

CHAPTER 4 - NUTRITION AND HEALTHY EATING

0401. **Introduction.** In accordance with the United Kingdom (UK) Ministry of Defence (MOD) policy and UK legislation it is incumbent on all catering staff to accommodate the diverse dietary needs of the military population, which is recruited from the multi-cultural population of the UK and the British Commonwealth. Additionally, caterers are required to respond to the requirements of prescribed diets, the particular nutritional requirements of military tasking and the increasing incidence of the impact of lifestyle choices on eating [behaviours](#).

0402. **Nutrition Policy Statement.** The MOD Nutrition Policy Statement (detailed at Annex A) commits all catering staff to provide a catering service based on sound nutritional principles reflecting current UK government advice and to support the rigorous physical fitness requirements of an expeditionary Armed Forces Policy.

0403. **Definition of Nutrition.** Nutrition is the science of food and the components of food that a living organism requires to maintain the processes of life. The complex chemical composition of the human body requires constant replenishment for the processes of energy production, tissue growth and repair, and the bio-chemical functions of the human body.

0404. **Nutrition in the Armed Forces.** Nutrition is fundamental to military physical capability, as well as the health and well-being of personnel. Nutrition forms part of the preparation for operational duties to ensure optimum fitness for task. Baseline standards for operational effectiveness are defined in the knowledge that theatre specific modifications can be readily achieved. The MOD has developed UK Military Dietary Reference Values (MDRV)¹ for energy, macro- and micro-nutrients.

0405. **Implications of Poor Nutrition.** Poor nutrition caused by an insufficient, over sufficient, or unbalanced diet, or by a medical condition can lead to impaired basic functions of the body (e.g. breathing, heart activity, movement and temperature control), reduced cognitive skills, a predisposition to injury/ illness and slower recovery from exercise, injury and illness. The effects of poor nutrition may result in: reduced manning due to absenteeism; reduced operational readiness; and decreased retention of personnel.

0406. **Food Allergies.** There are a wide variety of medical conditions that are caused or exacerbated by food or specific nutrients because of an individual's inability to digest, absorb and/or metabolise nutrients, or their allergic response to food elements. The prevalent medical conditions are discussed in JSP 456 Vol 1 Chap 5.

0407. **Composition of Food.** In nutritional terms food is composed of nutrients (a – e), water and dietary fibre. The specific functions of these nutrients are detailed below and at Annex B:

- a. Carbohydrate (CHO) – for energy;
- b. Fat – for energy, maintaining the structure and function of tissues, and the carriage of fat-soluble vitamins;
- c. Protein – for the growth and repair of tissue, and for the production of hormones and enzymes;
- d. Vitamins – for the chemical processes of metabolism or as essential components of cell structures;
- e. Minerals – for physical structure and chemical balance in the human body;
- f. [Water](#) – constitutes a large proportion of the body and is the medium in which many of the processes of the body occur;

¹ MDRV - available on the Defence intranet – ACDS (Log Ops) webpage.

- g. Dietary fibre – a diet rich in dietary fibre is associated with a reduced risk of heart disease, stroke, type 2 diabetes and bowel cancer.

0408. **Energy.** The primary sources of energy in the diet are carbohydrate and fat. Proteins can also supply energy through the breakdown of amino acids into glucose or fatty acids. However, as long as you consume enough calories from other sources, protein is not used for energy production. When metabolised alcohol also produces energy, but it is not a nutrient and it is strongly advised that the harmful effects of alcohol outweigh its value as an energy source.

Energy is required by the body to: stay alive; grow; regulate temperature; and for physical activity (work and leisure). The amount of energy in food is measured in kilocalories (kcal) or kilojoules (kJ), where 1 kcal is equivalent to 4.18 kJ. The energy value per gram of nutrients is as follows:

Carbohydrate: 3.75 kcal Fat: 9 kcal Protein: 4 kcal

Energy requirements vary depending on factors such as gender, age, body size, body composition and physical activity levels. The government recommendations for food energy and nutrients are expressed as dietary reference values (DRV). For the general population, which includes military personnel in a sedentary role, recommendations for the percentage contribution of each energy source to the daily food energy intake are:

Carbohydrate: > 50% Fat: < 35% Protein: 15%

However, due to the specific need to develop and maintain muscle glycogen stores (the storage form of carbohydrates) for sustained physical work, it is recommended that the percentage contribution of each energy source to the daily food energy intake of military personnel in training or on operations are:

Carbohydrate: 60% Fat: 25–30% Protein: 10–15%

The above recommendations do not indicate the volume of food to be consumed because of the difference between the energy density of the nutrients. Also the availability of nutrients obtainable from food is affected by our ability to digest and absorb nutrients from food, and by the food processing and cooking methods used (see Annex C). The above recommendations also do not indicate the preferred food sources, where it is known that sugars and saturated fats are not as beneficial to health in comparison to starchy carbohydrates and unsaturated fats, respectively.

0409. **Diet and Health.** Eating healthily can reduce the risk of serious health problems (e.g. coronary heart disease, strokes, type 2 diabetes and cancer); help individual's to maintain a healthy body weight and immune system, and may help prevent injury. To achieve a healthy diet with the right balance of nutrients it is recommended that individuals consume a wide variety of foods. Eating healthily does not mean that individuals have to give up all or any type of food. No food is 'bad'; it is how much, how often and in what combination it is eaten which influences the effect it has on the overall composition (healthiness) of the diet. The principle of healthy eating is to ensure that people have access to the necessary advice and information, the choice to eat appropriate combinations of foods, and the opportunity to modify dietary intake. The whole diet approach is crucial; dish-by-dish monitoring is not necessary. If the overall nutritional balance of the diet is sensible and broadly meets the recommended guidelines, the long-term dietary and nutritional goals are more likely to be achieved.

0410. **Healthy Eating Guidelines.** The Eatwell Guide defines the government's current advice on a healthy balanced diet (www.gov.uk/government/publications/the-eatwell-guide). It provides a visual representation of the different types of foods and drinks we should consume, and in what proportions, to have a healthy, balanced diet. The Eatwell Guide is based on five food groups. It is recommended to:

- a. Eat at least 5 portions of a variety of fruit and vegetables every day – these foods are a primary source of vitamins, minerals and dietary fibre;
- b. Base meals on potatoes, bread, rice, pasta or other starchy carbohydrates; choosing wholegrain versions where possible – foods from this group are a good source of energy and the main source of a range of nutrients in the diet;
- c. Have some dairy or dairy alternatives (such as soya drinks); choosing lower fat and lower sugar options – foods from this group are a good source of protein, fats, vitamins and minerals;
- d. Eat some beans, pulses, fish, eggs, meat and other proteins (including 2 portions of fish every week, one of which should be oily) – these foods are a good source of protein, vitamins and minerals. Oily fish are high in long-chain omega-3 fatty acids, which may help to prevent heart disease;
- e. Choose unsaturated oils and spreads and eat in small amounts.

Additionally, it is recommended to:

- f. Drink at least 2 litres (about 8 glasses) of fluid each day, more when exercising in the heat;
- g. If consuming foods and beverages high in fat, salt or sugar have these less often and in small amounts.

0411. **Healthy Eating Initiatives.** Current national healthy eating initiatives focus on:

- a. Reducing the consumption of foods and beverages that are high in:
 - (1) Saturated fat;
 - (2) Salt and other sodium sources (expressed as salt equivalents);
 - (3) Sugar.
- b. Increasing the consumption of dietary fibre, fruit and vegetables, and oily fish.
- c. Reducing the consumption of red and processed meat.
- d. Reversing the current societal trend of increased obesity in the population.

Fat. Fat is made up of different types of fatty acids, some of which are essential for health in small amounts. Fatty acids are usually classified as saturated, monounsaturated and polyunsaturated (omega-3 and omega-6 fatty acids). Eating too much fat can lead to excess calorie intake and body weight gain and a high intake of saturated or trans fatty acids can have adverse effects on health (e.g. increase the risk of heart disease).

Salt. A high salt intake can contribute to the development of high blood pressure, which is a risk factor for cardiovascular disease. The government currently recommends that adults should eat no more than 6 g of salt per day. On average, we eat 8 g salt every day. About three quarters of the salt eaten is already present in processed foods, the remainder is added as seasoning during cooking and at the table.

Sugar. Carbohydrates are key components in the diet, comprising sugars, starchy carbohydrates and dietary fibre. Sugars are divided into two types: naturally occurring sugars and free sugars. Naturally occurring sugars are found in whole fruit, vegetables and milk-based products, and are not considered harmful to health. Free sugars include monosaccharides and disaccharides added to foods and beverages by the manufacturer, chef or customer, and sugars naturally present in honey, syrups and unsweetened fruit juices. Although all sugars and starches absorbed by the body provide similar amounts of energy, they have different physiological effects. High levels of sugar consumption are associated with a greater risk of tooth decay. Furthermore, the higher the proportion of sugars in the diet, the greater the risk of excess energy intake, which may contribute

to weight gain. The government recommends that the average population intake of free sugars should account for no more than 5% of daily dietary energy intake.

0412. **Nutrition Education.** To ensure that all new entry recruits and officer cadets have at least a basic understanding of the principles of nutrition and healthy eating, an advisory package which includes the publication “UK Armed Forces Personal Guide to Nutrition” (available for issue from DSDC) will be issued to individuals to complement and reinforce messages delivered in a nutrition education lecture. A DVD entitled “Food for Thought” has also been produced (available from BDFL) which is targeted at personnel who have left training to remind them of the importance of healthy eating. Additional nutrition education resources are available from the Defence Nutrition Advisory Service (DNAS, see Para 0421 for more information).

0413. **Nutrition Labelling.** Nutrition labelling helps customers to identify healthier foods/beverages and enables them to make informed choices. Caterers should provide consumers with this information by displaying education material at the servery (e.g. posters, information leaflets and nutrition labelling at the point of choice). The Department of Health (DH) provide technical guidance on nutrition labelling for prepacked and non-prepacked foods (www.gov.uk). It is recommended that food labels contain:

- a. Information on the energy (kJ and kcal), fat (g), saturates (g), (total) sugars (g) and salt (g) content per 100 g/ml and in a specified portion of the product;
- b. Portion size information that is expressed in an identifiable and meaningful way;
- c. Percentage Reference Intake (% RI) information based on the amount of each nutrient and energy content in a portion of the food;
- d. Colour coding of the nutrient content of the food/dish (i.e. red [high], amber [medium] and green [low]).

Table 4.1 details the DH guidance on what is considered to be a ‘low’, ‘medium’ and ‘high’ content of fat, saturates, (total) sugars and salt for food. It is recommended that caterers use this information to help develop menus to provide a range of healthy choices. Additional guidance for beverages is provided at Annex D.

Table 4.1 Criteria for 100g of food (whether or not it is sold by volume)²

| Text | LOW | MEDIUM | HIGH | |
|----------------|-------------|------------------------|--------------|-----------------|
| Colour code | Green | Amber | Red | |
| | | | >25% of RIs | >30% of RIs |
| Fat | ≤ 3.0g/100g | > 3.0g to ≤ 17.5g/100g | > 17.5g/100g | > 21g/portion* |
| Saturates | ≤ 1.5g/100g | > 1.5g to ≤ 5.0g/100g | > 5.0g/100g | > 6.0g/portion* |
| (Total) Sugars | ≤ 5.0g/100g | > 5.0g to ≤ 22.5g/100g | > 22.5g/100g | > 27g/portion* |
| Salt | ≤ 0.3g/100g | > 0.3g to ≤ 1.5g/100g | > 1.5g/100g | > 1.8g/portion* |

* Portion size criteria apply to portions/serving sizes greater than 100g

² Department of Health – available on the gov.uk website

0414. **Armed Forces Food Based Standards (AFFBS).** Food-based guidelines for the Armed Forces are provided in Table 4.2. These guidelines should be followed by caterers and retail outlets to help choose and provide foods, meals and menus using foods from the different food groups. Additional guidance is provided on the use of salt and the provision of fluid.

Table 4.2 Armed Forces Food Based Standards

| Food/ Food group | Standards |
|--|--|
|  Fruit and vegetables | <ul style="list-style-type: none"> ▪ Provide at least 5 portions* of a variety of fruit and vegetables every day |
|  Potatoes, bread, rice, pasta and other starchy carbohydrates | <ul style="list-style-type: none"> ▪ Vegetables cooked in fat or oil or served in a cream/cheese sauce should not be provided more than once per meal ▪ Provide a variety of starchy foods at every meal, where at least one-third of options over a menu cycle are non-potato ▪ At least 25% of non-potato starchy options over a menu cycle should be wholegrain or higher-fibre versions ▪ At least 50% of breakfast cereal options should be high in fibre (i.e. more than 6g per 100g) ▪ Starchy food cooked in fat or oil should not be provided more than once per day across lunch and the evening meal ▪ No more than 50% of breakfast cereal options should be high in total sugar (i.e. more than 22.5g per 100g) ▪ Main course options made with pastry should not be provided more than once per day across lunch and the evening meal |
|  Beans, pulses, fish, eggs, meat and other proteins | <ul style="list-style-type: none"> ▪ Provide at least two portions of fish a week, of which one portion should be oily fish ▪ At least one vegetarian main course option per day should contain either: eggs, beans, peas, lentils or vegetable-based sources of protein (e.g. tofu, bean curd or mycoprotein) ▪ Processed meat products** should not be provided more than once per day across lunch and the evening meal |
|  Dairy and alternatives | <ul style="list-style-type: none"> ▪ Provide a portion* of milk and/or dairy foods at every meal ▪ Offer lower fat milk, yoghurt and cheese |
|  Oils and spreads | <ul style="list-style-type: none"> ▪ At least 75% of oils and spreads that are provided or used during the cooking process should be based on lower fat unsaturated fats |
|  Food and drinks high in fat and sugars | <ul style="list-style-type: none"> ▪ Reduce the availability and use of food and drinks that are high in sugar and/or fat (particularly saturated fat) ▪ Savoury snacks should only be available in packet sizes of 30g or less ▪ Confectionery and packet sweet snacks should only be available in the smallest standard single portion size and not exceed 250 kcal ▪ Meat and meat products, biscuits, cakes and pastries that are provided should be lower in saturated fat where available ▪ At least 50% of the dessert options available should be based on fruit (fresh, canned in juice, dried or frozen) |
|  Salt | <ul style="list-style-type: none"> ▪ Caterers should not add salt to food after the cooking process is complete ▪ Vegetables and boiled starchy foods should be cooked without salt ▪ Salt shall only be provided at the servery or at a central service point |
|  Fluids | <ul style="list-style-type: none"> ▪ Tap water should be visible and freely available ▪ Sugar sweetened beverages*** should not be available in a pack size of more than 330ml ▪ No more than 20% of beverages (procured by volume) may be sugar sweetened |

* Refer to Ration Scales provided in JSP 456 Vol 2 Chap 3

** Processed meat products include sausages and burgers

*** Sugar sweetened beverages incorporate beverages which are not low calorie and which have added sugar

Key to symbols

- Food or food groups that must be **provided**

- Food or food groups where the frequency or amount provided should be **restricted**
- Food or food groups that are **no longer allowed**

0415. **Healthy Catering: General Guidance.** Caterers can improve the ‘healthiness’ of recipes and menus by using suppliers’ nutrition information to procure products within a food group that are healthier (e.g. baked beans with the lowest salt and sugar content). Caterers should use products that are aligned with the nutrient criteria within the Government Buying Standards for Food and Catering Services (GBSF).³ Caterers should aim to increase the amount of dietary fibre and reduce the amount of fat, sugar and salt, particularly saturated fat, in recipes and menus. To achieve this, the following practices should be adopted:

a. Fat:

- (1) Check recipes and ingredients and wherever possible reduce the fat content.
- (2) Reduce the use of breaded, battered and pastry products, which are high in fat.
- (3) Use cooking and spreading fats that are based on mono- and polyunsaturated fats wherever possible.
- (4) Avoid frying. Dry grill, bake, poach, boil or steam roast instead.
- (5) If frying, make sure the temperature is correct, change fat/oil regularly and drain foods well after cooking to reduce the fat content.
- (6) Stir-frying uses less oil than deep-frying.
- (7) When making stews, casseroles, soups or gravy, skim off the fat continuously.
- (8) Reduce the amount of dressing that is added to fillings for sandwiches, baguettes, jacket potatoes and salads. Use reduced fat mayonnaise in dressings and serve dressings separately.
- (9) Reduce the amount of foods served containing visible fat.
- (10) Serve foods with tomato or vegetable based sauces rather than creamy, buttery sauces to lower the fat content.

b. Sugar:

- (1) Offer diet or no added sugar drinks and iced water as alternative to sugar-sweetened soft drinks.
- (2) Limit the offer of fruit juice and/or smoothies to a combined total of 150ml per day.
- (3) Gradually reduce the amount of sugar in recipes. Try halving the sugar used in recipes. This works for most recipes except jam, meringues and ice cream.
- (4) Use dried or fresh fruit to sweeten dishes.
- (5) Offer artificial sweeteners to customers and keep sugar sachets at beverage dispensers rather than on the table.

c. Salt:

- (1) At least 50% of meat and meat products, breads, breakfast cereals and cooking sauces (procured by volume) should meet Responsibility Deal (<https://responsibilitydeal.dh.gov.uk/>) salt targets.
- (2) Gradually reduce the amount of salt in recipes.
- (3) Substitute with garlic, herbs and spices.
- (4) Always taste before adding salt.
- (5) Do not salt chips or other foods before serving; leave the choice to the customer.
- (6) Keep salt at the servery or a central service point rather than on each table.

³ GBSF – available on the Public Health England website

- (7) Make homemade soup and stock.

0416. **Healthy Catering: Food-based Guidance**⁴. The guidelines provided below for storing, preparing, cooking and serving foods should be followed by caterers to improve the 'healthiness' of foods in the different food groups.

a. Fruit and vegetables

(1) Storing and preparation:

- i. Use fresh fruit and vegetables as soon as possible, rather than storing them, to avoid vitamin loss. Alternatively, use frozen fruit and vegetables.
- ii. Store fresh vegetables in a cool, dark place.
- iii. Avoid leaving any cut vegetables exposed to air, light, heat or leaving them to soak. Cover and chill them.
- iv. Avoid using tinned vegetables containing salt.

(2) Cooking:

- i. Steam and cook vegetables with minimum amounts of water (no added salt), for as short a time as possible and serve as soon as possible to retain vitamins.
- ii. Vegetables can also be stir-fried, grilled and roasted in a small amount of oil.
- iii. Vegetable juices (maximum of 150ml) and soups (depending on vegetable content) can count as one portion towards the five-a-day target.
- iv. Pureed stewed fruit can be offered with lower fat and sugar custard, yoghurt or ice cream as a dessert.
- v. Add vegetables and pulses to stews, casseroles or other dishes to increase the fibre content and reduce the overall fat content.
- vi. Incorporate fruit into other desserts and dishes, including cold starters and savoury dishes.
- vii. Add vegetables to rice (e.g. mushrooms, peas, sweetcorn and peppers).

(3) Serving:

- i. Offer a variety of fruits and vegetables at all meals.
- ii. Offer a variety of dried fruits and tinned fruit in natural juices to add to cereals and porridge and include dried fruit in cakes and desserts.
- iii. Offer a variety of salads by combining vegetables and fruits with nuts, noodles and couscous.
- iv. 150ml of fruit juice and/or smoothie combined counts towards a maximum of one portion of your 5 A Day.
- v. Control the amount of sauces and dressings added to vegetables and salad.
- vi. Do not add sugar or syrupy dressings to fruit (such as stewed apple).
- vii. Offer fruit based desserts. At least half of the dessert options available should be fruit based (i.e. half raw weight of ingredients is fruit).

b. Potatoes, bread, rice, pasta and other starchy carbohydrates

(1) Storing and preparation:

- i. Use wholemeal flour to replace some/all of the white flour in recipes to add folate and fibre.

(2) Cooking:

- i. Serve oats in a variety of ways (e.g. porridge, granola and bircher muesli).

⁴ On operational deployment some of these guidelines will not be achievable through logistic/supply challenges.

- ii. Steam or boil potatoes with minimum amounts of water (no added salt), for as short a time as possible to retain vitamins.
- iii. Use semi-skimmed or 1% milk rather than butter or margarine to mash potatoes.
- iv. Pre-blanch chips in steamers (if available) before frying to reduce the amount of oil absorbed.
- v. Use baked products instead of frying as they should contain less fat.
- vi. Do not add salt to water when cooking pasta, rice and other grains. Use herbs, spices, garlic, vegetables, dried fruit, seeds and nuts to add flavour.

(3) Serving:

- i. Offer a variety of starchy foods with main meals (e.g. pasta, rice, noodles, cous cous and potatoes).
- ii. Offer a variety of breakfast cereals and porridge at breakfast, including cereals which are high in fibre and cereals with added dried fruit.
- iii. Reduce the provision of breakfast cereals coated with sugar or honey.
- iv. Offer a variety of breads and rolls including, wholemeal and granary breads at all meals.
- v. Do not add too much fat (e.g. lower fat unsaturated spread and mayonnaise) on bread or in sandwiches.
- vi. Use wholemeal pasta, brown rice, wholegrain cereals and pulses as an alternative to refined products. Offer potatoes with skins on to increase fibre.
- vii. Use more starchy foods in relation to meat/rich sauces.
- viii. Offer potatoes cooked in a variety of ways: mashed, boiled and baked. If offering chips use thick-cut chips or potato wedges instead of thin-cut chips or fries, as they absorb less oil when cooking.
- ix. Serve boiled/steamed rice or naan bread with curries, rather than poppadoms, or fried rice.

c. Beans, pulses, fish, eggs, meat and other proteins

(1) Storing and preparation:

- i. Remove visible fat from meat and skin from poultry.

(2) Cooking:

- i. Stand poultry and joints on racks when cooking to allow the fat to flow away.
- ii. Larger pieces of meat will absorb less fat than smaller pieces.
- iii. When baking fish, brush with unsaturated vegetable oil rather than butter.
- iv. Add beans and pulses to dishes as a whole or partial substitute for meat (e.g. in casseroles, chilli or curries).
- v. Use wholemeal breadcrumbs as a crunchy coating instead of batter for fish. To provide a healthier option serve the fish grilled or baked with no coating.

(3) Serving:

- i. Offer a variety of meats, fish (white and oily), seafood and vegetarian alternatives at all meals.
- ii. Offer lean cuts of meat where possible (e.g. chicken breast and pork steak).
- iii. Serve red meat and processed meat less often.
- iv. Serve slightly less meat with extra vegetables and starchy foods.

d. Dairy and alternatives

(1) Serving:

- i. Offer a choice between skimmed, 1% and semi-skimmed milk.

- ii. Replace the cream in dishes with lower fat and lower sugar yoghurt.
- iii. Use skimmed, 1% or semi-skimmed milk in sweet and savoury sauces, puddings and custard.
- iv. Use béchamel, instead of cheese sauce for dishes covered in cheese.
- v. Use smaller amounts of stronger tasting cheese to provide flavour (e.g. mature cheddar). This helps lower the salt and fat content of dishes.
- vi. Grate cheese for use in salads, sandwiches and fillings.
- vii. Provide lower fat and lower sugar yoghurts as an alternative to hot puddings/desserts at dinner.
- viii. Use lower fat cheeses such as Edam, cottage cheese or the growing range of reduced-fat cheeses.

0417. **Healthy Catering: Marketing.** There are four basic 'P' principles of marketing that should be applied to promoting healthy eating. Caterers should act to:

- a. Provide a good quality **Product**.
- b. Where necessary, **Price** foods appropriately and competitively.
- c. **Place** foods in an attractive display with the dishes supporting sound nutrition and healthy eating principles in a prominent position on the servery.
- d. **Promote** foods by using displays, communication, advertising and new ideas.

0418. **Healthy Catering: Implementing Changes.** Before deciding which changes need to be implemented to improve the 'healthiness' of recipes and menus it is important to consider the lifestyle of the average customer and the factors that determine an individual's food choice (e.g. sensory appeal, availability, convenience, familiarity, cost, health, weight control and ethical concerns). Ensure that customers and staff are informed about what has been done and why, record customer comments, monitor changes in sales and consumption patterns and be open to customer suggestions. Some people are more open to new ideas than others. Therefore it is wise to introduce any changes gradually and to encourage customers to alter their eating habits. Ingredient changes are not a choice for the customer but usually prove successful.

The following points should be remembered:

- a. Ensure that there is always a choice of food.
- b. Change menus to support sound nutrition and healthy eating.
- c. Improve the "healthiness" of popular dishes (e.g. measure and gradually reduce salt added in standard recipes).
- d. Highlight the fact that healthier ingredients are being used (e.g. 'we only fry in polyunsaturated oil', or 'all our recipes use less salt and sugar than before and every opportunity is taken to increase the amount of dietary fibre available').
- e. Do not allow your healthy eating initiative to rely solely upon gimmicky promotional material on the servery. The initiative should be deeper and more comprehensive through menu planning and the cookery processes adopted in the mess.
- f. Change promotional displays frequently to catch the eye and maintain interest.

0419. **Healthy Catering: Food Presentation Initiatives.** Careful presentation of food is a key element in marketing healthy foods. The following points should be considered:

- a. "Healthy" dishes should be the norm within the menu and should be at least as attractive to the eye and nose as those dishes known to be popular but less healthy (e.g. poached or grilled fish should appear to be as generous in terms of portion size, have as good colour and smell and be as appetising as fish in batter).

- b. Place the healthier choices within the customers' sight and within reach. Keep less healthy options at the rear of the servery. Display foods attractively and make the most of colourful garnishes and presentation techniques.
- c. Healthier options should be convenient to see on menus and ideally listed first. This can be achieved by drawing more attention to particular items, or shifting attention away from unhealthier items through the use of traffic lights or other signposts. Avoid using the descriptor "healthy", instead call things "light and fresh" or similar taste-related phrases.
- d. All staff should be approachable, friendly and well informed about the healthy eating programme.

0420. **Legal Requirements.** Any nutrition (e.g. low-fat) or health (e.g. reduces risk of heart disease) claims made must be evidenced within statutory requirements. UK legislation has always made it an offence to give wrong or misleading information. To avoid making any misleading claims only general information on nutritional content should be given. If in doubt do not make nutrition or health claims. Current legislation and guidance can be found at: www.gov.uk/food-labelling-and-packaging.

0421. **Defence Nutrition Advisory Service.** The Defence Nutrition Advisory Service (DNAS), which is supported by the Institute of Naval Medicine, aims to provide expert advice and information on diet, nutrition and military feeding. The DNAS has produced a series of practical factsheets and presentations, which are available on the DNAS page on [MOSS](#) the [Defence Intranet](#) and [Defence Connect](#). The factsheets intend to:

- a. Provide personnel and their families with all the information they need to live a healthy active lifestyle.
- b. Provide practical tips and guidance on how to eat a healthy balanced diet at home, at work and during operations.
- c. Demonstrate how good nutrition can improve physical and mental performance, and recovery from physical activity.

The DNAS can be contacted using the following email address: NAVYINM-EMSDNAS@mod.uk.

0422. **Recommended Reading.**

Brown S. (1985) Healthy Living Cookbook. Dorling Kindersley Publishers Ltd.

Ceserani V. and Kinton R. (1992) Practical Cookery. 7th Ed. Hodder and Stoughton Ltd.

Department of Health (2008) Healthy Weight, Healthy Lives – A Cross Government Strategy for England (Change 4 Life and 5 a Day). HMSO.

Department of Health (1995) Government White Paper "The Health of the Nation – Fit for the Future" and 2004; The Health of the Nation white paper. HMSO.

Department of Health (1990) Catering for Health - The Recipe File. HMSO.

Department of Health (2012) Manual of Nutrition 12th Ed. TSO.

Drummond K.E., Vastano J.C and Vastano J.F. (1993) Cook's Healthy Handbook. John Wiley and Sons Inc.

Food Standards Agency (2014) Food Labelling. www.food.gov.uk

Public Health England (2014) Healthier and More Sustainable Catering. www.gov.uk

Public Health England (2016) Eatwell Guide. www.gov.uk/government/publications/the-eatwell-guide

Public Health England (2016) Childhood obesity plan: PHE's role in implementation. www.gov.uk

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Stevenson D.R. (1991) Basic Cookery – The Process Approach. Stanley Thornes (Publishers) Ltd.

The Commanders' Guide to Nutrition.

The Food Labelling Regulations (1996) HMSO.

UK Armed Forces Personal Guide to Nutrition (2006).

UK Military Dietary Reference Values (2008). QinetiQ.

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CHAPTER 4 Annex A - UK MOD NUTRITION POLICY STATEMENT

The UK Ministry of Defence (MOD) undertakes to provide military personnel with a basic knowledge of nutrition, with the aim of optimising physical and mental function, long-term health, and morale. Educators will use effective education techniques, and programmes developed by, or in consultation with, registered dietitians and other qualified personnel. Programmes will reflect current nutrition knowledge and scientific research findings, and may contain other appropriate information, such as that provided by the UK Department of Health. Advice on the nutritional needs of pregnant or lactating female military personnel, or individuals requiring nutrition therapy for conditions such as illness, injury, infection, chronic disease, or trauma, will be available from qualified personnel on request.

The UK MOD undertakes to provide a variety of healthy and palatable food and beverage choices to military personnel to enable them to adopt healthy eating habits, a balanced diet, and to ensure optimal fitness and performance. Contract caterers will be required to provide food at the point of service that meets these requirements.

UK Operational Ration Pack(s) (ORP) will continue to be provided to sustain troops on operations and during field exercises, with the aim of preserving life, preserving both physical and cognitive function, maintaining mood and motivation, preventing fatigue, and speeding up recovery. ORP will be designed to meet the energy and nutrient requirements of military personnel operating for long periods in both temperate and extreme environments. The exception to this will be any form of nutritionally-incomplete survival ration, or restricted ration.

The UK MOD has developed UK Military Dietary Reference Values (MDRV) for a range of macro- and micro-nutrients. The guidelines are appropriate for the healthy end-user, and are divided into training and operational MDRVs as well as non-operational MDRVs for Adults (19 – 50 years old) and Adolescents (15 – 18 years old).

Specific Information

Details of classification, common sources and the functions of nutrients are developed in the table at Annex B. Specific comments or feedback relating to the UK MOD Nutrition Policy Statement or the information detailed in the table should be directed to the ACDS (Log Ops) Policy desk.

CHAPTER 4 Annex B – CLASSIFICATION, COMMON SOURCES AND FUNCTIONS OF NUTRIENTS

| NUTRIENT | TYPE | DIETARY SOURCES | FUNCTION | REMARKS |
|---------------------------|--|---|--|---|
| Carbohydrate (CHO) | Starchy carbohydrates | Potatoes; bread; rice; pasta; breakfast cereals; cous cous; grains such as wheat, barley, rye, oats | Primary source of food energy | These foods should form the basis of meals and make up over a third of the diet. Choose wholegrain or higher fibre versions with less added fat, salt and sugar |
| | Sugars from whole fruits, vegetables, milk and dairy products | Sugars contained within whole fruit and vegetable products plus the sugar naturally present in milk and dairy products (lactose) | | Does not include fruit juices or smoothies – the sugars in these are free sugars. The population should aim to consume at least five portions of a variety of fruits and vegetables each day including fresh, frozen, canned and dried produce |
| | Free sugars | All sugars added to food by the manufacturer, cook or consumer, plus the sugars naturally present in honey, syrups and unsweetened fruit juices. Foods high in free sugars include sweets, cakes, biscuits, chocolate, and some fizzy drinks and juice drinks | | Free sugars should contribute no more than 5% of total energy (this is no more than 30g/day for adults). Diets high in free sugars are associated with tooth decay, and overweight and obesity, which in turn increase the risk of heart disease, type 2 diabetes and some cancers. Greater consumption of sugar-sweetened drinks is associated with increased risk of type 2 diabetes. For this reason it is advised that consumption is minimised Fruit juices and smoothies should be limited to a combined total of 150ml (which can count as a maximum of 1 of your 5 A Day), as the sugars in these drinks are free sugars. Fruit juices and smoothies should be limited to 150ml per day and consumed at mealtimes to prevent the risk of tooth decay |
| | Dietary fibre | Fruits, vegetables, whole grain cereals, beans, pulses | Helps food and waste products move through the gut more easily. Some types of fibre may help reduce the amount of cholesterol in the blood | A diet rich in dietary fibre is associated with a reduced risk of heart disease, stroke, type 2 diabetes and bowel cancer' The current recommendation is 30g/day for adults |

| NUTRIENT | TYPE | DIETARY SOURCES | FUNCTION | REMARKS |
|----------------|------------------------|--|---|--|
| Fat | Saturated | Animal sources such as meat, eggs, milk and dairy products, butter, lard, dripping, suet, and a few vegetable oils (palm, coconut) | Source of energy Carriage and absorption of fat soluble vitamins, provision of essential fatty acids | A diet high in saturated fat increases blood cholesterol which in turn increases your risk of cardiovascular disease-heart disease and stroke. There is strong evidence that replacing saturated fats in the diet with unsaturated fats can help to lower blood cholesterol The current recommendation for saturated fat is 20g/day for the average woman and 30g/day for the average man |
| | Polyunsaturated | Most vegetable oils (sunflower, corn, soya), walnuts, seeds and oily fish such as salmon, fresh tuna, mackerel and sardines | | Oily fish is a good source of long chain polyunsaturated omega 3 fatty acids. There is some evidence for a beneficial effect of long-chain omega-3 polyunsaturated fatty acids in reducing cardiovascular disease mortality. The recommendation is to include 2 portions (2 x140g) of fish per week, one of which should be oily (e.g. salmon, mackerel, fresh tuna and sardines) |
| | Monounsaturated | Olive oil, rapeseed oil, avocado, most nuts | | |
| Protein | | Beans, pulses, fish, eggs, meat and meat alternatives including tofu and soya, nuts | Growth, repair and maintenance of all living tissue. Production of enzymes and hormones Maintenance of immune function. Any excess is used to provide energy | Red and processed meats should be limited in the diet. Those who eat an average of more than 90g/day should reduce their consumption to an average of 70g/day The recommendation is to include 2 portions per week (2 x 140g); one of which should be oily (e.g. salmon, mackerel, fresh tuna and sardines) |

| NUTRIENT | TYPE | | DIETARY SOURCES | FUNCTION | REMARKS |
|----------|-----------------------|-------------------|---|---|---|
| Vitamins | Water Soluble: | | | | Owing to water solubility there will be losses of water soluble vitamins during food processing particularly if soaking. These vitamins will also be lost in any discarded cooking liquor |
| | B1 | Thiamine | Most foods, but richest sources are pork, vegetables, dairy, eggs, offal, seeds and yeast | Metabolism of CHO, fat and alcohol | Heat sensitive |
| | B2 | Riboflavin | Richest sources are milk and milk products, liver, kidneys, eggs and whole grains, fortified breakfast cereals | Metabolism of CHO and maintenance of mucous membranes, skins, eyes and the nervous system | May be destroyed by Ultra Violet light including that found in natural light |
| | B3 | Niacin | Milk and milk products, beef, pork, chicken, eggs, grains especially whole grains, except maize, tapioca, sago and cassava | Metabolism of CHO | |
| | B6 | Pyridoxine | Meat, fish, whole grain cereals, bananas, peanuts and to a lesser extent other fruits and vegetables. Fortified breakfast cereals | Metabolism of proteins. Formation of haemoglobin in red blood cells | |
| | B12 | | Foods of animal origin, the richest source being the liver where it is stored. Yeast products and fortified vegetable extracts, fortified breakfast cereals | Brain and nervous system function. Red blood cell production | |
| | | Folate | Most foods in small amounts. Good sources include green leafy vegetables, peas, chickpeas, brown rice, fortified breakfast cereals | Production of red blood cells and synthesis of cell DNA | |
| | | C | Ascorbic acid | Fruits (citrus fruits, berry fruits and kiwi fruit are rich sources), vegetables (green leafy vegetables, peppers are rich sources), sweet potato, potatoes | The development, maintenance and repair of the body, important for wound healing. Has an antioxidant function in the body. Helps the body absorb iron |

| NUTRIENT | TYPE | DIETARY SOURCES | FUNCTION | REMARKS | |
|----------|---------------------|---------------------------------|--|---|---|
| Vitamins | Fat Soluble: | | | | |
| | A | Retinol | Liver, egg, oily fish, dairy products | Aids vision in dim light Maintains healthy skin and is important for the immune system | Deficiency is “night blindness” Vitamin A is destroyed by oxidation when exposed to air and heat or light |
| | | Carotene (Pre Vitamin A) | Yellow or orange coloured fruits and vegetables, green leafy vegetables (e.g. carrots, tomatoes, spinach, red peppers) | Can be converted to Vitamin A in the body to support the functions above | Cooking processes enhance absorption |
| | D | | Oily fish, eggs, fortified products such as margarines and breakfast cereals | Absorption and metabolism of calcium and phosphorus for the production and repair of bone | Deficiency is rickets and osteomalacia. Vitamin D is created in the human body by the action of ultra violet light on the skin In spring and summer, most people will get all the vitamin D they need through sunlight on the skin and from a healthy balanced diet. However, during the autumn and winter we need to rely on dietary sources of vitamin D. Since it is difficult for people to get enough vitamin D from food alone, everyone should consider taking a daily supplement containing 10 micrograms of vitamin D during autumn and winter |
| | E | | Vegetable oils, fat spreads, nuts and seeds | Functions as an antioxidant in the body which protects the body from damage caused by free radicals | A diet with sufficient vitamin A is unlikely to be deficient in vitamin E |
| | K | | Produced for humans in the large intestine by bacteria. Widely available in vegetables such as spinach, cabbage, cauliflower, peas and cereals | Supports blood clotting | Deficiency very rare |

| NUTRIENT | TYPE | DIETARY SOURCES | FUNCTION | REMARKS |
|----------|-------------------------------|--|--|---|
| Minerals | Sodium | Commonly added to food as sodium chloride (salt), sodium bicarbonate, monosodium glutamate | Maintains fluid balance in the body Required for muscle and nerve activity | Salt content can be calculated from sodium content by multiplying by 2.5 and dividing by 1000. The UK diet typically based on processed foods is high in salt. A high salt intake has been shown to raise blood pressure which is a risk factor for stroke. It is recommended that adults should eat no more than 6g of salt a day. Children should have even less. 6g of salt is about a teaspoonful |
| | Potassium | Widely available in the diet, particularly in bananas, potatoes and juices | Works in conjunction with sodium for maintenance of fluid balance | Excess potassium will have a deleterious effect on the normal heart beat |
| | Calcium | Milk and milk products green leafy vegetables, pulses and fish with edible bones (e.g. canned sardines) | Increases the strength of bones and teeth Necessary for the transmission of nerve “messages” and muscle contraction | Deficiency leads to osteoporosis, osteomalacia and a predisposition to bone fractures including stress fractures |
| | Phosphorus | Most foods but offal very rich source | Together with calcium strengthens bones and teeth Involved in energy metabolism | Excess phosphorus will inhibit the absorption of calcium |
| | Iron | Liver, red meat, oily fish, eggs, fortified wheat flour products green leafy vegetables, pulses and dried fruits | Iron is a component of haemoglobin in red blood cells and necessary for the carriage of oxygen around the body | Deficiency is anaemia Iron is lost from the body through bleeding Vitamin C assists the absorption of iron into the body. Some foods inhibit the absorption of iron (e.g. tea and bran) |
| | Other (Trace elements) | All foods in minute amounts | All bodily functions | Includes magnesium, chromium, Zinc, copper, manganese, molybdenum, selenium. |

Note: A more comprehensive summary of nutrients may be found in Department of Health Manual of Nutrition 12th Edition (2012)

CHAPTER 4 Annex C – NUTRITIONAL VALUE OF FOOD

The nutritional value of food depends on many factors not least the human body’s ability to absorb and utilise the nutrients. Equally food processing and cooking have an impact either by improving the digestion of food or by damaging the nutrients. The deleterious effect of food processing and cooking on the nutrients is demonstrated in the table below.

| Nutrient | Heat | Light | Air | Water (leaching) | Acid | Alkali | Other |
|-----------------|----------------|-------|------------------------------------|------------------|------|--------|-------------------|
| Protein | ✓ if prolonged | | | | | | |
| Vitamin A | ✓ with air | | ✓ with heat | | | | Metals |
| Thiamine (B1) | ✓ | | ✓ | ✓ | | ✓ | Sulphur Dioxide |
| Riboflavin (B2) | | ✓ | | ✓ | | ✓ | |
| Folate | ✓ | | ✓ but protected by vitamin C | ✓ | | ✓ | |
| Vitamin C | ✓ | ✓ | ✓ but protected by sulphur dioxide | ✓ | | ✓ | Enzymes Metals |
| Minerals | | | | ✓ | | | |

CHAPTER 4 Annex D – FOOD LABEL GUIDANCE FOR BEVERAGES

Criteria for beverages (per 100ml)²

| Text | LOW | MEDIUM | HIGH | |
|----------------|---------------|-----------------------------|----------------|------------------|
| Colour code | Green | Amber | Red | |
| | | | >12.5% of RIs | >15% of RIs |
| Fat | ≤ 1.5g/100ml | > 1.5g to ≤ 8.75g/100ml | > 8.75g/100ml | > 10.5g/portion* |
| Saturates | ≤ 0.75g/100ml | > 0.75g to ≤ 2.5g/100ml | > 2.5g/100ml | > 3.0g/portion* |
| (Total) Sugars | ≤ 2.5g/100ml | > 2.5g to ≤ 11.25g/100ml | > 11.25g/100ml | > 13.5g/portion* |
| Salt | ≤ 0.3g/100ml | > 0.3g to ≤ 0.75g/100ml | > 0.75g/100ml | > 0.9g/portion* |

* Portion size criteria apply to portions/serving sizes greater than 150ml