Rethink Obesity®
Discover the Science, Causes, and Effect of Obesity
This content was developed for health care professionals with the purpose of providing educational background on the disease of obesity

This content should be used for educational purposes only
Overview

- Factors that contribute to the heterogenous, chronic, and progressive disease of obesity
- People affected by obesity
- Risk associated with pre-obesity\textsuperscript{a} and obesity\textsuperscript{b}
- Steps for effective management of obesity
Obesity is a chronic disease influenced by a range of factors¹

Obesity is impacted by genetic, environmental, and biological factors¹

Obesity is affected by genetics, environment, and biology

- Genetic factors influence an individual’s response to the environmental factors that can contribute to obesity\(^1\),\(^2\)
- Twin and family studies have shown that 40% to 70% of interindividual differences in BMI are explained by genetic factors\(^3\)
- Following weight loss, metabolic adaptation leads to changes in appetite-regulating hormones and decreases in resting metabolic rate\(^2\),\(^4\)-\(^6\)

Obesity is considered a global pandemic\textsuperscript{1}
\textbf{The global prevalence of obesity has increased significantly over the past 30 years\textsuperscript{2}}

Worldwide obesity has nearly \textbf{tripled} since 1975\textsuperscript{2}

The chronic disease of obesity affects over \textbf{650 million} adults worldwide\textsuperscript{2}

How obesity ranks compared with some other health challenges in the United States

Millions of US adults have health challenges and obesity is one of the most prevalent

- **About 100 million** adults in the US have obesity
- **About 75 million** adults in the US have high blood pressure
- **78 million** adults in the US with high cholesterol who could benefit from medicine

*Adults aged ≥20 years.

Definition of obesity

Obesity is defined by the World Health Organization (WHO) as abnormal or excessive fat accumulation that may impair health.

- BMI (body mass index) provides a convenient, population-level measure of obesity.

\[
\text{BMI (kg/m}^2\text{)} = \frac{\text{body weight (kg)}}{\text{height squared (m}^2\text{)}}
\]

<18.5
Underweight

18.5 to <25
Healthy weight

25 to <30
Pre-obesity

30 to <35
Obesity Class I

35 to <40
Obesity Class II

≥40
Obesity Class III
Obesity is a disease that can impact more than your patients’ weight

- Migraines, Depression, Pseudotumor cerebri, Obstructive sleep apnea
- Chronic obstructive pulmonary disease, Asthma
- Non-alcoholic fatty liver disease
- Type 2 diabetes mellitus, Metabolic syndrome
- Polycystic ovarian syndrome
- Venous stasis disease

- Cardiovascular disease, Hypertension
- Dyslipidemia
- Gastroesophageal reflux disease
- Cancer (various)
- Stress urinary incontinence
- Knee and hip osteoarthritis
- Gout

The above list is not exhaustive and is intended to illustrate only a range of key complications.
Increased BMI results in higher risk of mortality

For every 5 kg/m² BMI increment above the range of 22.5–25 kg/m², there is a 30% increase in overall mortality.

- **BMI**: 22.5–25 kg/m²
  - ~80% chance of reaching age 70 (in men)

- **BMI**: 35–40 kg/m²
  - ~60% chance of reaching age 70 (in men)

- **BMI**: 40–50 kg/m²
  - ~50% chance of reaching age 70 (in men)

~77% for men and 88% for women. ~60% for men and 85% for women. ~49% for men and 72% for women.

Patients with obesity can lose years off their lives\textsuperscript{a}

<table>
<thead>
<tr>
<th></th>
<th>Years of life lost per age group</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>20–39 years</td>
<td>40–59 years</td>
<td>60–79 years</td>
<td></td>
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<tr>
<td>BMI: 30 to &lt;35 kg/m\textsuperscript{2}</td>
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<tr>
<td>Men</td>
<td>5.9 years</td>
<td>1.7 years</td>
<td>0.8 years</td>
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<tr>
<td>Women</td>
<td>5.6 years</td>
<td>3.0 years</td>
<td>1.6 years</td>
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<tr>
<td>BMI: \geq 35 kg/m\textsuperscript{2}</td>
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</tr>
<tr>
<td>Men</td>
<td>8.4 years</td>
<td>3.7 years</td>
<td>0.9 years</td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>6.1 years</td>
<td>5.3 years</td>
<td>0.9 years</td>
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</tbody>
</table>


Younger patients with obesity lose more years off their life than older patients.
Obesity is associated with impaired physical mobility

Percentage of people with mobility problems

- **Normal BMI: 18.5 to < 25 kg/m²**
  - 0.4% Extreme problems
  - 1.1% Severe problems
  - 2.4% Moderate problems
  - 3.8% Slight problems

- **Pre-obesity BMI: 25 to < 30 kg/m²**
  - 0.5% Extreme problems
  - 1.8% Severe problems
  - 4.2% Moderate problems
  - 6.4% Slight problems

- **Obesity BMI: 30 to < 35 kg/m²**
  - 0.9% Extreme problems
  - 4.1% Severe problems
  - 7.6% Moderate problems
  - 9.2% Slight problems

- **Obesity BMI: ≥ 35 kg/m²**
  - 1.6% Extreme problems
  - 4.1% Severe problems
  - 7.5% Moderate problems
  - 10.6% Slight problems

1 in 8 patients (12.6%) with BMI 30 to <35 kg/m² reported moderate to extreme mobility problems

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People with obesity have higher health care costs than those with normal weight.

With increased medical spending, obesity is currently an economic burden that is projected to worsen.

Total healthcare expenditure\textsuperscript{a,b}

\textsuperscript{a}\textsuperscript{b}BMI (Body Mass Index) categories are defined according to WHO thresholds (WHO 2016) for adults and Cole TJ et al. BMJ. 2000;320:1240–3. for children and teenagers. \textsuperscript{c}2000 is base year equal to 100.

People with obesity regain weight after weight loss achieved by reduced-calorie meal plans\textsuperscript{1,2,a}


People with obesity often find long-term weight loss difficult due to strong physiological responses that encourage weight regain\textsuperscript{2}

\textsuperscript{a}A review of 14 long-term studies.

The tug-of-war of weight management
Willpower vs biology: Metabolic and hormonal responses affect the ability to maintain weight loss

After weight loss, metabolic adaptation leads to reductions in resting metabolic rate (~15%),\(^1\) decreasing total energy expenditure,\(^2\) and changes in appetite-regulating hormones (increase in the hunger hormone [ie, ghrelin] and decrease in satiety hormones [ie, GLP-1, PYY, CCK, amylin])\(^2\)

- Learn how you can help patients manage and treat obesity
- Ask your patients about their weight-loss attempts

Patients were randomized to calorie restriction (CR), calorie restriction with exercise (CREX), or low-calorie diet (LCD) groups. Mean percentage weight change (SEM) at 6 months by group was -10.4 (0.9)% (CR), -10.0 (0.8)% (CREX), and -13.9 (0.7)% (LCD) of initial body weight.

Weight loss improves obesity-related complications

≥5% weight loss can have a clinically meaningful impact on:

1. Blood pressure1-3
2. Cholesterol and lipids1,2,4
3. Type 2 diabetes1,5
4. Sleep apnea1,6,7

Support from HCPs can help patients achieve clinically significant and maintained weight loss

- Physician-initiated discussions motivate patients to lose weight and change behavior\(^1,2\)
- Patients are less likely to start the dialogue for many reasons, including:
  - Potential for hearing hurtful comments about their weight\(^3\)
  - Fear of being blamed for their weight problems\(^4\)
  - Shame and embarrassment about their weight\(^3\)
- To achieve sustainable weight loss, long-term intervention is often required\(^5\)

HCPs, health care professionals.
Reduced-calorie meal plan, increased physical activity, and behavioral therapy should be continued throughout the treatment of obesity (AHA/ACC/TOS Guideline)

**BMI ≥ 25 with comorbidities**

**BMI ≥ 27 with comorbidities**

**BMI ≥ 30**

**BMI ≥ 35 with comorbidities**

**BMI ≥ 40**

Surgery

Pharmacological management

Reduced-calorie meal plan, increased physical activity, behavioral therapy

≥150 minutes moderate-intensity aerobic activity each week can help patients lose and maintain weight\textsuperscript{1,2}
- Progressively increase physical activity volume and intensity\textsuperscript{2}
- Split activity time across 3 to 5 days each week\textsuperscript{2}

Moderate-intensity physical activities include:\textsuperscript{1}
- Brisk walking
- Biking at a casual pace
- Light yard work (raking leaves or using lawn mower)
- Actively playing with children

\textbf{Approaches for physical activity}

\textbf{Individualize activities to patient capabilities/preferences, taking into account physical limitations}\textsuperscript{2}

Approaches for a reduced-calorie meal plan

• Reduced-calorie meal plans should be individualized. There is no "best" plan
  — Approaches should include a ~500–750 kcal daily deficit

• There are a variety of meal plans, such as:
  — Low carbohydrate
  — Low fat
  — High protein
  — Mediterranean

• Meal replacements may be considered

Reduced-calorie meal plans should be selected to reflect personal and cultural preferences

Summary

- Obesity is a chronic disease\(^1\) that is a global pandemic\(^2\).
- Obesity is associated with a number of weight-related complications such as obstructive sleep apnea, hypertension, and some types of cancers\(^3\).
- Following weight loss, metabolic adaptation leads to changes in appetite-regulating hormones\(^4\) and a decrease in resting metabolic rate,\(^5,6\) which encourage weight regain.
- A comprehensive lifestyle approach is recommended to achieve and sustain weight loss in patients with obesity\(^3\).
  - Treatment for obesity should include individualized reduced-calorie meal plan, increased physical activity, and behavioral therapy\(^3\).
  - There are pharmacological and surgical options available for the long-term management of obesity in appropriate patients\(^3\).

Novo Nordisk offers many tools to support conversations with your patients about obesity

Many tools and resources for HCPs are available at:

RethinkObesity.com

Resources for patients are available at:

TruthAboutWeight.com