The Role of Oral Nutritional Supplements for the Management of Adult Malnutrition

SPECIAL REPORT

Improving Oral Nutritional Supplements for the Management of Adult Malnutrition
Your Patients and Malnutrition
Nutritional Supplements, Vitamins and Micro-Nutrients
Taste, Smell, Flavour, Nutrition, Palatability and Supplements
Using Technology to Transform the Delivery of Dietetic Services

Sponsored by nualtra
making a difference in nutrition

Published by Global Business Media
The Role of Oral Nutritional Supplements for the Management of Adult Malnutrition

Published by Global Business Media

Foreword
Dr Charles Easmon, Editor

Improving Oral Nutritional Supplements for the Management of Adult Malnutrition
Dr Charles Easmon, Editor

The Creation of a Better Product for Malnutrition
Added Value Services
The Personal Importance of Nutrition
The Community and Financial Importance of Nutrition
Summary

Your Patients and Malnutrition
Dr John O’Connell, Medical Correspondent

Testing for Malnutrition – A Whole Team Effort on all Patients
How to Help the Malnourished
The Obese Malnourished
Summary

Nutritional Supplements, Vitamins and Micro-Nutrients
Dr Charles Easmon, Editor

Vitamins
Micronutrients
Summary

Taste, Smell, Flavour, Nutrition, Palatability and Supplements
Dr John O’Connell, Medical Correspondent

The Tongue, the Nose and the Brain
Types of Taste
Why Nutrition Supplements Should be Palatable

Using Technology to Transform the Delivery of Dietetic Services
Catherine McShane, Clinical project manager dietitian, County Durham and Darlington NHS Foundation Trust catherinemcshane@nhs.net

Introduction
Health Call Undernutrition
Case Study
Conclusion
Improving Oral Nutritional Supplements for the Management of Adult Malnutrition

Dr Charles Easmon, Editor

The role of Oral Nutritional Supplements (ONS) is major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN).

In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Every General Practitioner practice should think of a team wide effort to detect and manage all cases of malnutrition. The best way to do this would be to introduce a validated malnutrition assessment tool for ALL patients at all visits and to roll this out for all practices.

Every General Practitioner practice should think of a team wide effort to detect and manage all cases of malnutrition. The best way to do this would be to introduce a validated malnutrition assessment tool for ALL patients at all visits and to roll this out for all practices.

The creation of a ‘Malnutrition Universal screening Tool’ (MUST) enables the detection of patients who do not attend the surgery. An easy to use method was developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). The ‘Malnutrition Universal screening Tool’ (MUST) enabled the detection of patients who do not attend the surgery. An easy to use method was developed by the British Association for Parenteral and Enteral Nutrition (BAPEN).

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.

Malnutrition is a major problem worldwide. In the UK it is estimated to cost more than £19.6 billion and affects more than 3 million people. A lot of research, education tools and detecting tools have been developed by the British Association for Parenteral and Enteral Nutrition (BAPEN). In General Practice it is easy to miss many of your patients with malnutrition and BAPEN recognises a ‘malnutrition carousel’, where the malnutrition leads towards higher hospitalisations, who when discharged are not properly re-nourished and end up back in hospital earlier and more ill than they should be.
Malnutrition is a significant contributor to illness, hospitals stays and readmissions. Successful treatment of malnutrition is the solution.

**Altraplen Compact - Low Volume Great Tasting Supplement**

**Added Value Services**

In addition to direct product savings, Nualtra also works closely with NHS organisations to deliver added value support services to help them achieve their own goals and objectives. A recent example of this is the implementation of an online academy programme that allows nursing staff and healthcare assistants to upskill on malnutrition, nutritional supplements, dysphagia and many other topics related to nutrition, taking some of the training responsibilities away from the NHS.

Elsewhere, Nualtra are working closely with a number of large CCGs to help them implement active switching programmes where they can realise large savings opportunities in a shorter time period. After all, if you knew you could save £500,000 for your CCG, why wouldn’t you want to release this sooner rather than later?

As well as assisting during the implementation phase, Nualtra also provide key insights and usage analysis to help manage the implementation of new programmes.

Nualtra have an exciting pipeline of New Product Development planned with at least another 2 products being launched in 2016.

**The Personal Importance of Nutrition**

Malnutrition is a state of nutrition in which a deficiency or excess (or imbalance) of energy, protein and other nutrients causes measurable adverse effects on tissue / body form (body shape, size and composition) and function and clinical outcome.

If a car runs out of fuel it fails to run. However, the car’s problem is confined to the engine, in that the rest of the car does not start to consume itself at all. After some time in the wrong climate, the engine will rust, but months later the steering wheel is still more or less intact as is the dashboard. However, if a human receives inadequate nutrition the body starts to catabolise (cannibalise itself in some ways) to get the needed energy and nutrients. In the non-obese, the weight loss in malnutrition affects all organs from muscle to bone and in the obese similar changes occur which may be less visible. The signs and symptoms of malnutrition in the non-obese patient may be both difficult to recognize and gradual but include:

- **Visible weight loss**
- **Loosening of clothes, rings and jewellery**
- **Tenderness and loss of energy**
- **Reduced ability to perform normal tasks**
- **Reduced physical performance in duration and speed**
- **Lethargy, depression and other mood alterations**
- **Osteoporosis or osteomalacia**
- **In a child poor growth, rickets, delayed alterations**
- **In the non-obese, the weight loss in malnutrition affects all organs**

In pregnancy, we are now more aware of the longer-term effects of on the foetus of poor prenatal care and nutrition in both sexes. Micronutrient deficiencies may lead to big variations in childhood. Poor intake of vitamins and minerals such as iron and iodine can cause anemia and mental retardation respectively. Zinc deficiency can cause skin rashes and contributes to poor immune function. Extremes of Vitamin C deficiency will cause scurvy for which James Lind found the cause and led to British sailors being called ‘Limeys’. Rarely seen Vitamin A deficiency can cause night blindness and this would particularly affect any child caught up in a measles epidemic (Bitey’s spot).

The restoration of nutrition to a human is not the same as just adding petrol or diesel to a dried out car engine. The relevant product must at least combine calories and protein and be supplemented by the relevant trace elements, vitamins and minerals. Nualtra products ranging from 125-200mls (or 125g)

**Foodlink Complete - Delicious Powdered Supplement**

Malnutrition has been estimated to cost the NHS more than £19.6 billion per year and this is actually more than the cost of treating and managing obesity. The high costs are because patients who are malnourished get ill more often, take longer to get well and will have higher rates of illness recurrence and readmission. Surveys of the 700,000 people living in sheltered housing... have shown that 10-14% are at risk of malnutrition.
The currently available Nualtra range of supplements and desserts is the product of many years of research, taste trials, safety and consumer testing before the Nualtra product range launched in 2012 as the National Institute for Clinic Excellence (NICE), The British Dietetic Association (BDA), the Care Quality Commission (CQC) and the Royal College of Nurses all advocate regular, systematic assessment of nutrition in your patients both in primary and secondary care. The excellent charity the British Association of Parenteral and Enteral Nutrition (BAPEN) has provided a clinically validated tool to make the job of nutrition assessment easier and more standardised. This tool is called the ‘Malnutrition Universal Screening Tool’ (MUST).

'Malnutrition Universal Screening Tool' (MUST). This tool consists of three parts:

- Body Mass Index (BMI) – this is calculated from an individual’s weight and height. A BMI of less than 18.5 kg/m² suggests a significant risk of malnutrition.
- A history of recent weight loss that has happened without any intention to lose weight. The unintentional loss of more than 10% of normal body weight in the last 3 - 6 months suggests a significant risk of malnutrition.
- An “acute disease effect” associated with being acutely ill and unable to eat for more than five days.

This tool assesses patients as being at low, medium or high risk of malnutrition and guides the user to develop individualised care plans for treatment if required and further monitoring.

Summary

In the same way you cannot diagnose malaria by just putting your hand on a patient’s forehead, you cannot assess and diagnose malnutrition just by looking at your patient. Your clinical teams have an excellent, validated and useable tool for assessing all your patients. The importance of testing all is that without doing so many treatable cases will be missed and lead to all or some of the complications already discussed. Sadly, in many cases when secondary care has got its act together and is screening appropriately for nutrition, the same patients do not have this assessment when they return to the community and if they fall off the ‘nutrition wagon’ they get ill again and end up back in hospital at great cost to themselves, their families, loved ones, society and the NHS.

A term for this has been coined by BAPEN – the malnutrition carousel. The British Association of Parenteral and Enteral Nutrition (BAPEN) have provided the screening tools (MUST) and the on-line education regarding malnutrition. The General Practitioner and the CCG together need to implement these as soon as possible, if not already doing so, for the benefit of their health care communities.

Since 2012, Nualtra have provided the cost-effective, high compliance, great-tasting solution to providing nutrition for your patients at home, in care and in hospital.

Find out more at www.nualtra.com

Find out how much your CCG could save at www.nualtrasaver.com

References:
The rise of male anorexia has recently been flagged in the news and is often well hidden by the sufferer.

**MANY** of your patients in primary care will be malnourished and without making the appropriate assessment you will miss them. The obese malnourished can be a particularly difficult group to assess. The British Association for Parenteral and Enteral Nutrition (BAPEN) informs us as below.

It has been estimated that malnutrition (or “under nutrition”) affects over 3 million people in the UK. Of these about 1.3 million are over the age of 65. Whilst most of those affected are living in the community (about 93% or 2.8 million people) BAPEN’s Nutrition Screening Week surveys (2007-11) have shown that:

- 25–34% of patients admitted to hospital are at risk of malnutrition
- 30–42% of patients admitted to care homes are at risk of malnutrition
- 18–20% of patients admitted to mental health units are at risk of malnutrition

Surveys of the 700,000 people living in sheltered housing using ‘MUST’ criteria have shown that 10–14% are at risk of malnutrition.

The elderly may have many reasons for malnourishment including poverty, loneliness, neglect, mental illness, dementia or early onset, stroke and physical impairment in shopping or feeding. We all hear the apocryphal tale of those in hospital whose food has been left to one side and then removed because they are ‘obviously not hungry’. Well these malnourished people get discharged and then the ‘malnourishment carousel’ restarts. Your cancer patients can easily be malnourished by the illness itself or the therapy used to treat it. One significant problem for many of those with chemotherapy and/or radiotherapy is oral mucositis. This condition leads to a dry mouth and physical and mental impairment in eating and drinking.

There are many possible causes of dysphagia and within this group are those autoimmune disorders that decrease salivation like Sjogren’s syndrome, which can be part of conditions such as sarcoidosis.

In children there may be many predisposers to malnutrition from poverty, illness, parental mental illness or ignorance to actual eating disorders. The rise of male anorexia has recently been flagged in the news and is often well hidden by the sufferer.

Testing for Malnutrition – A Whole Team Effort on all Patients

Malnutrition is a classic situation of ‘if you don’t ask, you don’t find’. No matter how clear you are as a clinician, you cannot just ‘know’ who is malnourished by looking or speaking for a maximum of the 10 allocated minutes. One of your team must do a validated nutrition score. The one designed and recommended by BAPEN is the Malnutrition Universal Screening Tool (MUST), which abbreviates to MUST, and this seems the easiest way to apply using calibrated tools in your surgery. BAPEN have made life easier with the creation of an app, clear department websites and e-learning training toolkits that any General Practitioner or Clinical Commissioning Group (CCG) can sign up for. To emphasise the importance of a systematic approach to assessing all your patients, a survey of hospital nurses, who assumed that they had done a nutritional screen on close to 100% of their patients, found that they had actually done it on less than 50%. ‘Systematising the MUST’ is important and should be linked to each pre-consultation registration process to maximize implementation. This process itself can be part of a clinical audit and, with the appropriate feedback loop, can be constantly improved for the benefit of all your patients.

How to Help the Malnourished

Once you have identified which of your patients is malnourished, ideally you should refer them to a dietitian (whether in-house or external) for an assessment of degree, cause and treatment. A key part of the treatment is education, information and communication and, fortunately, organisations such as BAPEN have appropriate tools for this. To ‘plug the deficit’ in malnutrition, some form of supplement is likely to be needed. Ideally such nutritional supplements should be palatable and of the right texture for your patients. Wasted nutritional supplements are a significant cost to your surgery and CCG and the unpalatable ones are the most likely to be wasted. One school of thought is that (within reason) clinicians should try the things that they recommend to their patients. It is harmless and no great hardship to actually try out the options in nutritional supplements and to work on a simple basis that if it is unpalatable to you, it is likely to be unpalatable to your patients and vice versa. Some nutritional supplement companies will provide you as the General Practitioner with free samples of their drinks, yogurths and powders to try. The available supplements will range from 200–300 kcal and 10–20 grams of protein per portion.

The Obese Malnourished

I saw few die of hunger, of eating, a hundred thousand. Benjamin Franklin

“The key for doctors is to recognise that malnutrition co-exists with obesity – and it’s just as important to treat it... That will make a huge difference.” Dr Simon Gabe, chair of BAPEN.

An oxymoron is defined as the juxtaposition of two words that are or seem opposite. The obese malnourished seems like an oxymoron but sadly it is not. Your patients can bulk up by obesity eating a lot of the wrong things that do not ‘nourish’ but rather harm the body. In these circumstances, which are not ‘under nutrition’, there are excess kilocalories but the wrong stuff and to assess this can be difficult. BAPEN again comes to the rescue. The diagnosis is also made by MUST.

Treatment will consist again of the famous Education, Information and Communication (EIC), dealing with co-morbidities and motivational interviewing.

Summary

All of your patients deserve the best you can provide. Opportunistic screening can be both a lifesaver and a life enhancer. Nutritional screening using validated tools like the MUST should be part of your routine surgery practices and who those who do not visit should be called in for this and other opportunistic screening. Using the right supplements can save the National Health Service (NHS) millions and diagnosing and treating those with malnutrition can save society billions.

References:

Nutritional Supplements, Vitamins and Micro-Nutrients

Dr Charles Easmon, Editor

Nutrition is a science that entails the study of all processes of growth, maintenance and repair of the living body, which depend on the intake of food.

Food is, ... any solid or liquid which, when swallowed, can provide the human body with material enabling it to function in one or more of the following ways:

a) production of heat or other manifestations of energy
b) growth, repair or reproduction, i.e., body-building
c) participation in the mechanisms regulating the production of energy or the process of growth, repair and reproduction. The foods in this group are sometimes known as the protective foods because they help to maintain health.

“Food supplements that contain familiar substances like vitamins, amino acids or minerals are generally subject to food safety and food labelling legislation rather than medicines control.”

The world of nutritional supplements, vitamins and micro-nutrients is confusing with many unsubstantiated and unscientific claims in a strange legal and regulatory framework. Things that are seen as drugs or medical devices are regulated in the UK by The Medicines and Healthcare products Regulatory Agency (MHRA), in Europe by the European Medicines Agency (EMA) and in the United States by the U.S. Food and Drug Administration (FDA). ‘Food products, in particular food supplements’ are labelled by the MHRA as ‘borderline products’.

These ‘borderline products’ that are not labelled as drugs or medicines but may have a health benefit are restricted as to what claims they can make to the public and how they can be promoted. For those without malnutrition a key question is whether any nutritional supplements are required and would they be best just to manage their food and how it is made better to ensure maximum bio-availability of the right ingredients?

Many dietitians would agree that supplements are only necessary for those who are malnourished. However, many nutritionists train in institutes that promote supplements and hence they become peddlers of ‘product’ rather than advisers on best practice. For unbiased advice about food, nutrition and supplementation, resources such as the British Association for Parenteral and Enteral Nutrition1 (BAPEN) and the British Dietetic Association2 (BDA) are available. It may be wise to choose those with a qualification as a diettian3 (more tightly regulated) than those who call themselves ‘nutritionists’.

For those who are malnourished, it is clear that, unless they can regularly eat the right things required, then some form of nutritional supplementation will be needed for energy and protein.

**Vitamins**

Until the beginning of the twentieth century it was assumed that the diet would be adequate if sufficient protein, fat, carbohydrates and inorganic elements were supplied. This view was changed when it was shown that natural unrefined foods contain substances essential to life but which the body is unable to form for itself. The organic substances were called vitamins and were found to be present in very minute amounts in food. Some of the vitamins, i.e., A, D, E and K, are found mainly in fatty foods and are called fat soluble vitamins; the others, i.e., the vitamins of the B group and Vitamin C, are water soluble vitamins.

The role of vitamins has been elucidated over time by deficiency syndromes, in deprivation, disease, war or odd behaviours. Scurvy from Vitamin C deficiency was common amongst sailors on long trips. Rickets caused by Vitamin D deficiency will occur in those whose bodies are not exposed to adequate sunlight. Pellagra4 was seen in prisoners of war fed rice without husks and is caused by a lack of niacin or trytophan. Wernicke’s encephalopathy was noted in alcoholics and is caused by thiamine deficiency.

**Micronutrients**

The same processes have helped define the role of micro-nutrients, which as the name implies, are substances required in very small amounts for key bodily functions and confusingly include all the vitamins above. The World Health Organisation (WHO) describes them as the “magic wands” that enable the body to produce enzymes, hormones and other substances essential for proper growth and development4, 5, 6.

The range of micro-nutrients includes all the vitamins as well as minerals such as iron and zinc. Iodine7 the trace element is also a micro-nutrient. Folic acid deficiency in pregnant women leads to birth defects and in adults is associated with heart disease; Iodine deficiency in adults leads to the ‘bull neck’ goitre and in children leads to a level of underdevelopment that used to be called ‘cretinism’. Iron deficiency contributes to deaths in childbirth and to children’s mental retardation. Zinc deficiency contributes to childhood diarrhoea and respiratory illnesses worldwide.

**Summary**

The global problem of vitamin and micro-nutrient dietary shortfalls is very significant7, 8. In the UK the specific problems may occur in impoverished areas and in those who have odd behaviours, disease or food poverty. Most well people eating a healthy balanced diet8 with ‘rainbow’ colours should not need any additional nutritional supplementation but those assessed as malnourished will require energy and protein supplementation with consideration needed for the vitamins and micro-nutrients.
Taste, Smell, Flavour, Nutrition, Palatability and Supplements

Dr John O’Connell, Medical Correspondent

What is generally categorized, as “taste” is basically a bundle of different sensations: it is not only the qualities of taste perceived by the tongue, but also the smell, texture, and temperature of a meal that are important. The “colouring” of a taste happens through the nose... Only after taste is combined with smell is a food’s flavour produced. If the sense of smell is impaired, by a stuffy nose for instance, perception of taste is usually dulled as well. Like taste, our sense of smell is also closely linked to our emotions. This is because both senses are connected to the involuntary nervous system. That is why a bad taste or odour can bring about something or cause …... and flavours that are appetizing increase the production of saliva and gastric juices, making them truly mouth-watering.

When it comes to our food and drink, we think we taste them but more often we smell them and assume it is taste. Our senses can fool us. The most classic example of these is synaesthesia1, where some people ‘see’ colours and ‘taste’ sounds etc. Our taste mechanism is mainly on the tongue but research now shows that many foods are tasted by a retro nasal process of smell, which we then assume is taste.

Emotions play a key part in taste and taste plays a key part in memory as anyone who has studied about the Proust2 remembers well. When it comes to our food and drink, we play a key part in memory as anyone who has struggled through their Proust1 remembers well.

This should not surprise us on an evolutionary level and reminds of us of our humanity rather than seeing our senses as mechanism A which does, not relate to mechanism B, C or D.

The Tongue, the Nose and the Brain

Computer analogies and the human nervous system3 only work up to a point and key issues often ignored are our emotions and consciousness that are a key part of our humanity. To those who see the brain as a Central Processing Unit (CPU), taste is a good example of the limitations of this approach since, what we define as ‘tastes’ may start with a sense detected in the tongue but this will be mixed with smells from the olfactory cells and interpreted by a brain prone to evolutionary preferences, emotions, memory and sensory interactions. Perfectly good food if coloured blue will be found to be ‘disgusting’ and lead to a loss of appetite4.

Taste cells send a sensory stimulus to the brain. In adults they are found mainly on the tongue but are also in the oral cavity, the back of the throat, the epiglottis, the nasal cavity and the upper part of the oesophagus. Infants and young children may have additional sensory cells on the mucous membranes of their lips, cheeks and on their hard palate. Taste cells on the tongue are positioned in three key geographic areas 1) the general surface of the tongue 2) the base of the tongue and 3) the sides of the tongue.

Types of Taste

“Taste really refers to four, really five I suppose, sensitivities and that is sweet, sour, salt, bitter – the four well known ones – and a relatively new taste sensation called umami,” Dr O’Connell told the Nutricia conference. “Flavour, on the other hand – or what we refer to when we say something tastes good or bad – is a different animal altogether. ‘Flavour is what we call a hedonic sense in that it is really a combination of several different senses, the five tastes, but also in a very important contribution from your olfactory or smell system. In fact, it’s estimated that about 85% of what we perceive as of flavour is really olfaction,” Professor Stuart Firestein, Columbia University neurobiologist.

Before a 5th taste (umami) was officially recognized in the 1980s (despite a Professor Kikunae Ikeda of Japan noting it as early as 1912) it was assumed that we had just four. There is debate now as to whether we have more than even these five tastes.

The four well known before umami are sweet, sour, salty and bitter.

References:

1 Manual of Nutrition published by Her Majesty’s Stationary Office (HMSO), Ministry of Agriculture, Fisheries and Food
12 http://www.homesize.co.uk/blog/1156倒入/Affordable Price for the NHS
13 Since launch, Nutricia has helped over 3000 healthcare providers in the UK.
14 Manual of Nutrition published by Her Majesty’s Stationary Office (HMSO), Ministry of Agriculture, Fisheries and Food
Using Technology to Transform the Delivery of Dietetic Services

Catherine McShane, Clinical project manager dietitian, County Durham and Darlington NHS Foundation Trust catherinemcshane@ons.net

Introduction
The NHS is facing its biggest challenge of an ageing population, increased numbers of people living with long-term conditions and increased cost of treatments with the background of a flat budget and a need to transform the way services are delivered.1 2 3

Undernutrition costs the English economy over £19 trillion annually4 and affects an estimated three million individuals, 93% of which live in the community. Not only is there the cost to the health system but undernutrition has ‘substantial impact on the health, disease and well-being in community, residential care and hospital settings’.5 Yet despite NICE clinical guidelines6 and Quality Standards7 undernutrition remains poorly recognised and therefore poorly treated and monitored and unfortunately many nutrition and dietetic services don’t have the capacity to provide the high quality treatment and monitoring that they want to.

Health Call Undernutrition
Treating undernutrition is a matter of quality and safety for some of our most vulnerable patients. Health Call Undernutrition (HCUN) allows nutrition and dietetic services to transform the way services are delivered to enable them to provide high quality care that meets the needs of the patient at the right time. Up to 1/3 of community dietetic referrals can be for nutritional support advice, placing significant burden on the services and delaying treatment to our patients.

HCUN has been developed by dietitians at County Durham and Darlington NHS Foundation Trust, in response to their concern about not being able to provide a responsive service to patients. HCUN has been designed to be simple and easy to use for patients, carers and health care staff. Using simple automated phone calls or a secure web based portal patients provide information regarding their weight, appetite and if they are tolerating their oral nutritional supplements (ONS) or other diet therapy e.g. nourishing snacks or homemade fortified drinks. Dietitians are alerted if any information is outside of pre-determined parameters, for example if there is poor compliance with the diet therapy.

HCUN has not been designed to replace dietitians, it allows for triaging of patients so that our limited resources can focus on patients when they need our input. Health Call Undernutrition has been shown to increase the capacity and efficiency of a nutrition and dietetic department as well as realising cost benefits due to improved appropriate prescribing of ONS. It provides a framework for safe caseload management through highlighting patients that require dietetic input. As well as the known clinical benefits HCUN has delivered to the dietetic service it has also had impact on the wider health and social care services. As the information can be pulled through to electronic patient records we have reduced duplication of work of community nurses having to visit patients to weigh them and screen for risk of undernutrition. When contacting a care home you already have the information in front of you and you are only contacting the home about the patients that need it. Traditional service delivery would mean either telephoning or visiting the home to assess or review an entire caseload and requiring a member of the staff with you while this takes place.

As a clinician the more important added value is that patients and carers feel better supported and cared for, they have confidence that a dietitian is looking at the information they are providing and responding to it when needed. It empowers patients to manage their own nutritional health through an improved understanding of the impact of the dietetic advice on not only their weight but also their well-being.

Case Study
Mr C lives in a care home and was referred for nutritional support advice, he was assessed within a week of the referral, and found to be at high

References:
risk of undernutrition. Advice included taking two ONS per day and he was registered on HCUN with the care home inputting information using the secure web portal. The information received from the home the following week highlighted that the prescription for the ONS was not correct and he had only been prescribed one per day. The dietitian was able to liaise with the GP surgery and have this amended. His weight has since increased and he is now low risk of undernutrition. Under the traditional service delivery model he would still be waiting for an assessment which could take up to three months and the error in the prescription would have been unlikely to be highlighted until the following review appointment in another three months meaning that Mr C would have continued to lose weight, making the dietetic input more complex and exposing him to potential health complications as a result of undernutrition.

Conclusion

Health Call Undernutrition has been demonstrated to improve the quality of care to patients whilst improving the capacity and efficiency of the dietetic services.

References:
