
FOR PATIENTS WITH WEIGHT-RELATED COMORBIDITIES
BRING OBESITY TO THE FOREFRONT
Actor portrayals throughout.
Explore the role obesity can play in your patients' health
novo nordisk®

Obesity is the first thing you see. Don’t make it the last thing you talk about

- Depression
- Obstructive sleep apnea (OSA)
- Gastroesophageal reflux disease (GERD)
- Cardiovascular disease (CVD)
- Asthma/reactive airway disease
- Nonalcoholic fatty liver disease (NAFLD)
- Polycystic ovary syndrome (PCOS)
- Female infertility
- Urinary stress incontinence
- Male hypogonadism
- Osteoarthritis (OA)
- Prediabetes
- Type 2 diabetes (T2D)
- Hypertension
- Dyslipidemia
- Cancers (various)

Obesity is associated with at least 60 comorbidities, some of which can be improved through weight loss.[1-4]

While the majority of patients and HCPs agree that weight loss of 10% may be beneficial to their health, patients may be waiting for HCPs to take that important first step and discuss weight management.[5]*

It’s time to bring obesity to the forefront

Weight-related comorbidities are just that: medical conditions that may often be associated with obesity.

Weight loss of **5% to 15%** or greater may result in improvements in many of these comorbidities.[2]

*Data from a survey that examined obesity-related perceptions, attitude and behaviors among ~3000 adults with obesity and ~600 HCPs.

Don’t ignore the connection between obesity and cardiovascular disease

It’s time to make weight loss a priority

In one study, patients 16 years of age and older with an elevated BMI were

~2x

as likely

to have hypertension[6]

Obesity can be associated with some common CVD risk factors, including[7]:

- **Hypertension**
- **Dyslipidemia**
- **Type 2 diabetes**

Obesity and its related risk factors can lead to development of cardiovascular diseases, including[7-9]:

- **Coronary artery disease**
- **Myocardial infarction**
- **Heart failure**

How does obesity affect cardiovascular disease?

Nearly

3 MILLION

obesity-related cardiovascular deaths occurred worldwide in 2015[10]

Obesity can lead to enlarged adipose tissue cells, or adipocytes, which promote low-grade systemic inflammation.[11] This can[8,12]:

- **Lead to vascular breakdown**
- **Cause structural and functional myocardial damage**

Increased adipose tissue can further lead to endothelial dysfunction and cardiovascular conditions.[12]

BRING OBESITY TO THE FOREFRONT WITH YOUR PATIENTS WITH CVD RISK FACTORS

A **5% to 15% weight loss** can improve[2]:
triglycerides | HDL cholesterol | diastolic blood pressure

Don’t overlook obesity in your patients with NAFLD

A systematic review and meta-analysis reveal that NAFLD was present in nearly 60% of patients with obesity[13]

1 in 4

adults worldwide have NAFLD[14]

Nonalcoholic fatty liver disease is a buildup of excess fat in the liver.[15]

Obesity, as well as dietary and environmental factors, can lead to raised levels of[15]:

- **Free fatty acids (FFAs)**
- **Free cholesterol**
- **Other lipid metabolites**

This increase in hepatic FFAs can lead to fat accumulation in the liver in the form of triglycerides and ultimately NAFLD.[15]

An increase in hepatic FFAs can lead to fat accumulation in the liver in the form of triglycerides; in certain patients, inflammation and liver damage can follow.[15,16]

Waist circumference—more than elevated BMI—can increase risk for NAFLD[17]

BRING OBESITY TO THE FOREFRONT WITH YOUR PATIENTS WITH NAFLD

AACE/ACE guidelines recommend that patients with obesity and NAFLD should be managed with lifestyle intervention, targeting **5% to 10% weight loss**.[3]

What role does obesity play in your patients' PCOS?

PCOS is one of the most common endocrine disorders in women[18,19]

Nearly

5 MILLION

US women of reproductive age have PCOS[18,19]

Symptoms include[20,21]:

- **Menstrual irregularities**
- **Excess androgen levels**
- **Enlarged and dysfunctional ovaries**
- **Metabolic disturbances such as insulin resistance**

Obesity and excess adipose tissue are underlying factors that may worsen PCOS[22]

From

38%–88%

of women with PCOS are overweight or living with obesity[22-24]

Increased fat distribution is associated with **higher circulating levels of insulin**, which leads to increased insulin resistance and causes further androgen excess.[22,25]

Obesity can influence gonadotropin production, and imbalances lead to further **ovulatory dysfunction and menstrual abnormalities**.[25,26]

BRING OBESITY TO THE FOREFRONT WITH YOUR PATIENTS WITH PCOS

With a **5% to 15% or greater weight loss**, your patients can improve certain PCOS symptoms, including[3]*:
hyperandrogenism | oligomenorrhea | anovulation

*Clinical efficacy can vary among individual patients.

How often do your patients with obesity present with joint pain?

Patients with obesity are associated with an increased risk of knee OA[3]

The damaging impact of obesity on OA may be due to mechanical stress and other factors[27-31]

Mechanical stress

- Structural damage
- Abnormal cell activities
- Inflammation of synovial membrane

Metabolic impact through the functions of adipokines

- Additional inflammation
- Cartilage degeneration
- Bone remodeling

A meta-analysis of patients with OA showed that obesity is associated with greater pain, long-term disability, and complications following hip or knee arthroplasty.[32]

Increased BMI can mean an increased risk of knee osteoarthritis[33]

BMI of **25 to <30 kg/m²**

BMI of **≥30 to 35 kg/m²**

BMI of **≥35 kg/m²**

A population-based cohort study involving data from approximately 1.7 million Spanish adults, at least 40 years of age, over a median of about 4.5 years. The study aimed to analyze the effect of overweight and obesity on the incidence of diagnosed knee, hip, and hand osteoarthritis.

BRING OBESITY TO THE FOREFRONT WITH YOUR PATIENTS WITH OSTEOARTHRITIS

With a **5% to 10% weight loss**, knee functionality, speed, walking distance, and pain can improve—and the more weight lost, the greater the improvement.[2,34]*

*Knee MRI and x-ray findings do not change after weight loss.

What is the relationship between obesity and your patients' type 2 diabetes?

Obesity can increase the risk of prediabetes, which can lead to type 2 diabetes[35]

In patients with obesity and prediabetes

10%

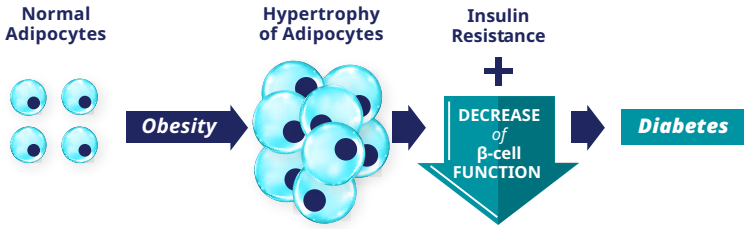
WEIGHT LOSS

reduces the risk of developing diabetes[2,3]

70% of patients with prediabetes—an A1C from 5.7% to 6.4%—often go on to develop type 2 diabetes.[36,37] In patients with type 2 diabetes, a higher BMI is associated with higher A1C (glycated hemoglobin) levels.[38]

What is a potential mechanism linking obesity to diabetes?

Obesity is associated with insulin resistance and decreased β-cell function, which can lead to the development of diabetes.[39,40]



Evidence suggests that genetic risk factors may be necessary for the occurrence of β-cell dysfunction.[40]

BRING OBESITY TO THE FOREFRONT WITH YOUR PATIENTS WITH PREDIABETES

Weight loss may prevent or delay progression to type 2 diabetes, with an **average weight loss of 6.7% being shown to reduce the onset of diabetes by 58%**.[2,11]

The American Diabetes Prevention Program (ADPP) was a trial of adults at high risk for development of type 2 diabetes (N=3,234) who were randomized to receive intensive lifestyle intervention, pharmacotherapy, or placebo.

Can addressing obesity improve sleep apnea?

It is estimated that nearly half of all people with obesity also have obstructive sleep apnea[41]

Obesity is associated with fat deposition in the upper respiratory tract, which can lead to mechanical, hormonal, and inflammatory effects, impacting the severity of OSA.[42,43]

- Mechanical load increase → respiratory stress
- Proinflammatory cytokines → reduced CNS activity and upper airway control
- Oxidative stress increase → lowered upper airway function

A 10% weight gain in people with an average BMI of 29 kg/m^2 increases the likelihood of developing moderate to severe OSA by **6 times**, and incidence increases with BMI.[44]*

BMI	OSA Incidence[41,45†]
25 kg/m^2 to 34.9 kg/m^2	33%
35 kg/m^2 to <40 kg/m^2	71%
40 kg/m^2 to <50 kg/m^2	74%
50 kg/m^2 to <60 kg/m^2	77%
≥60 kg/m^2	95%

*This study was population-based, prospective cohort study of 690 patients that measured the independent longitudinal association between weight change and change in sleep-disordered breathing severity.
†The intent of this study was to determine the prevalence of OSA in 290 patients with obesity presenting for weight-loss surgery.

BRING OBESITY TO THE FOREFRONT WITH YOUR PATIENTS WITH OSA

AACE guidelines recommend a weight-loss goal of **7% to 11% or more** for patients with obesity and obstructive sleep apnea.[3]

Bring obesity to the forefront when looking at your patients' health

Consider the following:

1. When evaluating your patients, make obesity a priority right from the start
2. Educate patients on how obesity can play a role in certain comorbid conditions
3. Design a comprehensive treatment plan together

Learn more about the impact weight loss may have on some comorbidities at **FocusOnObesity.com**

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