Guidelines for the identification and management of undernutrition in adults in the community

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1 Aims of the guidelines

These guidelines are aimed at health care professionals working in the community in Wolverhampton, specifically GPs, community nurses and nurses working in nursing homes, care home managers, community pharmacists and dietitians. Their aim is to facilitate the cost effective management of adult patients at risk of undernutrition by providing guidelines on identification and management of those at risk.

2 Introduction and rationale

Malnutrition is both a cause and consequence of disease in adults. It is estimated to affect at least 3 million adults in the UK, 93% of whom live in the community, and costs the UK £19.6 billion annually in public expenditure (Elia, 2015).

Malnourished individuals have poorer clinical outcomes, higher rate of complications (including pressure ulcers and infections) (Stratton et al, 2003; NICE, 2006) and consequently incur greater healthcare costs (Elia, 2006). Undernutrition and its effects can be treated, through nutrition support and in the majority of cases oral nutrition support such as the measures indicated below will be effective:

- Small, frequent, nutrient dense meals
- Nourishing snacks & drinks between meals
- Help with obtaining and taking food (e.g. help to buy and prepare suitable meals and snacks, assistance with eating where needed)
- Oral nutritional supplements (ONS) also called sip feeds, when normal food alone has been shown to be inadequate

Although the use of sip feeds can be effective in the management of undernutrition (NICE, 2006), they are expensive and their use increasing. In 2011 Wolverhampton PCT spent £1.6M on sip feeds compared to £360K in 2008. In the community setting general practitioners (GPs) and nurses, are largely responsible for the management of patients at risk of undernutrition in the community. However it has been found that these professionals receive little training in nutrition, and practice relating to oral nutritional supplements is not always evidence based (Kennelly et al 2008). In other words there is significant scope to improve the clinical and cost effectiveness of nutrition support in Wolverhampton, through:

1. **Nutrition screening** - provides an opportunity to identify patients who are malnourished or at high risk of malnutrition and who would benefit from nutrition support.

2. **Nutrition management and sip feed prescribing guidelines** - to advise on the treatment of those with or at risk from malnutrition, including when and how to introduce sip feeds and how to monitor and discontinue their use.
3 Nutrition screening

The Malnutrition Universal Screening Tool (MUST) is recommended as it shows good validity, reliability and consistency across all health care settings (BAPEN, 2003). The version enclosed within these guidelines should be used across community healthcare settings and is consistent with the version of MUST ratified for use at New Cross and West Park Hospitals. All staff using the screening tool should have the necessary skills and training (NICE, 2006). The recommended screening tool for local use is included as Fig. 1 below, and should be used in conjunction with the appropriate Nutrition Management Guidelines in Appendices i and ii. Guidelines on identifying which individuals warrant nutrition screening are provided in section 4. Additional guidelines on screening are included in Appendix iii.

<table>
<thead>
<tr>
<th>Step 1 BMI score</th>
<th>+</th>
<th>Step 2 Weight loss score</th>
<th>+</th>
<th>Step 3 Intake score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BMI Weight (kg)/Height²</strong></td>
<td><strong>Unintentional weight loss in last 3-6 months</strong></td>
<td><strong>No or negligible intake for more than 5 days</strong></td>
<td><strong>2</strong></td>
<td></td>
</tr>
<tr>
<td>&gt;20</td>
<td>0</td>
<td>&lt;5%</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>18.5-20</td>
<td>1</td>
<td>5-10%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>&lt;18.5</td>
<td>2</td>
<td>&gt;10%</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Step 4** Add the scores from steps 1, 2 and 3 together, to calculate overall score as an indicator of risk of undernutrition

**Step 5** Action plan - follow Nutrition Management Guidelines

**Fig. 1 MUST screening tool** (adapted for use in Wolverhampton community healthcare settings with the kind permission of BAPEN (British Association for Parenteral and Enteral Nutrition))
3.1 Notes and guidance on completion of MUST

Step 1 – BMI score
Body Mass Index (BMI) kg/m^2 = \frac{\text{Weight (kg)}}{\text{Height}^2 (m^2)}

Can also be calculated through BMI chart, available in Appendix iii and CP17 or at http://www.bapen.org.uk/pdfs/must/bmi-weight-loss-charts/must-table-up-to-100kg.pdf and http://www.bapen.org.uk/pdfs/must/bmi-weight-loss-charts/must-table-100to170kg.pdf

Step 2 – Weight loss score
\% \text{weight loss} = \frac{\text{Usual weight (kg)} - \text{current weight (kg)}}{\text{Usual weight (kg)}} \times 100

Can also be calculated through \% \text{weight loss} chart (available in Appendix iii and CP17 or at http://www.bapen.org.uk/pdfs/must/bmi-weight-loss-charts/kg-only-30to169kg-wt-loss.pdf

Weight
Recorded weight should be actual, current weight in kg. Avoid using estimated weight. In exceptional circumstances, if actual weight cannot be obtained and estimated or reported weight is used, the weight should be documented as “est. weight”

Alternative assessments of BMI
Patients who cannot be measured for height can have an estimation of their height made from ulna length. Patients who cannot be weighed can have an estimated BMI calculated from mid upper arm circumference (MUAC). Tools and guidelines for undertaking these estimations are provided in the „MUST” explanatory booklet available in Appendix iii and CP17 or at http://www.bapen.org.uk/pdfs/must/must_page5.pdf and http://www.bapen.org.uk/pdfs/must/must_page6.pdf

For further information on ‘MUST’ refer to BAPEN.org.uk.
4  **Identification of individuals who should be screened**

NICE (2006) recommends that people in care homes should be screened on admission and monthly thereafter. It is suggested that specific groups of community patients are screened annually as a minimum (Table 1) and if concerns arise concerning nutritional status.

<table>
<thead>
<tr>
<th>Patient group at risk of undernutrition</th>
<th>Frequency of screening</th>
<th>Responsibility for screening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 75 years of age</td>
<td>On initial registration with GP practice; when weight loss is cause for concern; opportunistic at other health checks or vaccinations etc</td>
<td>Any health professional who undertakes health checks or identifies cause for concern</td>
</tr>
<tr>
<td>Nursing or residential home residents</td>
<td>On admission and thereafter monthly</td>
<td>Nurse manager/Matron</td>
</tr>
<tr>
<td>Those with any of the following conditions:</td>
<td>Annually and more frequently as identified through the screening tool</td>
<td>Health professional involved in management – eg specialist nurse, consultant/team, GP, district nurse / community matron</td>
</tr>
<tr>
<td>Gastrointestinal disease, eg IBD, pancreatitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer and treatment effects, especially of the GI tract or head and neck</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chest disease, eg TB, COPD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Progressive neurological disease, eg. MS, MND, Parkinsons” disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain injury eg stroke</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic pain, eg arthritis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental health conditions, eg depression, dementia, Huntingdon”s Chorea, which negatively impacts on a patient”s ability to self care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV / AIDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any adult who may be considered as vulnerable, eg alcoholism, social isolation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Those referred for community nurse input (except those identified as at minimal risk through initial nursing assessment)</td>
<td>On initial assessment and thereafter as indicated by underlying clinical conditions/diagnoses and Nutrition Management Guidelines (Appendix i)</td>
<td>District nurses and community matrons</td>
</tr>
</tbody>
</table>

**Table 1: Recommended frequency of nutritional screening for community patients**
4.1 Exclusions from nutrition screening

It is inappropriate to undertake nutritional screening on patients who are in the terminal or end of life stage. These individuals should be offered food and drink as appropriate to their needs, but efforts to address nutritional issues are not in the best interests of this group of patients.

Children and young people under the age of 18 are excluded from these guidelines.
5 Nutrition management and sip feed prescribing guidelines

The aim of these guidelines is to promote a food first approach to the management of undernutrition and to introduce sip feeds only when food alone has been shown to be inadequate. The flowcharts included in Appendices i and ii provide a step by step guide on how to achieve this aim in patients living in their own home and those living in a care home.

However, the healthcare professional responsible for the patient’s nutritional care should consider the following:

Underlying causes for weight loss or undernutrition – ie other symptoms, eg dysphagia, change in bowel habit, unexplained bleeding should be taken into account and managed accordingly.
Rapid unintentional weight loss (≥10% in 1 month or ≥15% in 2 months) may warrant earlier dietetic intervention.
Individuals with a pre-existing condition which requires a restrictive diet (eg. gluten free, pureed or renal diet) may require earlier dietetic intervention.

5.1 Sip feed prescribing guidelines

Oral nutritional supplements (ONS) or sip-feeds e.g. Fortisip Bottle, are classed as „border-line substances“. They can only be prescribed on an NHS prescription if the patient’s condition falls into a specified ACBS category.

The patient should have one of the following ACBS indicators and have failed to maintain or increase their weight through diet and symptom control measures, in order to commence a trial of sip feeds:
- Short bowel syndrome
- Intractable malabsorption
- Pre-operative preparation of malnourished patients
- Inflammatory bowel disease
- Following total gastrectomy
- Dysphagia
- Bowel fistula
- Disease related malnutrition, as evidenced by:
  - MUST score of 2 or more
  - Diagnosis of a medical condition which increases the risk of undernutrition as listed within Table 1

A decision to start sip feeds should be made in line with the attached flowcharts (Appendices i and ii). Additional information on the choice of sip feeds is provided in Table 2 (Appendix iv). Examples of vitamin and mineral supplements available on prescription or to buy over the counter is provided in Table 3 (Appendix v)
5.2 Guidelines for prescribing oral nutritional supplements in substance misuse

Introduction
The prescribing of oral nutritional supplements (ONS) for individuals known to misuse substances is an area of concern for many reasons:

Effects of substance misuse on nutritional intake:
- Poor appetite
- Poor dental hygiene and dental decay
- Co-morbidities, eg HIV, hepatitis B and C, mental health problems (including eating disorders), liver disease
- Low income and allocating available money to buying drugs and alcohol
- Poor nutrition knowledge and food preparation skills
- Irregular eating habits
- Lack of support from family and friends
- Homelessness and poor housing.

Additional problems associated with ONS prescribing in this client group:
- Tendency to become reliant on ONS instead of food and it can be difficult to stop them taking them
- May be given to family members or friends, or even sold as a source of income
- Follow up to re-assess the on-going need for ONS can be difficult because this client group tend to be poor at keeping appointments.

Considerations when discussing food, nutrition and ONS

Weight loss
- In the majority of cases this is due to inadequate food intake. Therefore the only long term solution is to improve their food intake, over a period of time. Basic ideas and suggestions are provided in Section 7: Appendices. In addition over the counter Build Up and Complan is available as a first line supplement drink. More detailed advice is available in the leaflet How to eat well when you have a poor appetite.

- It is advisable to obtain an objective assessment of their weight history and risk of undernutrition– ie weigh them, measure their height and calculate and record their BMI and % weight loss, to provide a MUST score. Avoid the use of reported weights and heights.

Poor appetite
- May be a side effect of drug use (eg because of constipation), alcohol excess and smoking
- Fizzy drinks, tea and coffee may contribute to a poor appetite
Nutrition management
The flowcharts provided in Section 7: Appendices, can be used in this client group, with the additional recommendations, before considering prescribing ONS

☐ Their MUST score must be 2 or above with a further weight loss (or failure to gain weight if pregnant) demonstrated over 2-4 weeks despite food fortification advice (which may include over the counter Complan or Build Up)
☐ The client should be in a rehabilitation programme or on the waiting list for a programme
☐ The client should be reviewed monthly and if they fail to attend an appointment, the ONS stopped
☐ Maximum prescription should be for the equivalent of 600kcal / day. The most cost effective sip feed to prescribe is Complan Shake (387kcal per sachet when made up with 200mls full fat milk). The second choice is the Fortisip range (usually 300kcal / bottle).
☐ They should only be prescribed for 1-3 months initially. Thereafter weight and dietary intake reviewed to re-evaluate the effectiveness of ONS
☐ If weight gain occurs, ONS may be continued until an acceptable weight is reached at which point the client should be weaned off their ONS.

Hepatitis C and HIV infection
Patients being treated for these infections may have genuine and significant nutritional problems. If this is the case, they should be under the care of a dietitian who will advise on the appropriate use of ONS.

Reproduced by Nutrition and Dietetics, Royal Wolverhampton NHS Trust (November 2012) with permission, from NHS Grampian Policy and Procedure for General Practitioners and Primary Care Staff for Prescribing Oral Nutritional Supplements in Substance Misuse (produced October 2011)

Produced by Nutrition and Dietetics, RWT on behalf of Wolverhampton CCG April 2017. Approved by Wolverhampton APC May 2017. Next review April 2019
6 References


Elia M. (2015). The cost of malnutrition in England and potential cost savings from nutritional interventions. Published by the British Association for Parenteral and Enteral Nutrition and National Institute for Health Research Southampton Biomedical Research Centre. U.K.


7 Appendices

i  Malnutrition Universal Screening Tool (MUST) and Nutrition Management Guidelines
   – for patients living in their own home

ii Malnutrition Universal Screening Tool (MUST) and Nutrition Management Guidelines
   – for patients living in residential or nursing homes, or in sheltered housing

iii Additional information on screening using the MUST (“Trouble Shooting” from CP17)
   BMI Chart (BAPEN, 2003)
   Percentage weight loss calculator (taken from BAPEN, 2003)
   Alternative measurements: instructions and tables (BAPEN, 2003)

iv Table 2: Guidance for choice of sip feeds (typical daily dosage is 1-3 for all sip feeds)

v Table 3: Examples of vitamin and mineral supplements available on prescription or to buy over the counter

vi Advice to help individuals get the most from their food
**Malnutrition Universal Screening Tool (MUST) and Nutrition Management Guidelines**

(for patients living in their own home)

‘MUST’ is adapted here with the kind permission of BAPEN (British Association for Parenteral and Enteral Nutrition)

To be completed as per Table 1 in “Guidelines for the identification and management of undernutrition of adults in the community”

<table>
<thead>
<tr>
<th>MUST score 1</th>
<th>MUST score 0</th>
<th>MUST score 2 &amp; above</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identify duration that patient has been underweight, or pattern of weight loss</td>
<td>Set a date to re-screen according to Table 1</td>
<td>Follow management guidance as for MUST 1 and:</td>
</tr>
<tr>
<td>2. Investigate underlying causes of weight loss</td>
<td></td>
<td>1. Trial Build Up and/or Complan – 2-3/day or prescribe Complan Shake 2/day</td>
</tr>
<tr>
<td>3. Treat underlying symptoms</td>
<td></td>
<td>2. Prescribe a multi-vitamin, multi-mineral supplement</td>
</tr>
<tr>
<td>4. Provide food fortification advice (patient leaflet)</td>
<td></td>
<td>Review monthly for 2 months - Check MUST score and compliance with sip feeds (Build Up / Complan or Complan Shake)</td>
</tr>
<tr>
<td>5. Consider need to prescribe multi vitamin &amp; multi mineral supplement with GP</td>
<td></td>
<td>MUST 1</td>
</tr>
<tr>
<td>6. Request patient/ carer records all dietary intake for at least 3 days.</td>
<td></td>
<td>MUST 2 &amp; above but weight stable and taking sip feeds</td>
</tr>
<tr>
<td>7. Set a review date for 2-4 weeks</td>
<td></td>
<td>MUST 2 &amp; above Non-compliant with sip feeds</td>
</tr>
<tr>
<td></td>
<td>Review between 2 and 4 weeks</td>
<td>Establish reason for non-compliance and discuss with GP to try another from list</td>
</tr>
<tr>
<td>Further weight loss and/or no improvement in dietary intake</td>
<td>Stable weight or weight gain and improved dietary intake</td>
<td>MUST 2 &amp; above Compliant with 2-3 sip feeds / day, but further weight loss and patient not in end of life stage of illness</td>
</tr>
<tr>
<td>Treat as MUST 2 &amp; above</td>
<td></td>
<td>MUST 2 &amp; above and losing weight (whether taking sip feeds or not). Not in end of life stage of illness</td>
</tr>
<tr>
<td></td>
<td>MUST 0</td>
<td>Refer to dietitian</td>
</tr>
<tr>
<td>MUST 1</td>
<td>MUST 1 with stable weight and reasonable dietary intake</td>
<td></td>
</tr>
<tr>
<td>Weight and underlying symptoms stable or improving, for last 2-3 months</td>
<td></td>
<td>MUST 2 &amp; above but stable weight and intake. Still requires sip feeds and patient not in end of life stage of illness</td>
</tr>
<tr>
<td>Discontinue vitamin and mineral supplements (and sip feeds if used) and recommend return to normal diet. Repeat screen as per Table 1 or sooner if there are concerns regarding intake or weight/weight loss</td>
<td>Aim to wean off vitamin and mineral supplements and sip feeds. Repeat screen every 2 months</td>
<td></td>
</tr>
<tr>
<td>Re-screen every 2 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re-screen every 2 months for 4 months</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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4. The above care pathway is only intended as guidance and should not override sound clinical judgement. Patients may require referral to a dietitian for other conditions even if they do not trigger a referral through MUST or earlier dietetic intervention may be indicated.
Malnutrition Universal Screening Tool (MUST) and Nutrition Management Guidelines
(for people living in residential or nursing homes or in sheltered housing)
‘MUST’ is adapted here with the kind permission of BAPEN (British Association for Parenteral and Enteral Nutrition)

**MUST score 1**
1. Identify duration that patient has been underweight, or pattern of weight loss
2. Discuss need to investigate underlying causes and treatment of symptoms with GP
3. Provide high calorie high protein diet and between meal snacks
4. Discuss need for multi vitamin and multi mineral supplement with GP
5. Record all dietary intake for at least 1 week
6. Set a review date for 2 weeks

- Review in 2 weeks
- Further weight loss and/or no improvement in dietary intake
- Stable weight or weight gain and improved dietary intake
- Treat as MUST 2 & above
- Discontinue vitamin and mineral supplements (and sip feeds if used) and recommend return to normal diet. Repeat screen monthly

**MUST score 0**
- Set a date to re-screen in one month’s time

- Review monthly for 2 months - Check MUST score and compliance with sip feeds (Build Up/Complan or Complan Shake)

**MUST score 2 and above**
Follow management guidance as for MUST 1 and:
1. Trial Build Up and/or Complan – 2-3/day (or discuss with GP whether Complan Shake 2/day is warranted)
2. Ask GP to prescribe a multi-vitamin, multi-mineral supplement

- Review monthly for 2 months - Check MUST score and compliance with sip feeds (Build Up/Complan or Complan Shake)
- Re-screen monthly for 2 months

- MUST 1
  - Weight and underlying symptoms stable or improving, for last 2-3 months

- MUST 1 with stable weight and reasonable dietary intake
- Aim to wean off vitamin and mineral supplements and sip feeds. Repeat screen monthly

- MUST 2 & above
  - but weight stable and taking sip feeds

- MUST 2 but stable weight and intake. Still requires sip feeds and patient not in end of life stage of illness

- MUST 2 & above
  - Non-compliant with sip feeds

- Establish reason for non-compliance and discuss with GP to try another from list

- MUST 2 & above
  - Compliant with 2-3 sip feeds / day, but further weight loss and patient not in end of life stage of illness

- MUST 2 & above
  - and losing weight (whether taking sip feeds or not). Not in end of life stage of illness

- Refer to dietitian

**NB** The above care pathway is only intended as guidance and should not override sound clinical judgement. Patients may require referral to a dietitian for other conditions even if they do not trigger a referral through MUST or earlier dietetic intervention may be indicated. If there are concerns discuss with GP
Trouble shooting guide:

How often should patients be weighed?

Weights on all adult in-patients eligible for screening must be recorded at least weekly. Daily weights are only appropriate for the assessment of fluid balance status.

What if the patient can't be weighed?

Most patients can be weighed on standing, chair or hoist scales. However there will be a minority of patients for whom this is not safe eg unconscious patients, those with unstable fractures or spinal injuries.

If it is unsafe to weigh a patient, use a weight recently documented in their notes or use self-reported weight (if reliable and realistic) from them or a family member. If it is not safe to weigh a patient, the reason for this should be clearly documented on MUST. It is essential to ask about recent weight loss, and observe for signs of loose fitting clothes, rings, wrist watches or dentures, which are all signs of weight loss.

For patients requiring long-term health interventions and care who cannot be weighed, mid-upper arm circumference measurements repeated each fortnight can be a useful indicator of BMI. More in formation is available in Appendix 9

What about recording weights for patients with oedema, plaster casts or amputations?

Estimates will need to be made – the dietitian can provide guidance.

What about patients who cannot have their height measured

Measurement of weight and height is required for an accurate BMI calculation. If the patient is unable to stand to have their height measured, reported height or ulna length can be used (Appendix 9).

If neither of these is available, a subjective assessment should be made of whether the patient has a BMI of more than 20kg/m2 (healthy weight or overweight), a BMI of 18.5-20kg/m2 (appears underweight) or a BMI of less than 18.5 kg/m2 (appears extremely underweight).

Palliative care

Palliative care patients must be screened as long as there is the potential for clinical and / or psychological benefit from nutrition support, regardless of whether they are receiving active treatment.
It is not appropriate to undertake an initial screen or conduct reassessments once patients enter the end of life stage. However, patients must continue to be offered food and fluids, in line with their care plan.

Patients transferred between wards
The initial MUST procedure must be undertaken within 24 hours of admission to hospital. If the patient is transferred within the hospital, the MUST documentation must be sent with the patient. On admission to the receiving ward or unit, the action plan detailed on the MUST chart must be implemented, there is no need to complete a new MUST screening.

Patients at medium or high risk on discharge from hospital, or nursing intervention
Patients with a score of 1 or more must be highlighted to the GP on discharge.

Critical Care
Nutrition screening is appropriate for all inpatients. Most patients on critical care will be at high nutritional risk. For those requiring enteral feeding, a protocol is in place for their management, other patients at high risk must be referred to the dietitian.
### Percentage weight loss calculator [taken from MUST, BAPEN 2003]

<table>
<thead>
<tr>
<th>Weight before weight loss [kg]</th>
<th>SCORE 0</th>
<th>SCORE 1</th>
<th>SCORE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Score 0</td>
<td>Score 1</td>
<td>Score 2</td>
</tr>
<tr>
<td></td>
<td>Wt Loss&lt;5%</td>
<td>Wt Loss 5-10%</td>
<td>Wt Loss&gt;10%</td>
</tr>
<tr>
<td>34 kg</td>
<td>&lt;1.70</td>
<td>1.70 – 3.40</td>
<td>&gt;3.40</td>
</tr>
<tr>
<td>36 kg</td>
<td>&lt;1.80</td>
<td>1.80 – 3.60</td>
<td>&gt;3.60</td>
</tr>
<tr>
<td>38 kg</td>
<td>&lt;1.90</td>
<td>1.90 – 3.80</td>
<td>&gt;3.80</td>
</tr>
<tr>
<td>40 kg</td>
<td>&lt;2.00</td>
<td>2.00 – 4.00</td>
<td>&gt;4.00</td>
</tr>
<tr>
<td>42 kg</td>
<td>&lt;2.10</td>
<td>2.10 – 4.20</td>
<td>&gt;4.20</td>
</tr>
<tr>
<td>44 kg</td>
<td>&lt;2.20</td>
<td>2.20 – 4.40</td>
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</tr>
<tr>
<td>46 kg</td>
<td>&lt;2.30</td>
<td>2.30 – 4.60</td>
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<tr>
<td>48 kg</td>
<td>&lt;2.40</td>
<td>2.40 – 4.80</td>
<td>&gt;4.80</td>
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<tr>
<td>50 kg</td>
<td>&lt;2.50</td>
<td>2.50 – 5.00</td>
<td>&gt;5.00</td>
</tr>
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<td>52 kg</td>
<td>&lt;2.60</td>
<td>2.60 – 5.20</td>
<td>&gt;5.20</td>
</tr>
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<td>54 kg</td>
<td>&lt;2.70</td>
<td>2.70 – 5.40</td>
<td>&gt;5.40</td>
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<td>56 kg</td>
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<td>58 kg</td>
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<td>2.90 – 5.80</td>
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<td>60 kg</td>
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<td>3.00 – 6.00</td>
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<td>62 kg</td>
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<td>3.10 – 6.20</td>
<td>&gt;6.20</td>
</tr>
<tr>
<td>64 kg</td>
<td>&lt;3.20</td>
<td>3.20 – 6.40</td>
<td>&gt;6.40</td>
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<tr>
<td>66 kg</td>
<td>&lt;3.30</td>
<td>3.30 – 6.60</td>
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<tr>
<td>68 kg</td>
<td>&lt;3.40</td>
<td>3.40 – 6.80</td>
<td>&gt;6.80</td>
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<tr>
<td>70 kg</td>
<td>&lt;3.50</td>
<td>3.50 – 7.00</td>
<td>&gt;7.00</td>
</tr>
<tr>
<td>72 kg</td>
<td>&lt;3.60</td>
<td>3.60 – 7.20</td>
<td>&gt;7.20</td>
</tr>
<tr>
<td>74 kg</td>
<td>&lt;3.70</td>
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<tr>
<td>126 kg</td>
<td>&lt;6.30</td>
<td>6.30 – 12.60</td>
<td>&gt;12.60</td>
</tr>
</tbody>
</table>

Weight before weight loss [st] loss [lb]

Produced by Nutrition and Dietetics, RWT on behalf of Wolverhampton CCG April 2017. Approved by Wolverhampton APC May 2017. Next review April 2019
Alternative measurements: instructions and tables

If height cannot be obtained, use length of forearm (ulna) to calculate height using tables below. (See The ‘MUST’ Explanatory Booklet for details of other alternative measurements (knee height and demispans) that can also be used to estimate height).

### Estimating height from ulna length

Measure between the point of the elbow (olecranon process) and the midpoint of the prominent bone of the wrist (styloid process) (left side if possible).

<table>
<thead>
<tr>
<th>Height (m)</th>
<th>Men(&lt;65 years)</th>
<th>Men(&gt;65 years)</th>
<th>Ulna length (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men(&lt;65 years)</td>
<td>1.94</td>
<td>1.93</td>
<td>1.91</td>
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<tr>
<td>Ulna length (cm)</td>
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<td>31.5</td>
<td>31.0</td>
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<tr>
<td>Men(&gt;65 years)</td>
<td>1.87</td>
<td>1.86</td>
<td>1.84</td>
</tr>
<tr>
<td>Women (&lt;65 years)</td>
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<td>1.83</td>
<td>1.81</td>
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<td>Ulna length (cm)</td>
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<tr>
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<tr>
<td>Women (&lt;65 years)</td>
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<tr>
<td>Women(&gt;65 years)</td>
<td>1.60</td>
<td>1.58</td>
<td>1.56</td>
</tr>
</tbody>
</table>

### Estimating BMI category from mid upper arm circumference (MUAC)

The subject’s left arm should be bent at the elbow at a 90 degree angle, with the upper arm held parallel to the side of the body. Measure the distance between the bony protrusion on the shoulder (acromion) and the point of the elbow (olecranon process). Mark the mid-point.

Ask the subject to let arm hang loose and measure around the upper arm at the mid-point, making sure that the tape measure is snug but not tight.

If MUAC is <23.5 cm, BMI is likely to be <20 kg/m².
If MUAC is >32.0 cm, BMI is likely to be >30 kg/m².

The use of MUAC provides a general indication of BMI and is not designed to generate an actual score for use with ‘MUST’. For further information on use of MUAC please refer to The ‘MUST’ Explanatory Booklet.
Advice to help individuals get the most from their food

- Smaller, frequent meals are easier to face than large meals. Try to have 3 meals every day and 3 snacks between meals. Don’t leave more than three hours between meals and snacks.

- Don’t overfill your plate- if you have a small appetite use smaller plates and eat more often.

- Use ready made meals and snacks if your appetite is affected by cooking smells or you are unable to stand for long periods.

- Try to have at least 1 pudding or dessert every day.

- Try to have a whole piece of fruit or a glass of pure fruit juice every day.

- Try to have 6-8 cups of fluid (water, tea, coffee, milk or squash) during the day but do not fill up on drinks in between or during meals instead of eating nourishing foods. (If thickened fluids have been advised, please make sure that all fluids meet the appropriate consistency).

- Take your time to relax and enjoy your meals rather than rushing them.

- A breath of fresh air, gentle exercise and eating in company may be helpful.

Simple ways to increase the calories provided from normal foods

- Avoid all low fat or reduced sugar foods: use Thick „u” Creamy yoghurts (not diet or low fat), full fat margarine or butter (not low fat spread).

- Spread butter or margarine thickly, on hot toast, teacakes or muffins etc

- Add butter, margarine, grated cheese or cream to mashed potatoes, vegetables and savoury sauces. Add olive oil to pasta and salad.

- Add grated cheese to omelettes, baked beans and extra to the top of cottage or fish pies

- Add double cream, ice-cream or custard to puddings and stewed / canned fruit. Add double cream to porridge.

- Make up dried or condensed soup with milk instead of water. Make up jelly with milk or evaporated milk instead of water

- Try and use 1 pint of full cream (full fat) milk or enriched milk* every day, in drinks, puddings and on cereals or porridge.

- Add mayonnaise to salads and sandwich fillings.

- Add extra sugar (if not diabetic) to drinks, cereals and puddings

*Milk can be enriched by adding 2-4 tablespoons of milk powder to a pint of full fat milk. Whisk with a fork to avoid lumps. Use throughout the day as ordinary milk.
Nourishing snack ideas

- A hot milky drink e.g. Ovaltine®, Horlicks®, drinking chocolate
- A glass of chilled full cream (full fat) milk flavoured using for example, Crusha® Syrup or Nesquik® with ice cream.
- 2-3 biscuits – shortbread, cream or chocolate biscuits or plain biscuits spread with butter or cream cheese or peanut butter
- Sponge cake, fruit cake or cream cake, individual apple pies, flapjack, jam tart
- Malt load, fruit loaf, teacake, scone with butter or margarine
- Buttered hot toast, crumpet, or muffin with jam
- Individual dessert such as trifle, yoghurt, crème caramel, rice pudding, milk jellies, thick and creamy yoghurt, egg custard, ground rice pudding
- Cheese with crackers, digestive biscuits, water crackers or bun bread
- Crisps with dips e.g. cream cheese and chive, houmous
- Mini pies, sausage roll, samosa, spring rolls, pakoras (onion bhajis), eggy bread
- Bowl of cereal or porridge made with full cream milk
- Handful of dried fruit or nuts for example peanuts, sultanas, raisins, dates, almonds, pistachios, Bombay mix/chevadra