury

GUIDANCE FOR MEDICAL STAFF (HISTORY TAKING/ CLERKING/PHYSICAL INVESTIGATIONS/MONITORING/REFEEDING SYNDROME)

CLERKING

Full clerking with attention to:

a) History of eating disorder (e.g. restriction, purging, exercising, laxative abuse) and other mental health problems

b) Past medical history including history of substance abuse or alcohol use

c) Comprehensive physical examination including cardiovascular, respiratory and abdominal. High risk findings include purpuric rash and dark blue/cold extremities. Look for signs of sepsis with low threshold for broad spectrum antibiotics, particularly with evidence of liver failure.

ADMISSION BLOODS

FBC, U&E, Cr, Mg, PO4, Ca, glucose, LFT, TFTs, haematinics, CRP if clinical concern, TTG (do not repeat TTG if previously negative)

ADMISSION ECG

a) Tachy/bradycardias, arrhythmias

b) Prolonged QTC

c) Non-specific T wave changes

d) Changes consistent with hypokalaemia

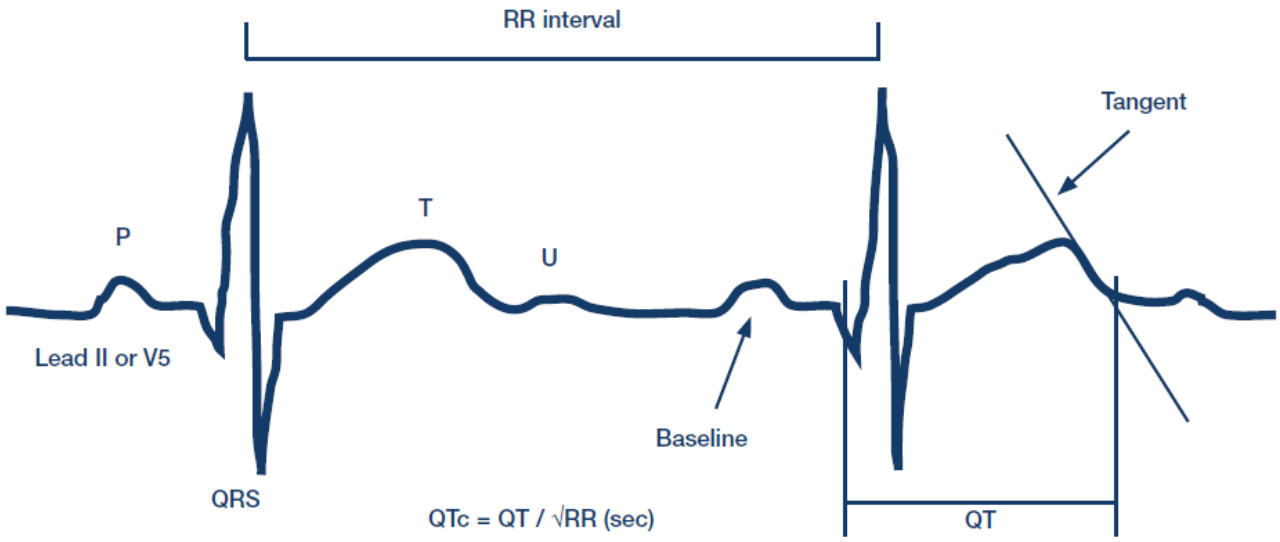
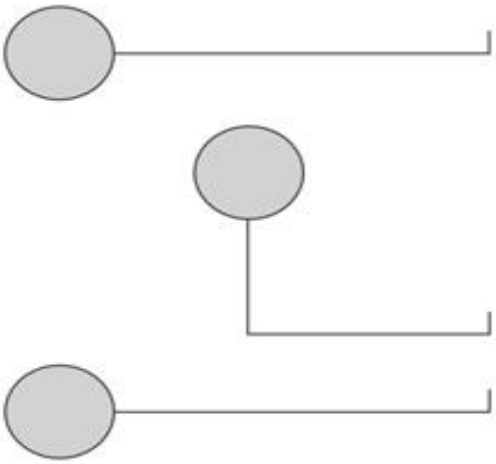


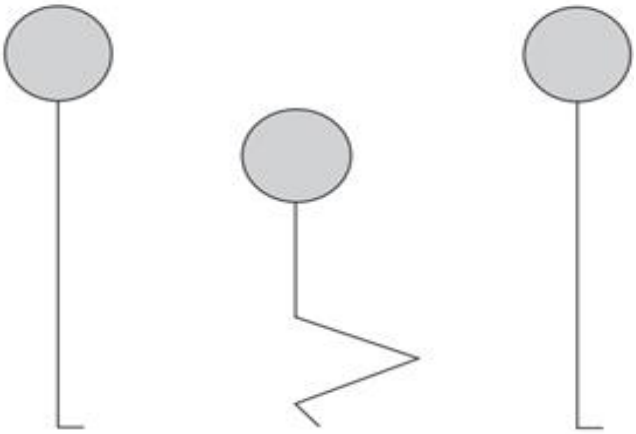
Fig. 1 Calculating the QTc interval. Reproduced with permission from Postema et al (2008).

Abnormal QTc: under 15 years of age (males and females) an abnormal QTc is >460ms. Over 15 years of age abnormal is >450ms; in females abnormal >460ms

SQUAT TEST / SIT-UP TEST



1. Sit-up: patient lies down flat on the floor and sits up without, if possible, using their hands.



2. Squat–Stand: patient squats down and rises without, if possible, using their hands.

Scoring (for Sit-up and Squat–Stand tests separately)
0: Unable
1: Able only using hands to help
2: Able with noticeable difficulty
3: Able with no difficulty

RECORD OBSERVATIONS

Pulse, blood pressure, temperature, and blood glucose monitoring (BM) on admission and 4 hourly unless PEWS changes

RE-FEEDING SYNDROME AND UNDERFEEDING SYNDROME

Sudden reversal of prolonged starvation leads to a sudden requirement for electrolytes involved in metabolism, known as re-feeding syndrome. Phosphate levels can fall rapidly, with neurological and cardiovascular consequences. Those most at risk of re-feeding syndrome are patients with very low BMI, minimal or no nutritional intake for more than a few days, rapid weight loss and those with abnormal electrolyte levels prior to re-feeding. A safe approach to re-feeding acknowledges the possibility of the rare, but potentially fatal, re-feeding syndrome while also recognising that an over-cautious approach (underfeeding syndrome) is equally risky.

ALL PATIENTS CONSIDERED AT RISK OF RE-FEEDING SYNDROME SHOULD BE MONITORED FOR CLINICAL SIGNS OF THE RE-FEEDING SYNDROME:

- Resting tachycardia (differential for this includes anxiety).
- Oedema or swelling, especially in the legs.
- Confusion or altered conscious state (always check glucose in this case).

PATIENTS SHOULD HAVE:

- Daily inspection for any signs of oedema (in particular, peripheral oedema) for first five days.
- Three times/day resting pulse and lying and standing blood pressure for first five days.
- Monitor for biochemical/blood parameters of the re-feeding syndrome:

- Daily urea, creatinine, sodium, potassium, phosphate, magnesium daily for five days. The drop in phosphate seen when re-feeding will normally occur within 48-72 hours.
- Blood sugars should not be measured routinely unless there is clinical evidence of hypoglycaemia (confusion, decrease in conscious level, acutely abnormal behaviours consistent with hypoglycaemia) or hyperglycaemia (positive dipstick on urine, passing urine frequently or excess thirst) (Rationale 16).
- Attention should be paid to other electrolytes such as Na, K, Mg and Ca. Ca will be low when albumin is low and should be corrected. Discussions about abnormalities in these blood parameters and how to treat them should be discussed with the attending consultant.

TREATMENT OF RE-FEEDING SYNDROME (Also see flow diagram in Appendix 1).

Re-feeding syndrome will usually present in on one of two clinical scenarios:

Low phosphate but no clinical signs of the re-feeding syndrome (this is the most common scenario).

- The responsible consultant and medical registrar should be informed.
- Keep feeding regime same, DO NOT INCREASE calories until phosphate is normalised (Rationale 17).
- Identify other electrolyte abnormalities (see below – note these are rare in this context).
- If phosphate in range (0.5-1.1):
    - If phosphate has not already been commenced prior to feeding prescribe two tablets of Sandoz phosphate to be given immediately, and commence TDS regime thereafter.
    - If phosphate has already been commenced increase dose orally or consider need for IV (Rationale 18).
- Recheck U&E in six to eight hours and monitor clinically (see above).
- If phosphate is significantly low (<0.5) or still low six to eight hours following correction then consider repeated double dose, or IV correction (Rationale 17). This is unusual. Discuss with consultant, registrar and CSP about need for transfer to medical ward – especially if phosphate remains low after an initial correction. Repeat ECG (Rationale 19).
- Patients with phosphates <0.3 in the context of the re-feeding syndrome should be transferred to a medical ward for ongoing management and cardiac monitoring (Rationale 20). Repeat ECG (Rationale 19).

Clinical signs of significant re-feeding syndrome (a combination of oedema, confusion, resting tachycardia) and (usually) low phosphate (usually low but may be normal).

- If this clinical scenario is suspected, then discussion should occur with the consultant and CSPs about transfer to a medical ward (or HDU/PICU depending on severity of clinical findings).
- Note the finding of resting tachycardia alone should prompt a medical review, check of electrolytes, ECG and careful monitoring in the first instance with consideration of other causes for tachycardia (e.g. anxiety). DO NOT INCREASE FEEDS UNTIL RE-FEEDING SYNDROME has been excluded (Rationale 17).

- Management of clinically evident re-feeding syndrome:
    - Should be transferred (when stable) for ongoing management on a medical ward (or HDU/PICU) (Rationale 20).
    - Reduce calories to starting dosage (see section above) (Rationale 17).
    - Immediately check: FBC, U&E (including Magnesium, phosphate, calcium), LFT; check blood gas for measurement of acid-base and more immediate measurement of sodium and potassium.
    - Check blood sugar and treat hypoglycaemia (Rationale 16).
    - Patient should be put on a cardiac monitor, especially those with cardiac arrhythmia and electrolyte abnormalities (Rationale 19).
    - Patients with an arrhythmia should be discussed with the duty cardiology registrar ASAP.
    - Replace electrolyte disturbances – this should generally be done intravenously in a medical setting (Rationale 20).
    - Oedema will usually complicate fluid management, albumin is often low – senior support and advice is required.
    - Initiate neuro-observations.
    - **CONSIDER DIFFERENTIAL DIAGNOSIS OF THE PRESENTATION – INCLUDING SEPSIS AND OTHER CAUSES OF ACUTE DETERIORATION IN CONSCIOUS STATE**.

OTHER IMPORTANT CONSIDERATIONS WHEN TREATING RE-FEEDING SYNDROME:

In all cases of hypophosphataemia, other causes of low phosphate should be excluded – in particular, Vitamin D deficiency and hypoparathyroidism: check PTH and Vitamin D with next set of bloods (if hasn't already been checked). These bloods should not delay feeding commencing once phosphate is normalised.

- If phosphate is significantly low (<0.5) consider IV replacement – this will generally mean transfer to a medical ward environment (Rationale 18 and Rationale 20).
- Phosphates that are potentially dangerously low (<0.3) should be managed on a medical ward/PICU and discussions should occur with the consultant and CSPs about transfer (Rationale 20).
- Check U&E (in particular phosphate) six hours later. Usually, phosphate will have corrected after the administration of phosphate.
- If clinical features develop then follow clinical scenario two below.

Important consideration for ongoing phosphate management – how to wean.

- Check phosphate at day 10, 14.
- Phosphate should normally be weaned off after two weeks of treatment if phosphate remains stable as long-term phosphate can lead to paradoxical hypophosphataemia (Rationale 10). This should be done by reducing the dose by one Sandoz phosphate tablet every two days with serial measurement of phosphate.
- Side effects of phosphate treatment include diarrhoea and abdominal pain – consider reducing the dose if phosphate is stabilised or the delivering phosphate via an IV route instead of oral.

Other considerations and complications during re-feeding:

- Severe central abdominal pain during re-feeding. Consider pancreatitis or superior mesenteric artery syndrome.
- Adherence with plan.

NB trust refeeding guideline (https://viewer.microguide.global/guide/1000000308#content,d6576e2a-0616-465e-987d-876edec13152) suggests currently available electrolyte supplements but please check dose with BNFc as this is a generic guideline, not paediatric.

APPENDIX 1: RE-FEEDING GUIDELINES FLOW CHART

On Admission

- Check U&E, phosphate and Magnesium
- Perform ECG – for QTc and exclude arrhythmia
- Discuss any abnormalities with consultant
- Do not prescribe prophylactic phosphate routinely
- Do not prescribe prophylactic thiamine routinely
- Do not check glucose routinely unless asymptomatic
- Check Vitamin D and prescribe prophylaxis (or deficiency when have results)

Low Phosphate

- Do not increase feed regime until the phosphate is corrected and normal
- Check Vit D and PTH if baseline phosphate is low
- Always discuss an abnormal phosphate with the on-call consultant
- Treatment depends on the phosphate level:

0.5-1.1 mmol/l

- Correct orally with a stat dose of 2 x Sandoz phosphate tablets (1.936g of sodium acid phosphate anhydrous per tablet)
- Commence three times per day regular Sandoz Phosphate (1 tablet)
- Check phosphate 12 hours after oral stat dose

<0.5 mmol/l

- Consider need for IV treatment and discuss with consultant
- Make clinical site practitioners aware
- Repeat ECG if developed as re-feeding syndrome

<0.3 mmol/l

- Significant risk for feeding safety
- Will need medical environment, including potential high dependency

Normal Phosphate >1.1 mmol/l

- Commence feeding as per dietetic plan
- Daily U&E, phosphate and Magnesium for 5 days
- Discuss electrolyte abnormalities with consultant
- Check clinically each day for signs of re-feeding syndrome (confusion and oedema) as routine, but be aware they can develop at any time
- Check daily for biochemical evidence of re-feeding syndrome, especially low phosphate
- If phosphate remains normal then cease any phosphate supplements after 2 weeks

Develops Re-feeding Syndrome at any time

No clinical signs but low phosphate
or
Clinical signs (oedema , Confusion)

Clinical Signs of Re-Feeding Syndrome

- Should be transferred (when stable) for ongoing management on a medical ward (or HDU/PICU)
- Discuss and inform all patients with registrar and consultant on-call
- Reduce calories to starting dosage (calories on admission) – but discuss with consultant and dietician
- Immediately check: FBC, U&E, Magnesium, Phosphate, Calcium), LFT and blood gas
- Check blood sugar and treat hypoglycaemia
- Patient should be put on a cardiac monitor, especially those with cardiac arrhythmia and electrolyte abnormalities
- Patients with and arrythmia should be discussed with cardiology
- Replace electrolyte disturbances- this should generally be done intravenously in a medical setting.
- Oedema will usually complicate fluid management, albumin is often low- senior support and advice is required
- Initiate neuro observations

REFEEDING VITAMINS AND MINERALS

This is a guide – please see local policies

Refeeding vitamin protocol for over 14 year olds

This patient has been identified as being **at risk of refeeding syndrome**. Please monitor **Nutrition Bloods** (PO4, Mg+, K+, Ca^{2}+) **DAILY** and supplement electrolytes as required.

Please prescribe the following for 10 days:

- **Thiamine –** 100mg TDS (with the first dose administered 30 minutes before initiating feeding) either orally or crushed and flushed via feeding tube
- **Vitamin B Compound Strong** 1 tablet TDS **OR Vitamin B Syrup/ Vigranon B** 5ml TDS
- **1 Sanatogen A-Z** tablet OD **OR 1 Forceval Soluble (**dissolved in 50ml water via feeding tube) OD

If enteral route not available,

- Administer intravenous **Pabrinex®** (ampoules 1 and 2 = one pair) OD 30 minutes before initiating feeding and then OD for 3 days. If after 3 days it is not possible to revert to oral or enteral route, further supplementation should be discussed with the Nutrition team.

Refeeding vitamin protocol for under 14 year olds

1 x A-Z tablet OD or 1 x Forceval Junior Soluble (dissolved in 50 ml water via feeding tube) OD.

REVIEW

A sick child with an eating disorder needs Registrar/consultant paediatric review on admission and at least daily if there are paediatric (medical) issues.

APPENDIX 2 - NASOGASTRIC FEEDING PROCESS

LOCAL HOSPITAL ENTERAL FEEDING POLICY MUST BE ADHERED TO

Complete all appropriate physical investigations:

- bloods
- ECG
- Height
- Weight

⇩

Abnormal results and/or medical stabilisation as agreed at admission not being achieved

⇩

Young person compliant with prescribed dietetic meal plan.

⇩

Continue TEDS/paediatric / dietetician weekly care plan reviews as per joint protocol

Young person not compliant with prescribed dietetic care plan, physical health deteriorating

⇩

Care plan review meeting to include:

- Named nurse
- Paediatrician
- TEDS consultant
- Liaison/ OSCA/ CAMHS clinician
- Ward dietician
- Young person and family member/ carer

Option of NG feeding to be discussed

⇩

Young person is not competent (<16) or lacks capacity (>16) to give valid consent: consider proceeding under parental consent in best interests or use of the Mental Health Act to give valid legal basis to proceed with NG feeding.

RESTRAINT: **'When a young person is refusing to cooperate with an NG tube then a multiagency discussion including clinical staff and appropriate managers needs to be called ASAP (face to face or via telephone) to discuss the least restrictive option. Restraint may need to be considered and whilst CAMHS are happy to contribute towards this care plan – including giving advice for treatment for young people subject to the Mental Health Act – the responsibility for organising and carrying safe holding remains with the DGH the young person is the patient of.'**

Young person competent (<16) or has capacity (>16) to give valid consent: proceed with NG tube according to hospital policy

Please refer to joint ED protocol for guidance re: Initiation of NG feeding and process of review