1 Background information

Quick info:
The purpose of this care map is to define the appropriate diagnosis and management of obesity in adults. The objective is to guide the appropriate investigation, prescribing, and referral of patients presenting to provider organisations in Qatar. It is intended that the care map will be used primarily by healthcare professionals in primary care and outpatient settings.

Scope of the guideline
This care map covers the following aspects of care:

• The diagnosis, assessment, and management of obesity in adults (aged 18 years and older), including:
  • Risk stratification.
  • Investigations.
  • Addressing barriers to weight loss and psychological factors.
  • The assessment of associated comorbidities.
  • Lifestyle advice and behavioural interventions.
  • Referral indications to specialised obesity services.
  • Pharmacological treatment options.
  • Endoscopic bariatric therapies.
  • Surgical treatment options.

Aspects of care not covered in this care map are:

• Patients age younger than 18 years.
• Population screening.
• Medical management of related medical conditions.

Definition and classification

Overweight and obesity are increasing challenges that lead to deleterious health and social consequences [1,2]:

• Obesity is a disease process characterised by excessive adipose fat accumulation with multiple organ-specific complications.
• Excessive adipose tissue deposition around the viscera is associated with the greatest cardio-metabolic risk.

Obesity is commonly defined by a measurement of BMI of ≥30 kg/m² [1] in Western populations; however, different ethnic-specific cut points for defining obesity may need to be considered [3].

BMI: [1]

• Is the body weight in kilograms divided by height in metres squared (kg/m²).
• Is a clinical estimate of adiposity in adults.
• Should be interpreted with caution because it is not a direct measure of adiposity.

The degree of overweight and obesity can be classified as [4]:

• BMI 25.00-29.99 kg/m² – Overweight.
• BMI 30.00-34.99 kg/m² – Obesity Class I.
• BMI 35.00-39.99 kg/m² – Obesity Class II.
• BMI ≥40.00 kg/m² – Obesity Class III (extreme obesity).

Prevalence

Obesity, type 2 diabetes mellitus, and related metabolic and cardiovascular diseases are highly prevalent in member states of the GCC, i.e. Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates [5]:

• In the GCC, the reported prevalences of overweight and obesity in adults in 2011 ranged from 25-50% and 13-50% respectively [6].
• In Qatar in 2014, the WHO STEPS survey reported the prevalence of obesity in adults aged 18 years and older as 40.0% in males and 49.7% in females [7].

Aetiology

Obesity results from an imbalance between energy intake and energy expenditure, which is influenced by many factors, including:

• Lifestyle [2,8-10]:
  • Dietary factors.
  • Physical activity.
2 Risk factors and comorbidities

Quick info:

Risk factors
The risk factors for the development of obesity in adults include:

• Individual modifiable risk factors [2,15,16]:
  • High intake of energy-dense food or drink including alcohol, confectionary, and sugar drinks.
  • Sedentary lifestyle and low levels of physical activity, e.g. frequent use of television, computer games, internet, and telephone.
  • Sleep deprivation.
  • Psychological factors, e.g. stress, comfort-eating, depression.
  • Cultural acceptance of overweight and obesity.

• Individual non-modifiable risk factors [1,2,17,18]:
  • Female gender.
  • Increasing age.
  • Genetic factors and ethnicity.
  • Family history of overweight, obesity, and comorbidities.
  • Physical disability, learning disability, or enduring mental health difficulties.
  • Childhood psychological trauma.
  • Intrauterine, antenatal, and postnatal factors e.g.:
    • Low and high birth weight.
    • Maternal obesity.
    • Maternal gestational weight gain.
    • Maternal gestational diabetes mellitus or maternal diabetes mellitus.
    • Maternal smoking in pregnancy.
    • Absence of breast-feeding.

• Environmental cofactors [1,2,18]:
  • Low public health awareness.
  • Transportation, i.e. high dependence on cars.
  • A wide and easy availability of cheap processed foods.

References:
Please see the care map's Provenance.
• Lack of nutrition labelling.
• Sedentary work environments.
• Night-shift work.

Comorbidities
Obesity reduces life expectancy and quality of life [1,2,15,19]. It has also been associated with the following [19-23]:
• A higher frequency of hospital admissions.
• Longer hospital stays and greater costs.
• Higher prescription medication costs.
Comorbidities of obesity in adults include [2]:
• Cardiovascular [2,19,21,24]:
  • Coronary artery disease.
  • Hypertension.
  • Stroke.
  • Cardiomyopathy.
  • Atrial fibrillation.
• Respiratory [2,19,25]:
  • Obstructive sleep apnoea.
  • Obesity hypoventilation syndrome.
  • Asthma.
  • Breathlessness.
  • Pulmonary hypertension.
• Metabolic [1,2,19,24]:
  • Pre-diabetes mellitus and type 2 diabetes mellitus.
  • Dyslipidaemia.
  • Hyperuricaemia.
• Gastrointestinal [2,19]:
  • Gastro-oesophageal reflux disease.
  • Non-alcoholic fatty liver disease.
  • Gallstones.
  • Pancreatitis.
• Renal and urological [2,15]:
  • Chronic kidney disease.
  • Urinary incontinence.
• Haematological [2]:
  • Thromboembolic disease, e.g. DVT/PE.
• Reproductive [2]:
  • Reduced fertility.
  • Polycystic ovary syndrome.
  • Hypogonadism.
  • Pregnancy complications.
  • Birth complications.
• Musculoskeletal [2,15]:
  • Osteoarthritis.
  • Lower back pain.
• Psychological [2,19]
  • Low self-esteem.
  • Anxiety.
• Depression.
• Decreased libido.
• Neurological [2]
  • Benign intracranial hypertension.
  • Cognitive decline.
• Cancers [2]:
  • Breast cancer.
  • Endometrial cancer.
  • Colon cancer
  • Prostate cancer.
• Other [1,2]:
  • Cellulitis and oedema.
  • Fungal infection, e.g. tinea
  • Lymphoedema.
  • Pressure ulcers.

References:
Please see the care map's Provenance.

3 Updates to this care map

Quick info:
Date of publication: 19-Mar-2017
Please see the care map's Provenance for additional information on references, contributors, and the editorial approach.

4 Key recommendations of this care map

Quick info:
The key recommendations of this care map are:

Measurement of waist circumference:
• Consider measuring waist circumference in patients with a BMI of less than 35 kg/m\(^2\) \[1\][L2, RGA2].
• For screening and risk assessment purposes in people of Middle Eastern ethnicity, use a waist circumference threshold of ≥90 cm (35 inches) in men and ≥80 cm (31.5 inches) in women for diagnosing central adiposity \[R-GDG\].

Severity staging:
• The Edmonton Obesity Staging System should be used to grade the severity of obesity in those with a BMI over 30 kg/m\(^2\) in order to assess severity and guide appropriate management \[33\].

Service provision:
• Services that should be provided in a primary/generalist care setting [1,2,31]:
  • Universal services, such as health promotion.
  • Lifestyle interventions.
  • Dietetic services
  • Physiotherapy/physical activity training.
  • Nurse-led education.
  • Psychological support.
• Services that should be provided in secondary/specialist care setting [1,2,31]:
  • Specialist weight management services, comprising of:
    • Pharmacological treatments.
    • Endoscopic procedures.
    • Bariatric surgical procedures.
• Any planned interventions should be individualised to patient’s history, comorbidities, previous experiences and expectations. A baseline focused assessment of their history is required in order to provide individualised management [R-GDG].

**Very low-energy diets**

• Low-energy diets can be as effective as very low-energy diets in weight loss [43].

• Consider very low-energy diets only as part of a multicomponent weight management strategy for patients who are obese and have a clinically-assessed need to rapidly lose weight, e.g. if undergoing surgery or planning fertility treatment [1][L1, RGA1].

**Referral to secondary/specialist care:**

• See the ‘Consider referral to secondary/specialist care’ care points for specific referral criteria to secondary/specialist care.

**Pharmacological treatment of obesity:**

• Consider only after dietary, exercise, and behavioural approaches have been started and evaluated in patients who have not yet reached their target weight loss (or have reached a plateau) by the date set for attaining their goal [1][L2].

• Physicians prescribing weight management medication should [R-GDG]:
  • Have undergone accredited training in the management of patients with obesity.
  • Be familiar with, and prescribe in accordance with, the drug’s Summary of Product Characteristics and relevant guidelines.
  • Work within a multidisciplinary team that is able to assess the full extent of obesity comorbidities and provide individualised lifestyle advice.
  • Reassess patients on at least a three-monthly basis, or more frequently, as determined by the medication prescribed or the patient’s comorbidities.
  • Conduct and report an audit of their weight management outcomes.

**EBTs:**

• All evidence-based EBTs should only be offered by experienced physicians working within a specialist weight management service [R-GDG].

**Bariatric surgery:**

• Surgery for obesity should only be undertaken by a multidisciplinary team who can provide [1][L2]:
  • Pre-operative assessment, including a risk-benefit analysis to review:
    • Preventing complications of obesity.
    • Specialist assessment for eating disorders.
    • Information on the different procedures, including potential weight loss and associated risks.
  • Regular post-operative assessment, including specialist dietetic and surgical follow-up.
  • Management of comorbidities.
  • Psychological support before and after surgery to:
    • Carry out a comprehensive pre-operative assessment of any psychological or clinical factors, which may affect adherence to post-operative care requirements, such as changes to diet, before performing surgery.
    • Information on, or access to, plastic surgery when appropriate, e.g. abdominal contouring.
  • Access to suitable equipment and the staff trained to use them.

**Follow-up after discharge from a bariatric surgery service:**

• After the patient has been discharged from the bariatric surgery service, offer at least annual monitoring of nutritional status and appropriate supplementation, according to individual needs as part of a shared care model of chronic disease [1].

**Obesity in pregnancy:**

• See the ‘Manage maternal obesity’ care point for specific recommendations for women with obesity who are planning to become pregnant or who are pregnant.

References:
Please see the care map’s Provenance.

5 Abbreviations used in this care map

**Quick info:**

The abbreviations used in this care map are as follows:

**BMI**
Body mass index
Obesity - assessment and primary care

6 Clinical presentation

Quick info:
There are several potential presentations, which may determine the treatment pathway. These include the following [2]:

- Self-presentation requesting advice on how to lose weight.
- Self-presentation with the concern that they have an underlying medical problem causing weight gain.
- Opportunistic identification of obesity during a consultation.
- Patient is advised to lose weight for the management of underlying conditions.
- Weight reduction is required for a specific intervention, e.g.:
  - Fertility treatment.
  - Surgery including:
    - Transplantation.
    - Orthopaedic interventions.

Obesity in pregnancy [64]:
- Defined as a BMI of ≥30 kg/m² at the first antenatal consultation.
- Associated with an increased risk of a number of serious adverse outcomes, including:
  - Miscarriage.
  - Foetal congenital anomaly.
  - Thromboembolism.
  - Gestational diabetes mellitus.
  - Pre-eclampsia.
  - Dysfunctional labour.
  - Postpartum haemorrhage.
  - Wound infections.
  - Stillbirth.
  - Neonatal death.
- May be a risk factor for maternal death.

References:
Please see the care map's Provenance.

7 History
Quick info:
As part of the routine assessment of patients with obesity, enquire about the following [2]:

- Weight history, including [1,2,15][L2, RGA2]:
  - Previous weight loss attempts.
  - Weight loss medication.
  - Weight loss surgery.
  - Seeing other weight loss professionals or organisations.
  - Use of alternative therapies.
- Find out what has already been tried, how successful this has been, and what was learned from the experience [1,2][L2].
- Presenting symptoms, e.g. breathlessness, snoring.
- Underlying causes of being overweight or obese.
- Eating pattern and behaviours.
- Diet and physical activity levels.
- Relevant comorbidities (see the ‘Risk factors and comorbidities’ care point).
- Psychological problems and psychosocial distress.
- Medication history.
- Any environmental, social, and family factors, including:
  - Family history of overweight, obesity, and comorbidities.
  - Alcohol consumption and smoking status.
  - Occupation and home environment.
  - Marital status.
- Social support structures.
- The patient's willingness and motivation to change their lifestyle.

References:
Please see the care map's Provenance.

8 Calculate BMI

Quick info:
Calculate the BMI by dividing a person's weight in kilograms by the square of their height in metres [1][L2, RGA2], i.e.:

- Body weight (kg) / Height (m$^2$).

NB: BMI should be interpreted with caution because the calculation alone is not a direct measure of adiposity, especially in highly muscular adults [1][L2]. Do not use bioimpedance as a substitute for BMI as evidence to support its use is lacking at present [1][L2, RGB].

References:
Please see the care map's Provenance.

9 Consider other measurements

Quick info:

**Consider measurement of waist circumference**

Consider measuring waist circumference in patients with a BMI of less than 35 kg/m$^2$ [1][L2, RGA2]. Waist circumference along with BMI can be used as a measure to assess risk; however, if the BMI is greater than 35 kg/m$^2$, the waist circumference does not add to the absolute measure of risk [1,2,4].

Use the following International Diabetes Federation thresholds for waist circumference as a measure of central adiposity [26]. At present there are no definitive waist circumference thresholds established for Middle Eastern ethnicities. It is therefore recommended that for screening and risk assessment purposes, use a threshold of ≥90 cm (35 inches) in men and ≥80 cm (31.5 inches) in women of Middle Eastern origin [R-GDG].

Waist circumference thresholds for central adiposity in different ethnic groups [26].
Measurement of waist circumference
The WHO STEPS protocol for measuring waist circumference [27]:
• Measurement should be made at the approximate midpoint between the lower margin of the last palpable rib and the top of the iliac crest, when the patient is in the standing position.
Alternatively, waist measurement can be made at the level of the umbilicus [28]; however, some studies indicate that umbilical level measurements underestimate true waist measurement [27]. A consistent means of measurement should therefore be used in serial measurement with the same patient [R-GDG].

Consider measurement of neck circumference
Neck circumference of ≥43 cm in men and ≥40 cm in women is associated with an increased risk of sleep apnoea and cardiometabolic risk [29,30].

Further examination
Assess for signs of the following [1,2,31][L2, RGA2]:
• Cardiovascular disease, including blood pressure measurement – ensure large blood pressure cuff is available.
• Any underlying causes of being overweight or obese, e.g.:
  • Hypothyroidism.
  • Cushing’s syndrome.
  • Polycystic ovarian syndrome.
  • Growth hormone deficiency.
• Any comorbidities or associated conditions (see the ‘Risk factors and comorbidities’ care point).

References:
Please see the care map’s Provenance.

10 Investigations

Quick info:
Perform the following routine investigations [1,2,32][L2, RGA2]:
• Check lipid profile – a fasted sample is not necessary.
• Measure HbA1c.
• Urea and electrolytes.
• Liver function tests.
• Thyroid function tests.
• Complete blood count.
• Ferritin, iron studies.
• Folic acid.
• Vitamin B12.
• Vitamin D.

Consider other tests as appropriate, on the basis of history and examination findings [32], e.g.:
• Resting echocardiogram, as guided by risk factors for cardiovascular disease.
• Ultrasound for non-alcoholic fatty liver disease.
• Sleep studies for suspected obstructive sleep apnoea.

References:
Please see the care map’s Provenance.

11 Consider referral to secondary/specialist care

Quick info:
Consider referral to specialist care if [1][L3]:
• The patient has a BMI of [40]:
  • ≥40 kg/m².
• ≥35 kg/m\(^2\) and an obesity-related comorbidity, e.g.:
  • Type 2 diabetes mellitus.
  • Metabolic syndrome.
  • Hypertension.
  • Obstructive sleep apnoea.
  • Functional disability.
  • Infertility.
  • Depression.
• 30.0-34.9 kg/m\(^2\) with poorly controlled type 2 diabetes mellitus.

Assess how engaged a patient is with the process before a decision is made about referral [40][L2].

References:
Please see the care map's Provenance.

12 Grade severity of obesity

Quick info:
The Edmonton Obesity Staging System should be used to grade the severity of obesity in those with a BMI over 30 kg/m\(^2\) in order to assess severity and guide appropriate management [33].

References:
Please see the care map's Provenance.

14 Consider referral to secondary/specialist care

Quick info:
Consider referral to specialist care if [1][L3]:
• The underlying causes of being overweight or obese need to be assessed [1], e.g.:
  • Medical problems.
  • Medication.
  • Psychological problems and psychosocial distress.
• The patient has complex disease states or needs that cannot be managed adequately in primary care, e.g. [1]:
  • The additional support needs of patients with learning disabilities.
• The patient has already had bariatric surgery and presents with a problem, such as weight regain or nutritional deficiency, or where revisional surgery might be considered [40].
• Specialist interventions may be needed, such as [1]:
  • Very low-energy diets.
  • Evidence-based endoscopic procedures (these can be considered in patients with a BMI of 30 kg/m\(^2\) and above).
• Bariatric surgery is being considered [1].
• Patient has a long history of cyclical weight loss and gain [40].
• Patient needs to lose weight for [1]:
  • A surgical procedure that is not directly related to obesity, e.g. knee replacement.
  • Fertility treatment.
• There is clinical suspicion of an eating disorder, such as binge eating disorder [32].
• Medical objectives have not been met, e.g. [R-GDG]:
  • There has been weight loss of less than 5% of initial body weight, or the patient has gained weight, despite active intervention over the previous 6 months.

Assess how engaged a patient is with the process before a decision is made about referral [40][L2].

References:
Please see the care map's Provenance.
15 Management in primary care

Quick info:
The management of obese adults in primary care applies to patients at Edmonton Stage 0–1 [33]. All of the following recommendations are also applicable to patients at Edmonton Stage 2–4, who will primarily be managed in a secondary care setting [33].

Services that should be provided in a primary/generalist care setting [1,2,31]:
• Universal services, such as health promotion.
• Lifestyle interventions.
• Dietetic services
• Physiotherapy/physical activity training.
• Nurse-led education.
• Psychological support.

Additional services that should be provided in secondary/specialist care setting [1,2,31]:
• Specialist weight management services, comprising of:
  • Pharmacological treatments.
  • Endoscopic procedures.
  • Bariatric surgical services.

Any planned interventions should be individualised to patient’s history, comorbidities, previous experiences and expectations. A baseline focused assessment of their history is required in order to provide individualised management [R-GDG]

References:
Please see the care map's Provenance.

16 Manage maternal obesity

Quick info:
Management of maternal obesity – pre-pregnancy [64][L2, RGA2]:
• Ensure that all women of childbearing age have the opportunity to optimise their weight before pregnancy.
• Provide advice on weight and lifestyle during family planning consultations.
• Regularly monitor weight, BMI, and waist circumference.
• For all women of childbearing age with a BMI of ≥30 kg/m²:
  • Provide information and advice about the risks of obesity during pregnancy and childbirth.
  • Support them to lose weight before conception.
  • If they wish to become pregnant, advise them to take 5mg folic acid supplements daily, starting at least 1 month before conception and continuing during the first trimester.

Management of maternal obesity – during pregnancy [15,64][L2, RGA2]:
• Ensure women are made aware of the importance of healthy eating and appropriate exercise during pregnancy in order to prevent excessive weight gain and gestational diabetes mellitus.
• Ensure dietetic advice is provided in early pregnancy.
• Measure height, weight, and calculate BMI.
• Provide accurate and accessible information about the risks associated with maternal obesity and how this may be minimised.
• The goals of weight management in pregnancy are:
  • To avoid excessive maternal weight gain.
  • Optimise care to improve pregnancy outcomes for both mother and baby.
  • Weight loss diets are contraindicated.
  • May need specialist obstetric care to ensure improved outcomes for mother and baby.
  • Breast feeding should be encouraged.
  • A clear follow up plan should be defined.
  • Maintain physical activity if there is no obstetric contraindication.
18  Review previous and ongoing interventions

Quick info:
As part of the routine assessment of patients with obesity, enquire about the following:

- About their weight history, including [2,15][L2, RGA2]:
  - Previous weight loss attempts.
  - Weight loss medication.
  - Weight loss surgery.
  - Seeing other weight loss professionals or organisations.
- Find out what has already been tried, how successful this has been, and what they learned from the experience [1][L2].

References:
Please see the care map's Provenance.

19  Consider the presence of psychopathology

Quick info:

**Binge eating disorder**
Consider the possibility of a binge eating disorder in patients who have difficulty losing weight and maintaining weight loss [2][L2, RGA1].

Patients with binge eating disorder are generally [2]:

- Heavier.
- More likely to have been overweight as a child.
- Prone to 'weight cycling', defined as:
  - The repeated loss and subsequent regain of body weight in those who repeatedly follow weight loss regimens [2].
  - Are at higher risk of psychological comorbidity, e.g. anxiety, depression, personality disorders.

Assess for an eating disorder by asking the patient [32][L2]:

- If they eat large amounts of food in a short period of time.
- If they ever feel like they cannot stop eating even when full.
- If they react to overeating by attempting to 'get rid' of extra calories, e.g. by:
  - Taking laxatives/diuretics.
  - Smoking cigarettes.
  - Inducing vomiting.

If the patient answers positively to any of the above questions, consider further evaluation or a referral to [32][L2]:

- A dietitian; or
- A behavioural health specialist who specialises in eating disorders.

NB: Do not exclude patients with binge eating disorder from weight management programmes [2][L2, RGA2]:

- Patients with a binge-eating disorder should be given treatment for their eating disorder at the same time as attempting to lose weight.
- Patients may demonstrate unusual eating patterns, which may indicate behavioural issues, depression, and anxiety.

**Depression**
Consider whether depression is present [2,15][L2, RGA1]:

- There is a strong association between mood disorders and obesity:
  - Obese patients are more likely to become depressed over time.
  - People with depression are more likely to become obese.
  - Stress and underlying personal issues can lead to a lack of energy, lack of motivation, and increased food consumption.
Other psychological disorders should also be considered, including anxiety.

Use a validated depression score such as PHQ9 or the Hospital Anxiety Depression score to diagnose depression and evaluate its severity [2,15].

If patients score highly on depression and anxiety scores they should be referred, after assessment, to available mental health services.

NB: Patients with ongoing depression should be excluded from weight loss medications that may exacerbate their mental health condition; however, such patients should not be excluded from other weight management treatments [R-GDG].

References:
Please see the care map's Provenance.

20 Establish the aims of weight management

Quick info:
The ideal aims of weight management should include [2,7,31] [L2, RGA2]:
- Improve pre-existing obesity-related comorbidities.
- Reduce the future risk of obesity-related comorbidities.
- Improve physical, mental, and social well-being.
- Improve quality of life.

Make patients aware of the following potential health benefits associated with maintained modest weight loss with lifestyle change [2,16,19,31,33]:
- Improved quality of life.
- Reduction of incidence of cardiovascular disease including myocardial infarction.
- Reduced osteoarthritis-related disability.
- Lowered all-cause and diabetes mellitus mortality.
- Reduced blood pressure.
- Improved glycaemic control.
- A reduction in the risk of developing type 2 diabetes mellitus.
- Improved lung function in patients with asthma.

In order to determine the next steps [R-GDG]:
- Ask about readiness to change lifestyle.
- Advise in designing a programme to achieve weight control.
- Assist in establishing an appropriate intervention.
- Arrange follow up.

Provide patients, and their families and/or carers, individually tailored, relevant information on the following aspects of weight management [1,31] [L2]:
- General information on being overweight and obesity, including related health risks.
- An agreed weight loss target.
- Understanding the distinction between losing weight and maintaining weight loss, and the importance of developing skills for both:
  - Advise that the change from losing weight to maintenance typically happens after 6-9 months of treatment.
- Realistic targets for outcomes other than weight loss, such as increased physical activity and healthier eating.
- Diagnosis and treatment options.
- Healthy eating in general.
- Medication and side effects.
- Surgical treatments.
- Self-care.
- Voluntary organisations and support groups and how to contact them.

References:
Please see the care map's Provenance.
21 Consider weight management in Ramadan

Quick info:
Ramadan can be an opportunity to change lifestyles in obese patients who wish to fast, as it can result in weight loss and improvements in comorbidities. It is best if this is addressed as part of a structured and consistent programme of lifestyle modification in patients without contraindications [41].

References:
Please see the care map’s Provenance.

22 Provide dietary advice

Quick info:
General dietary advice
Consider the following dietary advice [1,31][L1, RGA1]:
• Tailor dietary changes to individual food preferences.
• Allow for a flexible and individual approach to reducing calorie intake.
• Do not use unduly restrictive and nutritionally unbalanced diets, as:
  • These are ineffective in the long term and can be harmful.
  • Encourage patients to improve their diet even if they do not lose weight, as there are other health benefits from dietary improvement alone.
  • Inform patients that to lose weight, their total energy intake should be less than their energy expenditure.

Advise patients to:
• Reduce their intake of [2][L1, RGA1]:
  • High energy-dense foods, particularly large portions, including foods containing:
    • Animal fats.
    • Other high fat foods.
    • Confectionery.
    • Sugary drinks including alcohol.
    • ‘Fast foods’.
  • Select low energy-dense foods, e.g. [2,7][L1, RGA1]:
    • Wholegrains.
    • Cereals low in sugar.
    • Fruits.
    • Vegetables – particularly greens.
  • Consider portion control [7][L2].
  • Grill or boil foods rather than fry foods [15][L2].
  • Avoid extreme fad diets that may result in serious nutritional deficiencies.
  • NB: Lowering fat content of food can potentially lead to deficits in good fats, such as omega-3 fatty acids.
  • Encourage the use of mobile applications that allow monitoring/tracking of dietary intake and activity. Several applications are now available with culturally-relevant foods included [R-GDG].

Weight-loss eating plans
Recent studies have found weight loss differences between individual named diets to be minimal [34]. In order to achieve a weight loss of 10% of initial weight, and in combination with expert support and intensive follow-up, the following calorie goals are recommended [35]:
• 1200-1500 kcal/day for individuals weighing ≤114 kg at baseline.
• 1500-1800 kcal/day for individuals who weigh >114 kg.

If patients do not lose weight satisfactorily with the above calorie goals, reduce calorie intake to [35]:
• 1000-1200 kcal/day for individuals weighing ≤114 kg at baseline.
• 1200-1500 kcal/day for individuals who weigh >114 kg.
NB: Reduce calories by lowering the carbohydrate and unhealthy fat content [2,35]. Energy intake can include meal replacements [35].

**Very low-energy diets**

Do not routinely use very low-energy diets (<800kcal/day) to manage obesity [1][L1, RGA1]. Low-energy diets can be as effective as very low-energy diets in weight loss [1].

Consider very low-energy diets only as part of a multicomponent weight management strategy for patients who are obese and have a clinically-assessed need to rapidly lose weight, e.g. if undergoing surgery or planning fertility treatment [1][L1, RGA1]. Refer to specialist services when considering a very low-energy diet, as medical supervision is necessary [1,2][L2, RGA2].

References:
Please see the care map's Provenance.

23 **Encourage physical activity**

Quick info:

**Patient education on health benefits of an active lifestyle**

Ensure patients are aware of the significant health benefits associated with an active lifestyle, many of which are independent of weight loss [2][L1, RGA1].

These include [2,36]:

- Decreased risk of cardiovascular disease.
- Improved self-efficacy and confidence.
- Reduced breathlessness.
- Improved fitness.

**Evaluating patient’s physical fitness and ability for activity**

Take into account the patient's current physical fitness and ability for all activities [1][L2].

Prior to initiation of physical exercise, completion of the PAR-Q questionnaire is advised (available from: http://www.csep.ca/view.asp?ccid=517). The questionnaire should be completed by patients before starting a moderate to vigorous physical activity programme. If patients answer ‘yes’ to one or more questions on the form, clearance from a physician should be sought prior to commencement of a physical activity program [35].

Advise patients of the following key points regarding exercise:

- To reduce sedentary behaviour [2,37][L2, RGA1].
- Encourage walking where possible, as no equipment or change of clothing is required [81]:
  - Increase number of steps gradually over several weeks.
  - >10,000 steps per day is necessary for weight loss.
  - Patients should be encouraged to use pedometers or fitness trackers to self-monitor their daily activity.
- To be physically active [2,37][L1, RGA1]:
  - Moderate intensity exercise performed for at least 30 minutes ≥5 days per week, or vigorous intensity aerobic exercise done for at least 20 minutes ≥3 days per week is recommended for maintaining health and preventing disease.
  - To promote or maintain weight loss, ≥50-60 minutes per day of daily exercise is recommended.
  - Intermittent exercise of at least 10 minutes in duration (to accumulate the minimum duration recommended above) is an effective alternative to continuous exercise.
- Those with a BMI over 35 kg/m² and/or joint problems should consider moderate intensity non-weight bearing activities, e.g. [2][L2, RGA2]:
  - Cycling.
  - Swimming.
  - Water aerobics.
- Sedentary patients should build up to their physical activity targets over several weeks by [2][L2, RGA2]:
  - Starting with 10-20 minutes of physical activity every other day during the first one to two weeks of the programme.
- Those who wish to incorporate vigorous intensity physical activity [2][L2, RGA2]:
  - To introduce vigorous activity gradually after an initial 4-12 week period of moderate intensity activity.

References:
Please see the care map's Provenance.
24 Consider behavioural interventions

Quick info:
Consider behavioural interventions that are appropriate for the individual, such as [2][L2, RGA2]:

- Goal setting.
- Self-monitoring of behaviour and progress.
- Stimulus control:
  - Where the patient is taught how to recognise and avoid triggers that prompt unplanned eating.
- Cognitive restructuring:
  - Modifying unhelpful thoughts or thinking patterns.
  - Eating slowly.
  - Finding social support.
  - Problem solving.
  - Assertiveness training.
  - Reinforcing changes.
  - Considering how to prevent relapse.
  - Strategies for dealing with weight regain.
- Consider other techniques, such as mindfulness, meditation, and relaxation for stress eaters [R-GDG].

Consider referral to a psychologist for a mental health assessment if there is suspicion of depressive disorder or an eating disorder which are associated with overweight and obesity [15][L2].

References:
Please see the care map's Provenance.

25 Minimise comorbidity if no attempt at weight management

Quick info:
If a patient does not feel this is the right time for them to engage in weight management intervention [1]:

- Explain that advice and support will be available in the future whenever they need it [1][L2].
- Ensure that optimal management of associated risks and diseases takes place despite lack of weight loss [R-GDG], e.g. a patient with diabetes mellitus may benefit from reducing their sugar intake even if there is no weight loss.
- Consider how to optimise medications, such as [38,39]:
  - Metformin.
  - Weight-neutral antihypertensives for polycystic ovary syndrome.
- Advise to reduce alcohol intake [2][L2, RGA1].
- Discuss the benefits of weight maintenance [40][L2].
- Encourage them to return at any point if they decide they need help [40][L2].
- Provide contact details so that they are able to make contact when they are ready [1][L2].

References:
Please see the care map's Provenance.

26 Monitor and review progress

Quick info:
A suggested schedule of review by the primary care team is [R-GDG]:

- After 2-4 weeks initially.
- Then monthly for 3 months.
- Then every 3 months, for the first year.
Weight loss programmes should be individualised and more frequent review by individual members of the primary care team may be required. At each review, measure [R-GDG]:

- Weight.
- Waist circumference.
- BMI.
- Blood pressure.
- Heart rate.

References:
Please see the care map's Provenance.

27 Determine whether objectives have been met

Quick info:
Medical objectives are considered successful if [1,2,15,32]:

- There is a weight loss of 5-10% of initial body weight and maintenance.
- Weight loss targets are achieved.
- There is a measurable improvement in pre-existing comorbidities and the future risk of obesity-related comorbidities is reduced, e.g.:
  - Cardiovascular disease.
  - Type 2 diabetes mellitus.
  - Cancer.

References:
Please see the care map's Provenance.

28 Consider referral to secondary/specialist care

Quick info:
Consider referral to specialist care if [1][L3]:

- The underlying causes of being overweight or obese need to be assessed [1], e.g.:
  - Medical problems.
  - Medication.
  - Psychological problems and psychosocial distress.
- The patient has complex disease states or needs that cannot be managed adequately in primary care, e.g. [1]:
  - The additional support needs of patients with learning disabilities.
- The patient has already had bariatric surgery and presents with a problem, such as weight regain or nutritional deficiency, or where revisional surgery might be considered [40].
- Specialist interventions may be needed, such as [1]:
  - Very low-energy diets.
  - Evidence-based endoscopic procedures (these can be considered in patients with a BMI of 30 kg/m² and above).
- Bariatric surgery is being considered [1].
- Patient has a long history of cyclical weight loss and gain [40].
- Patient needs to lose weight for [1]:
  - A surgical procedure that is not directly related to obesity, e.g. knee replacement.
  - Fertility treatment.
- There is clinical suspicion of an eating disorder, such as binge eating disorder [32].
- Medical objectives have not been met, e.g. [R-GDG]:
  - There has been weight loss of less than 5% of initial body weight, or the patient has gained weight, despite active intervention over the previous 6 months.

Assess how engaged a patient is with the process before a decision is made about referral [40][L2].
30 Provide ongoing care and advice on the prevention of obesity

Quick info:
Ongoing support/care to be offered in primary care, includes:
• Offer regular, non-discriminatory, long-term follow-up [1][L2].
• Provide ongoing reinforcement of behaviour strategies [32][L2].
• Provide continuity of care through a multidisciplinary team [1][L1.RGB].
• Review the patient every 3 months for two years after weight loss has been achieved [R-GDG].

Encourage patients to [36]:
• Establish and maintain a combination of increased physical activity and healthier dietary habits to achieve and maintain energy balance.
• Avoid extreme physical activity or dietary behaviours, as they are difficult to sustain and may not be accompanied by wider improvements in health e.g.:
  • Obsessively exercising.
  • Aiming to avoid all carbohydrates.
• Identify perceptions, habits, or situations that may undermine efforts to maintain a healthy weight or prevent excess weight gain in the long term:
  • Offer patients practical examples of helpful alternatives, e.g.:
    • Drink water instead of sugary drinks.
    • Do not overestimate the amount of physical activity being done.
    • Avoid overeating after physical activity.
    • Maintaining healthier physical activity and dietary habits most days, including weekends and holiday.

References:
Please see the care map's Provenance.
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Provenance Certificate

Overview

This guideline document has been developed and issued by the Ministry of Public Health of Qatar (MOPH), through a process which aligns with international best practice in guideline development and localisation. The guideline will be reviewed on a regular basis and updated to incorporate comments and feedback from stakeholders across Qatar.

Whilst the MOPH has sponsored the development of the care map, the MOPH has not influenced the specific recommendations made within it.

This care map was approved on 19 Mar 2017.

For information on changes in the last update, see the information point entitled 'Updates to this care map' on each page of the care map.

Editorial approach

This care map has been developed and issued by the Ministry of Public Health of Qatar (MOPH), through a process which aligns with international best practice in guideline development and localisation. The care map will be reviewed on a regular basis and updated to incorporate comments and feedback from stakeholders across Qatar.

The editorial methodology, used to develop this care map, has involved the following critical steps:

- Extensive literature search for well reputed published evidence relating to the topic.
- Critical appraisal of the literature.
- Development of a draft summary guideline.
- Review of the summary guideline with a Guideline Development Group, comprised of practising physicians and subject matter experts from across provider organisations in Qatar.
- Independent review of the guideline by the Clinical Governance body appointed by the MOPH, from amongst stakeholder organisations across Qatar.

Explicit review of the care map by patient groups was not undertaken.

Whilst the MOPH has sponsored the development of the care map, the MOPH has not influenced the specific recommendations made within it.

Sources of evidence

The professional literature published in the English language has been systematically queried using specially developed, customised, and tested search strings. Search strategies are developed to allow efficient yet comprehensive analysis of relevant publications for a given topic and to maximise retrieval of articles with certain desired characteristics pertinent to a guideline.

For each guideline, all retrieved publications have been individually reviewed by a clinical editor and assessed in terms of quality, utility, and relevance. Preference is given to publications that:

1. Are designed with rigorous scientific methodology.
2. Are published in higher-quality journals (i.e. journals that are read and cited most often within their field).
3. Address an aspect of specific importance to the guideline in question.
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Where included, the ‘goal length of stay’ stated within this guideline is supported by and validated through utilisation analysis of various international health insurance databases. The purpose of database analysis is to confirm the reasonability and clinical appropriateness of the goal, as an achievable benchmark for optimal duration of inpatient admission.

Evidence grading and recommendations

Recommendations made within this guideline are supported by evidence from the medical literature and where possible the most authoritative sources have been used in the development of this guideline. In order to provide insight into the evidence basis for each recommendation, the following evidence hierarchy has been used to grade the level of authoritativeness of the evidence used, where recommendations have been made within this guideline.

Where the recommendations of international guidelines have been adopted, the evidence grading is assigned to the underlying evidence used by the international guideline. Where more than one source has been cited, the evidence grading relates to the highest level of evidence cited:

- **Level 1 (L1):**
  - Meta-analyses.
  - Randomised controlled trials with meta-analysis.
  - Randomised controlled trials.
  - Systematic reviews.

- **Level 2 (L2):**
  - Observational studies, examples include:
    - Cohort studies with statistical adjustment for potential confounders.
    - Cohort studies without adjustment.
    - Case series with historical or literature controls.
    - Uncontrolled case series.
  - Statements in published articles or textbooks.

- **Level 3 (L3):**
  - Expert opinion.
  - Unpublished data, examples include:
    - Large database analyses.
    - Written protocols or outcomes reports from large practices.

In order to give additional insight into the reasoning underlying certain recommendations and the strength of recommendation, the following recommendation grading has been used, where recommendations are made:

- **Recommendation Grade A1 (RGA1):** Evidence demonstrates at least moderate certainty of at least moderate net benefit.
- **Recommendation Grade A2 (RGA2):** Evidence demonstrates a net benefit, but of less than moderate certainty, and may consist of a consensus opinion of experts, case studies, and common standard care.
- **Recommendation Grade B (RGB):** Evidence is insufficient, conflicting, or poor and demonstrates an incomplete assessment of net benefit vs harm; additional research is recommended.
- **Recommendation Grade C1 (RGC1):** Evidence demonstrates a lack of net benefit; additional research is recommended.
- **Recommendation Grade C2 (RGC2):** Evidence demonstrates potential harm that outweighs benefit; additional research is recommended.
- **Recommendation of the GDG (R-GDG):** Recommended best practice on the basis of the clinical experience of the Guideline Development Group members.
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References

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Guideline Development Group members

The following table lists members of the Guideline Development Group (GDG) nominated by their respective organisations and the Clinical Governance Group. The GDG members have reviewed and provided feedback on the draft guideline relating to the topic. Each member has completed a declaration of conflicts of interest, which has been reviewed and retained by the MOPH.

<table>
<thead>
<tr>
<th>Name</th>
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<th>Organisation</th>
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<tbody>
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Responsibilities of healthcare professionals

This care map has been issued by the MOPH to define how care should be provided in Qatar. It is based upon a comprehensive assessment of the evidence as well as its applicability to the national context of Qatar. Healthcare professionals are expected to take this guidance into account when exercising their clinical judgement in the care of patients presenting to them.

The guidance does not override individual professional responsibility to take decisions which are appropriate to the circumstances of the patient concerned. Such decisions should be made in consultation with the patient, their guardians, or carers and should consider the individual risks and benefits of any intervention that is contemplated in the patient’s care.

1 Dr Ahmed Babiker attended the MoPH in his capacity as a Clinical Pharmacist and advisor on the availability of medications in Qatar.
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- Dr Ilham Omer Siddig, Guideline & Standardisation Specialist.
- Ms Maricel Balagtas Garcia, Guideline Standardisation Coordinator.
- Dr Rasmeh Ali Salameh Al Huneiti, Research Training & Education Specialist.
- Mr Mohammad Jaran, Risk Management Coordinator.

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