Strengthen leadership in obesity

Mads Krogsgaard Thomsen
EVP and Chief Science Officer

Camilla Sylvest
EVP Commercial Strategy and Corporate Affairs

Strengthen leadership in obesity

Mads Krogsgaard Thomsen
EVP and Chief Science Officer

Camilla Sylvest
EVP Commercial Strategy and Corporate Affairs
Forward-looking statements

Novo Nordisk's reports filed with or furnished to the US Securities and Exchange Commission (SEC), including the company’s Annual Report 2016 and Form 20-F, which are both filed with the SEC in February 2017 in continuation of the publication of the Annual Report 2016, and written information released, or oral statements made, to the public in the future by or on behalf of Novo Nordisk, may contain forward-looking statements. Words such as ‘believe’, ‘expect’, ‘may’, ‘will’, ‘plan’, ‘strategy’, ‘prospect’, ‘foresee’, ‘estimate’, ‘project’, ‘anticipate’, ‘can’, ‘intend’, ‘target’ and other words and terms of similar meaning in connection with any discussion of future operating or financial performance identify forward-looking statements. Examples of such forward-looking statements include, but are not limited to:

- Statements of targets, plans, objectives or goals for future operations, including those related to Novo Nordisk’s products, product research, product development, product introductions and product approvals as well as cooperation in relation thereto
- Statements containing projections of or targets for revenues, costs, income (or loss), earnings per share, capital expenditures, dividends, capital structure, net financials and other financial measures
- Statements regarding future economic performance, future actions and outcome of contingencies such as legal proceedings, and
- Statements regarding the assumptions underlying or relating to such statements.

These statements are based on current plans, estimates and projections. By their very nature, forward-looking statements involve inherent risks and uncertainties, both general and specific. Novo Nordisk cautions that a number of important factors, including those described in this presentation, could cause actual results to differ materially from those contemplated in any forward-looking statements.

Factors that may affect future results include, but are not limited to, global as well as local political and economic conditions, including interest rate and currency exchange rate fluctuations, delay or failure of projects related to research and/or development, unplanned loss of patents, interruptions of supplies and production, product recall, unexpected contract breaches or terminations, government-mandated or market-driven price decreases for Novo Nordisk’s products, introduction of competing products, reliance on information technology, Novo Nordisk’s ability to successfully market current and new products, exposure to product liability and legal proceedings and investigations, changes in governmental laws and related interpretation thereof, including on reimbursement, intellectual property protection and regulatory controls on testing, approval, manufacturing and marketing, perceived or actual failure to adhere to ethical marketing practices, investments in and divestitures of domestic and foreign companies, unexpected growth in costs and expenses, failure to recruit and retain the right employees, and failure to maintain a culture of compliance.


Unless required by law, Novo Nordisk is under no duty and undertakes no obligation to update or revise any forward-looking statement after the distribution of this presentation, whether as a result of new information, future events or otherwise.

Important drug information

- **Victoza®** (liraglutide 1.2 mg & 1.8 mg) is approved for the management of type 2 diabetes only
- **Saxenda®** (liraglutide 3 mg) is approved in the US and EU for the treatment of obesity only
Obesity is a chronic disease that requires treatment

The set-point theory portrays how metabolic changes affect the ability to lose weight

The body fights weight loss for people with obesity

- The body “remembers” its highest body weight and defends this body weight as the “new normal weight”
- During weight loss, changes occur in appetite-regulating hormones, which increase hunger
- If people with obesity do not eat enough, the hormones trigger the body to conserve energy
- Changes in hormones persist for at least 5-10 years following weight loss
The obesity pipeline consists of projects addressing both appetite reduction and energy expenditure.

How to address obesity from a medical perspective

- **Weight reduction by reducing food intake**
  - Appetite reduction

- **Weight reduction by increasing energy expenditure**
  - Impact on metabolic changes to increase lipid and glucose metabolism

Novo Nordisk obesity products and pipeline

<table>
<thead>
<tr>
<th>Projects:</th>
<th>Status:</th>
<th>2018 expected:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saxenda®</td>
<td>Launched</td>
<td></td>
</tr>
<tr>
<td>semaglutide – QW GLP-1</td>
<td>Phase 2</td>
<td>Phase 3</td>
</tr>
<tr>
<td>G530L – glucagon analogue¹</td>
<td>Phase 1b</td>
<td>Phase 2</td>
</tr>
<tr>
<td>AM833 – amylin analogue</td>
<td>Phase 1b</td>
<td>Phase 2 ready</td>
</tr>
<tr>
<td>PYY1562 – PYY analogue</td>
<td>Phase 1b</td>
<td>Phase 1b²</td>
</tr>
<tr>
<td>NN9499 – FGF21 obesity³</td>
<td>Phase 1a</td>
<td>Phase 1b</td>
</tr>
<tr>
<td>NN9277 – GG-co-agonist</td>
<td>Phase 1a</td>
<td>Phase 1b</td>
</tr>
<tr>
<td>NN9423 – Tri-agonist 1706</td>
<td>Phase 1a</td>
<td>Phase 1b</td>
</tr>
</tbody>
</table>

¹ Phase 1 in combination with liraglutide and phase 2 planned in combination with semaglutide
² Phase 1b completed with monotherapy, phase 1b in combination with semaglutide planned for 2018
³ FGF21 potentially also targets appetite reduction

Phase 1a: Single-dose trials; Phase 1b: Multiple-dose trials
QW: Once-weekly
Promising phase 1a results for single-dose amylin

**Key results and next steps**

- Long-acting amylin analogue single dose considered safe and well-tolerated
- Change in body-weight appeared dose-dependent and was partly sustained in the follow-up period after administration of a single dose
- After 28 days, the mean body weight was 3.5 percentage points lower with a single injection of amylin 30 µg/kg compared to placebo, and gastrointestinal side effects were limited

**Next steps**

- Phase 2 ready late 2018 and trial initiation expected in the first quarter of 2019
Semaglutide demonstrated unprecedented weight loss in phase 2 obesity trial

16.2% weight reduction with the highest semaglutide dose in phase 2 obesity trial

<table>
<thead>
<tr>
<th>Change in body weight (%)</th>
<th>sema 0.05 mg</th>
<th>sema 0.1 mg</th>
<th>sema 0.2 mg</th>
<th>sema 0.3 mg</th>
<th>sema 0.4 mg</th>
<th>lira 3.0 mg</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weeks</td>
<td>0</td>
<td>-20</td>
<td>-15</td>
<td>-10</td>
<td>-5</td>
<td>0</td>
<td>16.2%</td>
</tr>
</tbody>
</table>

Key results and next steps

- Participants in the highest dose arms continued to lose weight over the duration of the trial as the response curve did not plateau in the highest dose arm
- Nearly two out of three patients experienced a weight loss of 10% or more with the highest dose of semaglutide
- 80% of patients completed the trial
- Once-daily semaglutide had a well-tolerated safety profile, with the most common adverse events being gastrointestinal
- **Next steps**: Phase 3 clinical trial programme to be initiated in the first half of 2018

Note: All treatment arms are adjunct to diet and exercise

QD: Once-daily; sema: Semaglutide; lira: Liraglutide
**Phase 3 trials with 2.4 mg once-weekly semaglutide in obesity to be initiated in the first half of 2018**

**Semaglutide in obesity phase 3a programme, STEP, expected to include ~4,500 patients**

<table>
<thead>
<tr>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STEP 1: Weight loss</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,950 patients, 68 weeks duration</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STEP 2: T2D non-insulin patients</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,200 patients, 68 weeks duration</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STEP 3: Maximising weight loss</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600 patients, 68 weeks duration</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STEP 4: Maintained weight loss</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>900 patients, 68 weeks duration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Expected phase 3a programme completion: 2020**

**Cardiovascular landmark study planned for semaglutide in obesity**

- 12,500 people with obesity without diabetes
- Semaglutide 2.4 mg sc QW
- Placebo
- Event driven

**Completion: Pre-defined number of events**

---

1 Inclusion criteria: Male or female, age ≥18 years, BMI: ≥30 kg/m² or ≥27 kg/m² and ≥1 comorbidity
Note: All treatment arms are adjunct to diet and exercise

TD2: Type 2 diabetes

---

1 Inclusion criteria: Male or female >45 years, BMI >27 kg/m², myocardial infarction or stroke >60 days, HbA1c <6.5%
QW: Once-weekly; sc: Subcutaneous
Despite obesity being a chronic disease, the reality is...

- It is a significant cost burden for society
- There is no specialty managing it
- Physicians are not taught how to treat it
- Patients are discriminated against for being obese
- Patients lack treatment options
The healthcare cost associated with obesity expected to increase

Global healthcare costs related to obesity expected to increase by 50% by 2025

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost (trillion USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>~0.8</td>
</tr>
<tr>
<td>2020</td>
<td>~1.0</td>
</tr>
<tr>
<td>2025</td>
<td>~1.2</td>
</tr>
</tbody>
</table>

Increase in healthcare costs primarily driven by obesity-related comorbidities

- Today, 650 million people have obesity globally
- By 2025, ~1 billion people are expected to have obesity
- If left untreated, by 2025, the costs of treating complications of obesity is expected to reach USD ~550 billion in the US and USD ~1.2 trillion globally
- The increased healthcare costs are primarily driven by obesity-related comorbidities such as type 2 diabetes and cardiovascular disease

Source: World Obesity Federation, 2017

Source: WHO, October 2017; World Obesity Federation, 2017
Treatment rate is low and an increase requires a change of mindset and physician engagement

Only 2% of the 650 million people with obesity are treated with prescription medication

Key barriers to effective obesity management

- **Mindset**
  - Belief that obesity is self-inflicted
  - Focus on acute weight loss rather than chronic weight management

- **Few prescribers engaged**
  - Physicians not equipped to engage in and treat obesity

- **Limited patient access**
  - Funding and reimbursement a hurdle for physicians and patients

Note: The figure illustrates some of the intervention points to treat obesity with prescription medication

1 Attempt to manage weight through lifestyle modification or surgery

2 2% of people with obesity are estimated to be treated with anti-obesity medication

Source: IQVIA (formerly IMS) MIDAS 2017
Market development initiatives focus on overcoming the barriers to effective obesity management

<table>
<thead>
<tr>
<th>Change of mindset</th>
<th>Increase physician engagement</th>
<th>Improve patient access</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTION study</td>
<td>Rethink Obesity® platform</td>
<td>Treat and Reduce Obesity Act</td>
</tr>
</tbody>
</table>
| • Largest study ever done amongst more than ~3,500 respondents to explore barriers to obesity treatments | • Medical education on the science behind obesity  
• Dialogue tools for physicians in countries where Saxenda® is launched | • Document the burden of obesity and activate policy makers  
• Coverage of obesity medication through Medicare |
| ACTION AWARENESS, CARE & TREATMENT IN OBESITY MANAGEMENT | Rethink Obesity® | TROA COALITION |

Change of mindset

- ACTION study
  - Largest study ever done amongst more than ~3,500 respondents to explore barriers to obesity treatments
  - Media and online coverage

Increase physician engagement

- Rethink Obesity® platform
  - Medical education on the science behind obesity
  - Dialogue tools for physicians in countries where Saxenda® is launched

Improve patient access

- Treat and Reduce Obesity Act
  - Document the burden of obesity and activate policy makers
  - Coverage of obesity medication through Medicare
Patients with high BMI and high degree of obesity-related comorbidities can benefit from Saxenda®

Number of comorbidities almost three-fold for people with BMI >40 vs normal weight

- Average number of obesity-related comorbidities
- ~x3

Target population for Saxenda®

- Prevalence of obesity-related comorbidities

<table>
<thead>
<tr>
<th>BMI</th>
<th>&gt;25 and &lt;30</th>
<th>&gt;30 and &lt;35</th>
<th>&gt;35 and &lt;40</th>
<th>&gt;40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>&gt;25 and &lt;30</td>
<td>&gt;30 and &lt;35</td>
<td>&gt;35 and &lt;40</td>
<td>&gt;40</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Comorbidities include congenital heart disease, high cholesterol, hypertension, type 2 diabetes, gall bladder disease, osteoarthritis, sleep apnoea

BMI: Body mass index

Source: NHANES in Must et al 1999 and NHANES in Li et al 2010

Saxenda® target patients
The US accounts for vast majority of Saxenda® sales with opportunity for further global penetration

Saxenda® launched in 24 countries

Countries with highest Saxenda® sales in 2017

- **USA**: 50% Saxenda® value market share, 3% Saxenda® volume market share
- **Brazil**: 29% Saxenda® value market share, 4% Saxenda® volume market share
- **Canada**: 84% Saxenda® value market share, 71% Saxenda® volume market share
- **UAE**: 89% Saxenda® value market share, 59% Saxenda® volume market share
- **Australia**: 12% Saxenda® value market share, 5% Saxenda® volume market share

1 Reported sales for the first nine months of 2017
Source: IQVIA (formerly IMS) MIDAS, Sep 2017
Closing remarks

Ambitious and progressive obesity pipeline to address patient needs

Treatment rate is low and an increase requires a change of mindset and physician engagement

Saxenda® value market share leadership in key countries