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Management of Obesity in Adults: Project for European Primary Care

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Numbers in parenthesis are not references but are a ''grading system'' (see point 8)

1. 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. Body Mass Index (BMI) is calculated: measured body weight (kg)/measured height (m^2).

In adults (age over 18 yrs) obesity is defined by a BMI $\geq$ 30 and overweight (also termed pre-obesity) by a BMI 25–29.9 [4]. Many people in the overweight range of BMI 25–29.9 will become obese in their lifetime Table 1.

Table 1 BMI categories (WHO 1997)

CATEGORY	*BMI (kg/m²)*
Underweight	$<$18.5
Healthy weight	18.5–24.9
Preobese state	25.0–29.9
Obesity grade I	30.0–34.9
Obesity grade II	35.0–39.9
Obesity grade III	$\geq$40

Abdominal adiposity is associated with metabolic and cardiovascular diseases [1]. The amount of abdominal fat can be assessed by waist circumference [2].

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 [4]. Abdominal obesity* is defined as a waist circumference $\geq$88 cm in non pregnant women and $\geq$102 cm in men [4]. These criteria have been developed in Caucasian populations; differing criteria may be appropriate for other ethnic groups [2] but have not yet been formalised for all ethnic groups.

**Abdominal obesity is also called as visceral, android, apple shaped or upper body obesity.*

2. Pathogenesis of obesity

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. Interaction between biological factors (including genetics), behavioural and environmental factors are involved in regulation of energy balance and fat stores. High energy density diet, low physical activity and adoption of a sedentary lifestyle as well as eating disorders are considered as important risk factors for development of obesity.

3. Epidemiology of overweight and obesity

The prevalence of obesity in Europe is in the range 10–20% in men and 10–25% in women. In the past ten 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.

4. Health risks of obesity and socio-economic consequences of obesity

Obesity causes a significantly increased morbidity, disability and mortality and impairs quality of life [1] Table 2.

Table 2 Relative risk of health problems associated with obesity (WHO 1997)

Greatly increased (relative risk much greater than 3)	*Moderately increased (relative risk 2–3)*	*Slightly increased (relative risk 1–2)*
Diabetes mellitus type 2* (NF1)	Coronary heart disease	Cancer (breast cancer in postmenopausal women, endometrial cancer, colon cancer)
Gallbladder disease	Hypertension	Reproductive hormone abnormalities
Dyslipidaemia	Osteoarthritis (knees, hip)	Polycystic ovary syndrome
Insulin resistance	Hyperuricaemia and gout	Impaired fertility
Breathlessness		Low back pain due to obesity
Sleep apnoea		Increased risk of anaesthesia complications
		Fetal defects associated with maternal obesity

*Term NIDDM was used in original table published by the WHO.

Direct healthcare costs due to obesity in Europe are estimated to account for 2–8% of total healthcare costs, comparable to diseases such as cancer [2].

5. 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:

- Ethnic background
- Family history
- Dietary habits, eating pattern and possible presence of an eating disorder (bulimia, binge eating disorder, night eating syndrome)
- Physical activity
- Possible determinants: genetic, low physical activity, hormonal events, psychosocial influences, stress, smoking cessation, drugs etc.
- Health consequences of obesity (see Table 2)
- Patients expectations and motivation

As a minimum, the physician should exclude rare causes of obesity (e.g. hypothyroidism), assess the main risks and co-morbidities (cardiovascular disease, type 2 diabetes mellitus, non-alcoholic hepatic steatosis etc.) [RBP].

Physical examination

- Weight and height (from which BMI is calculated), waist circumference, blood pressure (appropriate size cuff) [C]
- Assess the presence and impact of obesity-related diseases (diabetes, cardiovascular, respiratory, rheumatological etc.) [RBP]
- Look for the presence of acanthosis nigricans as a sign of insulin resistance [RBP].

Laboratory examinations

The minimum dataset required will include [RBP]

- Fasting blood glucose and urinalysis
- Serum lipid profile (total and HDL cholesterol, triacylglycerols)
- Uric acid
- Thyroid function (TSH level)
- Liver function

Electrocardiogram [RBP]

6. 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 [RBP]**. Patients should understand that since obesity is a chronic disease, weight management will need to be lifelong.

Aims of treatment

The management and treatment of obesity. The management and treatment of obesity have wider objectives than weight loss alone and include risk reduction and health

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improvement. These may be achieved by modest weight loss, improved nutritional content to the diet, and modest increases in physical activity and fitness [1].

The management and treatment of obesity include treatment of complications. Appropriate management of obesity complications in addition to weight management is required [1] e.g.:

- 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 needs, including affective disorders, eating disorders, low self esteem and body image disturbance

Obesity management may reduce the need to treat co-morbidities by drugs [1].

Prevention of further weight gain. In some patients, especially in those with overweight (= pre-obesity characterised by BMI 25.0–25.9), prevention of further weight gain rather than weight loss per se may be an appropriate target [RBP].

Weight loss objectives should be:

- realistic
- individualised
- aimed at the long-term

Practical weight loss objectives are:

- A 5-15% weight loss from maximal is realistic and of proven health benefit [1].
- A greater (20% or more) weight loss may be considered for those with greater degrees of obesity (BMI $>35\,kg/m^2$) especially where quality of life gains justify this [RBP].
- Failure to respond to weight loss interventions may have genetic, biological or behavioural determinants [3]. Prevention of further weight gain is then a reasonable objective in some cases, especially when dietary restriction is poorly tolerated, or increased physical activity is not possible (e.g. in the severely disabled).

Follow-up. Follow-up and continued supervision is desirable and necessary, not only to prevent relapse from diet and lifestyle changes [2], but also to maintain surveillance of disease risks, and/or complicating disease (e.g. type 2 diabetes mellitus, cardiovascular disease) [RBP], as well as to improve quality of life.

Specific Components of Treatment

a. 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 thoughts and beliefs about 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, vegetables and fruit, and to substitute low fat dairy products and meats for full or high fat alternatives [A/B].

Appropriate dietary regimen can be achieved in a number of ways:

General advice to [D]:

- decrease energy density of foods and drinks
- decrease the size of food portions
- eat three to four meals a day, avoiding snacking between meals
- avoid skipping breakfast and eating in the night time
- manage and reduce episodes of loss of control or binge eating

Specific advice Energy (calorie) restriction should be individualised [A] and take account of hereditary factors, nutritional habits, physical activity, co-morbidities, and experience and tolerance of previous dieting attempts [RBP]. Prescribing an energy restricted diet may require the intervention of a nutritionist (dietitian).

- A 15 to 30% decrease in energy (calorie) intake from habitual intake in a weight stable individual is sufficient and appropriate. However, underreporting of energy intake by obese patients is common. Energy restriction should be focused mainly on reduction of dietary fat intake. 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 [C]. The recommended weight reducing dietary regimen tailored to an individual's need usually provides an energy deficit of 600 kcal/day [A/B]. Thus for a woman of BMI $32\,kg/m^2$ with an estimated daily intake of 2100 kcal (8800 kJ), a diet prescribing 1400–1700 kcal (6000–7000 kJ) would be appropriate. A 600 kcal (2600kJ) daily deficit will predict a weight loss of about 0.5 kg weekly [B].
- The use of very low calorie (liquid) diets (less than 800 kcal/day; 3500 kJ/day) may form part of a comprehensive programme undertaken by an obesity specialist or other physician trained in nutrition and dietetics. However, their administration should be limited for specific patients and for short periods of time [RBP].
- Meal replacement diets may be a useful strategy and have been shown to be effective [2].

b. 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

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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 reinforcement, cognitive and relaxation techniques. CBT elements should form part of routine dietary management or as a fuller, structured programme form the basis of specialist intervention [B]. This care can be delivered in a group setting. CBT should be provided not only by registered psychologists, but also by any trained other persons including physicians, dieticians, exercise physiologists, or psychiatrists etc [RBP].

c. Physical activity. Physical activity has benefits over and above its contribution to increased energy expenditure and weight loss:

- Physical activity reduces body fat, abdominal fat, and increases lean (muscle and bone) mass [2].
- Physical activity moderately enhances diet-induced weight loss and can diminish the loss of lean body mass that accompanies weight loss from dietary restriction [1].
- Physical activity may attenuate the diet-induced decline of resting energy expenditure [2].
- Exercise, independent of diet and weight loss, can reduce blood pressure, improve glucose tolerance, reduce elevated blood insulin, and improve lipid profile [1].
- Physical activity improves fitness [1].
- Physical activity improves compliance to the dietary regimen and has a positive influence on the long-term weight maintenance [2].
- Physical activity has a positive influence on the general feeling of well-being and self-esteem [2].
- Physical activity has a positive influence on the emotional state, and may reduce anxiety and depression and thus contribute to improved mental health [4].

Treatment aims to help the patients reduce sedentary behaviour (e.g. less television viewing) 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) exercise [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 at least 30 minutes of physical activity of moderate intensity (such as brisk walking) on most, if not all, days of the week [B].

d. Psychological support. Physicians should recognise where psychological or psychiatric issues interfere with successful obesity management, e.g. depression. 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 and the support of the obesity treatment group may all be useful in this setting [RBP].

e. Pharmacological treatment

- Pharmacological treatment should as always form part of a comprehensive strategy of disease management [RBP].
- Drug therapy may be used to help patients to improve diet and lifestyle [RBP].
- Only drugs licensed for the treatment of obesity should be prescribed for the treatment of obesity [RBP].
- Current drug therapy is recommended for patients with a BMI $\geq$30, or a BMI $\geq$27 with an obesity-related disease (e.g. hypertension, type 2 diabetes mellitus) [RBP].
- Drugs should be strictly used according to their licensed indications and restrictions [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-related health risks (e.g. type 2 diabetes mellitus) [2].

f. Surgery. Surgery is the most effective treatment for morbid obesity in terms of weight loss [2] and improves co-morbidities and quality of life [2], and should be considered for patients with a BMI$\geq$40.0 or between BMI 35.0–39.9 with co-morbidities [4]. 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 [D].

In general, patients should be referred for surgical management by obesity physicians who are able to provide the comprehensive care that is needed before, during and after surgery [RBP].

g. Miscellaneous. Obesity treatment is often unsuccessful. As a result, unorthodox and unproven treatments flourish and are often offered. Physicians should advise patients to follow evidence-based treatments, and recommend treatments only where evidence of safety and efficacy has been established [RBP].

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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7. 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 lifelong management.

These guidelines were developed on the basis of national obesity guidelines which were reviewed by a working group of the European Obesity Management Task Force of the EASO.

Guidelines (*) and evidence-based assessments reviewed and considered were:

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* Guidelines for general practitioners for the treatment of obesity: A stepwise approach. Dutch Association for the Study of Obesity, Amsterdam, 2001

* Recommendations for the diagnosis, the prevention and the treatment of obesity Association Française d'Etudes et de Recherches sur l'Obésité (AFERO), Association de Langue Française pour l'Etude du Diabète et des Maladies Métaboliques (ALFEDIAM) & Société de Nutrition et de Diététique de Langue Française (SNDLF), Paris, 2001

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* Anti-obesity drugs: guidance on appropriate prescribing and management. Report of the Nutrition Committee of the Royal College of Physicians of London. RCP, London, 2003

8. 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

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Network (SIGN), but has been simplified by amalgamating sub-categories of each level into a single criterion.

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

Grades of recommendation

A At least one meta analysis, systematic review, or RCT rated as $1^{++,}$ and directly applicable to the target population; *or*
  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; *or*
  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; *or*
  Extrapolated evidence from studies rated as 2^{++}
D Evidence level 3 or 4; *or*
  Extrapolated evidence from studies rated as 2^{+}

Good practice points

RBP Recommended best practice based on the clinical experience of the guideline development group

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