

Risk assessment in eating disorders: using MEED to reduce mortality

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Abstract

Eating disorders (EDs) are potentially fatal illnesses. Sadly, over the years, we have become aware of several deaths where detailed review suggests that they could have been avoided. This was the motivation to write what is now known as MEED, Medical Emergencies in Eating Disorders, published in 2022.

MEED is the most developed guidance on treating severely medically ill patients with EDs and should be used by all clinicians having contact with ED patients. This article documents the physical risks that EDs present, and the preventable deaths, particularly of the most unwell patients. It introduces MEED as a system which has the potential to avoid some of those deaths and improve management. A new website is introduced, meed.org.uk, which may make MEED more accessible to frontline staff and improve its uptake.

Staff are encouraged to be trained to use MEED and to familiarise themselves with the Risk Assessment Framework it contains. Each group of clinical staff as well as patients and carers will find summary sheets and specific advice in MEED. In this article, we have provided links to each problem area we anticipate will be encountered and links to the summary sheets for clinicians, patients and carers. We also provide two clinical vignettes, one a child and one a young adult, to demonstrate how MEED can be used in real-life situations with substantial clinical risk.

We strongly advocate for training to be made mandatory for any staff likely to be assessing or treating a patient with an ED so that the avoidable deaths, mostly in adults, which continue to be reported by coroners, can be eliminated.

Refeeding of severely malnourished patients often takes place in medical or paediatric settings, and previous guidance has led to overcautious refeeding, resulting in "underfeeding syndrome". MEED provides clear, up-to-date, evidence-based guidance which allows essential treatment of low weight by safe refeeding, thereby avoiding refeeding syndrome while avoiding underfeeding syndrome, which has resulted in several documented deaths.

Keywords: eating disorders, risk management, anorexia nervosa, bulimia nervosa, guidance, MEED

Introduction

Eating disorders (EDs), namely anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder, avoidant/restrictive food intake disorder and their atypical forms are common conditions that affect those of all ages and can lead to serious, sometimes fatal, health outcomes. The most lethal is AN, with a standardised mortality ratio (SMR) (corrected for age and sex) of 5.86, followed by BN and atypical EDs, with SMRs of about 2 (1). Some of the deaths occurring in patients with EDs appear to be avoidable, as was reported extensively by the Health Ombudsman for England in a review of three cases (2) in which it was suggested that improvements in clinical management could perhaps have avoided the deaths. At the time of the ombudsman's report, the issue had already been identified (3) and a guidance document (Management of Really Sick Patients with Anorexia Nervosa, MARSIPAN) published in 2010. Hence, there was evidence in these cases that available guidance was not being followed. Indeed, the Manchester Senior Coroner wrote in 2021 in relation to the death of a patient with AN that she was investigating: "This is not a question of lack of familiarity by professionals, it reflects a complete absence of any understanding that MARSIPAN exists and indeed how to implement it in respect of the emergency treatment of an anorexic patient" (4).

There are therefore at least two issues to consider.

1. Preventable deaths are occurring in patients with EDs.
2. The guidance that has been available since 2010 has not been implemented by all clinicians providing care for patients with EDs.

Physical problems encountered when assessing and treating EDs

The types of physical problems encountered in EDs were studied by Mehler et al. (5) who documented them in a series of 1026 adults hospitalised for treatment of an ED. Some of their results are given in Table 1.

Some comments on the list in Table 1 seem appropriate.

1. Low potassium (hypokalaemia) is possibly the most significant and dangerous physical problem in EDs. It can affect patients with both AN and BN. Low potassium is a complication of frequent purging (intentional vomiting

and/or laxative use). It can cause abnormal heart rhythms and can be life-threatening (6).

2. Metabolic alkalosis is often associated with low potassium. This is because vomiting causes loss of acid (hydrogen ions, H⁺) from the stomach and this leads to metabolic alkalosis. The body tries to correct this by exchanging H⁺ for potassium (K⁺) in the kidney. This works for a while because there is a lot of potassium stored in cells, but eventually the body becomes so depleted of potassium that the blood level falls and at that point cardiac arrest can occur.
3. Low sodium (Na⁺) is often caused by the patient drinking too much water, usually in order to appear to increase their BMI. Water intoxication occurs in compulsive water drinking and can be fatal (7).
4. Hypoglycaemia or low glucose can occur during starvation in AN, and as a result of taking insulin in a diabetic patient. Glucose in the blood is maintained via the chemical glycogen which is stored in the liver and the muscles. During complete starvation, glycogen stores are used up in about 24 hours (8). After that time, fat is broken down and ketones released from that process to allow essential organs to function, even when the blood glucose is very low. However, this form of metabolism is limited and depends on fat cells being present. In patients with AN, the level of fat can fall to very low levels. In the study by Kerruish et al. (9), the lowest level observed in a group of adolescents was 4.2% (compared to a normal minimum of 15.6%), and when this gets used up the patient can die. Thus, although little or no food intake is not usually associated with hypoglycaemia because the body's response adjusts to the poor intake, hypoglycaemic coma has been reported in AN (10).
5. Prealbumin, also known as transthyretin, is a protein that, if low, indicates possible malnutrition.
6. Low white blood cells (WBC). Over one-third of the patients with restricting AN had low WBCs. This is significant for two reasons. First, it may render the patient more susceptible to infection because of reduced immunity. Second, low WBCs have been associated in adolescents with a possibly increased risk of refeeding syndrome (RFS) (11).
7. Osteoporosis is a well-recognised long-term complication of AN (12) and leads to increased fracture risk. The cause is not clear, although hormonal changes, nutritional deficiency, including reduced levels of calcium and vitamin D (also noted in Table 1), and chronic low weight leading to reduced stress on the skeleton are all possible factors. It seems to be at least partly reversible by weight gain (12). Adolescents with AN are at much greater risk of developing osteoporosis than adult patients, as their bones are still developing and peak bone mineral density is not reached until early in the third decade (13).

Measure	AN restricting	AN purging	BN
Low prealbumin	51.4%		
Low white cells	36.1%		
Osteoporosis	34.3%	21.0%	
Vitamin D deficiency	30.0%		
Metabolic alkalosis	16.8%	33.3%	23.4%
Low sodium	16.0%		
Low potassium	14.2%	42.4%	26.2%
Low glucose	7.1%		

Table 1. Abnormal investigations reported in adults with eating disorders. Mehler et al. (5)

The development of MEED

In 2008, a case history was presented at the British Association for Parenteral and Enteral Nutrition conference. She was a young woman with AN, admitted very underweight to a gastroenterology ward. Attempts were made to feed her but, due to her illness, they did not succeed. The family was desperate to support her, but she continued to lose weight and died.

Following this tragic story, one of the current authors (PHR) met with the consultant physician and they invited a group of physicians and psychiatrists to discuss what could be done. Their meetings were almost all online and they eventually agreed for the Royal College of Psychiatrists to publish a document called MARSIPAN (Management of Really Sick Patients with Anorexia Nervosa) in 2010. This document was endorsed by the Royal Colleges of Physicians and Pathologists.

In 2012, an equivalent guidance for under 18s, Junior MARSIPAN, was produced. A revision of the first document appeared in 2014 and in 2019, a new group was set up with the collaboration of the National Collaborating Centre for Mental Health (NCCMH) which led to the publication in May 2022 of Medical Emergencies in Eating Disorders (MEED) (14).

MEED aimed to be more inclusive than MARSIPAN, providing guidance in one document for all EDs across the whole lifespan.

The MEED development group included a project group with nine members from NCCMH and clinicians, a 13-member Expert Reference Group with experts by experience, both patients and a carer, adult and child and adolescent eating disorders psychiatry, liaison psychiatry, gastroenterology, paediatrics, dietetics and emergency medicine. A

third group of 38 contributors were mostly nominated by organisations including BEAT (beateatingdisorders.org.uk), various Royal Colleges and clinical services and 30 stakeholder groups registered to provide advice. The evidence used in writing MEED was a mixture of published studies and expert consensus. While MEED was written for the UK health service, studies and guidance documents from different countries were read and their results incorporated if appropriate. MEED was endorsed by the Academy of Royal Colleges. There has been, until now, no formal audit or evaluation of the uptake of MEED or of its value in assessing risk or predicting the outcome of EDs. Figures from death certificates have shown no significant change in UK mortality from EDs between 2001 and 2018 (15). MARSIPAN was published in 2010. While there is no completed formal audit of MEED, the results of a survey on the MEED website (meed.org.uk) of 186 healthcare workers (HCWs) requesting copies of a patient's risk assessment, dated 21 November 2024, showed the following specialisms:

Specialist ED service: N = 53 (28.5%)	Gastroenterology: N = 9 (4.8%)
Paediatrics: N = 46 (24.7%)	Child and adolescent mental health: N = 5 (2.7%)
General adult medicine: N = 29 (15.6%)	Emergency medicine: N = 3 (1.6%)
General adult psychiatry: N = 28 (15.1%)	General practice: N = 3 (1.6%)
Parent or carer: N = 10 (5.4%)	

These results are encouraging and show that 22% of website users were medical HCWs treating adults. It is of interest that MEED is also being used by carers. Overall, 79% of respondents were doctors.

What are the main causes of death in eating disorders?

There are two ways to examine this important question: first, by referring to studies in the literature and second, by relating events arising from clinical experience.

Mehler et al. (16) acknowledged that evidence from studies of medical causes of death was inadequate. They postulated a number of plausible mechanisms but acknowledged they are not all proven. These include the following.

1. Cardiac structural changes associated with weight loss.
2. Refeeding syndrome.
3. The effects of electrolyte changes such as hypokalaemia due to purging.
4. ECG changes including QTc prolongation, exacerbated by the effects of drugs, such as neuroleptics, on QTc.
5. Hypoglycaemia.
6. Bradycardia leading to cardiac arrest.

Fichter et al. (17) reported cause of death in 65 patients with EDs and cited the following causes.

1. Circulatory collapse.
2. Cachexia.
3. (Multiple) organ failure.
4. Infection (pneumonia).
5. Kidney failure.
6. Suicide in 23% of deaths.

The most common diagnosis in each cause of death was AN, apart from suicide which was distributed equally between AN and BN.

In the MEED development group, a number of case histories were collected in which the patient had died and the death might have been preventable. A list of these cases follows:

1. Failure to use the Mental Health Act (or equivalent). This was reported several times. In one case, the patient, whose ED compelled her to oppose weight gain, lost weight until she died with no consultation with mental health services. In another, a female aged 19 years, mental health services were involved and the patient was detained under the UK Mental Health Act, but the physician refused to agree to any treatment being imposed.
2. Failure to treat extreme hypoglycaemia. This was documented by the Health Services Ombudsman (2). A 19-year-old female patient with severe AN was found to have a low serum glucose. This was not treated appropriately and the patient died.
3. Failure to recognise and treat RFS. An 18-year-old female patient was admitted to a medical ward with severe AN. She was refeed and developed major electrolyte disturbance. This was not recognised as RFS and she died from multi-organ failure. This is a situation in which blood tests recommended by MEED (serum phosphate, potassium) can indicate the presence of RFS and guide management.

4. Provision of no or almost no calories in an apparent attempt to avoid RFS. This has been termed underfeeding syndrome and we are aware of a number of fatal cases, although the overall prevalence is unknown. For example, a 20-year-old female patient with severe AN was transferred from an ED ward to the emergency department for assessment of chest pain. No cause was found but mildly raised liver function tests were discovered, probably due to malnutrition. She was admitted for liver investigations and not her malnutrition, which was not addressed. She died after a week on around zero calories.
5. Inability of nurses to prevent exercise leading to fatal outcome. A 19-year-old female patient with severe AN was being watched by two "special" mental health nurses who had received no training or experience in managing AN. The patient engaged in "micro-exercising", where she would stand at all times, not sleeping or eating for three days, and would move her feet and hands constantly while she stood. The nurses were not able to intervene and after three days the patient collapsed in coma associated with hypoglycaemia and died.
6. Inappropriately providing palliative care to a patient with AN. A 20-year-old female Dutch patient with AN was transferred from a clinic in the Netherlands to one in Portugal. She received therapy but continued to lose weight and died. The account of her illness and death was documented in a video recording online, *Emma Wants to Live* (18). It appears that the patient received palliative care and was not treated under mental health legislation against her will. The UK NICE recommendations for EDs (19) state: "1.12.1 If a person's physical health is at serious risk due to their eating disorder, they do not consent to treatment, and they can only be treated safely in an inpatient setting, follow the legal framework for compulsory treatment in the Mental Health Act 1983." We agree with that advice, while acknowledging that there is a legitimate discussion to be had concerning palliative care in EDs (20). Nevertheless, the attempt to define "terminal anorexia" has been strongly criticised (21).
7. Not feeding the patient while pursuing possible causes of raised liver function tests. Several cases came to the attention of the MEED development group in which obvious undernutrition had not been treated while other possible medical diagnoses were investigated. In two cases, the patient was severely underweight and was found to have abnormalities of liver enzymes. They were investigated for these and deteriorated, and some died, probably from undernutrition. The lessons to be learnt here are, first, that raised liver enzymes are frequently seen in severely underweight patients with AN (22) and second, that undernutrition must be treated urgently, according to MEED guidance, while other necessary investigations proceed.

Managing high-risk eating disorders in different contexts

EDs can present in many different places. The task of the clinician is always as follows.

1. To establish whether or not an ED is present.
2. To assess the level of risk that it may pose.
3. To act appropriately to reduce that risk.

The response to risk can be seen as a stairway or stepped process. For low risk, continue managing at home. This is not only for HCWs such as GPs but also for family members. As the risk rises, and the MEED Risk Assessment Framework is a good guide to this, the place of care becomes more complex. This process is illustrated in Figure 1. At the lowest level of risk, the patient and family may be primarily responsible for managing risk and their role might be to ensure the family member with the ED is encouraged to eat. At the primary care level, monitoring of weight, electrolytes and mental state are appropriate at low or moderate levels of risk, while specialist services, whether eating disorders day care, inpatient medical care or specialist eating disorder unit care, would normally be involved at the higher levels of risk.

Where do patients with eating disorders present for care?

The places where patients with EDs present are diverse (23). Below is a provisional list of clinical services likely to be faced with a patient with an ED and hence required to make a risk assessment.

Primary care. Patients with different EDs may present to the GP with symptoms of the ED, such as weight loss, bingeing, vomiting or laxative abuse. Sometimes, however, because of shame or unwillingness to accept treatment for the ED, a patient may come with a physical problem, such as amenorrhoea or infertility related to low weight, or be found to have unexpected low potassium in a blood test, or a psychological difficulty such as depression, self-harm or anxiety. All of these problems, as well as many others, can signify an ED.

Secondary care, including the emergency department (low weight, weakness, cardiac arrhythmia due to hypokalaemia), any medical outpatients (weight loss, gastrointestinal problems), paediatric outpatients (failure to grow, picky eating, mood changes, abdominal pain), gynaecology (amenorrhoea), infertility (due to weight loss), postnatal care (difficulties with lactation, recurrent ED symptoms post-partum, depression), dietetics (weight loss, vitamin deficiency), medical inpatients (need for refeeding, rejection of help to gain weight) orthopaedic care (unexpected fractures, unexplained loss of height) and dental care (dental erosion due to excessive vomiting). This list is not exhaustive.

In all of these contexts, it can be helpful to ask some screening questions, such as: "Is eating an issue for you?", "You

are a little underweight, what would you say to putting on a couple of kilos?" and "Are you happy with your weight and shape?" The answers can point the clinician in the direction of an ED.

How does MEED address the different risk areas for adults and for children and adolescents?

MEED contains a number of resources of use to clinicians. Figure 2 depicts a flow chart indicating how it can be used. By locating the issue you are facing on the left, the link on the right will take the reader to the relevant part of the MEED document. Alternatively, the link to the relevant document will be found on the MEED website. Table 2 lists various roles in healthcare (also not exhaustive) that can be involved in the care of people with EDs, as well the patients themselves and their carers. In the MEED website, clicking on "Summary sheets for each professional and supporter" leads to a list of sheets from which to choose.

The MEED checklist

The checklist approach, pioneered by surgeon Atul Gawande (24), identifies key issues that cause clinical problems and provides brief, unambiguous advice on how to address them. In writing the MEED (and MARSIPAN) guidance, we included a postcard-sized checklist to address some of the most important issues that clinicians face when seeing a severely ill patient with an ED, perhaps for the first time in their career. It is reproduced in Figure 3.

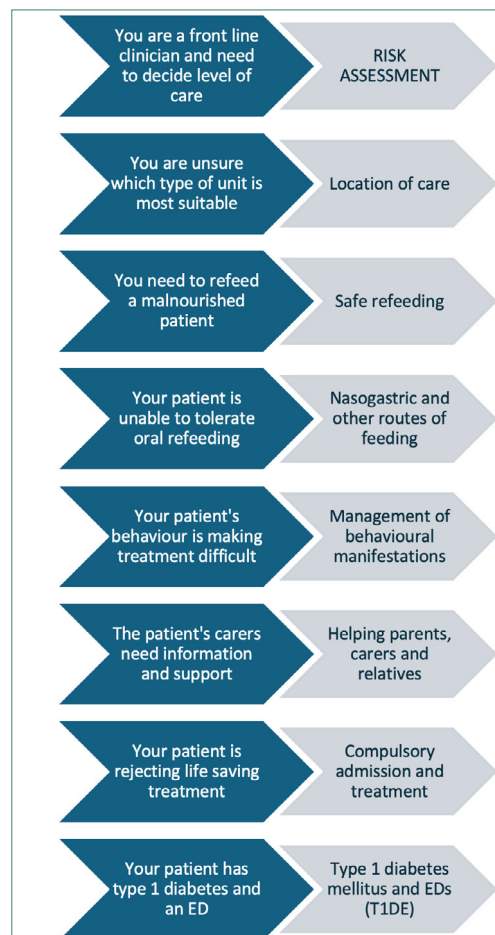


Figure 2. Accessing resources in MEED (see the MEED website: meed.org.uk)

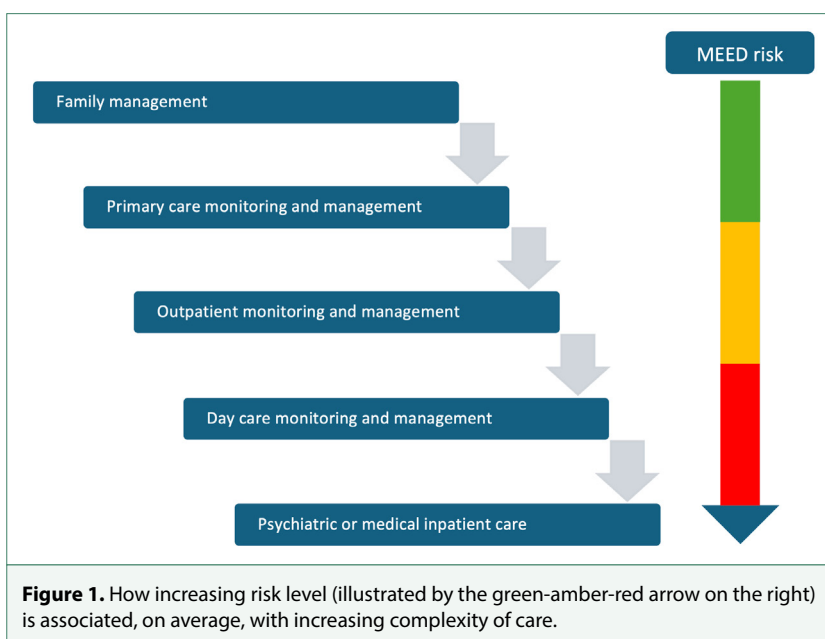


Figure 1. How increasing risk level (illustrated by the green-amber-red arrow on the right) is associated, on average, with increasing complexity of care.

The checklist is divided into three columns: assessing, refeeding and managing. The "assessing" column asks three basic questions: "Does the patient have an eating disorder?", "Is the patient medically compromised?" and "Is the patient consenting to treatment?". This allows the clinician (for example, a GP or emergency department physician) to refer a high-risk ED patient for urgent eating disorders care and, if necessary, obtain an urgent opinion on the need for compulsory care.

The "refeeding" column assumes that the patient is in medical or psychiatric care and that refeeding is being attempted. The checklist allows the clinician to assess the risk of RFS and to initiate refeeding at a level appropriate to the RFS risk, while monitoring necessary physical tests.

The "managing" column deals with the important issues of collaboration between professionals, a frequent source of problems, training of nurses and behaviours to be aware of that could impair response to treatment.

We believe that use of the checklist by frontline staff in all health-care settings could result in reduced mortality and morbidity in patients with severe EDs, as they seem to do in surgical patients (25).

Be concerned and alert but don't panic!

Yes, EDs can be dangerous and can even lead to death. Moreover, if you are found to have neglected a patient's risk factors, you (and your employer) may be criticised in an investigation. However, the majority of patients do not suffer these catastrophic outcomes and as well as being alert to the possibility of a serious health issue, we should equally not panic whenever a patient is found to be vomiting, self-harming or losing weight. There are a few golden rules that a HCW might wish to keep in mind.

Role
Psychiatrist
Liaison psychiatrist
Physician
Dietitian
GP
Managers and commissioners
Nurse
Psychologists and therapists
Relatives and carers
Generic psychiatry teams
People with eating disorders
Emergency department staff, on-call medical and paediatric staff
Paediatrician
Physiotherapist

Table 2. How to find your summary sheet in MEED. Click on the role or use meed.org.uk to find the summary sheet.

1. Do a MEED risk assessment on all patients referred.
2. If there are significant risks (amber or red), the HCW should ask him or herself, "Is the risk high enough to recommend a change in management?" (e.g., more frequent monitoring, day care or inpatient admission).
3. If the answer to the above question is "I'm not sure", then the HCW should ask someone more senior and experienced or, if the HCW is that senior person, he or she should discuss the case with a peer.
4. The HCW should never ignore significant risks.
5. Once the HCW has done all of the above he or she should assure him or herself that the risk is being managed as well as possible and attend to other responsibilities.

There is a danger in providing care for patients with EDs that the HCW may become overanxious, and this can affect their own mental health and capacity to function in their role. If they think this is happening, we would suggest discussing it with a colleague(s), consider taking some time off, seek help from friends, relatives or perhaps their GP, and consider raising these concerns with their line manager.

Some clinicians faced with a patient with a severe ED find it hard to make an overall assessment and get drawn into investigating an abnormal blood result (such as nutritionally caused abnormal liver function or thyroid function), which can lead to them unintentionally neglecting to treat the obvious and much more dangerous malnutrition. This can be more common with male patients, where EDs may be less likely to be suspected and can lead to delays in treatment (26). If the HCW suspects that this may be happening, MEED should be consulted, the case should be discussed with someone experienced in the medical management of EDs and the HCW should arrange to attend a course in ED risk assessment.

Two clinical vignettes

A 13-year-old boy has stopped eating entirely following the birth of a baby sister. He is brought to you, his GP, by his father. He has lost 3 kg in weight over four weeks and is very distressed. He thinks he looks better because, he says, a teacher at school had previously referred to him as "chubby". You check his weight (31.1 kg) and height (1.55 m) and find his m%BMI is 72%. The boy talks vaguely about feeling that he should disappear so his family can care for the new baby, and his parents have found some paracetamol tablets in his school bag. He does not wish you to share information with his parents because "They'll be too worried".

Risk assessment

First, diagnosis is required. An ED, probably AN, is likely, but other causes of weight loss should be excluded. Using the MEED Risk Assessment Framework, a number of risk areas appear. He has lost 3 kg over four weeks, which is an average rate of weight loss of 0.75 kg per week. That rates as amber. The quoted m%BMI is referring to the percentage median BMI from the formula, BMI/(50th percentile BMI for the same age and sex) x 100. So, if the child's weight is 31.1kg and his height is 1.55m, his BMI is 12.96. For a boy of 13 years, the 50th percentile for BMI is 18.20, so the patient's percent median BMI is (12.96/18) x 100 = 72%. This also rates amber on MEED.

Appendix 3: Medical emergencies in eating disorders risk checklist for clinicians		
Assessing Does the patient have an eating disorder? Yes: Anorexia nervosa- Bulimia nervosa- Other Not sure: Request psychiatric review Is the patient medically compromised? ☐ BMI <13 (adults); m%BMI <70% (under 18)? ☐ Recent loss of >1kg for 2 consecutive weeks? ☐ Acute food or fluid refusal/intake <400kcal per day? ☐ Pulse <40? ☐ BP low, BP postural drop >20mm, dizziness? ☐ Core temperature <35.5°C? ☐ Na <130mmol/L? ☐ K <3.0mmol/L? ☐ Raised transaminase? ☐ Glucose <3mmol/L? ☐ Raised urea or creatinine? ☐ Abnormal ECG? ☐ Suicidal thoughts, behaviours? Is the patient consenting to treatment? Yes: No: Mental health assessment requested	Refeeding High risk for refeeding syndrome? ☐ Low initial electrolytes ☐ BMI <13 or m%BMI <70% ☐ Little or no intake for >4 days ☐ Low WBC ☐ Serious medical comorbidities, e.g. sepsis High risk? Management: • <20 kcal per kg per day • Monitor electrolytes twice daily • build up calories swiftly • avoid underfeeding Lower risk? Management: • Start at 1,400-2,000kcal per day (50 kcal/kg/day) and build by 200 kcal/day, to 2,400kcal/day or more • Aim for weight increase of 0.5-1kg/week • Avoid underfeeding Monitoring ☐ Electrolytes (especially P, K, glucose) ☐ ECG ☐ Vital signs ☐ BMI	Managing Are medical and psychiatric staff collaborating in care? Yes: No: Psych. consultation awaited Are nurses trained in managing medical and psychiatric problems? Yes No and appropriately skilled staff requested/training in place Are there behaviours increasing risk? ☐ Falsifying weight ☐ Disposing of feed ☐ Exercising ☐ Self-harm, suicidality ☐ Family to stress/anxiety ☐ Safeguarding concerns Mobilise psychiatric team to advise on management Note: m%BMI = mean percentage BMI Please do not use BMI as a single indicator of risk

Figure 3. The MEED checklist (reproduced with permission from the Royal College of Psychiatrists)

Lastly, he is expressing vague suicidal thoughts which would need investigation but would also probably be rated amber on MEED. He is therefore rated amber on at least three MEED measures and should be assessed on all other risk factors (electrolytes, ECG etc.) so that a full risk assessment can be made.

A 19-year-old young woman attends university near your clinic. She has a two-year history of AN and was admitted to hospital for nine months, being discharged at a BMI of 17.2 (46.3 kg; height, 1.65 m) in March in the year that she moved to university from home. Her medical monitoring, including weekly weight and bloods, is being managed by her GP, requested by the ED doctor. When seen in your clinic, she has lost weight following her discharge six months earlier and has a BMI of 15. She attends therapy and appears to be using it appropriately. Four weeks later, you try to find her medical monitoring results and discover that she has not been attending her GP, so she has effectively not been monitored. There are medical members of your multidisciplinary team, but they are located over 60 miles away in another town. She attends for her therapy session and looks significantly thinner than the last time you saw her. Her BMI is 14. You assign her urgently for outpatient medical review, but she fails to attend. Two weeks later she is found by her cleaner on the floor of her room, unable to stand and is taken to the emergency department of the nearest hospital.

Risk assessment

Using MEED, this patient also has a number of risk areas. When seen initially, she had lost 6 kg in six months, a rate of 0.25 kg per week (MEED risk, green). Then, in four weeks, she lost 2.6 kg, a rate of 0.65 kg per week (MEED risk, amber). Her BMI fell to 14 (MEED risk, amber). Not attending her GP for monitoring is not specified as a risk on MEED but could be considered equivalent to poor "engagement with management plan" and rated as amber or, possibly, red.

This is an example in which several amber ratings should alert the clinician that the risk is climbing and a medical review is essential. This did not occur and she was found collapsed in a very poor state.

Cautionary notes

While we believe that MEED can be very helpful as a risk assessment tool, a few factors need to be borne in mind in order to optimise its use.

1. MEED does not provide a quantitative measure of risk, that is, a patient with four reds on MEED is not necessarily at a greater level of risk than a patient with three.
2. Sometimes patients who have been chronically underweight may be more medically stable, despite lower weights and heart rates etc., than others who might still be at a relatively normal weight but have lost weight rapidly.
3. Management decisions need to be made on a case-by-case basis: for example, decisions to admit or discharge to ED units or medical/paediatric wards cannot be made reliably using protocols or algorithms created solely using MEED scores or physical measurements.

Perhaps these caveats could be best summarised with the aphorism, "always look at the patient and not just their MEED scores".

Implementing MEED in health facilities

A guidance document is only any use if it is used. MARSIPAN and Junior MARSIPAN, the predecessors to MEED, were popular and anecdotally appeared to be implemented in the UK and Ireland. However, following a number of deaths occurring in health facilities the coroner, Sean Horstead, wrote in 2021, "The evidence of hospital staff revealed, at best, inconsistent implementation of the Royal College of Psychiatrists MARSIPAN guidance for the emergency treatment of AN patients and, at worst, a failure to implement the Guidance at all" (27).

Since the publication of MEED in 2022, the guidance has been cited many times in the UK and Ireland. A Google search in April 2024 using the terms "MEED anorexia" revealed articles and posts by the Royal Colleges of Psychiatrists, Emergency Medicine, Intensive Care Medicine and Paediatrics and Child Health; by primary care, nursing and medical education organisations; and by acute and mental health trusts and private psychiatric services. Concerns expressed by the coroner cited above and others (e.g., concerning the death of Nichola Lomax (4)) might lead to improvements in practice but that seems unlikely without changes in the education of HCWs. The campaign by BEAT (28), the UK EDs charity, "Worth more than 2 hours" identified that only 16 out of 41 UK medical schools were providing satisfactory ED teaching. Training for all clinicians who may provide care to a patient with an ED is urgently required in order to improve knowledge about EDs.

It is our view that education is one of the best keys to ending unnecessary deaths from EDs and that this should be taken up by medical, nursing and dietetic schools as well as by postgraduate training organisations for general and emergency medicine, primary care, gastroenterology, intensive care medicine, paediatrics and other relevant specialities. Furthermore, we would suggest that EDs competency should be required in specialist training in these and other relevant fields.

Healthcare providers also have a role in spreading the word. We recommend that MEED training should be mandatory (as, for example, are resuscitation and infection prevention in medical units) for all staff who might provide a clinical

service to a patient with an ED in any clinical setting including mental health, acute healthcare, primary care and any other relevant setting. This training should be provided and monitored by healthcare management.

We believe that only through widespread comprehensive, regular and updated training will acute healthcare for patients with EDs improve and further unnecessary deaths be prevented.

1.	Eating disorders, especially anorexia nervosa, have an increased mortality
2.	Symptoms associated with particular risk include low and falling weight, vomiting, laxative abuse, electrolyte disturbance and suicidality
3.	The combination of physical and mental problems can pose challenges to a team without specialised knowledge
4.	MEED provides a risk assessment framework which is straightforward to use and available at meed.org.uk
5.	Patients with red or amber risk factors should have a full evaluation of their physical and mental states
6.	When an eating disorder patient with significant risks is under the care of a team that does not specialise in eating disorder management, there should always be liaison with at least one eating disorder specialist
7.	When refeeding eating disorder patients with weight loss, there is a risk of both refeeding and underfeeding syndromes
8.	Education of all healthcare workers who might provide care to an eating disorder patient should be part of basic training and if that has not occurred, the healthcare worker should receive training as soon as possible
For eating disorders, please use MEED	

Table 3. Key learning points about MEED

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