Driving change in obesity care
A multi-stakeholder perspective on the value of non-invasive interventions

ISPOR US 2023
Boston Convention & Exhibition Center
9 May 2023
This is an unbranded symposium sponsored by Novo Nordisk
<table>
<thead>
<tr>
<th>Topic</th>
<th>Led by</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Welcome</strong></td>
<td><strong>Sean Sullivan</strong>, Professor, CHOICE Institute, University of Washington</td>
</tr>
<tr>
<td><strong>Medical &amp; healthcare system perspective:</strong> Why is early treatment intervention important in the management of obesity?</td>
<td><strong>Dr. Angela Fitch</strong>, Founder and Chief Medical Officer, knownwell, Assistant Professor, Harvard Medical School</td>
</tr>
<tr>
<td><strong>Employer, pharmacy benefit manager (PBM) &amp; insurer perspective:</strong> Who should pay for obesity care and why?</td>
<td><strong>David Skomo</strong>, Chief Operating Officer, WellDyne</td>
</tr>
<tr>
<td><strong>Questions &amp; answers</strong></td>
<td>All</td>
</tr>
<tr>
<td><strong>Closing remarks</strong></td>
<td><strong>Sean Sullivan</strong>, Professor, CHOICE Institute, University of Washington</td>
</tr>
</tbody>
</table>
Housekeeping

Please turn your phone and laptop on silent to avoid disruptions

Please limit moving in and out of the room as much as possible

There will be time for questions with each speaker at the end, so please make note of anything you’d like to ask throughout the presentations

This meeting will be recorded for the online ISPOR platform
The moderator and speakers in today’s session

DISCLOSURES: The moderator and speakers have received payment from Novo Nordisk to cover their time related to their involvement in this Educational Symposium.
This is an unbranded symposium sponsored by Novo Nordisk.

Novo Nordisk provided financial support and content review for this non-promotional session. The information presented and any views expressed are those of the presenters, however, and should not be attributed to Novo Nordisk.
Obesity is a global health priority
Global prevalence of obesity among adults¹

2 billion overweight
650 million live with obesity²

Overweight: BMI is 25.0 to <30
Obesity: BMI is 30.0 or higher
2035 predictions, if current trends prevail

- Nearly 2 billion (or 1 in 4) people will live with obesity
- 100% increase in childhood obesity rates from 2020 levels
- $4.32 trillion estimated global economic impact of overweight and obesity
What obesity in the US looks like

- Ranked #14 in the world for obesity prevalence rates\(^5\)
- Approximately 51% of adults and 16% of children are living with obesity\(^5\)
- That equates to more than 131 million adults living with obesity\(^5,6\)
- With an economic burden of $480 billion direct costs and $1.24 trillion indirect costs\(^7\)

Latest US statistics from The World Obesity Federation\(^2\)

<table>
<thead>
<tr>
<th></th>
<th>Obesity</th>
<th>Overweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>48.9%</td>
<td>34%</td>
</tr>
<tr>
<td>Women</td>
<td>52.8%</td>
<td>27.9%</td>
</tr>
<tr>
<td>Boys</td>
<td>16.5%</td>
<td>18%</td>
</tr>
<tr>
<td>Girls</td>
<td>15%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Approximately 51% of adults and 16% of children are living with obesity. That equates to more than 131 million adults living with obesity. With an economic burden of $480 billion direct costs and $1.24 trillion indirect costs.

\(^2\)This is an unbranded symposium sponsored by Novo Nordisk.
Obesity is associated with multiple comorbidities.

**Metabolic effects**

- **CVD and risk factors** (in 31% of people with obesity*)
  - Dyslipidaemia
  - Hypertension
  - Heart failure with preserved ejection fraction

- **Type 2 diabetes** (in 31% of people with obesity)
  - Prediabetes

- **Liver disease** (in 5% of people with obesity)
  - NAFLD
  - NASH

- **PCOS** (in 9% of people with obesity)
  - Prediabetes

**Direct mechanical effects**

- **PCOS** (in 9% of people with obesity)
  - Prediabetes

- **Chronic back pain** (in 10% of people with obesity)
  - Osteoarthritis (in 16% of people with obesity)

- **Osteoarthritis** (in 16% of people with obesity)

**Emerging evidence**

- Cancer

*Prevalence of hypertension in people with obesity
How can we **improve health and quality of life** in people with obesity?

Most PwO can achieve significant weight loss, health benefits and improved QoL \(^{19-23}\)

Greater sustained weight loss leads to improved health benefits in obesity related complications.

Magnitude of weight loss (%) -

<table>
<thead>
<tr>
<th>Weight loss</th>
<th>Health improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–5%</td>
<td>Hypertension(^{19}), Hyperglycemia(^{19})</td>
</tr>
<tr>
<td>5–10%</td>
<td>PCOS(^{19}), NAFLD(^{19}), Prevention of T2D(^{19}), Dyslipidemia(^{19})</td>
</tr>
<tr>
<td>10–15%</td>
<td>OSAS(^{19}), GERD(^{19}), NASH(^{19}), Cardiovascular disease(^{19}), Urinary stress incontinence(^{20}), Knee osteoarthritis(^{19})</td>
</tr>
<tr>
<td>15–20%</td>
<td>CV mortality(^{21}), T2D remission(^{22}), Hepatic steatosis(^{23})</td>
</tr>
<tr>
<td>&gt;20%</td>
<td>HFpEF(^{24}), Advanced T2D remission(^{25,26*}), Postural instability(^{27})</td>
</tr>
</tbody>
</table>

Increased weight loss is associated with improvements in obesity comorbidities\(^{1-5}\)

Improvements in health must go beyond the scale
CVD in people with obesity carries a substantial **clinical and economic burden** \(^{28-30}\)

- Obesity increases the risk of **CVD morbidity** and **mortality** \(^{28}\)
- **Higher obesity classes** increase the **CVD burden** \(^{28}\)

- Obesity and CVD are **substantial drivers of healthcare costs** \(^{29}\)

- Weight management may help **reduce** the **clinical and economic burden** of obesity \(^{28,29}\)

- Some **pharmacotherapies** may represent a treatment modality for **people with obesity and established CVD**\(^*^{30}\)

\(^*\)Not applicable to all anti-obesity medications and for all people living with obesity
The relative value of anti-obesity treatments

• The access and coverage of anti-obesity medications (AOMs) is limited when compared to other chronic diseases, despite its high disease burden.

• A recent study looked at the relative value of AOMs, comparing clinical and economic benefits of AOMs vs treatments for other therapeutic areas (smoking cessation, daytime sleepiness, migraine, and fibromyalgia).

• These comparators were chosen based on the following similarities to AOMs:
  • Population size
  • Reimbursement
  • Cost evolution
  • Type of therapy
  • Benefit to patients
  • Type of indication

This is an unbranded symposium sponsored by Novo Nordisk
Obesity-related comorbidities are **costly**

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>Obesity</th>
<th>Excessive Sleepiness</th>
<th>Smoking</th>
<th>Migraine</th>
<th>Fibromyalgia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>$$$</td>
<td></td>
<td>$$$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td>$$$</td>
<td></td>
<td>$$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td>$$$</td>
<td></td>
<td>$$$</td>
<td>$$</td>
<td>$$$</td>
</tr>
<tr>
<td>PE</td>
<td>$$$</td>
<td></td>
<td>$$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kidney failure</td>
<td>$$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleep apnea</td>
<td>$$</td>
<td>$$</td>
<td>$$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAD</td>
<td>$$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>$$</td>
<td>$$</td>
<td>$$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OA</td>
<td>$$</td>
<td>$$</td>
<td></td>
<td></td>
<td>$$</td>
</tr>
<tr>
<td>Pain</td>
<td>$$</td>
<td>$$</td>
<td>$$</td>
<td>$$</td>
<td>$$</td>
</tr>
<tr>
<td>NAFLD</td>
<td>$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GERD</td>
<td>$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>$</td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>Urinary stress</td>
<td>$</td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>Diabetes</td>
<td>$</td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>Anxiety</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>Endometriosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Epilepsy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>IBS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$$</td>
</tr>
</tbody>
</table>

Note: $ correlates with the cost of the comorbidity relative to each other. $: low; $$: moderate; $$$: high
Obesity is one of the leading causes of productivity loss\textsuperscript{31}

<table>
<thead>
<tr>
<th>Therapeutic Area</th>
<th>Attributable Annual Absenteeism (per person)</th>
<th>Prevalence Avg Mid-Size Company* (patients)</th>
<th>Annual Workday Loss** (days per company)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>3.0 days</td>
<td>175</td>
<td>525</td>
</tr>
<tr>
<td>Excessive sleepiness</td>
<td>4.6 days</td>
<td>115</td>
<td>529</td>
</tr>
<tr>
<td>Smoking Cessation</td>
<td>2.3 days</td>
<td>70</td>
<td>161</td>
</tr>
<tr>
<td>Migraine</td>
<td>1.7 days</td>
<td>85</td>
<td>145</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>13.0 days</td>
<td>20</td>
<td>260</td>
</tr>
</tbody>
</table>

Note: baseline of annual average absenteeism is 2.34 days in healthy workers

Annual productivity loss due to absenteeism, $ thousands in a mid-size company*

- Obesity: $130
- Excessive sleepiness: $129
- Smoking Cessation: $93
- Migraine: $40
- Fibromyalgia: $36

Driven by high prevalence, obesity is one of the leading causes of absenteeism and productivity loss in the workplace.

*Based on disease prevalence among 500 employees (average medium-size employer); obesity is defined as BMI ≥ 30 kg/m\textsuperscript{2};
**Calculated by multiplying annual average absenteeism added and disease prevalence

This is an unbranded symposium sponsored by Novo Nordisk
With other **direct and indirect costs** adding to the economic burden

<table>
<thead>
<tr>
<th>Condition</th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>$170</td>
<td>$130</td>
<td>$300</td>
</tr>
<tr>
<td>Obesity</td>
<td>$140</td>
<td>$120</td>
<td>$260</td>
</tr>
<tr>
<td>Excessive Sleepiness</td>
<td>$52</td>
<td>$16</td>
<td>$68</td>
</tr>
<tr>
<td>Migraine</td>
<td>$42</td>
<td>$21</td>
<td>$63</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>$14</td>
<td>$8</td>
<td>$22</td>
</tr>
</tbody>
</table>

**Annual economic Burden (Direct and Indirect), US in $ billion**

This is an unbranded symposium sponsored by Novo Nordisk
Obesity treatment leads to significant direct medical cost reduction\textsuperscript{31}

Real-world annual medical cost change by treatment area, $ per patient per year (in 2021 USD)

<table>
<thead>
<tr>
<th>Treatment Area</th>
<th>Outpatient</th>
<th>Inpatient &amp; ER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>-$1,359</td>
<td>-$1,227</td>
</tr>
<tr>
<td>Smoking</td>
<td>-$280</td>
<td>-$650</td>
</tr>
<tr>
<td>Excessive Sleepiness</td>
<td>-$907</td>
<td>-$1,045</td>
</tr>
<tr>
<td>Migraine</td>
<td>-$344</td>
<td>-$124</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>$924\textsuperscript{a}</td>
<td>$138</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Real-world medical cost change for Fibromyalgia is an estimate.

This is an unbranded symposium sponsored by Novo Nordisk
Non-invasive treatment of obesity may not only improve the lives of individuals but reduce economic burden.

The adoption of AOMs may significantly decrease burden on the healthcare system while benefiting patients, payers, and employers.

- **15%**
  - Currently, only 10-15% of health plans cover AOMs

- **$2,600**
  - Potential reduction in annual medical costs, when patients achieve a 15% weight loss

- **AOMs**
  - Obesity's association with comorbidities; drives high costs to payers and employers
  - Studies show that weight reduction leads to an annual reduction of at least 3 absenteeism days
Medical & health system perspective

Why is early treatment intervention important in the management of obesity?

*Dr. Angela Fitch*
Obesity is a disease of abnormal physiology\textsuperscript{1-3}

Positive caloric balance in conjunction with sedentary lifestyle in genetically and environmentally susceptible individuals can drive pathophysiologic processes such as **adiposity** (accumulation of fat in adipocytes) and **adiposopathy** (dysfunction of adipocytes)\textsuperscript{38,39}

Adiposopathy results in abnormal release of **inflammatory factors and other adipokines** from the dysfunctional adipocytes and can contribute to pathogenic interactions with other body organs\textsuperscript{39,40}

Manifests into **clinical symptoms and conditions** such as prediabetes, type 2 diabetes, hypertension, dyslipidemia, among other diseases\textsuperscript{38}
Over time, untreated obesity can increase long-term incidence rates of complications\(^41\)*

*Population included 100,000 adults with obesity and 100,000 demographically matched adults with normal weight. Data taken from 2005-2012 NHANES and shown in the graph as cumulative over 5 and 10 years and as absolute difference in prevalence. Patients with type 2 diabetes excluded.

**With the exception of type 2 diabetes.

** Obesity-related comorbidities may increase over time**

OA=osteoarthritis.
People with obesity may benefit from the combined efforts of stakeholders who share their treatment goals.

**Support guidelines** for clinical diagnosis and treatment by providing coverage for evidence-based programs and interventions.

**Work with providers** to identify treatment goals, take an active role in potential interventions.

**Suggest long-term maintenance programs** and weight-loss incentive programs.

**Provide clinical evaluation**, as well as recommending treatment, such as evidence-based programs.

**Employ educational materials** for providers and patients, develop standardized screening and treatment pathways.

This is an unbranded symposium sponsored by Novo Nordisk.
Implement a comprehensive clinical treatment pathway to support and empower patients through these steps

- Ask permission before discussing obesity with your patient
- Be systematic in the clinical workup
- Counseling and support improve weight-loss perceptions and outcomes
- Determine health status
- Escalate treatment when appropriate
- Follow up regularly and leverage available resources

- Asking permission is a respectful and strategic way to broach a sensitive topic
- Advising patients to eat less and exercise more is unhelpful. A clinical problem-solving approach should be used
- Support motivation by appealing to patients' interests, values, and preferences, as well as by managing expectations
- Evaluate patients for weight-related health conditions (e.g., diabetes, hypertension, sleep apnea, OA, disability, and impaired quality of life) so that intensity of treatment can be aligned with severity of disease
- Consider FDA-approved AOMs (BMI ≥ 27 kg/m²) with a weight-related health condition or bariatric surgery (BMI ≥ 30 kg/m²) when metabolic disease is present*
- Frequent counseling is essential, but providers do not need to provide this alone. Create a care team

*Bariatric surgery is recommended for patients with a BMI ≥ 35 kg/m² or BMI 30 kg/m² to 34.9 kg/m² with metabolic disease.

This is an unbranded symposium sponsored by Novo Nordisk
Employer, PBM & insurer perspective

Who should pay for obesity care and why?

David Skomo
Prevalence of obesity and related problems

Steep increase in obesity over the past 20 years\textsuperscript{32}

- Obesity Prevalence
- Severe Obesity

<table>
<thead>
<tr>
<th>Year</th>
<th>Obese (%)</th>
<th>Severe Obese (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>30.5%</td>
<td>4.7%</td>
</tr>
<tr>
<td>2020</td>
<td>41.9%</td>
<td>9.2%</td>
</tr>
</tbody>
</table>

- $2,505 higher annual medical costs for adults with obesity\textsuperscript{33}
- Over 40% of adults in the US are living with obesity\textsuperscript{33}
- 60 comorbidities associated with obesity\textsuperscript{46}
- 13 types of cancer are shown to be related to obesity\textsuperscript{47}

This is an unbranded symposium sponsored by Novo Nordisk
What should we do to manage this disease?
Addressing obesity

Roles of various organizations in obesity, according to employers

- Carriers/Health Plans: 75%
- Wellness Companies: 68%
- Care Management (Disease Management): 48%
- Digital Health Companies: 46%
- PBMs: 37%
- Pharmaceutical Companies: 3%

Many employers don’t realize that PBMs offer solutions.

Employers interested in covering an obesity solution, if supported by evidence

- 75% of employers agreed or strongly agreed
- 61% Agree
- 24% Neutral
- 1% Disagree
- 1% Strongly Disagree

This is an unbranded symposium sponsored by Novo Nordisk
Wellness programs are missing a key piece

67% of large employers offer wellness programs that incorporate employee benefits related to diet and exercise.

The global weight management market is significant and growing.

Covering anti-obesity medications can help employers improve employee health and reduce downstream costs.

Advocating for AOM coverage with employers: the Novo Nordisk approach

This is an unbranded symposium sponsored by Novo Nordisk
Obesity-related medical expenditure

$260 billion (United States 2016)

Average annual obesity-related medical expenditure (billions)

- 2001 - 2005 Average: $152.88
- 2006 - 2010 Average: $194.63
- 2011 - 2016 Average: $227.67
Adults with obesity in the United States experience double the amount of medical care expense as compared to adults of normal weight. Adults with obesity experience double the amount of medical care expense as compared to adults of normal weight. 

This varies significantly by obesity class with class 1 being 68.4% more costly and class 3 being 233.6% more costly. This varies significantly by obesity class with class 1 being 68.4% more costly and class 3 being 233.6% more costly.

**Medical care costs**

Obesity Class 1 (BMI 30 to < 35 kg/m²), $4,218
Obesity Class 2 (BMI 35 to < 40 kg/m²), $5,510
Obesity Class 3 (BMI ≥ 40 kg/m²), $8,354

Normal weight, $2,505

This is an unbranded symposium sponsored by Novo Nordisk.
A call to action for payers

1. Recognize the complexity of obesity and the implications this disease has on physical and emotional health, comorbidities and health-related quality of life.

2. Implement medical and pharmacy coverage and reimbursement models that increase patient access to a range of treatment options.

3. Improve the understanding of the cost-effectiveness of obesity treatment options.

4. Use person-first language and respectful communication.

This is an unbranded symposium sponsored by Novo Nordisk.
Typical coverage criteria for anti-obesity medications

Body mass index (BMI) ≥ 30 kg/m²

BMI ≥ 27 kg/m² and at least one weight-related comorbidity
(Hypertension, type 2 diabetes, dyslipidemia, obstructive sleep apnea or cardiovascular disease)
Coverage considerations

- Place agents on formulary as preferred brands
- Encourage plan design coverage
- Require prior authorization
- Consider weight loss requirements for coverage continuation
Closing remarks
How did you find the session?

Please go to www.menti.com and use the code 11 87 62 6 to complete a short, three question survey.

Your feedback would be greatly appreciated.