OBESITY IS A CHRONIC DISEASE

Obesity is a chronic disease, with multiple pathophysiological determinants, that requires multidisciplinary, long-term management.

Obesity is defined as abnormal or excessive fat accumulation that may impair health. It leads to anatomic (e.g., osteoarthritis, sleep apnea) and metabolic (e.g., the impact of body fat mass on insulin resistance and progression to T2DM and CVD) impairments in body function.

Body weight regulation is complex, influenced by genetics, physiology and the environment (Figure 1).

Professional associations (the American Medical Association, the American Association of Clinical Endocrinologists, the Obesity Society) recognize obesity as a global health challenge that requires a chronic disease management model.

Obesity is increasing in prevalence and severity.

Figure 2: Estimated obesity prevalence among US adults, 2010–2030

Figure 3: Prevalence of higher BMI categories is increasing faster than the prevalence of lower BMI categories

Notes: For BMI ≥30 kg/m² based on Behavioral Risk Factor Surveillance System (BRFSS) data; based on the current linear trend, prevalence could reach 51%.

Note: Based on BRFSS data.

Abbreviations: BMI, body mass index; BRFSS, Behavioral Risk Factor Surveillance System; CVD, cardiovascular disease; GLP-1, glucagon-like peptide-1; T2DM, type 2 diabetes mellitus.
Biological mechanisms undermine weight loss effects and promote weight regain in individuals attempting even modest weight loss\textsuperscript{11,12}

Weight loss through dieting increases levels of hunger hormone (ghrelin) and reduces levels of hormones that drive weight loss (e.g. PYY, OXM, GLP-1, leptin, and others)\textsuperscript{11,12}

Figure 4: Physiological factors driving weight regain after weight loss through dieting\textsuperscript{11}

Among people who lose weight through dieting, these hormonal changes persist even 1 year after initiation of weight loss\textsuperscript{12}

Figure 5: Weight reduction maintained over 5 years among people who achieved an initial weight loss of 14 kg after completing short-term, structured weight loss programs\textsuperscript{13}

Abbreviations: GI, gastrointestinal; GLP-1, glucagon-like peptide-1; OXM, oxyntomodulin; PYY, peptide YY.
Obesity is associated with many conditions and comorbidities, including:

- Depression
- Cardiovascular: Hypertension, Coronary heart disease, Dyslipidemia, Stroke
- Musculoskeletal: Chronic back pain, Osteoarthritis
- Respiratory: Obstructive sleep apnea, Asthma
- Gastrointestinal: Gallbladder disease, Non-alcoholic fatty liver disease, Irritable bowel disease
- Cancers
- Genitourinary and reproductive disorders
- Psoriasis
- Hypertension
- Coronary heart disease
- Dyslipidemia
- Stroke
- Obstructive sleep apnea
- Non-alcoholic fatty liver disease
- Gallbladder disease
- Osteoarthritis
- Chronic back pain
- Osteoarthritis
- Non-alcoholic fatty liver disease
- Gallbladder disease
- Osteoarthritis
- Chronic back pain
- Osteoarthritis
- Non-alcoholic fatty liver disease

The prevalence of obesity-related comorbidities generally increases with BMI:

- 55% with Class III obesity
- 46% of individuals with Class I/II obesity
- 44% with Class I obesity

With an economic burden of $1.42 trillion annually in the US, obesity is one of the top 10 most expensive chronic diseases for healthcare payers, as are obesity-related diseases, such as CVD, T2DM, and cancers. The economic burden of obesity in the US is estimated at $1.42 trillion, or 8.2% of GDP.

**Figure 6: Prevalence of obesity-related comorbidities by BMI**

**Figure 7: Centers for Disease Control (CDC) most expensive diseases for US payers (direct healthcare costs, $ billion)**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Cost ($ billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVDs</td>
<td>250</td>
</tr>
<tr>
<td>Smoking-related health issues</td>
<td>200</td>
</tr>
<tr>
<td>Alcohol-related health issues*</td>
<td>200</td>
</tr>
<tr>
<td>Diabetes</td>
<td>150</td>
</tr>
<tr>
<td>Alzheimer's disease</td>
<td>100</td>
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<tr>
<td>Cancers</td>
<td>100</td>
</tr>
<tr>
<td>Obese**</td>
<td>100</td>
</tr>
<tr>
<td>Arthritis</td>
<td>50</td>
</tr>
<tr>
<td>Asthma</td>
<td>50</td>
</tr>
<tr>
<td>Stroke</td>
<td>50</td>
</tr>
</tbody>
</table>

Abbreviations: BMI, body mass index; CVD, cardiovascular disease; GDP, gross domestic product; T2DM, type 2 diabetes mellitus.

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Healthcare costs rise rapidly with BMI in the range of Class II and Class III obesity (BMI >35 kg/m²)\textsuperscript{36}

In the US, obesity is associated with indirect costs of $988 billion from premature mortality, disability, workers’ compensation, insurance claims, and work absenteeism or presenteeism\textsuperscript{34,40-42}

Overall lost work time associated with obesity includes: \textsuperscript{40}

Abbreviations: BMI, body mass index; CVD, cardiovascular disease; GDP, gross domestic product; T2DM, type 2 diabetes mellitus.

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