

# University of Anbar - College of Pharmacy

## Clinical Pharmacy I - Weight loss and treatment of Obesity 1

### Weight loss and treatment of Obesity

Obesity is a growing epidemic. As a consequence, the risk of diseases such as diabetes and cardiovascular disease are also increasing, resulting in a situation where the current and future generations could have a shorter life span than their parents.

Obese individuals are more likely to have high blood pressure, diabetes and high blood fats.

### Body mass index

Body mass index (BMI) or Quetelet's index is calculated as the weight (kg) divided by height squared (m<sup>2</sup>). BMI of over 25 is classified as overweight and for obesity the value is 30.

BMI equation:

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$

<b>Category</b>	<b>BMI</b>
Below normal weight	< 18.5
Normal weight	≥ 18.5 and < 25
Overweight	≥ 25 and < 30
Class I Obesity	≥ 30 and < 35
Class II Obesity	≥ 35 and < 40
Class III Obesity	≥ 40

### Causes of obesity

- Genetics
- Imbalance between energy intake (food and beverages) and energy expenditure (exercise)
- Cultural norms
- Socioeconomic status
- Gender
- Ethnicity

### Management of obesity

Recommended weight loss goals are 1–4 kg per month in the short term, and 10–20% of body weight in the medium to long term.

Diet and exercise (such as brisk walking) are still considered the first-line treatment of obesity.

In order to achieve a healthy body weight, it is also important to build regular, moderate exercise into a daily routine.

Walking, jogging, swimming and cycling are all excellent choices. Remember to advise patients to start slowly and gradually build up their exercise.

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### ***Diet***

The recommended calorie intake should be between 1200 and 1600 kcal per day. People should be advised to moderate fat intake by eating less fatty meat, fatty cheese, full-cream milk, fried food, etc. and to reduce the amount of sugar.

They should consider eating more vegetables, fruit, cereals, whole grain bread, poultry, fish, rice, skimmed or semi-skimmed milk, grilled food, lean meat, pasta, etc.

### ***Orlistat***

Orlistat inhibits pancreatic and gastric lipase, which reduces the absorption of fat from the gut. It is indicated for weight loss in adults (18 or over) who are overweight (BMI  $\geq 28$  kg/m<sup>2</sup>) and should be taken in conjunction with a mildly hypocaloric, lower-fat diet. It produces a modest weight loss of approximately 5–10% of body weight.

It is available in 120mg capsule (*Xenical*®). A dose of 60 mg (*Alli*®) is considered OTC.

The recommended dose is 1 capsule three times daily and it should be taken immediately before, during or up to 1 hour after each main meal. If a meal is missed or contains no fat, the dose of orlistat should not be taken.

The best results are seen in the short term (6–12 months); long-term results rely heavily on lifestyle changes. If weight loss has not been achieved after 12 weeks, then the patient should stop taking orlistat.

***Side effects*** are largely GI and include fecal urgency and incontinence, oily evacuation and spotting, flatus and abdominal pain.

These can be minimized by restricting fat intake to less than 20g per meal.

There is limited data of orlistat being used in pregnant and breastfeeding women and is therefore not recommended.

Supplementation with fat-soluble vitamins (A, D, E and K) is recommended and can be achieved by taking a multivitamin. Because of the effect on vitamin K levels, patients on warfarin should avoid using orlistat. orlistat may decrease ciclosporin levels and requires close monitoring.

There is no clinical evidence of a drug interaction between orlistat and oral contraceptives but if a woman taking orlistat has severe diarrhea, they should be advised to use an additional contraception method.

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### *Other non-OTC agents*

<b><i>Glucagon-like Peptide-1 Agonists</i></b>	
Liraglutide	Liraglutide is a glucagon like peptide-1 (GLP-1) analog. The dose for obesity differs from that of liraglutide ( <i>Victoza</i> ®) that is used to treat diabetes. <i>Saxenda</i> ® is initiated at 0.6 mg SC once daily for 1 week, and is then increased by 0.6 mg/day in weekly intervals until a dose of 3 mg/day is achieved.
<b><i>Antidepressants, dopamine reuptake inhibitors + opioid antagonists</i></b>	
bupropion and naltrexone	This may regulate activity in the dopamine reward system of the brain that helps control food cravings and overeating behaviors.
<b><i>CNS Stimulants, Anorexiant</i></b>	
Lorcaserin	Lorcaserin is an adjunct to a reduced-calorie diet and exercise for long-term weight management. It has a potential for abuse.
Phentermine	Phentermine is intended for patients with an initial BMI of $\geq 30$ (obese). It is also appropriate for patients with a BMI of $\geq 27$ (overweight) who have other risk factors (eg, diabetes, hyperlipidemia, hypertension).
Phentermine / topiramate	The drug combination is indicated as an adjunct to a reduced-calorie diet and increased physical activity for long-term weight management in adults.
Diethylpropion	Diethylpropion is indicated for use as a short-term adjunct in the management of obesity.
Phendimetrazine	Phendimetrazine is indicated for use as a short-term adjunct in the management of obesity in patients aged $\geq 17$ y. It is a sympathomimetic amine that reduces appetite, an effect that appears to be secondary to CNS effects.
Benzphetamine	Benzphetamine is a sympathomimetic amine that reduces appetite, an effect that appears to be secondary to CNS effects. It is used as a short-term adjunct to caloric restriction in exogenous obesity.
<b><i>Melanocortin Agonist (MC4 agonist)</i></b>	
Setmelanotide	It is indicated for adults and for children aged 6 years or older, being employed for chronic weight management in obesity resulting from some genetic defects. (such as proopiomelanocortin (POMC), proprotein convertase subtilisin/kexin type 1 (PCSK1), or leptin receptor (LEPR) deficiency.

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<b><i>Off-labeled Agents – Oral antihyperglycemic agents</i></b>	
Metformin	Metformin is not indicated for obesity, but it is useful in preventing diabetes and improving insulin resistance in conditions such as polycystic ovary syndrome. Its use was associated with weight neutrality or mild weight loss.

<b><i>Others – Withdrawn from Market</i></b>	
Sibutramine	It was widely marketed and prescribed as an adjunct in the treatment of obesity along with diet and exercise. In 2010, it was withdrawn from the market due to concerns over minimal efficacy coupled with increased risk of adverse cardiovascular events.

### **Bariatric Surgery**

Surgical therapy for obesity (bariatric surgery) is the only available therapeutic modality associated with clinically significant and relatively sustained weight loss in subjects with morbid obesity associated with comorbidities.