

Management of Obesity in Adults: European Clinical Practice Guidelines

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Key Words

European guidelines · Obesity management · Primary care · OMTF

Summary

The development of consensus guidelines for obesity is complex. It involves recommending both treatment interventions and interventions related to screening and prevention. With so many publications and claims, and with the awareness that success for the individual is short-lived, many find it difficult to know what action is appropriate in the management of obesity. Furthermore, the significant variation in existing service provision both within countries as well as across the regions of Europe makes a standardised approach, even if evidence-based, difficult to implement. In formulating these guidelines, we have attempted to use an evidence-based approach while allowing flexibility for the practicing clinician in domains where evidence is currently lacking and ensuring that in treatment there is recognition of clinical judgment and of regional diversity as well as the necessity of an agreed approach by the individual and family. We conclude that i) physicians have a responsibility to recognise obesity as a disease and help obese patients with appropriate prevention and treatment, ii) treatment should be based on good clinical care and evidence-based interventions and iii) obesity treatment should focus on realistic goals and lifelong management.

Introduction

Obesity is now recognized as the most prevalent metabolic disease world-wide, reaching epidemic proportions in both developed and developing countries and affecting not only adults but also children and adolescents. The WHO has already declared obesity a global epidemic that constitutes one of the biggest current health problems [1]. In the European region, obesity also presents an unprecedented and underestimated public health challenge [2], with its prevalence rising rapidly and expected to include 150 million adults and 15 million children by 2010.

Overweight and obesity are responsible for about 80% of cases of type 2 diabetes, 35% of ischaemic heart disease and 55% of hypertensive disease among adults in Europe. They together cause more than 1 million deaths and 12 million life-years of ill health each year. It is estimated that one in 13 annual deaths in the EU is likely to be related to excess weight [3]. The consequent economic implications and the burden on national health costs are quite substantial.

Despite steady progress in the management of obesity, its prevalence continues to rise, stressing the necessity for prevention and intervention strategies not only at the individual but also at the communities and the population as a whole [4].

These European guidelines on the management of obesity in adults were developed to address the need for evidence-based recommendations for the management of obesity at the individual level and to establish a basis for a more uniform approach in obesity management across Europe. Our aim is to provide physicians, health-care policy makers and health-care carriers with essential elements of good clinical practice in the management of obesity. The working group of the European Obesity Management Task Force of the European Association for the Study of Obesity (EASO), which performed this task, was composed of experts, representing key disciplines in comprehensive obesity management and reflecting European geographical and ethnic diversity. The group also included a representative (MF) of the International Federation for the Surgery of Obesity – European Chapter (IFSO-EC). We reviewed published national obesity guidelines [5–24] from several European countries. At the same time, we have adopted a rigorous, evidence-based approach to the development of the practice recommendations, knowing well the limitations of the obesity literature on the issues we dealt. In addition, each recommendation includes a level of evidence (1 to 4) and/or a grade (A, B, C or D) based upon the Scottish Intercollegiate Guidelines Network (SIGN) [5]. The level of evidence informs the reader about the strength of the evidence that supports each recommendation while the grade of recommendation reflects both the supporting level of evidence and a consideration, where applicable, of the harms and costs of the intervention and its importance to the individual or population (see Appendix).

Definition and Classification of Obesity

Obesity is a chronic disease characterised by an increase of body fat stores. In clinical practice, the body fatness is assessed by the body mass index (BMI). BMI is calculated as measured body weight (kg) divided by measured height squared (m^2). In adults (age over 18 years) obesity is defined by a BMI ≥ 30 kg/m^2 and overweight (also termed pre-obesity) by a BMI between 25 and 29.9 kg/m^2 . Many people in the overweight range of BMI 25–29.9 kg/m^2 will become obese in their lifetime [1, 2] (table 1) {level 1}.

Central adiposity is associated with metabolic and cardiovascular diseases [1, 25] {level 1}. The amount of abdominal fat can be assessed by waist circumference [26] {level 2}. Waist circumference correlates positively with abdominal fat content. The waist circumference is measured in the horizontal plane midway in the distance of the superior iliac crest and the lower margin of the last rib [27] {level 4}.

The most recent International Diabetes Federation consensus [28] defined central obesity (also called as visceral, android, apple-shaped or upper body obesity) in Europids as a waist circumference ≥ 94 cm in men and ≥ 80 cm in non-pregnant women {level 3}. Lower cut-off points for central obesity are

Table 1. BMI categories (WHO 1997)

Category	BMI, kg/m^2
Underweight	< 18.5
Healthy weight	18.5–24.9
Pre-obese state	25.0–29.9
Obesity grade I	30.0–34.9
Obesity grade II	35.0–39.9
Obesity grade III	≥ 40

proposed for South Asian (90 cm), Chinese (90 cm) and Japanese (85 cm) men, but higher for Japanese (90 cm) women. Further epidemiological studies are required for formalising appropriate cut-off points in other ethnic populations (e.g. South and Central Americans, Eastern Mediterranean and Middle East populations, Sub-Saharan Africans) {level 4}. In the meantime, the South Asian cut-off points should be used for the Central and South Americans, and the European cut-off points for the Sub-Saharan and South East European and Middle Eastern populations {level 4}.

Pathogenesis of Obesity

The cause of obesity is complex and multi-factorial [29, 30]. At the simplest level, obesity develops as a result of a period of chronic energy imbalance and is maintained by a continued elevated energy intake sufficient to maintain the acquired higher energy needs of the obese state. Complex interactions between biological (including genetic and epigenetic), behavioural, social and environmental factors (including chronic stress) are involved in regulation of energy balance and fat stores [4, 31, 32]. The rapid increase in the prevalence of obesity over the past 30 years is mainly a result of cultural and environmental influences. High energy density diet, increased portion size, low physical activity and adoption of a sedentary lifestyle as well as eating disorders are considered as important risk factors for the development of obesity [2, 4]. These behavioural and environmental factors lead to alterations in adipose tissue structure (hypertrophy and hyperplasia of adipocytes, inflammation) and secretion (e.g. adipokines) [33, 34].

Epidemiology of Overweight and Obesity in Europe

The prevalence of obesity in Europe is in the range 10–25% in men and 10–30% in women (fig. 1) [2, 4]. In the past 10 years the prevalence of obesity has increased by 10–40% in the majority of European countries. In most countries more than 50% of people are overweight or obese. The prevalence of obesity was higher among men than among women in 14 of 36 countries or regions with data for both genders, and the prevalence of overweight was higher among men in all 36 countries [4].

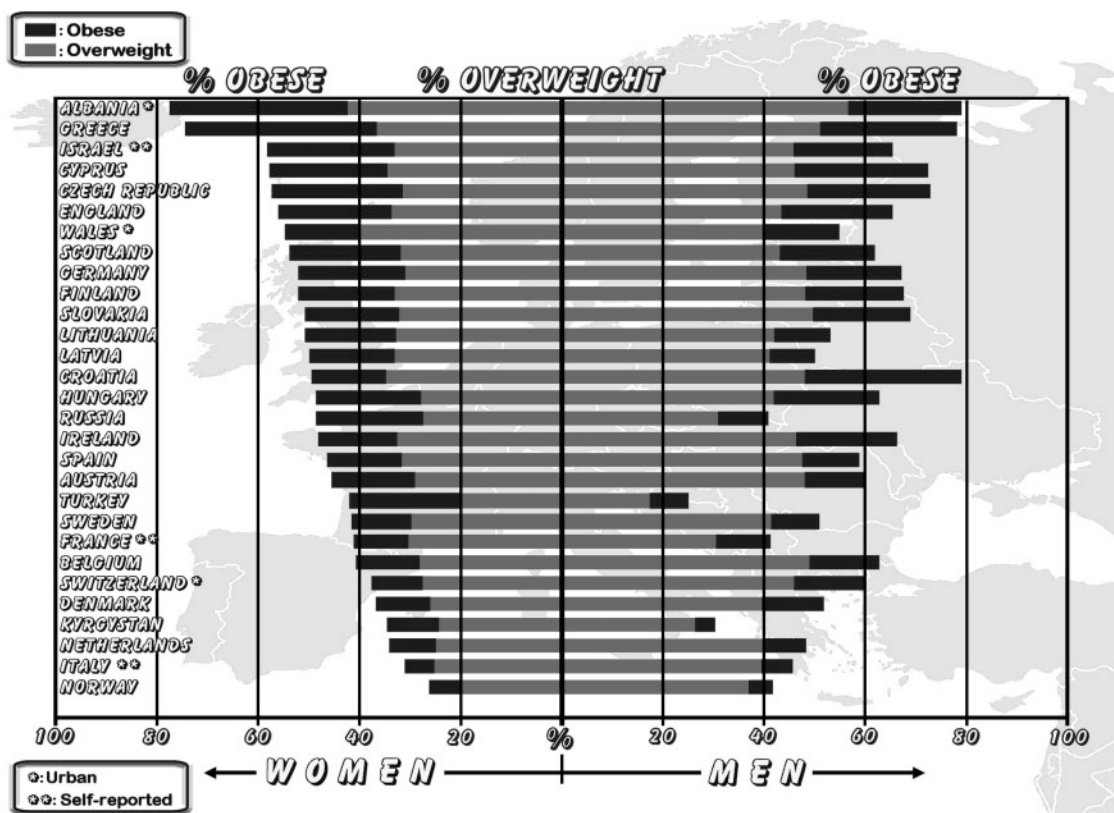


Fig. 1. Prevalence of obesity and overweight in Europe (Source: International Obesity Task Force (IOTF)).

Health Risks of Obesity and Socio-Economic Consequences of Obesity

Obesity causes a significantly increased morbidity, disability and mortality and impairs quality of life (table 2) [3, 35–40] {level 1}. Obesity is associated with an increased risk of death from both cardiovascular diseases and certain cancers, particularly with higher levels of obesity. In the BMI range 25–30 kg/m² (overweight), the link to increased mortality is weaker and may be more greatly influenced by fat distribution. The association between obesity and mortality weakens with increasing age, especially over 75 years.

The increased health risks translate into an increased burden on the health-care system. Direct health-care costs due to obesity in Europe are estimated to account for up to 7% of total health-care costs, which is comparable to diseases such as cancer [4] {level 2}.

Examination of the Obese Patient

A comprehensive history relevant to the patient’s obesity should be obtained; this will include the onset of and previous treatment for obesity {RBP}.

Other important issues to consider include [32, 41–44] {RBP}:

- ethnicity,
- family history,

- dietary habits, eating pattern and possible presence of an eating disorder (binge eating, binge eating disorder, night eating syndrome, bulimia),
- presence of depression and other mood disorders,
- physical activity,
- other determinants, e.g. genetic, drugs, endocrine abnormalities, psychosocial factors, chronic stress, smoking cessation, etc.,
- health consequences of obesity (see table 2),
- patient expectations and motivation for change.

Physical Examination

- Measure weight and height (from which BMI is calculated), waist circumference, blood pressure (appropriate size-cuff) {grade 3}.
- Assess the presence and impact of obesity-related diseases (diabetes, hypertension, dyslipidaemia, cardiovascular, respiratory, joint diseases, non-alcoholic fatty liver disease (NAFLD), sleep disorders etc.) {RBP}.
- Look for the presence of acanthosis nigricans as a sign of insulin resistance {RBP}.

Table 2. Obesity-related health risks and complications

Metabolic complications
Diabetes, insulin resistance
Dyslipidaemia
Metabolic syndrome
Hyperuricaemia, gout
Low-grade inflammation
Cardiovascular disorders
Hypertension
Coronary heart disease (CHD)
Congestive heart failure
Stroke
Venous thromboembolism
Respiratory disease
Asthma
Hypoxemia
Sleep apnoea syndrome
Obesity hypoventilation syndrome (OHS) (Pickwickian syndrome)
Cancers
Oesophagus, small intestine, colon, rectum, liver, gallbladder, pancreas, kidney, leukaemia, multiple myeloma, and lymphoma
In women: endometrial, cervix uteri, ovary, breast cancer after menopause
In men: prostate
Osteoarthritis (knee) and an increase in pain in the weight bearing joints
Gastro intestinal
Gallbladder disease
Non-alcoholic fatty liver disease (NAFLD) or non-alcoholic steatohepatitis (NASH)
Gastro-esophageal reflux
Hernia
Urinary incontinence
Reproductive health
Menstrual irregularity, infertility, hirsutism, polycystic ovaries
Miscarriage
Gestational diabetes, hypertension, preeclampsia,
Macrosomia, foetal distress, malformation (i.e. neural tube defect)
Dystocia and primary caesarean section
Miscellaneous
Idiopathic intracranial hypertension
Proteinuria, nephrotic syndrome
Skin infection
Lymphoedema
Complications from anaesthesia
Periodontal disease
Psychological and social consequences
Low self-esteem
Anxiety and depression
Stigmatisation
Discrimination in employment, college acceptance, job earning etc.

*The specific levels of risk associated with obesity vary with age, gender, ethnicity and social conditions.

Laboratory Examinations

The minimum dataset required will include {RBP}:

- fasting blood glucose,
- serum lipid profile (total, HDL and LDL cholesterol, triglycerides),
- uric acid,
- thyroid function (TSH level),
- liver function (hepatic enzymes).

Cardiovascular assessment, if indicated {RBP}.

Endocrine evaluation if Cushing's syndrome or hypothalamic disease suspected.

Liver investigation (ultrasound, biopsy) if abnormal liver function tests suggest NAFLD or other liver pathology.

Body Composition Analysis

Waist circumference can be used as a proxy for abdominal fat [26] {level 3; RBP}. Assessment of body composition is not essential for the management of obesity in clinical practice. Uncertainty exists about the validity of body composition and/or measured changes in weight loss by bedside techniques such as bioelectrical impedance analysis (BIA), particularly in obese individuals [45]. Dual X-ray absorptiometry (DXA) is the more relevant method for body composition assessment in specialist centres: it can be useful in the clinical evaluation of obesity associated with a dramatic decrease in lean body mass (i.e. obesity associated with genetic, endocrinological or neurological disorders and follow-up of bariatric surgery) [45].

Comprehensive Obesity Management

Appropriate goals of weight management emphasise realistic weight loss to achieve a reduction in health risks and should include promotion of weight loss, maintenance and prevention of weight regain (fig. 2) {RBP}. Patients should understand that, since obesity is a chronic disease, weight management will need to be lifelong.

Aims of Treatment

Management and Treatment of Obesity (fig. 2)

The management and treatment of obesity have wider objectives than weight loss alone and include risk reduction and health improvement. These may be achieved by modest weight loss (i.e. 5–10% of initial body weight), improved nutritional content of the diet and modest increases in physical activity and fitness [43, 46, 47] {level 1}.

Appropriate management of obesity complications in addition to weight management should include [48, 49] {level 1; grade A}:

Table 3. A guide to deciding the initial level of intervention to discuss with the patient

BMI, kg/m ² *	Waist circumference, cm*		Co-morbidities
	Men < 94 Women < 80	Men ≥ 94 Women ≥ 80	
25.0–29.9	L	L	L ± D
30.0–34.9	L	L ± D	L ± D
35.0–39.9	L ± D	L ± D	L ± D ± S
≥40.0	L ± D ± S	L ± D ± S	L ± D ± S

L = Lifestyle intervention (diet and physical activity); D = consider drugs; S = consider surgery

*BMI and waist circumference cut-off points are different for some ethnic groups.

- management of dyslipidaemia,
- optimising glycaemic control in type 2 diabetics,
- normalising blood pressure in hypertension,
- management of pulmonary disorders, such as sleep apnoea syndrome (SAS),
- attention to pain control and mobility needs in osteoarthritis,
- management of psychosocial disturbances, including affective disorders, eating disorders, low self esteem and body image disturbance.

Obesity management may reduce the need to treat co-morbidities by drugs [48, 50] {level 1}.

Prevention of Further Weight Gain

In some patients, especially in those with overweight (BMI 25.0–29.9 kg/m²), prevention of further weight gain (through dietary advice and increase in physical activity) rather than weight loss per se may be an appropriate target (table 3) {RBP}.

Weight loss objectives should be:

- realistic,
- individualised,
- aimed at the long term.

Practical weight loss objectives are:

- A 5–15% weight loss over a period of 6 months is realistic and of proven health benefit [51, 52] {level 1}.
- A greater (20% or more) weight loss may be considered for those with greater degrees of obesity (BMI ≥ 35 kg/m²) {RBP}.
- Maintenance of weight loss and prevention and treatment of co-morbidities are the two main criteria for success.

Failure to Lose and Maintain Weight

- Consider referral to an obesity specialist in case the patient fails to lose weight in response to the prescribed intervention (fig. 2).

- Weight cycling, defined by repeated loss and regain of body weight, is more frequent in women and may be linked to increased risk for hypertension, dyslipidaemia and gall-bladder disease [54]. It has been associated with psychological distress and depression and may require appropriate psychological care and/or antidepressant therapy [55].

Follow-Up

Obesity is a chronic disease. Follow-up and continued supervision is necessary [56] to:

- prevent weight regain {level 2},
- monitor disease risks and treat co-morbidities (e.g. type 2 diabetes mellitus, cardiovascular disease) {RBP}.

Specific Components of Treatment

Diet

The use of self-recorded food diary allows a qualitative assessment of the diet. In addition, it can be used to help the patient identify perceptions and beliefs about emotional eating behaviour (cognition) and eating habits (behaviour) {RBP}.

Dietary advice should encourage healthy eating and emphasise the need to increase consumption of grain, cereals and fibre as well as vegetables and fruit, and to substitute low-fat dairy products and meats for full- or high-fat alternatives [49, 57–59] {level 1, 2; grade B}.

An appropriate dietary regimen can be achieved in a number of ways:

General Advice {grade 3, 4}

- Decrease energy density of foods and drinks.
- Decrease the size of food portions.
- Avoid snacking between meals.
- Do not skip breakfast and avoid eating in the night time.
- Manage and reduce episodes of loss of control or binge eating.

Specific Advice

Energy (calorie) restriction should be individualised and take account of nutritional habits, physical activity, co-morbidities and previous dieting attempts {RBP}.

An emphasis put on the macronutrient proportion in the various diets (low fat, low carbohydrate, or high protein, etc.) has not proved better than a classic hypocaloric diet, except for low-glycaemic load diets (carbohydrate content of the diet × glycaemic index) in the short term [60–63] {level 2.3}. Prescribing an energy-restricted diet may require the intervention of a nutritionist (dietitian).

- A 15–30% decrease in energy (calorie) intake from habitual intake in a weight-stable individual is sufficient and appropriate. However, underreporting of energy intake by

Clinical care pathway for overweight and obese adults

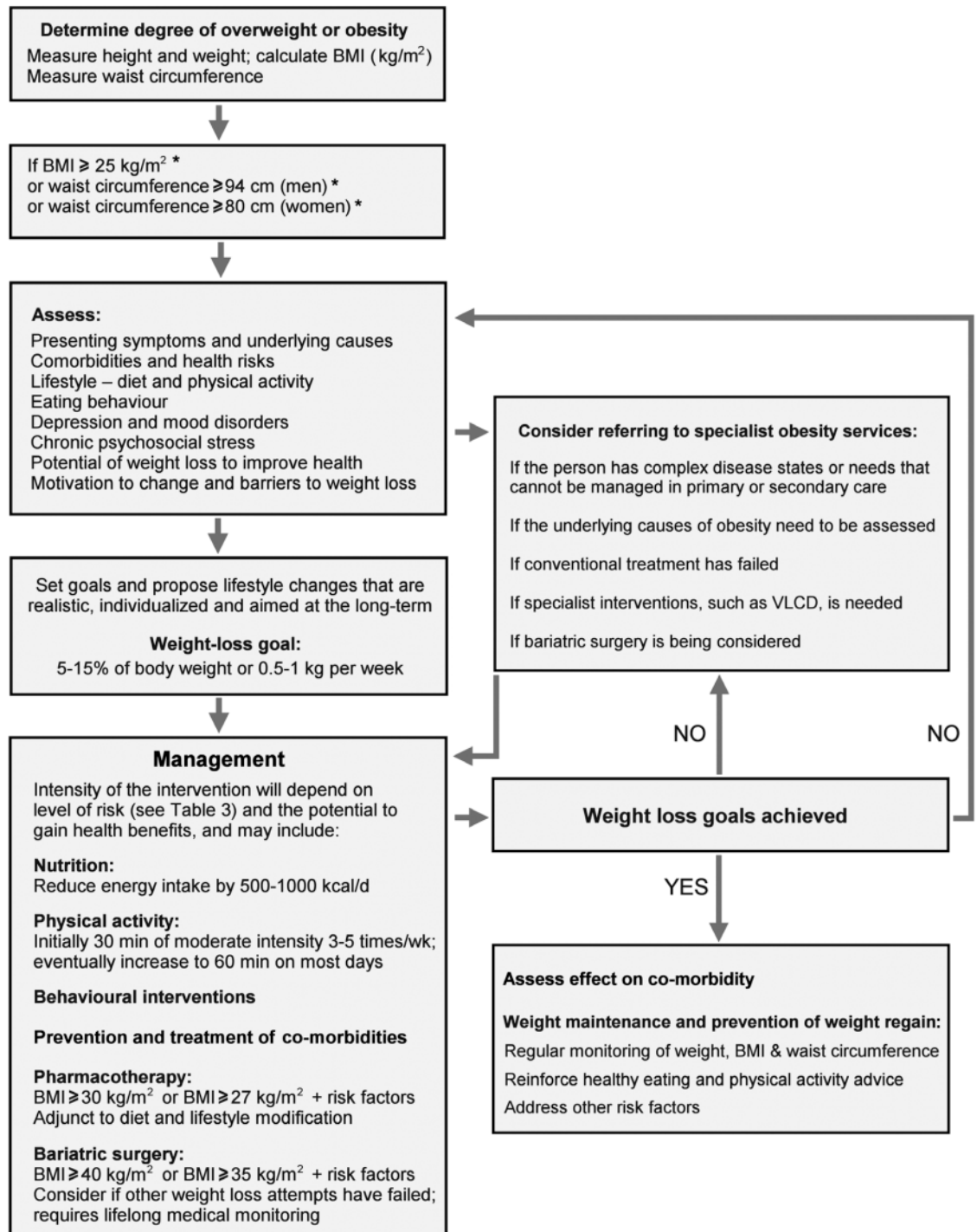


Fig. 2. Algorithm for the assessment and stepwise management of overweight and obese adults. *BMI and waist circumference cutoff points are different for some ethnic groups (see text).

obese patients is common. There is a great variation in energy requirements between the individuals which is dependent on individual's gender, age, BMI and physical activity level. Tables predicting energy requirements taking into account gender, age, BMI and physical activity ratio can be used. An easy rule of thumb is a daily energy requirement of 25 kcal/kg for either gender but, for the same body weight, this creates a greater energy deficit in men. The recommended weight-reducing dietary regimen tailored to

an individual's need usually provides an energy deficit of 600 kcal/day {*grade A, B*}. Thus for an obese sedentary woman with a BMI of 32 kg/m² and with an estimated daily intake of 2,100 kcal (8,800 kJ), a diet prescribing 1,400–1,600 kcal (6,000–7,000 kJ) would be appropriate. A 600 kcal (2,600 kJ) daily deficit will predict a weight loss of about 0.5 kg weekly [59, 64] {*level 2*}. Diets providing 1,200 kcal/day or more are classified as hypocaloric balanced diets (HBD) or balanced deficit diets [52].

- The use of very low calorie (liquid) diets (VLCD) (less than 800 kcal/day; 3,500 kJ/day) may form part of a comprehensive programme undertaken by an obesity specialist or other physician trained in nutrition and dietetics {RBP}. However, their administration should be limited for specific patients and for short periods of time [65]. VLCDs are unsuitable as a sole source of nutrition for infants and children, adolescents, pregnant or lactating women and the elderly.
- The energy content of low calorie diets (LCD) presented as a total diet composed of meal replacements is specified as between 800 and 1,200 kcal/day [65, 66]. Diets providing 1,200 kcal/day or more are classified as hypocaloric balanced diets (HBD) or balanced deficit diets [52].

Diets providing less than 1,200 kcal/day (5,000 kJ/day) might yield micronutrient deficiencies, which could exert untoward effects not only on nutritional status but also on the weight management outcome. Meal replacement diets (substitution of one or two daily meal portions by VLCD) may contribute to nutritionally well-balanced diet and weight loss maintenance [66] {level 2}.

Cognitive Behavioural Approaches

Cognitive Behavioural Therapies (CBT) are techniques which aim to help a patient modify both his/her insight and understanding of thoughts and beliefs concerning weight regulation, obesity and its consequences; they also directly address behaviours that require change for successful weight loss and weight loss maintenance. CBT includes several components such as self-monitoring (e.g. dietary record), techniques controlling the process of eating, stimulus control as well as re-inforcement, cognitive and relaxation techniques [67]. CBT elements should form part of routine dietary management or, as a fuller, structured programme, form the basis of specialist intervention {grade B}. This care can be in part delivered in a group setting or through bibliotherapy using self-help manuals. CBT should be provided not only by registered psychologists but also by other trained health professionals such as physicians, dieticians, exercise physiologists or psychiatrists {RBP}.

Physical Activity

Besides increasing energy expenditure and promoting fat loss, physical activity has additional benefits [68–74]. Physical activity:

- reduces abdominal fat and increases lean (muscle and bone) mass {level 2},
- may attenuate the weight loss-induced decline of resting energy expenditure {level 2},
- reduces blood pressure and improves glucose tolerance, insulin sensitivity and lipid profile {level 1},
- improves physical fitness {level 1},
- improves compliance to the dietary regimen and has a positive influence on the long-term weight maintenance {level 2},

- improves feeling of well-being and self-esteem {level 2},
- reduces anxiety and depression {level 2}.

The objective should also be to reduce sedentary behaviour (e.g. television viewing and computer use) and increase daily activities (e.g. walking or cycling instead of using a car, climbing stairs instead of using elevators). Patients should be advised and helped in undertaking (or increasing) physical activity {grade A}. Exercise advice must be tailored to the patient's ability and health and focus on a gradual increase to levels that are safe {RBP}. Current recommendations suggest that people of all ages should undertake 30–60 min of physical activity of moderate intensity (such as brisk walking) on most, if not all, days of the week [72, 75] {level 2; grade B}.

Psychological Support

Physicians should recognise where psychological or psychiatric issues interfere with successful obesity management, e.g. depression {RBP}. Psychological support and/or treatment will then form an integral part of management, and in special cases (anxiety, depression and stress) referral to a specialist may be indicated. Self-help lay groups and the support of the obesity treatment group may all be useful in this setting {RBP}.

Pharmacological Treatment

- Pharmacological treatment should be considered as part of a comprehensive strategy of disease management [49, 76] {RBP}.
- Pharmacotherapy can help patients to maintain compliance, ameliorate obesity-related health risks and improve quality of life. It can also help to prevent the development of obesity co-morbidities (e.g. type 2 diabetes mellitus) [77, 78] {level 2}.
- Current drug therapy is recommended for patients with a BMI ≥ 30 kg/m² or a BMI ≥ 27 with an obesity-related disease (e.g. hypertension, type 2 diabetes mellitus) [49, 76] {RBP}.
- Drugs should be used according to their licensed indications and restrictions {RBP}.
- The efficacy of pharmacotherapy should be evaluated after the first 3 months. If weight loss achieved is satisfactory (>5% weight loss in non-diabetic and >3% in diabetic patients), treatment should be continued. Treatment should be discontinued in non-responders {RBP}.

Criteria for Drug Choice 2008

Of the three drugs licensed and recommended for use within the EU (orlistat, sibutramine, rimonabant), few data exist to allow an evidence-based choice for the individual patient. All three drugs produce moderate and broadly similar absolute and placebo-subtracted weight losses [79–84] {level 2}. There are some differences in the licensed indications. Currently, choice is largely determined by excluding drugs for which there are specific contra-indications (e.g. orlistat: chronic mal-

Table 4. Levels of evidence, grades of recommendation and good practise points

Definition	
<i>Levels of evidence</i>	
1	1 ⁺⁺ high-quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias 1 ⁺ well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias 1 ⁻ Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
2	2 ⁺⁺ high-quality systematic reviews of case-control or cohort or studies 2 ⁺ high-quality case-control or cohort studies with a very low risk of confounding, bias, or chance and a high probability that the relationship is casual 2 ⁻ well-conducted case control or cohort studies with a low risk of confounding, bias, or chance and a moderate probability that the relationship is casual
3	non-analytic studies, e.g. case reports, case series
4	expert opinion
<i>Grades of recommendation</i>	
A	at least one meta-analysis, systematic review, or RCT rated as 1 ⁺⁺ and directly applicable to the target population; <i>or</i> a systematic review of RCTs or a body of evidence consisting principally of studies rated as 1 ⁺ , directly applicable to the target population, and demonstrating overall consistency of results
B	a body of evidence including studies rated as 2 ⁺⁺ , directly applicable to the target population, and demonstrating overall consistency of results; <i>or</i> extrapolated evidence from studies rated as 1 ⁺⁺ , or 1 ⁺
C	a body of evidence including studies rated as 2 ⁺ , directly applicable to the target population, and demonstrating overall consistency of results; <i>or</i> Extrapolated evidence from studies rated as 2 ⁺⁺
D	evidence level 3 or 4; <i>or</i> extrapolated evidence from studies rated as 2 ⁺
<i>Good practice points</i>	
RBP	recommended best practise based on the clinical experience of the guideline development group

absorption syndrome and cholestasis; sibutramine: psychiatric illness, concomitant use of monoamine oxidase inhibitors or of other centrally acting drugs for the treatment of psychiatric disorders, history of coronary artery disease, inadequately controlled hypertension >145/90 mm Hg; rimonabant: history of treatment of major depressive illness and/or ongoing anti-depressive treatment, severe hepatic or renal impairment) {RBP}. For full details see product specifications.

Surgery

Surgery is the most effective treatment for morbid obesity in terms of long-term weight loss [85–87] {level 2}, improves comorbidities and quality of life [88] {level 2}, and in the long term decreases overall mortality [89, 90] {level 2}. Surgery should be considered for patients in age groups from 18–60 years with a BMI ≥ 40.0 or with BMI between 35.0 and 39.9 kg/m² and co-morbidities in whom surgically induced weight loss is expected to improve the disorder (such as type 2 diabetes and other metabolic disorders, cardiorespiratory disease, severe joint disease and obesity-related severe psychological problems) [20] {grade 3, 4}. BMI criterion may be the current BMI or a documented previous BMI of this severity [20]. Multi-disciplinary skills are needed to support surgical interventions. Patients should only be referred to units able to assess patients prior to surgery, able to offer a comprehensive

approach to diagnosis and assessment and treatment, and able and willing to provide long-term follow-up {grade 2.3}. The referring physician and the inter-disciplinary team should collaborate closely to optimise the long-term post-operative care {RBP}.

A laparoscopic technique should be considered as the first treatment choice in bariatric surgery [91] {RBP}. In all situations the bariatric surgeon's experience is a key issue for a successful outcome. It is not advisable to perform bariatric techniques on an occasional basis.

Today, the most common surgical techniques are:

- food limitation operations (restrictive procedures) such as adjustable gastric banding (AGB), proximal gastric bypass (GBP) and sleeve gastrectomy (SG),
- operations limiting absorption of macronutrients (limiting energy absorption) such as biliopancreatic diversion (BPD),
- combined operations such as biliopancreatic diversion with duodenal switch (BPD-DS) or distal gastric bypass.

The expected average weight loss and long-term weight maintenance is increasing with the following procedures: AGB, SG, GBP, BPD-DS, BPD [86, 87]. However, the surgical complexity and potential surgical and long-term nutritional risks of the procedures increase in the same order [85, 87].

Alternative Therapies

Obesity treatment is often unsuccessful. As a result, unorthodox and unproven treatments flourish and are often offered. There is insufficient evidence to recommend in favour of herbal medicines, dietary supplements or homoeopathy for obesity management in the obese person. Physicians should advise patients to follow evidence-based treatments and recommend treatments only where evidence of safety and efficacy has been established {RBP}.

Developing a Health-Care Team for a Weight Management Programme

The development of networks of care involving the general practitioner, obesity specialist, nutritionist (dietician), exercise physiologist (physiatrist), behavioural therapist (psychologist/psychiatrist) and often patient support groups is encouraged {RBP}.

No health-care system can provide treatment for all those who are obese and overweight. Support groups, commercial and lay organisations, books and other media can provide useful help and support; the advice they give should conform to the principles of these guidelines {RBP}.

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Conclusion

- Physicians have a responsibility to recognise obesity as a disease and help obese patients with appropriate treatment.
- Treatment should be based on good clinical care and evidence-based interventions.
- Obesity treatment should focus on realistic goals and life-long management.

Appendix

Levels of Evidence and Grades of Recommendation

The evidence for the guidance given is drawn from a number of systematic reviews listed in the references. The grading system is based upon the Scottish Intercollegiate Guidelines Network (SIGN), but has been simplified by amalgamating sub-categories of each level into a single criterion (table 4).

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