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HULL MARSIPAN PROTOCOL

Management of Really Sick Patients with Anorexia Nervosa

June 2016

Aim of protocol

To improve the identification and management of physical risk in patients with anorexia nervosa who are being assessed or managed in medical settings.

Target patient group

Adult patients (>18 years) with anorexia nervosa in medical settings within Hull and East Yorkshire Hospitals NHS Trust.

Target professional group

Medical, nursing and dietetic staff working in areas where an adult patient with anorexia nervosa may be assessed or managed e.g. accident and emergency, acute assessment unit, general medical wards and gastroenterology wards.

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Introduction

The Management of Really Sick Patients with Anorexia Nervosa (MARSIPAN) National working group arose out of concerns that patients with severe Anorexia nervosa were being admitted to general medical units and sometimes deteriorating and dying because of psychiatric problems, such as non-adherence to nutritional treatment, and medical complications such as re-feeding syndrome or underfeeding syndrome. A College report CR168 was produced by The Royal College of Psychiatrists and Royal College of Physicians in 2010 and was updated in October 2014. A full copy of the report is available on line: http://www.rcpsych.ac.uk/usefulresources/publications/collegereports/cr/cr189.aspx

The college reports provide:

- advice on physical assessment
- a brief handout to send to all front-line medical and psychiatric staff
- advice to the primary care team and criteria for admission to both medical units and specialist eating disorders units as well as non-specialist psychiatric units, and criteria for transfer between those services
- advice on membership of the in-patient medical team
- medical, nutritional and psychiatric management of patients with severe anorexia nervosa in medical units, including the appropriate use of mental health legislation
- advice for commissioners on required services for this group of very ill patients.

The National MARSIPAN Group outlined and addressed the issues presented below in the college reports:

- failure to apply compulsory treatment
- lack of liaison psychiatry support
- collapse of local eating disorder services
- inadequacy of general psychiatry services
- inappropriate palliative care
- problems in medical management
- failure to recognise re-feeding syndrome
- failure to manage eating disorder behaviours
- calorie restriction leading to weight loss owing to overcautious re-feeding (under-feeding syndrome)
- failure of medical diagnosis.

This document aims to provide local guidelines on the management of patients with severe anorexia nervosa admitted to medical settings and draws directly from the recommendations outlined in the MARSIPAN reports 2010 and 2014. It has been developed by the Hull MARSIPAN Expert Working Group with members from Hull and East Yorkshire Hospitals, Humber NHS Foundation Trust and City Health Care Partnership Community Interest Company.

1. Admission to a Medical Unit

Patients with anorexia nervosa are usually managed successfully within community mental health and specialist eating disorder services. The physical monitoring of patients in the community is usually taken on by their registered GP who works in collaboration with the patients' treatment team. Occasionally due to the physical impact of their eating disorder behaviour there can be an increase in medical risk which may require physical assessment and treatment in a medical setting.

The current diagnostic criteria for anorexia nervosa (DSM-5):

1. 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
2. intense fear of gaining weight or becoming fat, even though underweight
3. disturbance in the way in which ones body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.

Patients with anorexia nervosa may present to accident and emergency departments and general medical settings with a variety of problems related to the physical complications of starvation and weight loss and purging as outlined in table 1 below.

Table 1. Physical consequences of anorexia nervosa and bulimia nervosa

SYSTEM	STARVATION	BINGEING/PURGING/VOMITING
Cardiovascular	Bradycardia Hypotension Sudden death	Arrhythmias Cardiac failure Sudden death
Renal	Mild pitting oedema **Electrolyte abnormalities:** hypophosphatemia, hypomagnesaemia, hypocalcaemia Renal calculi Renal failure	Severe oedema **Electrolyte abnormalities:** Hypokalaemia, hyponatraemia, hypochloraemia, metabolic alkalosis (vomiting), metabolic acidosis (laxative misuse), hypophosphatemia, hypomagnesaemia, hypocalcaemia Renal calculi Renal failure
Gastrointestinal	Parotid swelling Delayed gastro emptying Nutritional hepatitis Constipation	Parotid swelling Dental erosion Oesophageal erosion/perforation Gastric/duodenal ulcers Constipation
Skeletal	Osteoporosis Pathological fractures Short stature Proximal myopathies	Osteoporosis Pathological fractures
Endocrine	Amenorrhoea Infertility Hypothyroidism	Oligo menorrhoea/amenorrhoea
Haematological	Anaemia Leukopenia Thrombocytopenia	Leukopenia/lymphocytosis

Neurological	Generalised seizures Confused states EEG abnormalities Peripheral neuropathies Ventricular enlargement	Generalised seizures Confused states EEG abnormalities Peripheral neuropathies
Metabolic	Impaired temperature regulation Hypercholesterolemia Hypoglycaemia	Impaired temperature regulation Hypercholesterolemia Hypoglycaemia
Dermatological	Lanugo, brittle hair and nails	Calluses on dorsum of hands (Russell's sign)

Adapted from MARSIPAN College Report 2014

1.1. When to admit?

Patients with severe anorexia nervosa may often present as deceptively well and patients should be considered at risk and in need of medical admission if they fall into the 'high risk' category outlined in table 2. Medical admission should also be considered for patients who fall into the 'moderate risk' group outlined in table 3; especially if the level of risk is increasing. However, some patients in the 'moderate risk' group can often be safely managed in a specialist eating disorders unit (SEDU) or in the community if adequate services are available and accessible. Decisions regarding physical risk should also take into account the patient's capacity to consent to treatment and motivation to change. Table 3 presents a basic list of observations to be made when assessing risk in patients with anorexia nervosa.

Table 2. Assessment of high physical risk in eating disorders

SYSTEM	TEST OR INVESTIGATION	HIGH RISK
Nutrition	BMI Rate of weight loss Glucose	<13 kg/m^2 >1kg/week <2.5 mmol/l
Cardiovascular	Blood pressure Postural drop Pulse rate Peripheral cyanosis	<80/60 mmHg >20 mmHg <40bpm Yes
Musculo-skeletal	Unable to sit up unaided (sit up test)	Yes
Temperature		<34.5°C
Blood profile	White cell count Neutrophils Haemoglobin Platelets	<2.0 x 10^9/l <1.0 x 10^9/l <9.0 g/dl <110 x 10^9/l
Renal	Potassium Sodium Phosphate	<2.5 mmol/l <130 mmol/l <0.5 mmol/l
Electrocardiogram	Pulse rate Corrected QT interval (QTc) Arrhythmias	<40 bpm >450 msec Yes

Adapted from MARSIPAN College Report 2014

Table 3. Basic observational risk assessment for anorexia nervosa (moderate risk)

INVESTIGATION	CLINICAL INDICATOR	RISK ASSESSMENT
BMI (*see page 8)	Low Risk	15-17.5
	Moderate Risk	13-15
	High Risk	<13
Physical Examination	Measure Vital Signs	Low pulse (<40 bpm)
		Low Blood pressure (especially if associated with postural symptoms)
		Core temperature (<35°C)
	Full physical Examination	Infection (can occur with normal temperature) and signs of nutritional deficiency
	Signs of Dehydration	Examination of skin - Dryness Dizziness or faintness standing up from sitting. Postural drop
	Muscle power reduced	Sit up-Squat-Stand Test SUSS (scores of 2 or less, especially if scores falling).
Blood Tests Frequent investigations of full blood count and biochemistry (FBC, ESR, UE, Cr, CK, Glucose, LFTs) are necessary if: • patients are in a high risk category from a previous assessment • they have a BMI <15 or • the BMI is less reliable due to features outlined below*, or • there is a history of purging.	Low Sodium	(<130 mmol/L high risk) Suspect water loading or occult chest infection with associated SIADH
	Low Potassium	(<3mmol/L high risk) vomiting or laxative abuse. Nb. Low sodium and potassium can occur in malnutrition with or without water loading.
	Raised Transaminases	
	Hypoglycaemia	Blood glucose <3mmol/l (if present, suspect occult infection, especially low albumin or raised C-reractive protein).
	Raised urea or creatinine	The presence of any degree of renal impairment vastly increases the risks

		of electrolyte disturbances during re-feeding and rehydration (although both are difficult to interpret when protein intake is negligible and muscle mass low).
ECG *Recommended if BMI <15kg/m2 and if drugs which have an effect on QT interval are prescribed.*	Bradycardia	
	Raised QTc	>450ms
	Non-specific T-wave changes	
	Hypokaleamic changes.	

Adapted from Medical Risk Assessment for Eating Disorders (Treasure, J. 2009)

In addition the following features from the patient's history are known to increase the level of physical risk:

- rapid weight loss
- excess exercise with low weight
- blood in vomit
- inadequate fluid intake in combination with poor eating
- frequency of vomiting / laxative / diuretic misuse
- alcohol abuse and co-morbid physical illness.

***Limitations of BMI as a risk marker:**

- potential for deceit
- less reliable if there has been a rapid change in weight
- does not account for rapidity and quantity of weight loss
- less reliable at extremes of height
- higher risk for each BMI range for men (taller)
- less reliable if there are bulimic features such as self-induced vomiting or laxative abuse
- less reliable if fluid is restricted
- less reliable if there is physical co morbidity e.g., diabetes, pregnancy
- BMI may not be critical with regards to the risks associated with fluid and electrolyte disturbance.

1.2. Where to admit?

Patients with severe anorexia nervosa who require medical treatment are usually admitted to either:

- a gastroenterology bed for medical re-feeding
- an acute medical bed for urgent treatment (e.g. IV potassium replacement, cardiac complications, stabilization of blood glucose levels)
- a general psychiatric bed
- a regional SEDU bed
- a critical care unit (HDU or ITU).

Where a patient should be admitted depends on the clinical state of the patient and bed availability. The patient will have a number of needs all of which must be met. They include treatment for nutritional and other medical problems and management of behaviours which may compromise treatment. The management of these behaviours, which may include food avoidance and concealment, exercising, falsifying weight, excessive water drinking, to name a few, are best achieved on a SEDU. However, the patient may be so physically ill that admission to such a unit may not be possible.

In order to decide whether a patient can be admitted to a SEDU the needs of that patient must be matched with what the unit can provide.

SEDUs can provide:

- nasogastric insertion and feeding
- daily biochemistry
- frequent nursing observations
- prevention of symptomatic eating disorder behaviours (water loading, absconding, exercising etc.)
- daily ECG
- sedation of a resisting patient
- use and management of mental health legislation
- treatment of pressure sores.

SEDUs cannot provide:

- intravenous infusions
- artificial ventilation
- cardiac monitoring
- central venous pressure (CVP) lines
- a cardiac resuscitation ('crash team') team
- treatment of serious medical complications.

Hence in cases where patients require any of the services not provided by a SEDU then they should continue to be managed as a medical inpatient. Likewise, if the level of physical risk is deemed high (e.g. BMI<13) patients should be managed on a medical ward or critical care unit. In cases where an admission to a critical care unit (HDU or ITU) is required then it is the responsibility of the originating team to arrange a critical care review prior to any potential transfer. All discussions between services should be ideally done on a consultant to consultant basis.

1.3. Admission to gastroenterology (Ward 100, HRI) for planned re-feeding

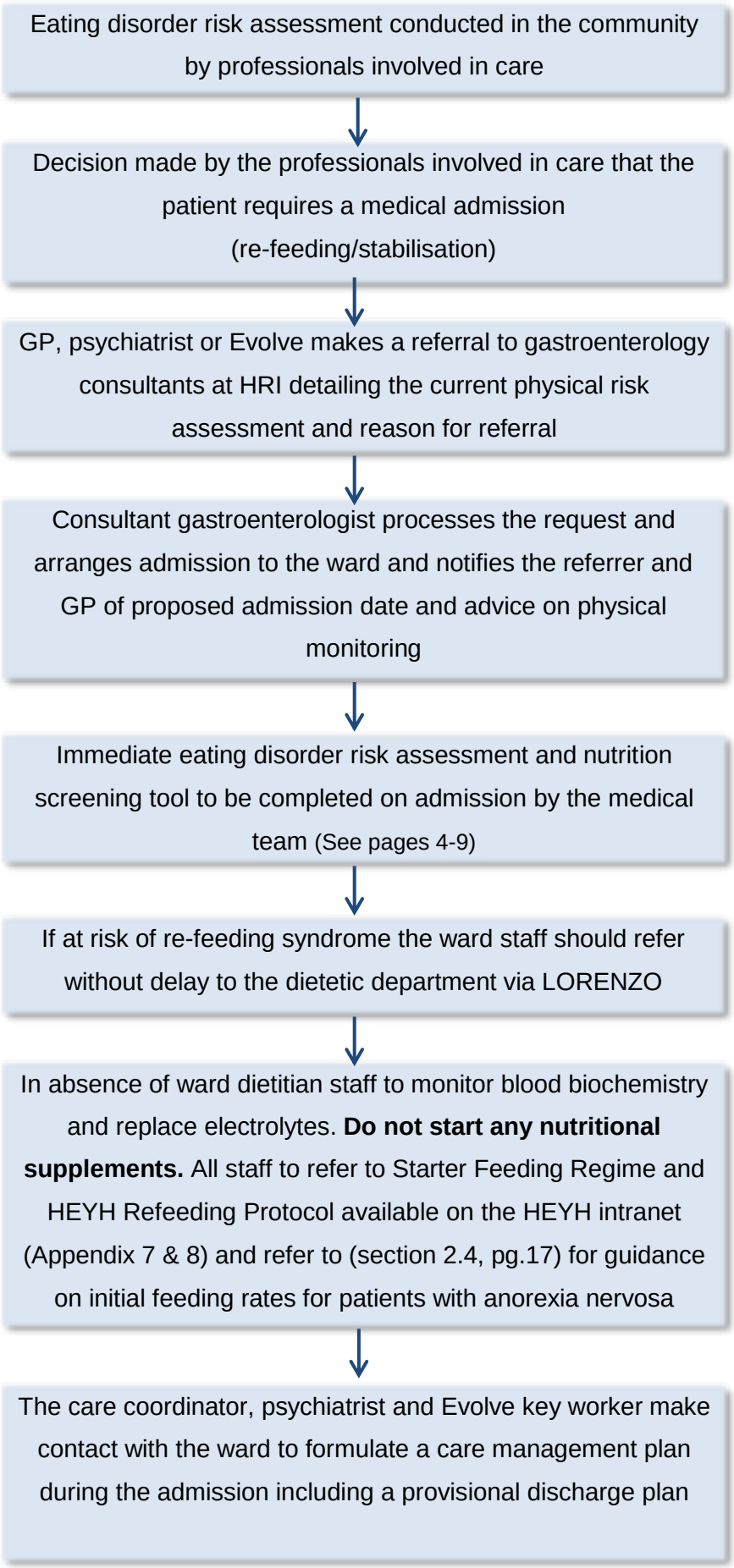
Patients who are admitted on this pathway should have a clear plan which is documented in the notes. Where possible these patients should be admitted to the gastroenterology ward at the beginning of the working week to enable the assessment process. These patients will in most cases be known to the psychiatric services and will have a Care Programme Approach (CPA) Care Coordinator, a Psychiatrist and a Key Worker from Evolve - Hull Eating Disorder Service involved in their care. These professionals should remain actively involved during a patient's admission in order to support the patient, support the care planning and monitoring process and be available to advise the ward staff on the behavioural management of the patient if necessary.

Hull patients will usually be managed on the ward with a view to stepping down into community day treatment with Evolve - Hull Eating Disorder Service or while arrangements can be made by Evolve - Hull Eating Disorder Service for a transfer to an inpatient SEDU. Patients may also be transferred to a psychiatric bed if the levels of risks of self-harm or suicide are a concern. Patients should not remain on a medical ward any longer than deemed necessary. However, occasionally there may not be a regional SEDU bed immediately available. In this situation Evolve - Hull Eating Disorder Service will monitor the situation closely in collaboration with the patient's psychiatrist and the physician managing

the patient on the ward. Evolve - Hull Eating Disorder Service will liaise with commissioners about options to access an out of area bed (outside of the region) if appropriate. Admission to local mental health unit should be considered via the Crisis Resolution Service (CRS) if mental health risks are escalating.

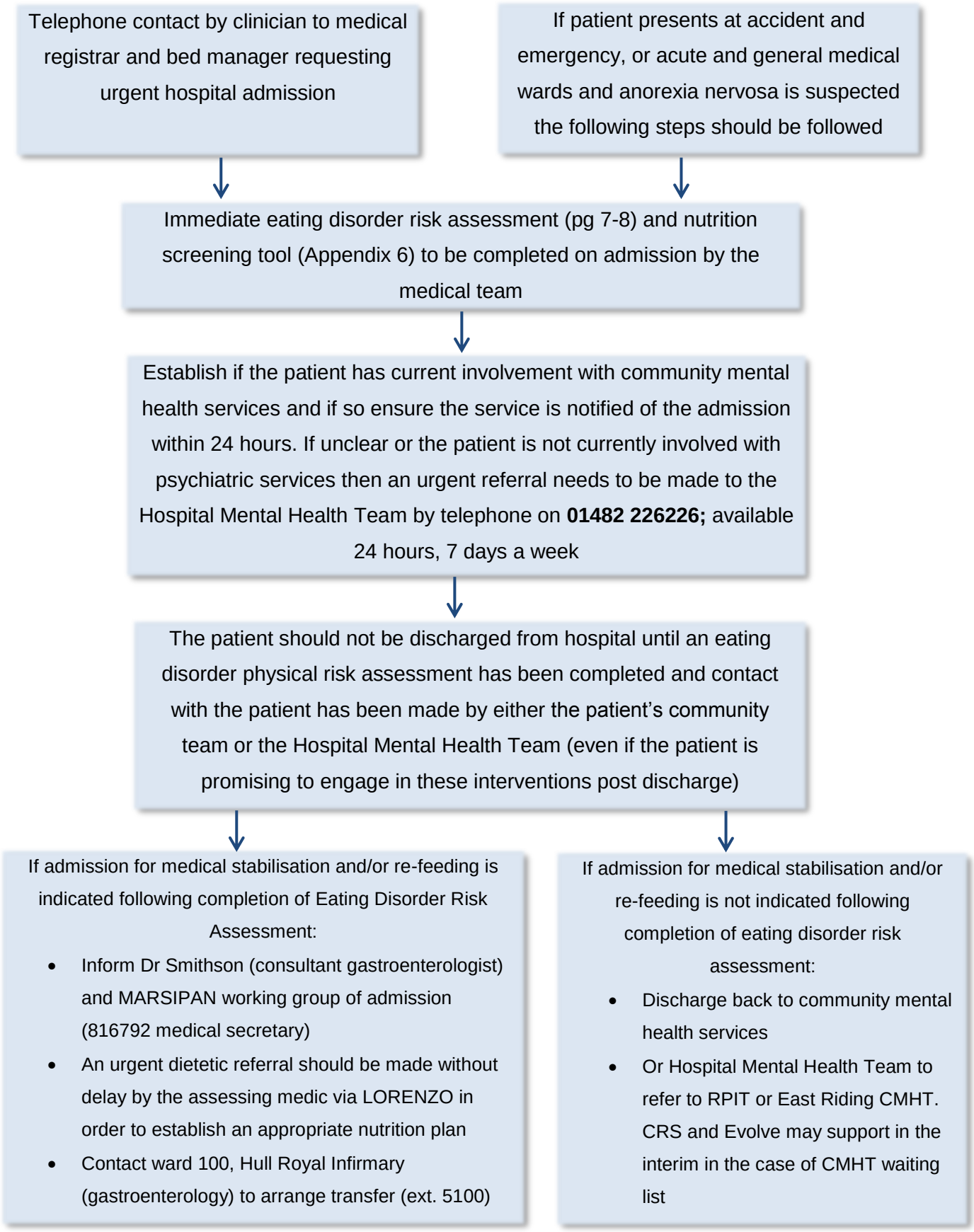
1.4 Planned admission pathway to Ward 100, HRI

Figure 1.



1.5 Admission pathway to accident & emergency, acute & general medical ward

Figure 2.



The key tasks of the in-patient medical team are to:

- safely re-feed the patient
- avoid re-feeding syndrome caused by too rapid re-feeding
- avoid under-feeding syndrome caused by too cautious rates of re-feeding
- manage, with the help of psychiatric staff, the behavioural problems common in patients with anorexia nervosa, such as sabotaging nutrition
- occasionally to treat patients under compulsion (using Section 3 of the Mental Health Act, or provisions of equivalent legislation) with the support of psychiatric staff
- manage family concerns.

The following investigations should be completed on admission to the ward

- Weigh patient and document weight on nutrition screening tool in admission paperwork. See page 22 for guidance on weighing of patients with anorexia nervosa
- Height patient and document in admission paperwork
- Calculate BMI and document in admission paperwork
- Ensure the following blood tests are taken, K+, Mg + and Po4 DAILY and baseline Zinc and Selenium
- Medic to establish blood glucose monitoring
- Prescribe Pabrinex two pairs 1 and 2 TDS for 5 days initially
- Prescribe Forceval multivitamin and mineral supplement
- K+, Mg+ Po4 are below reference range correct orally or IV as per HEYH re-feeding guidelines available on HEYH Intranet (Appendix 7)
- Keep a strict food record chart of all foods/fluids and amounts witnessed to have been taken
- **Refer to dietitian and do not provide nutritional supplements.**

2. Medical re-feeding

The preferred route of feeding is oral and if the medical risks allow, it is recommended that the patient be given the opportunity to take oral nutrition before considering other routes. However, some patients fail to gain weight when fed orally. Some may opt for oral nutritional supplements or nasogastric feeding as they may feel less responsible for the weight gain, rendering it more acceptable. Others may resist weight gain by any means and nasogastric feeding may be necessary. This should certainly occur if poor nutritional intake is life threatening. Insertion of a nasogastric tube against the will of the patient usually requires the presence of mental health nurses trained in safe control and restraint techniques, and psychiatric advice should be sought before embarking on this procedure. Nasogastric feeding should be commenced on a medical ward unless adequate monitoring and treatment is available on a SEDU.

2.1 Re-feeding syndrome

Re-feeding syndrome is a potentially fatal condition that occurs when patients who have had their food severely restricted are given large amounts of food via oral or nasogastric re-feeding as well as during parenteral nutrition. Re-feeding syndrome is characterized by fluid and electrolyte shifts, which may affect many body systems and can sometimes prove fatal. The effects of re-feeding syndrome include hypophosphatemia, hypokalaemia, hypomagnesaemia and altered glucose metabolism, deranged LFTs due to fatty liver are relatively common, but are not an indication to stop nutrition. Avoidance of the syndrome can be achieved by gradually increasing nutritional intake. Fluid retention can be due to reduced renal function and reduced metabolic rate present in malnutrition and oedema can be much greater if low serum albumin and/or dehydrated. During the early phase of feeding, even without re-feeding syndrome, patients often feel worse rather than better. Providing information and reassurance regarding stomach bloating, fluid retention and rapid weight gain can help with this. HEYH Trust adult re-feeding syndrome guideline provides further information on re-feeding syndrome. Advice on the safe implementation of nasogastric feeding can be found on the National Patient Safety Agency website. www.nrls.npsa.nhs.uk.

2.2 Assessing risk of re-feeding syndrome in anorexia nervosa

Criteria for determining patients with anorexia nervosa at risk of developing re-feeding problems adapted from NICE 2006 nutrition support in adults guidelines.

Patient has one or more of the following:

- BMI less than 16 Kg/m2
- weight loss greater than 15% within the last 3-6 months
- little or no nutritional intake for more than 10 days
- low levels of potassium, phosphate or magnesium prior to feeding
- history of alcohol abuse or drugs including insulin, chemotherapy, antacids/diuretics
- the presence of purging behaviours, such as vomiting and/or laxative misuse.

Or patient has two or more of the following:

- BMI less than 18.5 Kg/m2
- weight loss greater than 10% within the last 3-6 months
- little or no nutritional intake for more than 5 days.

(Cockfield & Philpot, 2011)

*BDA MHG Refeeding Protocol for Seriously Ill Patients with Anorexia Nervosa (*Appendix8)

2.3 Management of re-feeding syndrome in anorexia nervosa

When a patient with anorexia nervosa is admitted to a medical ward it is the sole responsibility of the Hull and East Yorkshire Hospitals Trust dietetic team to provide a nutritional support plan and advice regarding monitoring. There is substantial variation in opinion about the rate at which to start re-feeding a patient with anorexia nervosa. In response to this MARSIPAN Report 2014 provides specific guidance on the rate at which to start feeding patients with anorexia nervosa who are at risk of re-feeding syndrome (see section 2.4). The initial feeding rates advised for patients at risk of refeeding syndrome in HEYH Trust Adult Refeeding Syndrome guideline may not be applicable to patients with anorexia nervosa as they are based upon NICE 2006 nutrition support in adults guidelines which exclude eating disorders and could potentially result in under-feeding syndrome. Thus for patients with anorexia nervosa identified at risk of re-feeding syndrome (see section 2.2) refer to a dietitian for assessment of re-feeding syndrome and nutritional plan prior to commencing oral nutrition supplements and refer to section 2.4 for details on initial feeding rates. The medical team are responsible for ongoing physical monitoring and electrolyte replacement as per HEYH Trust adult re-feeding syndrome guideline available on HEYH Intranet (Appendix 7). It may also be helpful for the dietetic team to liaise with the specialist eating disorder dietitian at Evolve - Hull Eating Disorder Service.

Table 4. Re-feeding Risk Factors

Lower calorie intakes (5-10kcal/kg/day) are sometimes appropriate under the following circumstances:	• significant ECG abnormalities
	• substantial electrolyte or renal abnormalities at baseline (before feeding starts)
	• active comorbidities, infections etc.
	• significant comorbidities, especially cardiac including heart failure
	• very low initial weight (BMI <12) may require fewer calories initially
	• patient has not yet started thiamine and other vitamin replacements as per HEYH Trust adult re-feeding guideline (Appendix 7)
	• when beginning enteral (e.g. nasogastric) feeding.

Adapted from MARSIPAN Report 2014

2.4 Commencing re-feeding

In medical inpatient settings it is sometimes prudent to use lower starting calorie intakes especially for patients with known risk factors for re-feeding syndrome (Table 4). In the presence of these re-feeding risk factors patients should be started on fewer calories (5-10 kcal/kg/day) and frequently assessed (at least 12 hourly) so that calories can be increased in the absence of re-feeding syndrome and under-feeding syndrome can be avoided. If low initial calorie levels are used (5–10 kcal/kg/day), clinical and biochemical review as per HEYH Trust adult re-feeding syndrome guidelines (Appendix 7) should be carried out twice daily, with calories increased in steps to 20 kcal/kg/day within 2 days unless there is a contraindication. The decision to initiate low-calorie feeding should be made in consultation with an expert physician in clinical nutrition and a nutrition support team. Minor or even moderate abnormalities of liver function (e.g. alanine transaminase up to ten times the upper limit of the normal range) should not delay increased feeding.

For patients at lower risk of re-feeding syndrome who are not displaying re-feeding risk factors, initial feeding may be started at 15-20 kcal/kg/day and energy intake increased by 10-20% every 2-3 days until basal metabolic requirement (BMR) intake is achieved. Once BMR intake is established and the patient is physically stable, it is recommended that 10% is added if bed-bound and 15–20% if mobile. Once this is achieved, an extra 400kcal can be added to facilitate weight gain. Careful monitoring of blood glucose is essential during this period. Note that hypoglycaemia, pyrexia or hypothermia, and either a rise or fall in white blood count may indicate hidden infection rather than lack of food.

Avoidance of re-feeding syndrome can also be encouraged by restricting carbohydrate calories and increasing dietary phosphate. When patients are prescribed oral or enteral nutritional supplements, consideration should be given to the use of high-calorie supplements (e.g. 2kcal/ml) as they have lower levels of carbohydrate and may therefore be less likely to produce re-feeding syndrome. Moreover, the diet should be rich in phosphate (e.g. milk) to help avoid the syndrome. The total fluid intake can easily exceed safe levels, and the recommendation is a maximum total of 30–35 ml/kg/24 h of fluid from all sources, as re-feeding oedema is well recognised.

3. Behavioural management of patients with anorexia nervosa on a medical unit

If a patient is resisting the advised feeding regime or the required physical monitoring, or is presenting in an extremely agitated state the supporting psychiatrist should be notified without delay and a collaborative plan should be implemented. All patients working with the mental health service will have a risk management plan available on LORENZO to guide their crisis management. The use of the Mental Health Act may need to be considered. If this occurs outside of office hours the hospital mental health team or the crisis resolution service should be contacted (see contact list).

MARSIPAN Report 2014 offers advice on drug treatment during assisted nutrition in patients extremely agitated and resistant to treatment.

Patients with anorexia nervosa are subject to an extreme compulsion to pursue thinness. This compulsion has been likened to addiction to heroin and patients will take terrible risks in order to satisfy it. They may deny that they have the compulsion, to others and sometimes to themselves, and hardly be aware of their behaviours. These behaviours include falsifying weight by means such as drinking water before weighing, wearing weights or other items and gripping the weighing machine with long toes to increase weight. They may engage in obsessive exercise such as running up and down hospital towers, standing, wiggling toes and generally walking around. They may wear very little clothing in order to shiver. They may sabotage attempts at feeding by disposing of food, running nasogastric feed into the sink or a pillow and turning off drips. They may try and run away. They may vomit in the toilets. They may recruit friends and relatives to dispose of food or provide it for binges. A patient engaging in these behaviours can be very difficult to manage. At the same time, such behaviours may contribute to deterioration and sometimes death.

3.1 Use of the Mental Health Act

Under the Mental Health Act feeding is recognised as treatment for anorexia nervosa and can be done against the will of the patient as a life-saving measure. The Mental Health Act should be considered from the outset, where a patient's capacity is doubted or if they object to the care plan. If medical staff suspects that this course of action may be necessary, then the community mental health team should be contacted within 24 hours. If there is a need to contact the community mental health team for a mental health assessment out of hours, the medical ward can contact the crisis resolution service who can access the emergency duty team to provide the assessment. If the patient is not known to community mental health services the current pathway advises the ward to contact the hospital mental health team. If the medical consultant is not satisfied with the opinion given, there should be direct contact between the medical consultant and the consultant psychiatrist. A second opinion may be sought and the issue escalated until the patient's treatment is safe. Likewise if psychiatric staff believes that the patient is being denied treatment under the Mental Health Act for any reason, the matter must be similarly escalated between consultants and reasons documented for decisions made. Medical consultants can no longer be the responsible clinician for a patient detained under the Mental Health Act and this duty lies with the consultant psychiatrist from the psychiatry service involved in care. The responsible clinician is the approved clinician who has overall responsibility for the patient's case and will give direction for the treatment under compulsion; although the medical treatment will continue to be provided by the medical and nursing staff on the ward that are responsible for this treatment. Detailed information about compulsory treatment can be found in MARSIPAN Report 2014.

3.2 Nursing assessment and care planning

In view of the behaviours detailed above it is important that on admission the above behaviours are considered, included and clearly documented in the nursing care plan. Because patients may search for opportunities to sabotage the refeeding process or compensate for nutrition received it is vital that any expectations are made clear to the patient and agreed boundaries are communicated clearly between nursing shifts.

Points to consider as detailed in MARSIPAN Report 2014 are outlined in Table 5 alongside suggested management strategies of moderate (BMI 13 -15) and high risk patients (BMI <13).

The nursing care plan should be devised collaboratively with all professionals involved and must take into account the patient's capacity, level of medical risk and Mental Health Act status. If restrictions are necessary please seek guidance from the HEYH Trust safeguarding team accessed through the Hull Royal Infirmary switchboard (01482 328541).

Consideration should be given to formulating a collaborative plan for managing behaviours which are contributing to a patient's medical risk. The plan should be written and agreed between the patient and the staff involved in their care. If the patient does not adhere to the management plan and the medical risks are increasing, the use of The Mental Health Act would need to be considered.

Staff should advise and encourage a patient to stick to their management plan. Measures taken to manage behaviour should be considered in relation to the current level of physical risk and if the patient is being treated under the Mental Health Act.

Table 5. Points to consider in care plan formulation

Severe Anorexia		
Risk	**BMI <13 high risk**	**BMI 13-15 moderate risk**
Bed Rest *Required in view of compromised physical state of patient*	24 hours for most patients (consider deep vein thrombosis prophylaxis). Risk assessment for tissue viability. Liaise with tissue viability nurse regarding a special mattress	Periods of bed rest may be introduced, Rest in social settings
Fluids *Often patients drink large amounts of fluid causing dangerous overloading and electrolyte disturbance, therefore fluid balance should be carefully monitored and excessive intravenous provision avoided*	Input and output to be measured (supervised) Liaise with Dietitian. Water supply in room to be turned off if water loading is problematic	Liaise with dietitian regarding fluid balance. May need to consider turning off water supply in room
Supervise showers and washes *Owing to patient's compromised physical state, to monitor for abnormal behaviours*	Supervised washes ONLY within bedroom area recommended	Supervised showers recommended to monitor physical well-being and activity
Toilet supervision *Owing to patient's compromised physical state, to monitor for abnormal behaviours*	Supervised to ensure physical safety and accurate fluid balance	Unsupervised if fluid balance monitoring is not required
Meals *Patients should be encouraged to take an appropriate diet, in consultation with dietetic staff, and to supplement nasogastric feeding*	Liaise with dietitian regarding nasogastric feeding. Supervised meals and up to 30 minutes post meal support. All meals to be advised by a dietitian. Monitor for effects of refeeding syndrome. (See HEYH refeeding guideline)	Supervised meals and up to 30 minutes post meal support. All meals to be advised by a dietitian
Leave	No leave when on medical	Short periods of leave in a

Patients not under the Mental Health Act cannot legally be prevented from leaving the ward. However, it should be recognised that they may be using these opportunities to exercise and in other ways sabotage weight gain	ward	wheelchair where appropriate (depending on physical wellbeing), no unaccompanied leave
Physical observations *Patients are vulnerable to hypothermia and hypoglycaemia; as well as carrying out physical observations, ensure room is kept warm*	Blood pressure, pulse and core temperature (four times daily) Blood glucose four times daily before meals using BM machine and finger prick	Blood pressure, pulse and core temperature (twice daily) Blood glucose (daily depending on wellbeing).

Adapted from MARSIPAN Report 2014

3.3 Mental health issues

Mental health state should be closely observed, focusing on ideas of self-harm and/or ideas of suicide as well as ideas and behaviours aimed at weight loss. The mental health risk may increase with treatment due to patients feeling physically better and increasing levels of distress with weight gain. Any change in a patient's mental health state should always be reported to the psychiatric team involved.

Behavioural indicators which would need to be communicated to the psychiatric team may include tampering with feed, self-harm, extreme distress, aggression and or agitation or excessive exercise.

Additional staff to provide 1:1 observation may be needed on the ward in order to manage a patient's behaviour and reduce the risk. This should be arranged by the ward manager/ sister, using staff which have received training in supporting patients with anorexia nervosa where possible. The cost of additional support on the ward would be met by the ward.

3.4 Weighing of patients with anorexia nervosa

Weight stabilisation for patients with anorexia nervosa is likely to be one of the main aims of their hospital admission and needs to be monitored closely and documented accurately and consistently. The patient may find this process distressing. Some patients may have been closely monitoring their weight prior to their admission perhaps weighing themselves several times a day in order to guide their daily nutritional intake or exercise regime. Other patient may totally avoid weighing themselves or may use methods such as measuring or trying on certain items of clothing to make sure they still fit to obtain a sense of reassurance that they perhaps have not gained any weight.

In the hospital environment this sense of control over monitoring their own weight and shape has been lost and becomes the task of the nursing and dietetic staff. Patients may be tempted to manipulate their weight on the ward due to intense fear about actually gaining weight.

It may be useful to have a discussion with the patient on admission about their expected weight monitoring and come to some agreements about the boundaries around this for example:

- Before weighing, check if the patients want to be told their weight
- Weigh in a private area on the same calibrated scales
- Weigh in light night wear or a gown without slippers, socks or dressing gown
- Agree the days when weighing will take place, ideally the time should be first thing in the morning before food and drink
- Try and avoid making comments at the time of weighing about weight gain or loss but offer general support acknowledging any distress
- It is advised to document the weight in notes which are kept away from the bed space in order to avoid patients tampering with the numbers.

3.5 Height of patient

This should be taken on admission ensuring that the patient is standing straight and not slouching as this can be a method to influence their BMI Calculation. Height should be documented clearly in the notes.

4. Review, transfer and discharge of patients

It is extremely important that the patient does not stay in the medical setting longer than necessary. Regular review meetings should take place to include the patient and family, the managing physician, a ward nursing staff representative, the patients CPA care coordinator, psychiatrist and a representative from Evolve - Hull Eating Disorder service. The details of the review meetings and any agreed action should be clearly documented in the patient's notes. At each meeting progress should be discussed to determine whether the patient continues to require inpatient medical intervention that cannot be provided in the community.
Patients may become anxious about being transferred to another service e.g. SEDU or general psychiatric bed which may trigger compulsions relating to weight loss. Reassurance should be given and extra monitoring considered.

The receiving service will require up to date information regarding the patient's physical status and recent behavioural observations. A discharge report should be produced and should be communicated to the receiving service prior to the patient being transferred. Transport to a SEDU should be arranged by the discharging hospital ideally in an ambulance if the patient is physically unstable.

The MARSIPAN Report (2014) highlighted a number of cases when a patient with severe anorexia nervosa had died shortly after being discharged from hospital after an initial screening assessment. Indeed, patients with severe anorexia nervosa are sometimes admitted to a medical unit in a poor physical state (e.g. BMI<13, Potassium <2.5 mmol/l) and discharged home as soon as routine physical investigations returned to the normal range. This represents extremely dangerous practice which is often motivated by the need to clear beds rather than by the clinical needs of the patient. Patients with severe anorexia nervosa should not be discharged without the physician in charge consulting with the psychiatric services involved in their care or the liaison psychiatrist in the cases of uncertainty about who is supporting the patient in the community. The purpose of this communication would be to assess physical and psychiatric risk factors and ensure seamless care for the patient.

5. The MARSIPAN expert working group

The MARSIPAN Report (2010; 2014) advised that trusts should establish a MARSIPAN expert working group to meet quarterly to discuss clinical issues, training, and develop care pathways for patients with anorexia nervosa.

Eating Disorders Nutrition Physician

The MARSIPAN reports recommend that every hospital that a patient with severe anorexia nervosa is admitted have a consultant physician with all of the following qualities:

- an interest in managing patients with anorexia nervosa
- expertise in clinical nutrition and nutrition support and be capable of leading a multidisciplinary nutrition support team
- access to in-patient beds
- an association with a specialist in eating disorders psychiatry
- training in the clinical problems (medical and psychiatric) of patients with severe anorexia nervosa, and their management.

This consultant physician would be made aware whenever a patient with an eating disorder is admitted to the hospital, would consult as soon as possible and take over care in selected cases in which re-feeding is a significant part of treatment. In hospitals where a nutrition support team is established, the consultant physician would normally be a part of that team.

Current members:

- Dr J Smithson, Consultant Gastroenterologist, Ward 100, Hull Royal Infirmary
- Dr Staicu, Consultant Gastroenterologist - Nutrition Team

Psychiatrist

Patients with anorexia nervosa admitted to a medical ward should have the full and ongoing support of a consultant psychiatrist, who should form a partnership with the physician. Input from psychiatric trainees is welcome, but must be backed by involvement of the psychiatrist and regular contact between the two consultants. It is essential that psychiatrists providing support in this way be fully conversant with severe eating disorders and their management through specific training and experience.

Psychiatric support will be provided by the patient's local community psychiatrist. If a patient is waiting to be admitted to a SEDU then the receiving specialist eating disorder psychiatrist may be available for advice.

Current members:

- Dr Merolli, Associate Specialist
- Dr Hamvas, Consultant Psychiatrist
- Dr Chandranath

Liaison Psychiatry

The liaison psychiatrist within the hospital mental health team are available for consultation when there are patients who are newly presenting with an eating disorder and who are not under a community psychiatrist.

Current members:

- Dr Z Moggorossy, Consultant Psychiatrist
- Dr S Morris, Consultant Psychiatrist
- Kerrie Harrison (Team Leader), Hospital Mental Health Team

Dietetics

The lead dietitian will be skilled in re-feeding provide guidelines on the refeeding of patients and will be consulted when a patient with anorexia nervosa is admitted to the hospital. The dietitian will liaise with specialist services where necessary.

Current Members:

- Penny Kingston, Lead Dietitian, Hull Royal Infirmary
- Carl Robinson, Dietitian, Hull Royal Infirmary
- Jessica Parkin, Specialist Eating Disorder Dietitian, Evolve - Hull Eating Disorder Service

Nursing/Specialist Practitioner

Current Members:

- Dianne Backhouse, Sister, Ward 100, Gastroenterology, HRI Ext. 5811
- Kim Flockton, Eating Disorder Practitioner, Evolve Hull Eating Disorder Service
- Katharine Jones, Eating Disorder Practitioner, Evolve Hull Eating Disorder Service
- Caroline Lewis, Clinical Psychiatric Nurse, Single Point of Access East Riding of Yorkshire
- Jenny Hancock, Perinatal Mental Health Team

6. Audit and monitoring compliance

The Hull MARSIPAN Guidelines will be monitored by the MARSIPAN expert working group with annual audits to monitor adherence to the recommendations made.

Audit standards will include:

- Establishment of a MARSIPAN expert working group
- MARSIPAN expert working group to meet quarterly and minutes to be documented and distributed to all members
- Assessment and management of medical inpatients with anorexia nervosa as outlined by the MARSIPAN report (2010).

Audit results will be presented to the MARSIPAN expert working group audit meeting, which will agree actions arising from the recommendations, and monitor the progress of the actions.

7. Glossary of terms

- **MARSIPAN** – Management of Really Sick Patients with Anorexia Nervosa
- **HEYH** – Hull and East Yorkshire Hospital Trust
- **GP** – General Practitioner
- **SEDU** – Specialist Eating Disorder Unit
- **BMI** – Body Mass Index
- **HDU** – High Dependency Unit
- **ITU** – Intensive Treatment Unit
- **IV** – Intravenous
- **ECG** – Electrocardiogram
- **CPA** – Care Program Approach
- **CRS** – Crisis Resolution Service

8. Reference List

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders:DSM-5.Washington,D.C.American Psychiatric Association

Cockfield, A. and Philpot, U., (2011) *BDA Mental Health Group's Re-feeding Protocol for Seriously Ill Patients with Anorexia Nervosa*. The British Dietetic Association, Birmingham

MARSIPAN, (2010) *MARSIPAN: Management of Really Sick Patients with Anorexia Nervosa.* Royal College of Physicians

MARSIPAN, (2014) MARSIPAN: Management of Really Sick Patients with Anorexia Nervosa 2nd Edition. College Report CR189 Available from: rcpsych.ac.uk/usefulresources/publications/collegereports/cr/cr189.aspx

Mehler, P & Andreson, A. (2010) Eating Disorders - A Guide to Medical Care and Complications. The John Hopkins University Press

Mental Health Act Commission (1997) *Guidance on the treatment of Anorexia Nervosa under the mental health act 1983*. Mental Health Act Commission

National Institute for Clinical Excellence (2004) *Eating Disorders: Core interventions in the treatment and Management of Anorexia Nervosa, Bulimia Nervosa and related Eating Disorders (Clinical Guidance CG9)* British Psychological Society and Gaskell

National Institute for Clinical Excellence (2006) *Nutrition Support in Adults: Oral Nutrition, enteral tube feeding and parenteral nutrition (Clinical guideline CG33)*. National Collaborating Centre for Acute Care at the Royal College of Surgeons of England

Treasure, J., (2009) *A Guide to the Medical Risk Assessment for Eating Disorders*, Kings College, London

Appendix 1.

Regional inpatient specialist eating disorder units

- **The Yorkshire Centre for Eating Disorders**
  Newsam Centre
  Seacroft Hospital
  Leeds
  LS146WB

  Tel: 0113 855640

  Consultant Psychiatrist: Professor John Morgan / Dr Rhys Jones

- **Naomi Unit**
  The Retreat York
  Hesslington Road
  York YO105BN

  Tel: 01904 412551

  Consultant Psychiatrist: Dr Andrea Brown

- **Rharian Fields**
  The Gardens
  2nd Avenue
  Grimsby
  DN331NU

  Tel: 01472 302482

  Consultant Psychiatrist: Dr Akin

- **Riverdale Grange**
  93 Riverdale Road
  Ranmoor
  Sheffield
  South Yorkshire
  S103FE

  Tel: 01142 302140

  Consultant Psychiatrist: Dr Thomas

Appendix 2.

Local mental health service contact details

- **Evolve Hull Eating Disorder Service**
  267 Beverley Road
  Hull, HU5 2ST

  Tel: 01482 344082

- **The Recovery and Psychological Intervention Team**
  John Symons House
  Park Row
  Park Street
  Hull, HU3 2RA

  Tel: 01482 335670

- **The Mental Health Liaison Team**
  Department of Psychological Medicine
  Gladstone Street
  Anlaby Road
  Hull

  Tel: 01482 226226

- **Crisis Resolution and Home Treatment Team (Hull)**
  Miranda House
  Gladstone Street
  Hull

  Tel: 01482 335787

Appendix 3.

MARSIPAN working party members contact list 2016

- **Dr J Smithson**
  Consultant Gastroenterologist
  Hull Royal Infirmary
  Ward 100
  Anlaby Road
  Hull, HU3 2J2

  Tel: 01482 816792
  Jacquelyn.smithson@hey.nhs.uk

- **Dr Staicu**
  Consultant Gastroenterologist
  Nutrition Team
  Hull Royal Infirmary
  Anlaby road
  Hull, HU3 2J2

  Tel: 01482 816792
  Anca.staicu@hey.nhs.uk

- **Dr Merolli**
  Consultant Psychiatrist
  Recovery and Psychological Intervention Team
  John Symons House
  Park Row
  Park Street
  Hull, HU2 8TB

  Tel: 01482 335670
  rmerolli@nhs.net

- **Dr Hamvas**
  Consultant Psychiatrist
  Westlands
  Wheeler Street
  Anlaby Road
  Hull, HU3 5QE

  Tel: 01482 335647
  Szilard.hamvas@nhs.net

- **Dr Chandranath**
  Westlands
  Wheeler Street
  Anlaby road
  Hull, HU3 5QE

  Tel: 01482 335647
  Desmond.chandranath@nhs.net

- **Dr Z Moggorossy**
  Consultant Psychiatrist
  Department of Psychological medicine
  Clarendon House
  Park Street
  Hull, HU2 8TD

  Tel: 01482 617735
  Zslot.mogyorosy@nhs.net

- **Dr S Morris**
  Consultant psychiatrist
  Department of Psychological Medicine
  Hull Royal Infirmary
  Anlaby Road
  Hull, HU3 2J2

  Tel: 01482 675376
  Stella.morris@nhs.net

- **Penny Kingston**
  Lead Dietitian
  Hull Royal Infirmary
  Anlaby Road
  Hull, HU3 2J2

  Tel: 01482 875875
  Penny.kingston@hey.nhs.uk

- **Jessica Parkin**
  Specialist Eating Disorder Dietitian
  Evolve - Hull Eating Disorder Service
  267 Beverley Road
  Hull, HU5 2ST

  Tel: 01482 344083
  Jessica.parkin1@nhs.net

- **Dianne Backhouse**
  Sister
  Ward 100
  Gastroenterology
  Hull Royal Infirmary
  Anlaby Road
  Hull, HU3 2J2

  Tel: 01482 816792
  Dianne.backhouse@hey.nhs.uk

- **Kim Flockton**
  Eating Disorder Practitioner
  Evolve - Hull Eating Disorder Service
  267 Beverley Road
  Hull, HU5 2ST

  Tel: 01482 344083
  Kim.flockton@nhs.net

- **Katharine Jones**
  Eating Disorder Practitioner
  Evolve - Hull Eating Disorder Service
  267 Beverley Road
  Hull, HU5 2ST

  Tel: 01482 344083
  Katharine.jones2@nhs.net

- **Caroline Lewis**
  Clinical Psychiatric Nurse
  Single Point of Access
  Trust HQ
  Willerby
  East Yorkshire, HU10 6ED

  Tel: 01482 336200
  Caroline.lewis1@nhs.net

- **Jenny Hancock**
  Perinatal Mental Health Team
  Humber NHS Foundation Trust
  Trust HQ
  Willerby
  East Yorkshire, HU10 6ED

  Tel: 01482 617735
  Jenny.hancock2@nhs.net

Appendix 4.

MARSIPAN – Management of Really Sick Patients with Anorexia Nervosa, Royal College of Psychiatrists, 2010

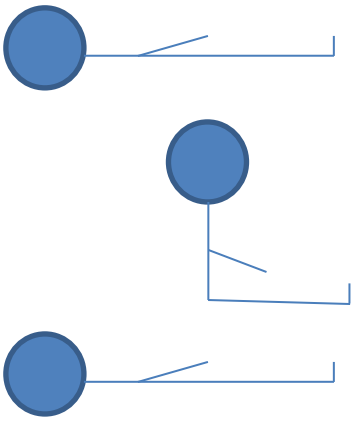
Key Points for Hospital Staff

1. **Physical Assessment**
   - Patients near to death often look well
   - BMI range: <13 high risk
   - Physical examination, including muscle power (Sit up–Squat–Stand test, below)
   - Blood tests: especially electrolytes, glucose, phosphate, Mg, liver function tests, full blood count
   - Electrocardiogram, especially QT interval.

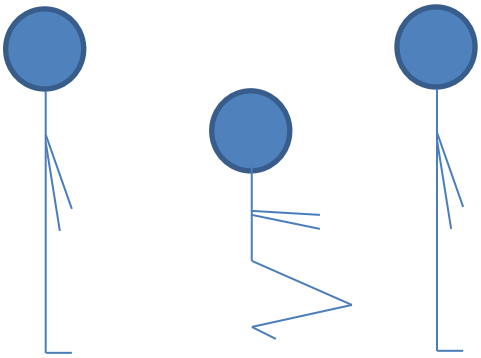
2. **Nutritional Issues**
   - Consult a medical expert in nutrition
   - Replace thiamine early and prescribe a vitamin and mineral supplement
   - Avoid re-feeding syndrome by slow re-feeding and close monitoring in vulnerable patients
   - Avoid underfeeding syndrome by frequent (12-hourly) reassessment and increasing calories as soon as safe.

3. **Psychiatric issues**
   - Transfer to a specialist eating disorders unit (SEDU) if possible regular liaison with a psychiatrist
   - Be aware of sabotaging behaviour such as falsifying weight, water drinking, exercising
   - Use only experienced and trained nurses to observe
   - Ask psychiatrist to consider Mental Health Act section if patient fails to improve.

Sit up-Squat-Stand Test (to detect muscle weakness)



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

Appendix 5.

South London and Maudsley
NHS Foundation Trust

KING'S College LONDON

www.eatingresearch.com
from the Section of Eating Disorders
at the Institute of Psychiatry and
the Eating Disorders Unit at SLaM

A GUIDE TO THE MEDICAL RISK ASSESSMENT FOR EATING DISORDERS

by Professor Janet Treasure (2009)

designed for use with patients with eating disorders:
outpatients in primary and secondary care, medical inpatients, general psychiatric inpatients and eating disorder inpatients.

People with eating disorders, in particular those with anorexia nervosa, are at high risk in terms of their own health and safety. They have the highest mortality of any psychiatric illness. Both their physical state and suicidal behaviors contribute to this risk. Risk to others is less of a concern.

The factors involved in the assessment of risk in people with eating disorders include:
- medical risk
- psychological risk
- psychosocial risk
- insight/capacity and motivation.

A proxy measure for insight/motivation is the response to treatment. If medical risk is high and there is no response to outpatient treatment, it is necessary to measure capacity and consider the use of mental health law.

This Guide aims to help in the understanding of :
1. **the medical risk** - how to assess it, evaluate it and where to refer.
2. **the use of the Mental Health Act** in treatment.

MEDICAL RISK

The medical risk arises from a combination of the restrictive behaviours (food and in some cases fluid) and the compensatory behaviours.

Features in history that indicate medical risk are:
- excess exercise with low weight
- blood in vomit
- inadequate fluid intake in combination with poor eating
- rapid weight loss
- factors which disrupt ritualised eating habits (journey/ holiday/exam).

Body mass index (weight/height^2) is a proxy measure of medical risk in anorexia nervosa (see *Maudsley Body-Mass Index Table*). Metabolic changes are most problematic if weight control measures such as vomiting and laxative abuse are used. Neither BMI nor blood tests alone are adequate markers of risk. Screening for risk with an examination of muscle strength, blood pressure, pulse rate, peripheral circulation and core temperature is essential.

Limitations of BMI as a risk marker for anorexia nervosa:
• potential for deceit
• less reliable if rapid change in weight
• less reliable at extremes of height
• higher risk for each BMI range for men (taller)
• children have a BMI range which changes developmentally*
• less reliable if bulimic features
• less reliable if fluid restriction
• less reliable if physical comorbidity
• BMI not critical with regards to risks associated with fluid and electrolyte balance.

*In children and adolescents, the cut off for BMI to make the diagnosis is a weight and height below the second centile of BMI. It is possible to get centile charts off the web for the USA (the third centile is depicted) – *www.cdc.gov/growthcharts/* Also, Cole and colleagues have produced charts for population norms.

Brief essential medical examination

We recommend the following for a rapid risk assessment, repeated frequently as necessary:

• BMI
• blood pressure and pulse rate, lying and standing
• muscle strength
• examination of the skin and temperature for those at high risk for dryness
• a full physical examination looking for eg infection (note can be with normal temperature) and signs of nutritional deficiency.

Tests for Muscle Strength (see table below for scoring)
1. The stand up/squat test:
The patient is asked to squat down on her haunches and is asked to stand up without using her arms as levers if at all possible.
2. The sit up test:
The patient lies flat on a firm surface such as the floor and has to sit up without, if possible, using her hands.

Tests for Hydration
The sign to notice is dizziness or faintness standing up from sitting.
Postural drop, ie the difference between lying and standing blood pressure and heart rate.

Investigations
1. Frequent investigations of full blood count and chemistry (FBC, ESR, UE, Cr, CK, Gluc, LFTs) are necessary if:
• patients are in a high risk category from a previous assessment
• they have a BMI <15 or
• the BMI is less reliable due to features outlined above, or
• there is a history of purging.

2. ECG is recommended if BMI < 15kg/m^2 and if drugs which have an effect on QT interval are prescribed.

3. Any other appropriate physical investigation pertinent to physical state.

The table on the next page gives values of concern for each part of the assessment and is followed by a management protocol based on risk.

SYSTEM	Test or Investigation	Concern	Alert
Nutrition	BMI	<14	<12
	Weight loss/week	>0.5kg	>1.0kg
	Skin Breakdown	<0.1cm	>0.2cm
	Purpuric rash		++
Circulation	Systolic BP	<90	<80
	Diastolic BP	<70	<60
	Postural drop (sit–stand)	>10	>20
	Pulse Rate	<50	<40
Musculo-skeletal (squat and sit-up tests)			
	Unable to get up without using arms for balance	++	
	Unable to get up without using arms as leverage	++	
	Unable to sit up without using arms as leverage	++	
	Unable to sit up at all		++
Temperature		<35C <98.0F	<34.5C <97.0F
Bone Marrow	WCC	<4.0	<2.0
	Neutrophil count	<1.5	<1.0
	Hb	<11	<9.0
	Acute Hb drop		++
	(MCV and MCH raised - no acute risk)		
	Platelets	<130	<110
Salt/water Balance	K+	<3.5	<3.0
	2. Na+	<135	<130
	3. Mg++	0.5-0.7	<0.5
	4. PO4–	0.5-0.8	<0.5
	5. Urea	>7	>10
Liver	Bilirubin	>20	>40
	Alkpase	>110	>200
	AsT	>40	>80
	ALT	>45	>90
	GGT	>45	>90
Nutrition	Albumin	<35	<32
	Creatinine Kinase	>170	>250
	Glucose	<3.5	<2.5
Differential Diagnosis	TFT, ESR		
ECG	Pulse rate	<50	<40
	Corrected QT interval (QTC)		>450msec
	Arrythmias		++

• The baselines for these tests vary between labs. Any abnormal result is an indication for concern and monitoring.
• A tachycardia in the presence of signs and investigations of severe risk may be a harbinger of imminent cardiovascular collapse.

1. Scores that do not fall into the risk areas
Stable. Regular review and monitoring of above parameters with routine referral to eating disorders unit/secondary services depending on local resources.
Unstable. If weight is falling ask the person with anorexia nervosa to come up with plan to ensure that nutritional state does not fall into the risk areas. Regularly review the implementation of this plan.

2. Score/s in the concern area
Regular review of parameters (c.weekly) and assessment of capacity with urgent referral to specialised eating disorders team and appropriate medical intervention if needed. As this signifies medical risk this should also be shared with the carer.

3. Score/s in the alert area
Immediate contact and referral to eating disorders unit and physicians if outpatient with assessment of capacity. The patient will need urgent specialist and medical assessment. If inpatient – immediate contact with on-call physicians.

Useful tips

Potassium
This is often chronically low in purging, even down to values <1.5 mmol/L, with no immediate sequelae. Acute changes are more dangerous. Regular feeding with control of purging is usually sufficient for re-establishment of normal levels. If potassium replacement is required, because it is usually caused by a loss of gastric secretion, it should be done with oral replacement with a salt and water replacement such as diorylate with regular electrolyte review and examination of fluid and water status (measurement of urea and lying and standing blood pressure).

Refractory hypokalaemia can also be due to concurrent low magnesium or calcium, and thus these levels may need checking and rectifying. Serum potassium levels may remain low even with potassium supplements if vomiting persists. A proton pump inhibitor such as lanzoprazole to inhibit gastric acid secretion may reduce metabolic alkalosis and help to conserve potassium but should be a second line measure.

Phosphate
Rebound hypophosphataemia can occur on initial refeeding as it is sequestered by carbohydrate metabolism. It can be lethal. Initial refeeding including foods with high phosphorus content – eg milk-based products (>2 pints/day) may be helpful. If necessary about 4 days of oral phosphate supplementation may also be needed.**
** In anorexia nervosa it is rare for there to a an isolated deficiency of any mineral or vitamin and therefore multivitamin and mineral replacement is to be recommended eg Forceval 2 capsules day or Sanatogen Gold

Refeeding oedema
Peripheral oedema is common and harmless during initial refeeding. It resolves within a few weeks spontaneously and rarely needs treatment. It must however be distinguished from oedema secondary to heart failure.

Dehydration
This can rapidly lead to medical crisis through circulatory and renal failure. All patients should be fully assessed for dehydration. Take a corroborative history of fluid intake and signs of decompensation (dizziness/fainting). The physical examination should include assessment of skin turgicity, ocular pressure and lying and standing blood pressure. Regular electrolyte levels should be checked for high urea, creatinine, sodium and potassium levels. Oral replacement is preferable.

Bradycardia
Investigation: ECG, look for heart block or prolonged QT. Measure U & E. If <40 admit. Rewarm (if hypothermic) and give a can of Ensure. Monitor HR overnight.

THE USE OF THE MENTAL HEALTH ACT (MHA) IN TREATMENT OF ANOREXIA NERVOSA

Mental Health Act, Mental Capacity Act and Medical Intervention:

If a patient is at medical risk but does not consent to treatment they must be:
1. assessed for capacity
2. treated under the appropriate legal criteria.

Capacity is related to a patient's ability to:
• understand information relevant to the specific decision;
• be able to understand the nature of their illness and understand the implications of non-treatment
• be able to rationally weigh up the pros and cons of treatment;
• thus make an informed decision regarding their management and communicate their decision.

Under the New MCA (2005) people lacking capacity may be treated if it is in their best interest, if it is the least restrictive option, if it is not depriving them of their liberty and there is no advanced refusal or objection by a donee or court of protection.

Treatment of people with severe anorexia nervosa who are not consenting to treatment for their mental disorder will in most cases require use of the MHA as it involves deprivation of liberty and compulsory refeeding. (See MCA 2005 and Deprivation of Liberty Safeguards). Treatment under the Mental Health Act can be given under Section 2 or 3, if they meet the legal criteria (see Code of Practice) whether or not they lack capacity. If after three months from the start of their detention they either lack capacity or object to treatment, SOAD authorisation is required.

For people lacking capacity, emergency medical treatment can be performed under Common Law. Non-emergency treatment for a physical condition not related to the eating disorder may be performed under the MCA 2005.

The laws regarding treatment for 16 -18 year olds have changed and for somebody refusing treatment, parental consent cannot be used as authority to treat (see Mental Health Act Code of Practice 2007).

References
Body mass index cut offs to define thinness in children and adolescents: international survey.
Tim J Cole, Katherine M Flegal, Dasha Nicholls and Alan A Jackson
BMJ 2007; 335 (7612): 194

Appendix 6.

PATIENT NAME: …….. WARD: …… INITIAL SCREENING DATE: ……

WEIGHT 'Record Weight'	Initial Score	Date	Date	Date	Date
Usual weight and steady/intended weight gain/intended weight loss	1	1	1	1	1
Recent weight loss/unintended weight gain, of up to 7 lbs/3 kg	2	2	2	2	2
Recent weight loss/unintended weight gain, of more than 7 lbs/3 kg	3	3	3	3	3
Extremely thin/emaciated	4	4	4	4	4
APPETITE					
Finishing most meals/drinks	1	1	1	1	1
Leaves up to half of meal	2	2	2	2	2
Leaves most food/drink offered	3	3	3	3	3
No appetite, refusing meals and drinks Unable to eat/drink due to medical condition	4	4	4	4	4
MEDICAL CONDITION /TREATMENT					
Medical condition/treatment causing no increase in energy requirements	1	1	1	1	1
Slightly increased energy requirements e.g. post minor surgery, GI disease, long bone fracture, frequent nausea, feeding difficulties, respiratory disease e.g. COAD, neurological conditions e.g. Parkinson's	2	2	2	2	2
Increased energy requirements e.g. post major surgery, raised temperature, infection, multiple injuries/fractures, pressure sores, fistula, GI disturbances i.e. vomiting and diarrhoea	3	3	3	3	3
High energy requirements e.g. cancer, severe infection with raised temperature	4	4	4	4	4
DIET					
Normal	1	1	1	1	1
Special e.g. low fat, low residue. Sometime NBM for investigation. Supplements.	2	2	2	2	2
Soft/puree. Numerous periods of NBM for investigations	3	3	3	3	3
Unable to eat/drink. NBM > 3 days. Tube feed	4	4	4	4	4
TOTAL SCORE					

Referral to Dietitian

Minimal Risk	4-5	No Referral	See Action Plan Overleaf
Moderate	6-9	No Referral	
High	10+	Yes Refer	

Nutritional screening score indicator and action plan

Nutritional risk	Action Plan for patients
Minimal risk 4-5	1. Weigh on admission and then once a week 2. Repeat nutritional assessment every week; if it becomes appropriate, take action as detailed below.
Moderate risk 6-9	1. Weigh on admission and then weekly 2. Involve patients in menu choice and with feeding if necessary 3. Help patient choose from extras menu 4. Offer milk between meals 5. Give two BUILD UPS DAILY between meals unless on a special diet for another condition* 6. Replace ordinary soup with BUILD UP SOUP at meal times 7. Replace uneaten meals with BUILD UP DRINK 8. Repeat nutritional assessment weekly and if no improvement inform medical staff and refer to dietitian 9. Record food intake. ***NB** - No more than 3 sweet Build Ups per day
High risk 10+	**PLEASE REFER TO THE DIETITIAN IMMEDIATELY IF THE PATIENT IS HIGH RISK** 1. Inform medical staff and refer to dietitian for advice 2. Weight on admission and then weekly if possible 3. Involve patient in menu choice and with feeding if necessary 4. Record food intake 5. Ensure all supplements are taken as prescribed by dietitian 6. Monitor patient's progress and contact dietitian if necessary 7. Repeat nutritional assessment weekly.

Appendix 7.

Hull and East Yorkshire Hospitals NHS
NHS Trust

ADULT REFEEDING SYNDROME GUIDELINE

Reference No.	372
Lead Director:	Chief Nurse
Author:	Head of Dietetics, Tina McDougall Assistant Chief Nurse, Kate Rudston
First Version Issued On:	January 2014
Latest Version Issued On:	January 2014
Review Date:	January 2017
Consultation Process:	Nutrition and Dietetic Department Nutritional Steering Group Pharmacy Department
Endorsed/Approved By:	Nutrition Support Group (Previously Enteral Tube Feeding Group)
Ratified By:	Nutrition Steering Group
Target Audience:	Trustwide
Distribution:	Intranet

When this document is viewed as a paper copy, the reader is responsible for checking that it is the most current version. This can be checked by accessing the database of policies on the Trust intranet

CHANGE RECORD			
Date	**Author**	**Nature of Change**	**Reference**
January 2014	Tina McDougal	New guideline	V1

CONTENTS

ADULT REFEEDING SYNDROME GUIDELINE

1 INTRODUCTION

Refeeding Syndrome can be defined as severe fluid and electrolyte shifts that can occur in malnourished patients undergoing feeding either enterally (via the gut e.g. Nasogastric (NG) or Percutaneous Endoscopic Gastrostomy (PEG), parenterally (nutrition avoiding the gut i.e. Parenteral Nutrition (PN) or orally (Crook *et al* 2001).

Refeeding syndrome is common amongst acutely ill inpatients but often underappreciated and under diagnosed (Hearing 2004). This guideline aims to assist Health Care Professionals in recognising and treating the condition appropriately. Many hospital inpatients are at a high risk of developing Refeeding Syndrome due to many of the factors associated with acute illness e.g. low weight, weight loss and poor oral intake for long periods of time.

2 PURPOSE

The document is designed to cover practical issues involved with prevention, identification and treatment of Refeeding Syndrome.

3 SCOPE

This guideline applies across all services provided by Hull and East Yorkshire Hospitals NHS Trust and is applicable to all staff providing these services and all patients accessing services provided by the Trust.

This guideline applies to all:

- Medical staff
- Registered Nursing staff/Midwife and Clinical Support Workers for whom this procedure has been identified in their role
- Dietitians

Across the Hull and East Yorkshire Hospitals NHS Trust.

The guideline must be read in conjunction with relevant Trust policies, procedures and guidelines:

- Nutrition & Hydration Policy (http://intranet/policies/policies/335.pdf)
- Management Of Electrolyte Disturbances In Adults (http://intranet/pharmacy/SOP/Final%20version%20of%20Management%20of%20electrolytes%20D&T%20update.doc)

4 DUTIES

Dietitian	• Assess nutritional status of patient • To classify the risk of Refeeding Syndrome based on NICE Guidance 2006 and using clinical judgement • If patient at severe risk commence nutrition at 5 kcal/kg body weight • If patient at high risk commence nutrition at 10 kcal/kg body weight • If patient at some risk introduce feeding at a maximum of 50% of nutritional requirements for first 2 days • Prescribe a plan of feeding via the appropriate route; aiming to meet the patients full requirements within 4-7 days (NICE 2006) • Ensure the feed is nutritionally complete for vitamins, minerals and trace elements
Pharmacist	•

Registered Nurse/Midwife	• Nutritional screening of patients on admission (within 24 hours) and weekly thereafter • Refer to Dietitian those with nutritional risk score of 9 or above (the Trust Nutritional Screening Tool will identify those patients at risk of Refeeding syndrome) • Use appropriate Starter Regimen if tube fed (NG/NJ/PEG/RIG/JEJ)
Medical Staff	• Monitor biochemistry daily until stable; specifically magnesium, phosphate and potassium • Replace electrolytes as required Prescribe Vitamin B supplementation as below: **Oral** – Thiamine tablets 100mg bd-tds and Vitamin B Co Strong 1-2 tablets tds for 10 days **Via Enteral Feeding Tube** – Crushed thiamine tablets 100 mg bd-tds first dose to be given before feeding initiated and Vitamin B Compound (not Co Strong) 1-2 tablets tds for 10 days **NB** Vitamin B Compound does not have an enteric coating and consequently is less likely to block feeding tubes when crushed for administration For alcohol dependant patients follow local guidelines as higher doses of vitamins may be required. **NBM or concerns about enteral absorption** – prescribe Pabrinex I + II ampules tds for 3 days and review (PENG 2011) If decompensated liver disease or alcohol excess prescribe 2 pairs Pabrinex I and II for 3 days and review **NB Dextrose** – May exacerbate Refeeding Syndrome and will contribute to total energy intake if clinically appropriate prescribe alternative IV fluids Note: 1000 ml 4% Dextrose = 160 kcal 1000 ml 5% Dextrose = 200 kcal 1000 ml 10% Dextrose = 400 kcal

NB Nutritional supplements (e.g. Fortisip etc) should not be provided/prescribed unless recommended by the Dietitian following full nutritional assessment.

5 CONTENT/PROCESS

Identification of Refeeding Syndrome

Refeeding Syndrome typically develops in undernourished, acutely ill patients, who have not eaten for more than 5 days. If the patient has supplements or artificial nutrition introduced too aggressively or without sufficient monitoring of blood levels potentially fatal shifts in potassium, phosphate and magnesium can occur. The phenomenon usually occurs within 4 days of feeding (Hearing 2004).

Refeeding Syndrome can occur when the body switches from burning fats (ketones) during starvation mode, to burning glucose (the body's preferred fuel source) when nutrition is re-commenced. During starvation adaptations take place in the body to reduce cellular activity and organ function in an attempt to conserve energy. Insulin

levels decrease and glucagon secretions increase as the body begins to utilise ketone bodies as its primary source of fuel. Levels of potassium, magnesium, phosphate, vitamins and trace elements become depleted throughout the body. Intracellular and whole body levels of water and sodium accumulate due to reduced clearance by the organs.

During re-feeding, levels of insulin rise in response to glucose. The switch from ketone metabolism to carbohydrate metabolism leads to an increased uptake of glucose, magnesium, phosphate and potassium for use in the cells. Thiamine (Vitamin B_1) is utilised as a co factor in carbohydrate metabolism and therefore levels can become depleted. The stimulation of the sodium and potassium pump leads to further movement of potassium into the cells and expulsion of sodium out of the cells (Hearing 2004, PENG 2011).

Although the syndrome typically occurs due to malnutrition or a low body mass index (BMI) the syndrome can also occur in patients that are overweight if they have lost a significant amount of weight or had little or no nutrition for a significant period of time.

All patients should be screened on admission to hospital within 24 hrs. The Trust Nutritional Screening Tool will identify the patients who are at risk of developing Refeeding Syndrome. Patients with a nutritional risk score of 9 or above should be referred to the Dietitian as a matter of urgency and the Trust's nutritional care plans followed accordingly.

Potential consequences of Refeeding Syndrome include:
- Hypophosphataemia
- Hypokalaemia
- Hypomagnesaemia
- Altered glucose metabolism
- Fluid balance abnormalities
- Vitamin deficiency

(PENG 2011)

A patient who has developed Refeeding Syndrome may develop the following abnormalities:
- Pulmonary oedema
- Cardiac arrhythmia
- Cardiac arrest
- Respiratory depression
- Weakness

(Pen Group 2007)

Troubleshooting

PROBLEM	ACTION	PREVENTION
ANAPHYLAXIS (This rare complication can sometimes occur during or shortly after administration of Pabrinex)	Facilities for treating anaphylaxis (including resuscitation facilities) should be available when parenteral Thiamine is administered (MHRA/CHM Advice 2007)	Administer Thiamine orally wherever possible

6 PROCESS FOR MONITORING COMPLIANCE

Clinical Monitoring of patients at risk of Refeeding Syndrome

This is completed by Medical and Registered Nursing/Midwives staff.

- Blood pressure and pulse rate are monitored as directed by Medical staff to monitor for neurological signs and symptoms of Refeeding Syndrome. Findings are documented on appropriate Trust monitoring charts. Any signs of deterioration the Medical Staff should be informed plus any other appropriate HCP e.g. Critical Care Outreach teams.
- Daily Biochemical Profile and Magnesium levels should be completed plus replacements as required until feeding is established and levels are stable then twice weekly.
- Daily fluid balance charts should be completed. If there are any concerns the Medical Staff should be informed.

This guideline will be monitored by the following:

- Setting the standard nursing metrics (replaced the previous QMP)
- Nutrition team audits and exception reporting
- DATIX and incident reporting
- SUI/Critical Incidents
- Observation and monitoring by Medical and Nurse/Midwife Ward Rounds

7 REFERENCES

- Aminda De Silva TS, Stroud M. BMJ Letters: NICE on refeeding syndrome Attitudes to NICE guidance on refeeding syndrome, 2008; 337: a680
- Crook MA, Hally V, Panteli V. (2001) The Importance of the Refeeding Syndrome. *Nutrition* 17:632-7.
- Hearing, S.D. (2004) Refeeding syndrome, is under diagnosed and under treated but treatable. *BMJ*; 328(7445): 908–909. doi: 10.1136/bmj.328.7445.908
- Marinella M. A. (2008) Refeeding syndrome in cancer patients. *International Journal of Clinical Practice*; 62, 460-465.
- Medicines and Healthcare Products Regulatory Agency: http://www.mhra.gov.uk/Safetyinformation/DrugSafetyUpdate/CON079169
- Mehanna HM, Moledina J, Travis J.(2008) Refeeding syndrome: what it is, and how to prevent and treat it. *BMJ* ~~2008~~; 336: 1495-8
- National Institute for Health and Clinical Excellence (NICE) (2006) Nutrition Support in Adults: Oral nutrition, enteral tube feeding and parenteral nutrition; Clinical Guideline 32; *NICE* http://www.nice.org.uk/nicemedia/live/10978/29978/29978.pdf
- National Institute for Health and Clinical Excellence (NICE). (2013) Nutrition Support in Adults: Evidence Update August 2013. Evidence update 43.
- Parenteral and Enteral Nutrition Group of the British Dietetic Association (PENG) Enteral Access Routes In: Todorovic VE and Micklewright A (2011) A Pocket Guide to Clinical Nutrition. Fourth Edition(Updated); *Section 13.* British Dietetic Association

8 APPENDICES

Appendix 1 - Definitions
Appendix 2 - Flow Chart for Management of Refeeding Risk
Appendix 3 - Monitoring Tool

Appendix 1

Definitions

Refeeding syndrome can be categorised into three categories; at risk, high risk, severe risk (NICE 2006). Two key tools that are used to classify a patient's level of risk for refeeding syndrome are BMI and percentage weight loss over a 3-6 month period.

$$\text{Body Mass Index (BMI)} = \frac{\text{weight (kilogram)}}{\text{height (metre squared)}}$$

$$\%\ \text{Weight loss} = \frac{\text{usual weight (kilogram) - current weight (kilogram)}}{\text{Usual weight (kilogram)}} \times 100$$

BMI	Interpretation (PENG 2011)
>40	Morbid Obesity
31-40	Moderate – severe obesity
26-30	Mild obesity
20-25	Normal range
16-19	Underweight
<16	Severely underweight

At risk or some risk

People who have eaten little or nothing for more than 5 days should have nutritional support introduced at no more than 50% of requirements for the first 2 days. Feeding rates should be increased to meet full needs if clinical and biochemical monitoring (potassium, magnesium, phosphate) reveals no refeeding problems (NICE 2006).

High risk

Patient has one or more of the following:

- BMI less than 16 kg/m^2
- Unintentional weight loss more than 15% within last 3-6 months
- Very little or no nutritional intake for more than 10 days
- Pre existing low levels of magnesium, phosphate and potassium

OR

Patient has two or more of the following:

- BMI less than 18.5 kg/m^2
- Unintentional weight loss more than 10% within last 3-6 months
- Very little or no nutritional intake more than 5 days
- A history of alcohol abuse or drugs including insulin, chemotherapy, antacids or diuretics

Nutritional support will be implemented by the Dietitian at a maximum of 10 kcal per kilogram body weight per day, increasing levels slowly to meet or exceed full needs by 4–7 days (NICE 2006).

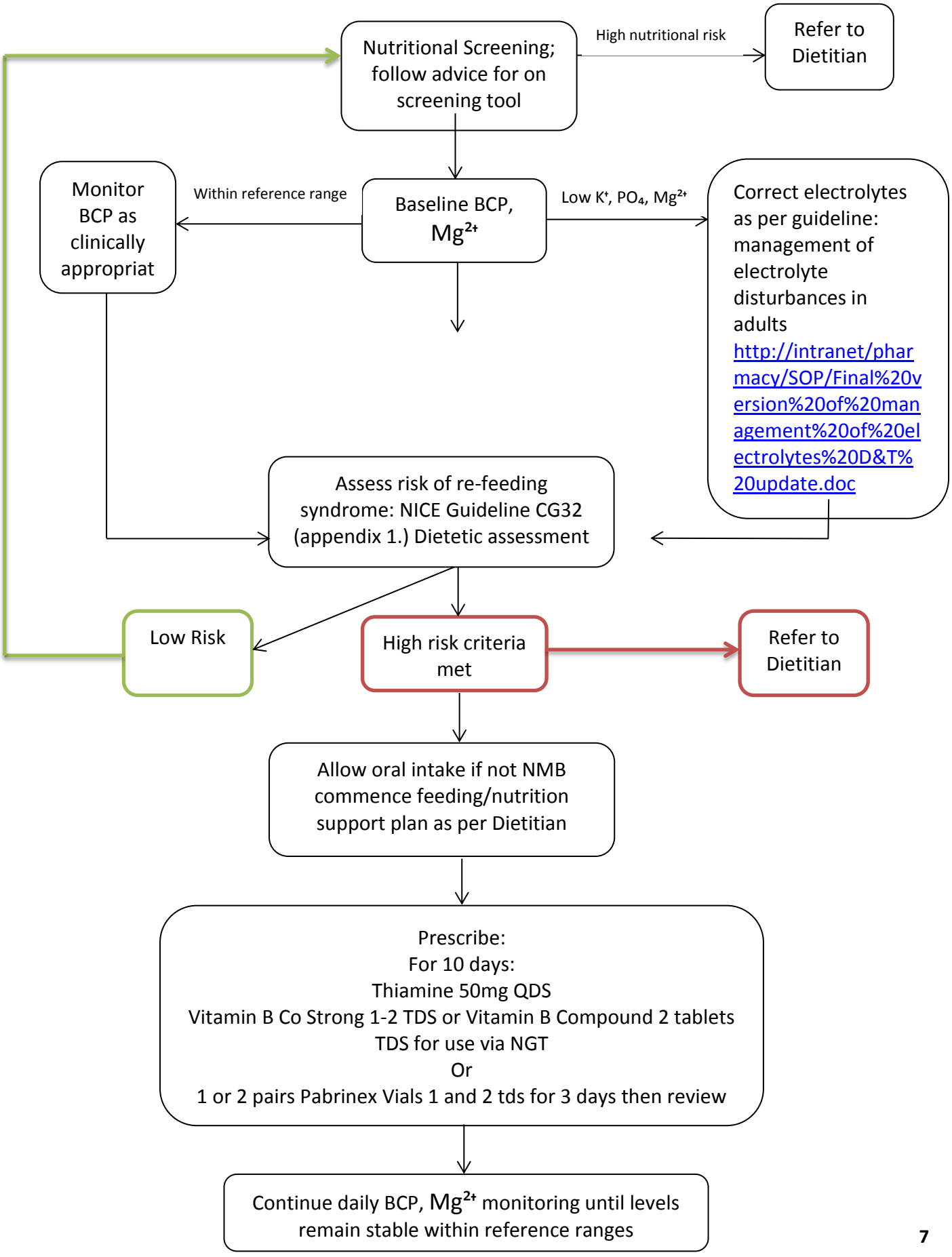
Severe risk

- BMI less than 14 kg/m^2 or very little or no nutrition for more than 15 days

Nutritional support will be initiated at a maximum of 5 kcal per kilogram body weight per day by the Dietitian (NICE 2006).

Appendix 2.

Flow chart for management of re-feeding risk



Appendix 3.

Monitoring Tool

Element to be monitored	Lead	Tool	Frequency	Reporting arrangements	Acting on reporting arrangements and lead(s)	Change in practice and lessons to be learned
Compliance with NICE guideline (CG32) regarding re-feeding syndrome	Ward manager/senior nursing staff	Setting the standard nursing metrics (replaced the previous QMP)	As required	Information will be reported using proforma associated with setting the standard nursing metrics	Recommendations from the nutrition team, ward managers and senior nursing staff will be actioned accordingly by the relevant team or lead individuals (e.g. authors) as required and in specified timeframes	Required changes to practice will be identified and actioned within a specific timeframe. A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant stakeholders.
Nutrition team audits and exception reporting	Nutrition team lead	Audit tool for specific area	As per nutrition team audit rota			
DATIX and incident reporting	Nutrition team lead and senior nursing staff	DATIX online reporting	As incidents / issues are identified	Datix online incident reporting will be used		
SUI/critical incidents						
Observation and monitoring by medical and nurse/midwife ward rounds				Concerns to be escalated to the nutrition steering group		
Audit of specific area	Relevant team	Audit tool for specific area	At request of the nutrition steering group	Results to be reported to the nutrition steering group		

Appendix 8.

Hull and East Yorkshire Hospitals NHS Trust

Department of Nutrition and Dietetics

Ward: Consultant:
Patient Details: (Affix label here)
Name:
NHS/HEY number:

Adult Enteral Feeding Starter Regimen
Gastrostomy or Nasogastric Feeding Tubes

☐ **Radiologically inserted gastrostomy (RIG)** Post insertion: Commence feed as per Radiology/medical advice - Aspirate RIG contents 6 hours after first bolus or start of pump feed to check absorption. If aspirate > 200ml, replace aspirate and stop feed. Request medical review; consider use of a prokinetic agent.

☐ **Percutaneous inserted gastrostomy (PEG)** Post insertion: NBM and NB PEG for 4 hours then flush PEG with 30ml sterile water. If tolerated with no resistance, pain or discomfort, commence feed as follows.

☐ **Nasogastric tube (NG)** Please ensure NG bundle maintained

Further information on enteral feeding can be found on the Nutrition and Dietetic intranet site and in Thrust Policy CP332
Ensure head and chest are elevated at least 30 degrees during and after feed.
Flush tube with at least 30 ml sterile water pre and post feed and with individual medications

Refeeding Syndrome Assessment (NICE CG32)	Treatment of refeeding syndrome
The following categories of patients may be at risk of refeeding syndrome: • BMI <18.5kgm^2 or body weight <45kg • Recent unintentional weight loss • Low levels of potassium, phosphate or magnesium prior to feeding • Very little or no nutrition for >5 days • A history of alcohol abuse or drugs including insulin, chemotherapy, antacids or diuretics	If the patient is assessed to be at risk of refeeding syndrome please ensure: • The Doctor monitors BCP and Mg^{2+} daily and corrects abnormalities as deemed appropriate (liaise with pharmacy if concerned) • Consider use of Thiamine 100mg TDS and Vitamin B Compound 2 tablets TDS for 10 days or Pabrinex 1 pair of I and II for 3 days (liaise with doctor)

Date commenced	Type of Feed	Total volume	Rate of feed (ml/hr)	Number of hours /time	Additional information eg. Rest period
…./…../…..	**Nutrison 1.0**	**400ml**	**20ml/hr**	**20 hours**	**4 hour rest period**

- Continue with starter regimen until assessed and advised otherwise by a dietitian
- Please ensure fluid requirements are met, liaise with medical team for further advice.
- **Please ensure a referral has been made to the Nutrition and Dietetic department via Lorenzo**

Appendix 9.

MENTAL HEALTH GROUP
Eating Disorders Learning Disability Mental Illness

THE BRITISH DIETETIC ASSOCIATION

Re-feeding Protocol for Seriously Ill Patients with Anorexia Nervosa

April 2011, Review date April 2014

Authors: Annette Cockfield and Ursula Philpot
for the BDA Mental Health Group

Contents

Refeeding Protocol

This protocol is designed to offer guidance to the multi-disciplinary team (MDT) involved in the management of a seriously ill patient admitted with anorexia nervosa, including physicians, psychiatrists, dietitians and nursing staff.

It has been written in line with the report from the MARSIPAN group (2009), which highlights the need for all seriously ill patients with anorexia nervosa to be managed by an MDT experienced in refeeding patients, in consultation with a specialist eating disorders unit (SEDU).

Refeeding syndrome can be defined as a range of potentially life-threatening biochemical and clinical abnormalities, which occur as a consequence of over-rapid or unbalanced nutrition support in severely malnourished individuals (Solomon and Kirby 1990).

Risk Assessment

The medical risk of a seriously ill patient with anorexia nervosa should be assessed and baseline measurements obtained prior to any feeding. The table below may offer some guidance.

Table 1 – A guide to the medical risk assessment for eating disorders – adapted from Treasure (2009)

System	Examination	Moderate Risk	High Risk
Nutrition	BMI	<14	<12
	Weight loss/wk	>0.5kg	>1.0kg
	Skin breakdown	<0.1cm	>0.2cm
	Purpuric rash		++
Circulation	Systolic BP	<90 mm Hg	<80 mm Hg
	Diastolic BP	<70 mm Hg	<60 mm Hg
	Postural drop	>10mm Hg	>20 mm Hg
	Pulse rate	<50 BPM	<40 BPM
Musculo-skeletal (Sit Up Squat Stand Test – Appendix 1)	Sit Up	Able only using hands to help	Unable
	Squat Stand	Able only using hands to balance	Able only using hands as leverage
Temperature		<35.0°C	<34.5°C
Investigations	FBC, urea, electrolytes (including phosphate, magnesium & potassium), LFT's, albumin, creatinine kinase, glucose	Concern if outside normal limits	K <3.0 Na <130 Mg <0.5 PO4 <0.5 Urea >10 Bilirubin >40 Alkpase >200 AST >80 ALT .>90 GGT >90 Albumin <32 Creatinine Kinase >250 Glucose <2.5

	ECG	Rate <50	Rate <40 QTC >450msec Arrhythmias

The first 7-10 days of feeding a seriously ill patient with anorexia nervosa poses a significant risk of developing refeeding syndrome and its related complications.

Criteria for determining people at high risk of developing refeeding problems – adapted from NICE (2006).
Patient has one or more of the following: BMI less than 16 Kg/m^2 Weight loss greater than 15% within the last 3-6 months Little or no nutritional intake for more than 10 days Low levels of potassium, phosphate or magnesium prior to feeding History of alcohol abuse or drugs including insulin, chemotherapy, antacids or diuretics The presence of purging behaviours, such as vomiting and/or laxative misuse Or patient has two or more of the following: BMI less than 18.5 Kg/m^2 Weight loss greater than 10% within the last 3-6 months Little or no nutritional intake for more than 5 days

Location of Nutrition Support

Seriously ill patients with anorexia nervosa should be cared for in a SEDU; unless the risk assessment indicates that any of the following may be needed, leading to an admission to a medical ward (MARSIPAN Report 2009):

- IV infusion.
- Artificial ventilation.
- Cardiac monitoring.
- CVP lines.
- Provision of a resuscitation team.
- Treatment of serious medical complications.

Process of Nutrition Support

Initial feeding (7-10 days) is aimed at weight and medical stabilisation and prevention of any weight loss (MARSIPAN Report 2009), as opposed to weight gain, as well as building patient's tolerance to a calorie (Kcals) intake that will eventually promote weight restoration.

Prior to commencing feeding:

- Weigh patient, calculate BMI and complete the risk assessment to establish baseline measurements (refer to table 1).

- Ensure most appropriate members of the MDT are involved.
- Determine method of refeeding using Diagram 1.
- Prescribe electrolyte, vitamin and mineral supplementation, as medically necessary. Some guidance is provided in tables 2 and 3, but local trusts may use different preparations and parameters. Please refer to local trust/pharmacy guidelines.

Diagram 1

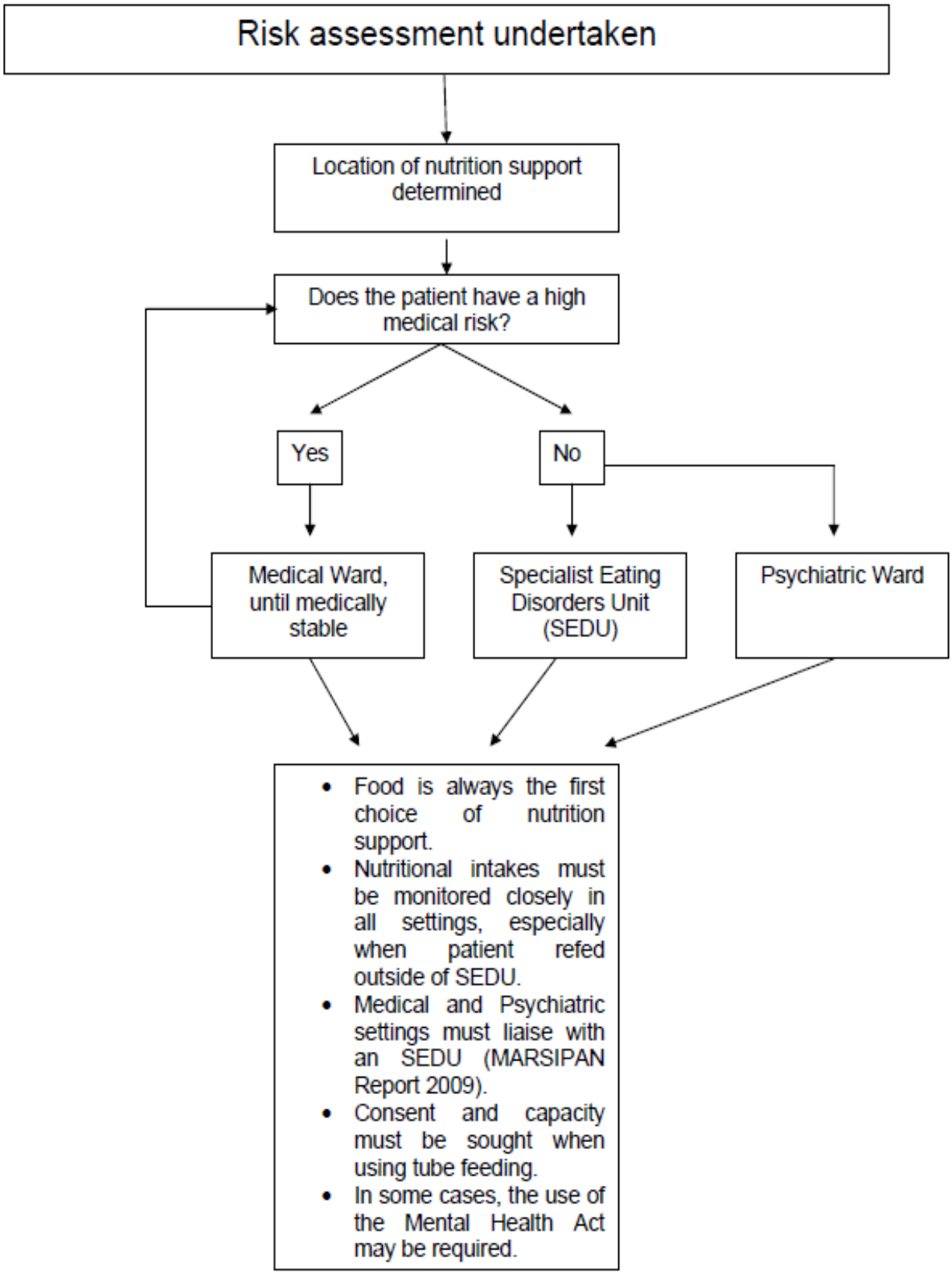


Table 2 – Electrolyte Supplementation (Oxford Radcliffe Hospital NHS Trusts 2003)

Supplementation	Administration	
	Oral	Intravenous
Hypokalaemia Mild >3.0 mmol/l Moderate 2.5-3.0 mmol/l + asymptomatic Severe <2.5 mmol/l or symptomatic	Potassium effervescent tablets 2 tablets X 2-3 times daily (each tablet 12mmol of K^+)	As medically directed
Hypophosphataemia Mild 0.4-0.6 mmol/l + asymptomatic Moderate 0.4-0.6 mmol/l + symptomatic Severe <0.4 mmol/l	Phosphate Sandoz effervescent tablets 2 tablets X 2 daily (each tablet 16mmol of PO_4)	As medically directed
Hypomagnesaemia Mild >0.5 mmol/l Severe <0.5 mmol/l	Magnesium glycerophosphate tablets 2 tablets X 3 daily (each tablet 4mmol of Mg)	As medically directed

Table 3 – Oral Vitamin and Mineral Supplementation - Commence immediately before and during the first 10 days of feeding (NICE 2006) or until medically stable.

Supplementation	Administration
Thiamin (NICE 2006)	200-300mg, once a day
Vitamin B Co-Strong (NICE 2006)	1-2 tablets, three times a day
Balanced Multivitamin/Trace element Preparation (e.g. Forceval) (NICE 2004a)	One capsule a day

Doses may vary according to age, body weight and local trust policies. Always liaise with pharmacy.

Calorie Requirements

It is recommended that an initial starting intake of 20 Kcals/Kg of body weight (MARSIPAN Report 2009) is used when refeeding a seriously ill patient with anorexia nervosa. However, in some cases, where severity indicators are present, a lower starting intake may be required e.g. 10 Kcals/Kg body weight.

If lower calorie intakes are prescribed, the feeding regimen must be reviewed frequently e.g. every 12 hours, and the regimen increased as soon as there is no clinical reason to continue the lower calorie intake (MARSIPAN Report 2009).

Once the patient is medically stable and weight gain of 0.5-1.0Kg/wk (NICE 2004a) is the focus, it is not unusual in this patient group for an individual to require 70-100Kcals/Kg body weight (Royal College of Psychiatrists 2004) in order to achieve this. Nonetheless, it is important to remain curious about possible compensatory behaviours (Van Wymelbeke *et al*. 2004).

Some examples of refeeding a seriously ill patient with anorexia nervosa of 35Kg are given below.

Example for Refeeding a 35Kg Patient Using a Tube Feed

	1 Kcal/ml feed	
Day 1-3	750mls at 31mls/hour for 24 hours	**750Kcals**
Day 4-5	1000mls at 42mls/hour for 24 hours	**1000Kcals**
Day 6-8	1250mls at 52mls/hour for 24 hours	**1250Kcals**
Day 9-10	1500mls at 63mls/hr for 24 hours	**1500Kcals**
Day 11+	Increase by 300Kcals increments until 0.5-1.0Kg/wk weight gain is achieved The rate can be increased as tolerated, indicated by biochemical markers and blood glucose	
Give 50mls fluid as flushes before and after each feed. If the patient is not drinking an adequate amount to meet their fluid requirements additional flushes can be given, aiming for 35mls/Kg body weight. Continuous feeding is recommended during the first 7-10 days or whilst an individual is medically unstable to manage the risk of hypoglycaemia.		

Example for Refeeding a 35Kg Patient Using Nutritional Supplements Orally

1.5 Kcal/ml sip feed	Day 1-3	Day 4-5	Day 6-8	Day 9-10	Day 11+
Breakfast	100mls	150mls	200mls	200mls	Increase by 300Kcals increments until 0.5-1.0Kg/wk weight gain is achieved
Mid-Morning	50mls	50mls	50mls	100mls	
Lunch	100mls	150mls	200mls	200mls	
Mid-Afternoon	50mls	50mls	50mls	100mls	
Evening Meal	100mls	150mls	200mls	200mls	
Supper	100mls	100mls	100mls	200mls	
	750Kcals	**975Kcals**	**1200Kcals**	**1500Kcals**	

Example for Refeeding a 35Kg Patient Using Food

	Day 1-3	Day 4-5	Day 6-8	Day 9-10	Day 11+
Breakfast	2 Tbsp Cereal 100mls SS Milk	2 Tbsp Cereal 100mls SS Milk	2 Tbsp Cereal 100mls SS Milk	**3 Tbsp** Cereal 100mls SS Milk	Increase by 250Kcals increments until 0.5-1.0Kg/wk weight gain is achieved
Mid-Morning	Toast x1 1 Tsp Spread	Toast x1 1 Tsp Spread	Toast x1 1 Tsp Spread	Toast x1 1 Tsp Spread	
Lunch	½ Sandwich	½ Sandwich	½ Sandwich	**Full** Sandwich	
Mid-Afternoon		**Yoghurt** (non-diet)	Yoghurt (non-diet)	Yoghurt (non-diet)	
Evening Meal	½ Full Plate Cooked Meal Equal Portions of Protein Carbohydrates Vegetables	½ Full Plate Cooked Meal Equal Portions of Protein Carbohydrates Vegetables	**Full** Plate Cooked Meal Equal Portions of Protein Carbohydrates Vegetables	½ Full Plate Cooked Meal Equal Portions of Protein Carbohydrates Vegetables	
Supper	100mls SS Milk	**150mls SS Milk + Fruit / Biscuits x2**	150mls SS Milk + Fruit / Biscuits x2	150mls SS Milk + Fruit / Biscuits x2	
	~ 750Kcals	**~ 1000Kcals**	**~ 1250Kcals**	**~ 1500Kcals**	

Monitoring Nutrition Support - Adapted from NICE (2006)

System	Examination	Frequency
Investigations	FBC, urea, electrolytes (including phosphate, magnesium and potassium), LFT's, albumin, creatinine kinase	Daily until stable Then 2 times a week Then weekly
	ECG	As indicated by baseline ECG
	Glucose	See section on hypoglycaemia below.
Temperature		4 hourly or as medically indicated or until stable.
Circulation	BP, Pulse rate	4 hourly or as medically indicated or until stable.
Nutrition	Weight – early morning, after the individual has emptied their bladder and not eaten or drunk anything.	Minimum twice weekly during the first 10 days of feeding. If rapid weight changes evident, increase frequency of monitoring. Then weekly
	Fluid	Daily fluid balance chart for the first 10 days of refeeding or until any issues related to fluid intake have been resolved.
	Stools	Daily stool chart for the first 10 days of refeeding or until any issues related to gut function have been resolved.

Management of Hypoglycaemia

Hypoglycaemia may occur in seriously ill patients with anorexia nervosa (Fonseca *et al*. 1991). Causes, as a result of starvation/low weight, include:

- Delayed insulin response.
- Depleted glycogen stores.
- Increase in metabolic demands e.g. infection, cellular repair (occurring during refeeding).
- Excessive activity/exercise.
- Missed or late meals.
- Eating meals that do not contain enough starchy carbohydrate i.e. bread, cereals, potatoes, pasta, rice, noodles, chapatti or naan.

Blood sugar levels should be tested at regular intervals, especially at the following times; 10.30am, 3.30pm and 2.00am, and the patient treated for hypoglycaemia if any blood sugars are less than 3.5 mmol/l (NICE 2004b). Please refer to local trust policies, or in the absence of such policies, use Table 4 below as a guide to the treatment of hypoglycaemia.

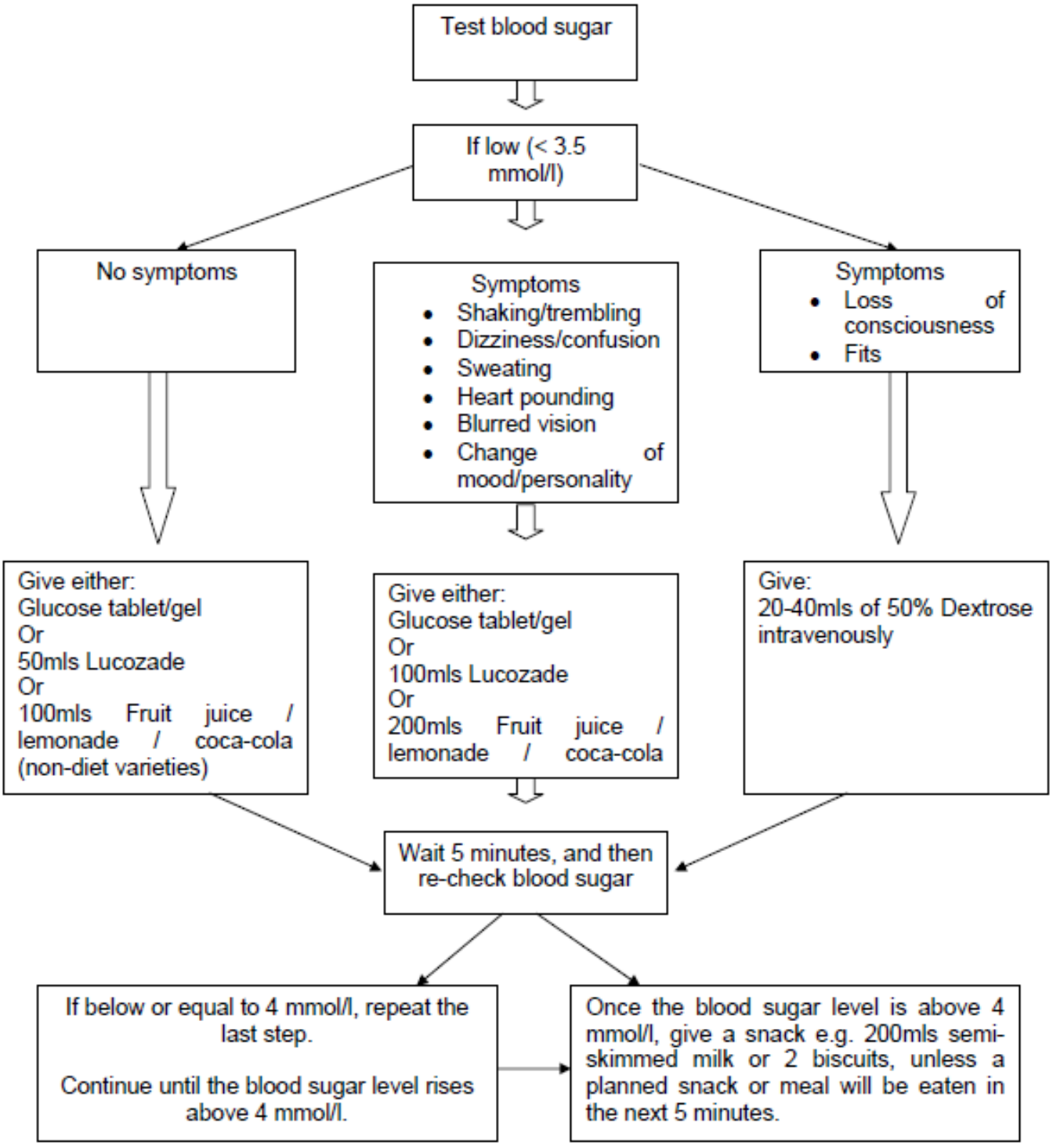
When testing blood sugar levels allow a minimum of 2 hours post food or sugar containing drinks.

After 7-10 days of refeeding, continue to monitor if there are still times when the individual's blood sugars are below 3.5 mmol/l. If blood sugar levels are consistently very low, seek medical advice.

If the individual's blood sugars are consistently within normal parameters, monitoring can be stopped after 7-10 days, and only restarted if the individual ever appears symptomatic.

If a patient refuses to comply with hypoglycaemic treatment, it is important to assess the capacity of the patient to make that decision, and should be discussed urgently with the MDT.

Table 4 – Treatment of Hypoglycaemia



Problem Solving

Problem	Consider
Rapid weight gain (>1.5kg/week)	Review fluid chart and daily calorie and fluid intake. Reduce feed/fluids if necessary. Spot weigh patient to check for weight manipulation.
Slow weight gain (<0.5kg/week)	Review daily calorie intake. Increase feed if necessary. Question if the individual is vomiting/being over-active/ tampering with feed. Consider 24 hour supervision/support for patient.
Suspected fluid loading/manipulation of weight/compensatory behaviours	Spot weight checks. Consider 24 hour supervision/support for patient. Liaise with SEDU team for further management strategies.
Patients wishing to negotiate regarding food or fluid intake	Food and fluid intake is non-negotiable, especially during first 10 days of refeeding. Boundaries should be maintained at all times. Once the patient is medically stable and consistently gaining weight some aspects of diet plan can be re-negotiated.
Patient wanting laxatives	Check history of laxative misuse and stool chart. Offer education about altered gut function in starvation, and support in tolerating some GI symptoms. If laxatives are needed – avoid lactulose (NICE 2008).
Patient is over-active (e.g. pacing or standing up all day)	Consider 24 hour supervision/support for patient. Consider short (5 min), supervised and purposeful walks once medically stable. Liaise with SEDU team for further management strategies.
Patient is tampering with feed and/or tube (e.g. pulling out tube)	Consider 24 hour supervision/support for patient. Liaise with SEDU team for further management strategies.

Care Planning

	Intervention	Rationale
Activity	Bed rest until medically stable. Risk assessment for Tissue Viability. Ensure pressure mattress.	Required in view of compromised state.
Fluids	Input and output to be measured. Consider limiting access to water supply e.g. turn off water supply in room. Be aware of the potential to fluid overload during some aspects of personal care e.g. teeth brushing, hand washing, going to the toilet.	Often patients drink large amounts of fluid causing dangerous fluid overloading and electrolyte disturbance.
Personal Care	Supervised washes only within the bedroom area recommended until medically stable. Consider the use of a commode.	Due to patient's compromised physical state e.g. low BP and temperature. Also to monitor for abnormal behaviours. Commode will assist in monitoring fluid balance.
Nutrition	Consider post-meal supervision for 40 minutes.	Required if vomiting and/or other compensatory behaviours are suspected.
Leave	No leave when on a medical ward. Short periods of leave on a psychiatric ward, as agreed by the MDT.	Due to patient's compromised physical state close medical supervision is needed.
Communication	Consider placing the patient in the bed next to the nursing station. Do not leave care plans/weight charts within easy patient access. Ensure regular feedback and MDT liaison. Ensure consistency of the nursing boundaries between shifts/care givers.	Observe any abnormal behaviour. Ensure patients feel safe and approaches are consistent.

Communication and Management Approaches

The initial discussion with the patient is crucial as many patients need to be in a position where they feel they have no choice in order to be able to comply with treatment. After treatment, patients report they were glad that the decision had been made for them (Tan *et al*. 2003).

In order to avoid the use of the Mental Health Act, try to adopt a firm but fair approach, whilst acknowledging any of the patient's fears or concerns. The options for feeding should be explained, with a clear rationale. It is also important which aspects of the refeeding plan are non-negotiable, explaining that more choices can be offered at a later stage, when the immediate threat to physical health has reduced. Ensuring a consistent MDT approach is essential.

References

Fonseca, V., Ball, S., Marks, V., and Harvard, C. W. H. (1991) Hypoglycaemia Associated with Anorexia Nervosa. *Postgraduate Medicine Journal*. 67, 460-461

MARSIPAN Group (2009) Management of Really Seriously Ill Patients with Anorexia Nervosa. (unpublished)

National Institute for Health and Clinical Excellence (2004a) *Eating Disorders: Core interventions in the treatment and management of anoxia nervosa, bulimia nervosa and related eating disorders* (CG9) London: NICE

National Institute for Health and Clinical Excellence (2004b) *Type I Diabetes* (CG15) London: NICE

National Institute for Health and Clinical Excellence (2006) *Nutrition Support in Adults: Oral nutrition support, enteral tube feeding and parenteral nutrition* (CG32) London: NICE

National Institute for Health and Clinical Excellence (2008) *Irritable Bowel Syndrome* (CG61) London: NICE

Oxford Radcliffe Hospitals NHS Trusts (2003) Guidelines for the Prevention and Management of the Refeeding Syndrome. (unpublished)

Robinson, P. H. (2006) *Community Treatment of Eating Disorders*. London: John Wiley

Royal College of Psychiatrists (2004) Guidelines for the Nutritional Management of Anorexia Nervosa. (unpublished)

Solomon, S. M., and Kirby, D. F. (1990) The Refeeding Syndrome: A review. *Journal of Parenteral and Enteral Nutrition*. 14, 90-97

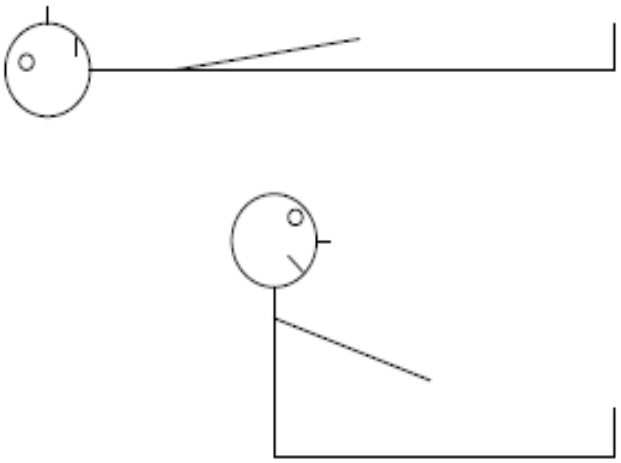
Tan, J., Hope, T., Stewart, A., and Fitzpatrick, R. (2003) Control and Compulsory Treatment in Anorexia Nervosa: The views of patients and parents. *International Journal of Law and Psychiatry*. 26, 627-645

Treasure, J. (2009) A Guide to the Medical Risk Assessment for Eating Disorders. (Unpublished)

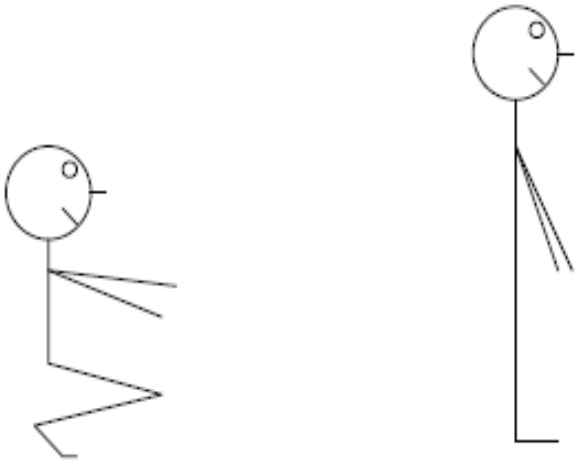
Van Wymelbeke, V., Brondel, L., Brun, J. M., and Rigaud, D. (2004) Factors Associated with the Increase in Resting Energy Expenditure during Refeeding in Malnourished Anorexia Nervosa Patients. *American Journal of Clinical Nutrition*. 80, 1469-1477

Appendix 1: Sit Up Squat Stand (SUSS) Test: Description and scoring

Sit Up



Squat Stand



1. Sit Up
Patient lies down flat on the floor and sits up without, if possible using his/her hands.

2. Squat Stand
Patient squats down and rises without, if possible using his/her hands.

Scoring:

0: Unable

1: Able only using hands to help

2. Able with noticeable difficulty

3. Able with no difficulty (Robinson 2006)

The British Dietetic Association
5th Floor, Charles House, 148/9 Great Charles Street
Queensway, Birmingham B3 3HT
Tel. 0121 200 8080 - Fax: 0121 200 8081
info@bda.uk.com - www.bda.uk.com