Nutritional approaches to weight loss in cancer patients

the evidence base
Introduction

Cachexia is variably defined. The term is often used interchangeably with weight loss in patients with cancer, but this is an over-simplification of both the experience for patients and the underlying pathophysiology. Some definitions of cachexia describe percentage weight loss compared with pre-illness weight, speed of weight loss over time and / or disproportionate loss of muscle and visceral protein. However, although cachexia is commonly recognised once patients have lost significant weight, the underlying pathology is established before weight begins to fall. The term anorexia-cachexia syndrome (ACS) encompasses the broad clinical features usually seen in patients with cancer-induced cachexia. Symptoms commonly associated with ACS include chronic nausea, early satiety (feeling full quickly) and fatigue. Underlying cachexia and ACS is a complex of abnormal metabolic, neuro-endocrine and immunological pathways.

The general term weight loss is defined as a decrease in body weight resulting from voluntary or involuntary circumstances (www.medterms.com). This definition makes no attempt to take into consideration the clinical circumstances of a patient.

There are two important differences between cachexia and weight loss associated with reduced food intake:

- In starvation, lean muscle mass is preserved and the biggest tissue component of the weight loss is fat. In cachexia both muscle and fat are markedly depleted.
- In cachexia the degree of weight loss cannot be completely accounted for by reduced food intake. The characteristic muscle wasting occurs even in the presence of normal food intake and may be reported before any weight loss has occurred. Moreover, the weight loss of cachexia cannot be adequately treated with aggressive feeding. In contrast the weight loss associated with restricted food intake is characterised by a caloric deficiency that can be reversed with appropriate feeding.

For the remainder of this document, the term weight loss will be used to encompass all possible causes in patients with cancer.

Identification of patients at risk of nutritional problems

There are many recommendations on how to identify malnourished patients, which incorporate weight, body mass index (BMI) and recent nutritional intake. Malnutrition is defined by the National Institute for Health and Clinical Excellence (NICE) as any of the following: BMI <18.5, unintentional weight loss >10% within the preceding 3–6 months, BMI <20 plus unintentional weight loss >5% within preceding 3–6 months. However, BMI relates to chronic protein-energy status and does not reflect loss of body function resulting from recent unintentional weight loss; thus it can provide only a guide to the probability or risk of malnutrition rather than identification of malnourished individuals.

Significant unintentional weight loss suggests the presence of an underlying disease, which, if unchecked, is likely to produce further weight loss and deterioration in body function. To identify individuals on the basis of unintentional weight loss it is necessary to define the level of weight loss that is significant. Most of the proposed cut-offs include an estimation of the time frame during which the weight loss has occurred, and are not specific to cancer patients. However, one cut-off is consistent across the various recommendations: weight loss >10% occurring in the preceding six months.

Tools that screen for malnutrition include the Malnutrition Universal Screening Tool (MUST), which has been validated and is cited as an example of an appropriate screening tool by NICE for all patients in acute or community settings.

One tool designed specifically for cancer patients is the Patient-Generated Subjective Global Assessment (PG-SGA), which relies on information about weight loss together with dietary intake, symptom profile, functional capacity and a physical examination. The original, validated version of PG-SGA is consistent with other tools in giving a weight loss of 10% or more the highest score and smaller amounts of weight loss a lower score. An abridged version is used in the Macmillan Durham Cachexia Pack, taking the first part of the document only. The questions have not been changed from the original version, and enable identification of the specific issues for individual patients and suggested strategies for management through the rest of the pack. The impact of the abridged PG-SGA, together with the management strategies detailed in Section 4 of the pack, have been the subject of a within-group study of patients with cancer, conducted in Durham. Results are expected in early 2008.
Early identification of patients who will require intensive nutritional support as a result of their planned treatment is important. Nutritional screening and assessment for these patients is a priority. Anticipating potential nutritional problems, successfully detecting them and treating them early may help the patient gain or maintain weight, improve the response to treatment and reduce complications. Referral to a dietitian should be automatic for patients in whom nutritional problems are particularly likely, eg those with upper gastrointestinal or head and neck cancers, in accordance with the Manual of Cancer Services 2004.

Evidence for providing nutritional intervention in patients with cancer and weight loss

The link between poor nutritional status and clinical outcome in cancer patients has been discussed in a review by Shils. The article sets out the steps required to identify and manage the nutritional problems encountered by patients with cancer, and refers to cases in which early assessment of nutritional status, carried out by a physician, and subsequent management by a dietitian, proved pivotal. It highlights the importance of integrating nutritional assessment and management into the clinical care of patients, and the need for its acceptance by medical boards and teams responsible for the care of people with cancer. The Shils review was written in 1979, before any randomised controlled trials (RCTs) of nutritional intervention in patients with cancer had been undertaken, and was largely based on opinion, guided by observing the clinical effects of malnutrition on cancer patients. Nevertheless, the principles it identifies have been reiterated in numerous subsequent reviews, have been incorporated into many guidelines for nutritional practice and are considered to represent best practice in the nutritional / dietary management of patients with cancer and weight loss.

The first RCT of nutritional intervention in patients with cancer appeared in 1981. Overall, to date, publications on the topic include 17 RCTs, two systematic reviews and a set of clinical guidelines. The findings have been unanimous in confirming the lack of evidence for a role for nutritional intervention in patients with cancer and weight loss.

A recent meta-analysis brought together data from all 17 randomised studies of nutritional intervention in patients with cancer. The findings demonstrated that nutritional intervention was associated with an improvement in energy intake, but there were no differences in nutritional status, survival, tumour response and quality of life between groups receiving nutritional intervention and groups receiving no nutritional intervention. Of the 17 studies identified for the meta-analysis, 12 included data on survival. Only eight of the 17 studies were judged to be of good quality, as defined by the robustness of the randomisation process. Survival results from the intervention and control arms of these eight studies were entered into a meta-analysis. There were 155 deaths in the treatment arm and 110 deaths in the control arm. The odds ratio for survival in the eight studies is 1.27 (95% confidence interval (CI)=0.86–1.89), ie the odds of survival were not significantly different if patients received nutritional intervention or no nutritional intervention.

Psychological impact of weight loss and anorexia

Despite the lack of evidence supporting nutritional intervention in people living with advanced cancers, weight loss remains one of the most common symptoms experienced by these patients. Studies of nutritional interventions in people living with cancer have tended to concentrate on managing weight loss and its impact on traditional clinical outcomes, such as survival and tumour response. Little attention has been paid to the perspective of patients and how they might best be supported when managing the consequences of weight loss, anorexia and other changes to eating habits.

The prevalence of anxiety associated with anorexia has been investigated in 145 patients with advanced cancer. 79% of patients had experienced some degree of anorexia, but only 36% expressed anxiety about this. Interestingly, there was inconsistency between patients and carers, with 87% of carers expressing anxiety about the patients’ reduced appetite.

In another study, researchers interviewed people living with cancer and their carers about their experiences of loss of appetite. A poetic transcription of the participants’ words was taken to capture and communicate the essence of each person’s experience. Themes that emerged included uncertainty and death, accepting limitations and what patients wanted, eg “listen to me”. An example of one of the poetic transcripts is given on the following page.
An example of a poetic transcription

Carer: “I don’t think you realise how much it worries me, how I feel when I know you’ve not eaten anything. You’ve got to put petrol in the engine to get it to go.”

Patient: “I know that you are being truthful, what you say is true. Not eating doesn’t bother me. What bothers me is that it worries you. Don’t be angry or feel I’ve let you down. It’s not intentional. I know you’re right, I know you’re right. I’ll try, I really will. But I can’t. I physically can’t.”

A study examining the taboos about weight loss in cancer among nursing staff and carers has demonstrated that nurses often feel helpless in relation to managing weight loss and hence avoid mentioning the subject during discussions of symptoms. The study also suggests that communication and a sense of connectedness are important to psychosocial well-being. One patient’s frustration with the lack of effective communication over diet/nutrition is clear from a transcript recorded as part of another study from the same team (see below).

From a patient interview

“Sit down and talk to me properly….Talk to me about my eating habits, rather than saying right we’ve got these nutritional supplements. There’s things you learn….You know your own body, your likes and dislikes. So surely they can say ‘Let’s start from what you like’.”

The issues of unmet need and patient and carer concern have also been highlighted in a study of the roles of dietitians, physiotherapists, occupational therapists and speech and language therapists in palliative care for oncology patients in the west of Scotland. In needs assessment interviews with 150 palliative care patients, problems with eating or swallowing were expressed by 40 patients, of whom 23 had had no assistance and 11 reported that they wanted assistance but had not received any. In addition, of 100 patients who had poor appetite, 43 had received no assistance and 11 of these had wanted assistance.

Clearly, if a patient gains psychological benefit from nutritional support, regardless of the physical effects, this may be a valuable outcome. Nelson, for example, argues: “To deny patients improved appetite and/or food intake because it will not provide physiologic improvement ignores the very important benefit of symptom control to quality of life.”

Healthcare professionals are in a powerful position with regard to the impact of anorexia and cachexia on patients and their carers. It is very important to strike the right balance between acknowledging (and addressing) nutritional problems and over-emphasising the importance of nutrition. Strong encouragement (or pressure) to increase nutritional intake may increase tension and anxiety in patients with advanced disease and established ACS. In fact nutritional intake in such patients becomes irrelevant; a more pragmatic approach is needed, which includes encouraging foods and drinks that are enjoyed, assessing other barriers to eating and providing opportunities for patients to air concerns. The goal of supportive nutritional therapy, where patients wish to take this approach, is to move everyone involved (patients, carers and healthcare professionals) towards an acceptance of eating or not eating, and to reduce anxieties around eating and drinking. Healthcare professionals may be able to diminish eating-related concerns through the provision of support that helps patients to regain a balance between their eating reality and eating expectations. Basic strategies to optimise nutritional intake, manage symptoms and address concerns may go some way to overcoming the sense of helplessness and hopelessness shared by patients and professionals when faced with ACS.

The remainder of this document will concentrate on the factors which can contribute to anorexia and weight loss and on the strategies available for providing nutritional help to patients with these symptoms. This section is supported by a range of leaflets included in the Macmillan Durham Cachexia Pack that deals with the various issues around eating difficulties.

Factors contributing to weight loss in cancer

1. Food intake
Taking a detailed diet history takes practice and training, but information sufficient to enable the provision of basic nutritional help can be obtained by asking about what a patient is eating each day, including snacks, and how this compares to previous eating habits. Lots of clues about the potential barriers to eating can be obtained during this part of the assessment.
2. Mechanical difficulties with eating
There are many physical changes that can result in mechanical difficulties with eating:
- odynophagia (pain on eating and swallowing)
- dysphagia (difficulty swallowing), which can range from needing to avoid some foods (but able to maintain a reasonable intake from softer / moist foods and drinks) to having difficulties with liquids
- soreness caused by lesions in the mouth
- ill-fitting dentures
- poor oral hygiene
- physical disabilities, e.g. a patient with arthritis of the hands may have difficulty opening food packaging.

When talking to patients about what they are able to eat it is important to ask questions about why habits have changed to try to discover any factors that limit their ability to eat.

3. Social and financial problems that affect eating
One in four of the UK population—nearly 14 million people—live in households with incomes below the European poverty line of half the average income. Also, illness often affects a person’s ability to work and earn money, and may lead to financial difficulties that have an impact on buying food.

Other social factors that influence food choice and eating include:
- budgeting skills
- cultural traditions
- religious beliefs
- education
- nutritional knowledge
- cooking facilities (which can vary in different types of living accommodation)
- habits
- likes and dislikes
- previous food experience
- willingness to experiment
- time available
- eating alone
- depression
- bereavement.

Talking to patients about what they eat gives insights into all aspects of the way they live, and can guide the way that nutritional help is given.

Food and eating have strong symbolic connections with survival and life, and provide one area where family members feel they can contribute to a patient’s well-being and recovery. They often encourage their loved one to eat, and spend much time and effort preparing favourite foods only to be disappointed by the quantity eaten. This can lead to feelings of rejection of the caregiver’s love, and feelings that the patient is not doing enough to keep well or to recover. Food then becomes a battleground, perpetuating the emotional turmoil experienced by the family and the patient. In these cases, lots of talking with both the patient and caregiver is needed to facilitate understanding and to support the patient in their choices about food.

4. Emotional difficulties
Mental function may be influenced by nutrition in several ways. It has been demonstrated that starvation and partial food deprivation in adults leads to anxiety and depression and other mental changes, which may in part be linked to specific micronutrient deficiencies.

In addition, patients with cancer may be anxious and depressed about their condition, the treatments they are experiencing and about the future, which may in turn result in them eating less and feeling that they ‘can’t be bothered’ with food. It is important to take this into consideration when giving advice about eating more, and to consider sensitive and appropriate strategies to help the patient feel better.

5. Symptoms that may reduce food intake
It is impossible to provide effective dietary advice for a patient if you do not have a clear understanding of all the symptoms that are limiting their food intake. The Macmillan Durham Cachexia Pack includes a comprehensive...
assessment of symptoms as part of the nutritional assessment of a patient. Management of these symptoms takes place alongside the provision of advice on food.

The importance of asking patients about individual symptoms that might be restricting food intake is highlighted by Ottery, who states: "It is interesting to note that when doctors ask if they (the patient) are experiencing any problems eating, patients frequently respond that they are not. However, data elicited using the PG-SGA (a questionnaire completed by patients) reveal that whilst patients may not experience difficulties with chewing and swallowing per se, they may report difficulties with nausea, vomiting, diarrhoea, constipation or altered taste or smell."

6. Pre-existing diets
A restrictive diet prescribed for a medical condition, eg hyperlipidaemia or diabetes, may limit the high-energy and high-protein foods that are necessary to prevent weight loss. Such dietary restrictions can usually be relaxed, especially if the patient is finding it difficult to maintain weight. For example, a patient with diabetes who has a poor appetite may tolerate small amounts of food throughout the day (even though they contain simple sugars) rather than following their usual diabetic meal plan.

Also, a patient may have adopted an alternative diet, believed to have a potential beneficial effect on their cancer. Such diets often require elimination of certain foods and / or intake of dietary supplements that may have side effects, and / or which interrupt meals and snacks (eg because they are taken on an empty stomach several times a day). If a patient is following an alternative dietary approach such as this, various factors should be considered and discussed:

- How does the patient feel about following the diet?
- Who prescribed it?
- Is the diet harmful (nutritionally and / or financially)?

If it is important to the patient to continue with the chosen diet, look for ways to maintain nutritional status within the guidelines. Advice from a specialist dietitian may be required.

Nutritional management of weight loss

There are no national or international guidelines on the management of weight loss associated with illness. It is generally accepted that attempts should be made to increase oral nutrient intake, but there is no clear guidance on whether this should result from increased food intake, addition of commercially available nutritional supplements or a combination of both. The British Dietetic Association (BDA) recommends that "...improving nutritional intake via ordinary foods and beverages is the first step in the process of providing nutritional support." The BDA goes on to suggest that some people may need further support in the form of sip feeds and other supplements. These recommendations are made without reference to a supportive evidence base, and researchers have demonstrated a lack of evidence for such an approach. However, it is important to recognise that very few studies of dietary advice were found, and this finding may be a reflection of the absence of evidence rather than evidence of no effect.

NICE has recently examined this area and reports that significant improvements in survival, weight and incidence of complications are associated with provision of oral nutritional support (dietary advice and / or nutritional supplements) to patients with weight loss or considered to be at nutritional risk. Moreover, a systematic review of oral and enteral nutritional support in patients with cancer has concluded that oral nutritional supplements are associated with improvements to dietary intake in subgroups of patients, but has failed to demonstrate any clinical benefits. This analysis included only four trials in cancer patients. The findings do not change when the results from the 17 RCTs of nutritional intervention in patients with cancer are combined (see earlier, Evidence for providing nutritional intervention in patients with cancer).

Local policies may exist to guide nutritional management in weight loss and it is important to identify these.

1. Dietary advice
Advice to increase food intake has potential advantages in that it offers variety, can be tailored to individual needs and may be associated with lower costs to the health service. Provision of dietary advice to increase food intake is a core dietetic skill, but its efficacy is unknown. A recent systematic review suggests that dietary advice plus nutritional
supplements have a greater role than dietary advice alone or no intervention in the improvement of body weight and some anthropometric and functional outcomes.\textsuperscript{20} There were insufficient data on survival to allow conclusions to be drawn, but again this does not mean that dietary advice is not effective. There were very few trials identified that examined survival, so the findings reflect absence of evidence rather than evidence of no effect.

It is uncertain whether the effects produced by dietary advice and nutritional supplements are the same, but if supplements produce clinical benefits, it is reasonable to presume that they do so by increasing nutrient intake. It then follows that if a similar increase in nutrient intake can be achieved by dietary means as by using supplements, similar clinical benefits would be expected to occur. A caveat to this is that we do not know which nutrient or combination of nutrients is responsible for the benefit (protein, energy, vitamins or trace elements) and it may not be possible to reproduce the exact changes induced by supplements using ordinary food.

The aim of advice to increase food intake is to increase the calorie and nutrient content of consumed food.

\textbf{Encourage small, frequent, nourishing meals and snacks}

The first way to try to increase calorie and nutrient intake is to make sure the patient is eating small amounts frequently. Assessment of the usual food intake in a 24-hour period will determine whether the patient is accustomed to having three meals a day and no snacks in between. If so, the patient can be encouraged to eat small, frequent meals and snacks. It can be helpful to suggest suitable high-calorie snacks and to talk about when to include them in the day. Remember to discuss the possibility of having a small dessert after lunch and / or dinner. The leaflet ‘Focus on Food’ contains lots of ideas on simple snacks to suggest—see below for an example.

\begin{quote}
\textbf{Snacks equivalent to four plain biscuits (140 calories)}
A fairy cake, slice of malt loaf, half a hot cross bun, half a scone and jam, medium sausage roll, packet of crisps, scoop of ice cream, slice of pizza, a cereal bar, handful of dried fruit, pot of custard or rice pudding, ham / cheese sandwich (1 slice), jam tart
\end{quote}

It can also be useful to encourage drinks that are high in calories in place of tea, coffee and water. Milk-based drinks tend to be the most calorific: the addition of just one extra drink made with full-cream milk could increase calorie intake by up to 200 calories.

\textbf{Fortify food to increase the calorie content}

Fortifying is when small quantities of everyday foods such as cream, milk powder or butter are added to a dish to increase its nutritional content without increasing the portion size.

There are a number of ways of fortifying foods, but it important not to make foods so rich or unappealing that they are not eaten. Milk powder may be added to full-cream milk (5 tablespoons in 1 pint), and the fortified milk can then be used throughout the day in drinks, on cereals and in puddings. Cream, butter and cheese can be used to fortify foods such as soups, pasta sauces, cereals, mashed potato and puddings. Manufactured soup can be made more nutritious, for example by adding milk powder to tinned soup or by reconstituting the powdered variety with full-cream milk instead of water. Energy-rich foods such as sugar, honey, jam and dried fruit can be added to cereals and puddings.

See ‘Focus on Food’ (Section 2) for more ideas.

Table 1 shows how a patient’s calorie intake can be altered over a day with carefully chosen additional and fortified foods.\textsuperscript{31}
Table 1: Food choices that increase daily calorie intake

<table>
<thead>
<tr>
<th>Mealtime</th>
<th>Standard daily food intake</th>
<th>Approx. calories (kcal)</th>
<th>Fortified / high-calorie daily food intake</th>
<th>Approx. calories (kcal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>Porridge made with water</td>
<td>65</td>
<td>Porridge made with ½ pint of full-cream (whole) milk and 2 teaspoons of sugar and Small glass of fruit juice</td>
<td>265 40</td>
</tr>
<tr>
<td>Lunch</td>
<td>Packet soup made with water</td>
<td>180</td>
<td>Packet soup made with full-cream (whole) milk and Bread roll with butter and Half a small banana with a scoop of ice cream</td>
<td>345 230 155</td>
</tr>
<tr>
<td>Evening meal</td>
<td>Minced meat</td>
<td>230</td>
<td>Minced meat</td>
<td>230 70</td>
</tr>
<tr>
<td></td>
<td>Boiled potato</td>
<td>50</td>
<td>Mashed potato with butter and milk</td>
<td>45 35 55</td>
</tr>
<tr>
<td></td>
<td>Carrots</td>
<td>10</td>
<td>Carrots with butter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tinned peaches in natural juice</td>
<td>40</td>
<td>Gravy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tinned peaches in syrup</td>
<td></td>
</tr>
<tr>
<td>Evening snack</td>
<td>2 plain biscuits</td>
<td>65</td>
<td>1 small slice of bread with butter and jam</td>
<td>145</td>
</tr>
<tr>
<td>Milk in tea and coffee</td>
<td>½ pint of semi-skimmed milk</td>
<td>125</td>
<td>½ pint of full-cream (whole) milk</td>
<td>165</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>995</td>
<td></td>
<td>1780</td>
</tr>
</tbody>
</table>

2. Oral nutritional supplements

Evidence for their use

Oral nutritional supplements are commonly used to manage malnutrition. In the UK in 2004, expenditure on oral nutrition in the NHS accounted for £106 million (Department of Health). Two reviews combining results from patients with a range of clinical backgrounds have cautiously concluded that supplements may benefit survival, weight change and clinical function, but neither review addresses the role of dietary advice. Also, the analysis carried out by NICE demonstrates that patients with weight loss who receive nutritional supplements have significant improvements in weight and survival and fewer complications.

One of the biggest problems with routine use of nutritional supplements is whether patients can take them consistently, for long enough, to achieve the potential benefits—studies having highlighted problems with compliance. One of the factors influencing compliance is the palatability of the supplement. For example, a study has shown that patients with cancer tend to prefer supplements based on fresh milk to those based on UHT milk or UHT fruit. However this issue has not been explored adequately and cannot account for all of the taste fatigue commonly reported by patients taking supplements. More information is needed to understand the issues surrounding compliance in different clinical situations.

A qualitative study of a group of cancer patients taking nutritional supplements suggests that experiences are enormously varied (personal communication). Some people choose to follow instructions given by a health professional and take the supplements like medicine, while those at the opposite end of the spectrum choose to reject the instructions, perhaps as a way of retaining some control at a time when the daily timetable may be heavily influenced by drugs and hospital visits. Many other experiences have been identified in this study, but the most important message for health professionals is the need to listen to patients and consider the type of intervention that is most suited to helping each individual.

Using nutritional supplements

Most of the nutritional supplements marketed for the management of weight loss and disease-related malnutrition are drinks fortified with vitamins and minerals, provided in 200–300 ml cartons. They are often described as nutritionally complete, meaning that they can be used as the sole source of nutrition. In addition, there are products described as nutritionally incomplete, which means that they are not designed to be the sole source of nutrition because they do not provide all the essential nutrients required, eg fat or carbohydrate supplements that are not fortified with a complete range of vitamins and minerals.
Almost all of the published guidelines on the provision of nutritional support to people with weight loss suggest that supplements should be used only when patients have tried to increase their food intake with extra snacks and by fortifying food. This food-first policy may seem sensible, but there is no evidence in the literature to support it. Conversely, there is no evidence that a food-first policy is harmful. There is simply no good evidence on which to base practice. What we do know is that patients who receive interventions (either food or supplements) to improve their nutritional intake do significantly better than patients who do not receive additional help. For some patients receiving palliative care, the benefit may be psychological, and the potential positive outcomes may lie in addressing the meaning of food and the anxieties around problems with eating.

In practice, not all dietitians follow a step-wise approach to the management of weight loss; eg some give advice on dietary modification and nutritional supplementation at the same time. However, the most important factor in making recommendations is that the advice takes into consideration what is best for the patient. For example, someone living alone and spending lots of time resting may find that sipping a nutritional supplement over the course of the day is easier to manage than shopping and preparing additional foods or seeking other practical alternatives, such as a carer providing meals, use of ready meals, etc. In contrast, if there is someone around to help prepare varied and interesting snacks, this may be a better way to encourage the patient to eat more. In addition, when considering commencing nutritional supplements, it is important to be clear of the intended outcomes and these should be explained to the patient. Commencing supplements with unattainable goals in mind should be avoided.

**Choice of nutritional supplement**

Choice of supplements depends partly on the nutritional needs of the person living with cancer, but mainly on the palatability and acceptability of the product. Good compliance is essential, so whether the patient likes the product is an important consideration. When giving someone an initial supply of supplements it is a good idea to provide one or two of each flavour in different product types, so patients can determine which ones they like. This approach fits well with an early review following the initial intervention, and is described in Dietary Algorithm 1 (Section 2).

- **Liquid supplements**
  The most commonly used nutritional supplements are milk-based, ready-to-drink, nutritionally complete liquids. These are listed in the pack (Section 2). They are generally used in addition to food where dietary intake is compromised, eg by fatigue, swallowing difficulties or oral problems. Some patients can only manage liquids, and these drinks can be used as a sole source of nutrition provided the individual can take the required amount to meet their nutritional requirements. It is important to provide clear instructions on how to take these drinks.

  Patients who find milky drinks unacceptable may prefer fruit-flavoured supplements such as Enlive Plus®, Fortijuice® and Provide Xtra®. These drinks are not intended as a sole source of nutrition, but are recommended for patients who are eating food. However, they can be used in late palliative care for patients unable to manage food or UHT milk-based supplements. It should be noted that not all fruit-flavoured products are milk-protein free.

  Starter packs containing an assortment of UHT milk-based and fruit-based supplements can be useful if you are unsure about which products to give a patient and for finding out the patient's taste preferences.

  Patients with established ACS often struggle to meet the recommended intake of supplement drinks and it is important to avoid coercing them and increasing anxiety and hopelessness. The focus in these patients must be on maximising comfort and minimising distress, rather than nutritional intake.

- **Powdered supplements**
  There are several powdered supplements available for the management of weight loss, but they vary in nutritional content and in what they can be added to. Only Complan® Shake is suitable as a sole source of nutrition for patients who are able to eat only a limited range of foods. The other fresh milk-based powdered supplements are not intended as a sole source of nutrition and are recommended for patients who are also eating food, although they can be used in late palliative setting for patients unable to manage to eat or use UHT milk-based supplements (see Section 2).

  Some powdered products are available from chemists and supermarkets, eg Complan® and Build Up®, but are not available on prescription and should not be confused with Complan Shake®.

  Fresh milk-based supplements that are available on prescription include Complan Shake®, Scandishake®, Enshake® and Calshake® (see Section 2). It is worth considering prescribing fresh milk-based supplements as some patients prefer these to UHT milk-based and UHT fruit-based supplements.
• **Semi-solid supplements**  
Dessert-like supplements, such as Clinutren® and Forticreme Complete®, are largely used for patients with dysphagia who are at risk of aspiration. A speech and language therapist can advise on the most suitable texture modification and whether such products are safe for use.

• **Energy supplements**  
Energy supplements are not suitable as the sole source of nutrition. They tend not to be the first products tried for patients with weight loss and are more likely to be suggested if other types of help have not worked. The main energy supplements are carbohydrate-containing products, e.g., Caloreen®, Maxijul® and Polycal®. They provide no protein and are often used when extra calories are needed with a restricted fluid intake. They can also be useful for patients who dislike other supplements or to boost energy intake for patients who are managing on a limited range of low-calorie foods. Liquid products can be diluted and used as squash or added to fruit puddings and jellies. They are high in calories but not as sweet as sugar, and can be incorporated into drinks, soups and puddings without affecting the taste.

Calogen® is a supplement containing fat and carbohydrate, and it can be taken like medicine (for example 3 x 30 ml / day). It is important that Calogen® is used to supplement a range of other foods as it is definitely not suitable as a sole source of nutrition.

**Starting supplements**  
The amount of supplement required will vary according to how much food the patient is eating. There is no absolute rule about how much supplementation to recommend per day, but it is important not to overwhelm patients by advising unrealistic quantities. Patients are normally advised to start with two cartons or sachets per day. However, it may be more appropriate for people with established ACS to commence with just one a day, with advice to increase if they feel they can take more.

People living with cancer frequently develop taste fatigue, so, to minimise waste, it is best to prescribe small quantities initially and to wait until a patient is established on a product of their choice before prescribing larger quantities. Patients should be re-assessed frequently, and the supplement prescription reviewed (see Section 2).

**Monitoring of nutritional supplements**  
There are a number of reasons for monitoring patients on nutritional supplements:

- to ensure compliance—the patient may need to try other varieties or flavours, or need recipes to support the use of supplements
- to review the nutritional objectives, which may change as the patient's disease changes; it is important to clarify and agree objectives of treatment at intervals in the disease pathway
- to consider referral to a dietician, which is needed if the patient shows no improvement, dislikes supplements or has been using supplements for more than six months (see Section 2)

The precise details of monitoring need to be agreed by local nutrition support teams and may vary according to local clinical experience and the clinical progress of the patient. It is likely that the frequency of monitoring will be dictated by the number of reviews for symptom management. The parameters included in monitoring will be guided by the goals of nutritional support agreed with the patient.

**NICE** provides a comprehensive set of guidelines on monitoring patients on nutritional support.5

**References**