Obesity market update and Saxenda® performance

Christian Kanstrup
SVP Marketing, Medical Affairs and Stakeholder Engagement
Forward-looking statements

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Important drug information
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• Saxenda® (liraglutide 3 mg) is approved in the US and EU for the treatment of obesity only
The global obesity prevalence continues to increase

**Historic development of obesity prevalence**

- USA
- Canada
- Mexico
- Spain
- Australia
- France
- Italy
- Switzerland
- England

<table>
<thead>
<tr>
<th>Year</th>
<th>Obesity prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972</td>
<td>0%</td>
</tr>
<tr>
<td>2012</td>
<td>35%</td>
</tr>
</tbody>
</table>

**Current and future burden of obesity**

- Worldwide obesity has more than doubled since 1980\(^1\)
- In 2014, worldwide more than 1.9 billion adults were overweight, of these over 600 million had obesity\(^1\)
- Obesity prevalence estimated to increase over the next 2 decades to 2030
  - By 33% for obesity in general (BMI ≥ 30)
  - By 130% increase for Class III obesity (BMI ≥ 40)\(^2\)

Source: OECD analysis of health survey 2014. Obesity in the listed countries is defined as BMI greater to or equal to 30 kg/m\(^2\)

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More than 20 million people in the US have a BMI above 35 with either pre-diabetes or CV related comorbidities

### Incidence of obesity in the US (million people)

<table>
<thead>
<tr>
<th>Comorbidity status</th>
<th>BMI 27-29.9</th>
<th>Class I BMI 30-34.9</th>
<th>Class II BMI 35-39.9</th>
<th>Class III BMI 40+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No CV comorbidities¹</td>
<td>15.5</td>
<td>11.0</td>
<td>4.2</td>
<td>3.0</td>
<td>33.7</td>
</tr>
<tr>
<td>CV comorbidities²</td>
<td>15.1</td>
<td>16.0</td>
<td>6.4</td>
<td>4.1</td>
<td>41.6</td>
</tr>
<tr>
<td>Pre-diabetes³</td>
<td>12.0</td>
<td>14.1</td>
<td>7.2</td>
<td>6.1</td>
<td>39.4</td>
</tr>
<tr>
<td>Type 2 diabetes⁴</td>
<td>2.0</td>
<td>5.0</td>
<td>3.6</td>
<td>2.3</td>
<td>12.9</td>
</tr>
<tr>
<td>Total</td>
<td>44.6</td>
<td>46.1</td>
<td>21.4</td>
<td>15.5</td>
<td>127.6</td>
</tr>
</tbody>
</table>

### The US obesity burden

- Cost of obesity to health care systems of USD 147 billion annually with continued growth⁵
- Around 35% of the US adult population (over 20 years) have obesity (BMI>30)⁶
- Only around 30% of all obesity cases in the US were diagnosed in 2009⁷
- In 2010, only 3 million people in the US or around 3% of the adult population with obesity were treated with anti-obesity medication⁸

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¹ Normal blood glucose without hypertension and/or dyslipidemia
² Normal blood glucose with hypertension and/or dyslipidaemia
³ Impaired Fasting Glucose with or without hypertension and/or dyslipidaemia
⁴ Type 2 diabetes with or without hypertension and/or dyslipidaemia
⁵ Finkelstein et al. Health Affairs 28, no. 5 (2009): w822-831
⁷ Ma et al. Obesity (Silver Spring) 2009;17:1077–85
⁸ Obesity. Decision resources, Inc. December 2010:38

Source: 2009-2010 NHANES + revised 2011 CDC estimates and based on US population 2015. Only includes population age 20+. Distribution between obese groups on market map based on NHANES data (including only measured and not self reported BMI and also measured not self-reported diabetes status)
**Saxenda® targeted at patients with BMI ≥35 and weight-related comorbidities**

<table>
<thead>
<tr>
<th>Saxenda® market approach</th>
<th>Saxenda® launch execution</th>
<th>Aspiration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clear patient segmentation</strong></td>
<td><strong>Focus on patients with BMI ≥35 with weight-related comorbidities</strong></td>
<td><strong>Build the market</strong></td>
</tr>
<tr>
<td><strong>Focused prescriber targeting</strong></td>
<td><strong>Focus on current prescribers of anti-obesity medication and GLP-1</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Clear product value proposition</strong></td>
<td><strong>Strengthened by 3-year clinical data</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Focus on engaging prioritised payers and employers</strong></td>
<td><strong>Formulary coverage emerging with more than 50 million lives¹ now covered</strong></td>
<td></td>
</tr>
</tbody>
</table>

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**BMI**: body mass index  
¹ Potential lives covered, based on employer opt-ins
US prescription volumes for obesity medications are growing and market value is increasing, but remains small.

**US prescription volumes for obesity medications**

Note: IMS reporting for new launches may reflect data instability due to small volume and/or supplier reporting. TRx: Total prescriptions; AOM: anti-obesity medication; Contrave® is the brand name for naltrexone HCl & bupropion HCl; Belviq® is the brand name for lorcaserin; Qsymia® is the brand name for phentermine & topiramate. Source: IMS NPA Monthly, September 2015

**Value of US obesity market increases**

Note: IMS reporting for new launches may reflect data instability due to small volume and/or supplier reporting. 2015 is MAT September 2015
Source: IMS NSP Monthly, September 2015
Saxenda® has established a significant presence in the US anti-obesity market

Prescription value uptake of anti-obesity medications recently launched in the US

Note: IMS reporting for new launches may reflect data instability due to small volume and/or supplier reporting. Contrave® is the brand name for naltrexone HCl & bupropion HCl; Belviq® is the brand name for lorcaserin; Qsymia® is the brand name for phentermine and topiramate

Source: IMS NPS Monthly value figures, September 2015
Saxenda® market feedback – healthcare professionals are willing to engage in chronic weight management

Percent of healthcare professionals who are fully engaged during visits

<table>
<thead>
<tr>
<th></th>
<th>Saxenda®</th>
<th>Contrave®</th>
<th>Belviq®</th>
<th>Qsymia®</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=565</td>
<td>n=176</td>
<td>n=169</td>
<td>n=161</td>
</tr>
</tbody>
</table>

Healthcare professionals engage in chronic weight management

- Most healthcare professionals are fully engaged during Saxenda® visits, more than during competitors visits
- Length of Saxenda® visits are longer on average for both quick chats and long visits compared to competitors
- Saxenda® efficacy and coverage messages are the top recalled messages

Length of average Saxenda® visits:

- Quick chats: 5.4 min (n=268)
- Long visits: 20.8 min (n=269)

Note: For quick chats the average length for competitor products was 4.2-4.7 min. For long visits the average length for competitor products was 16.4-18.6 min.

Source: Novo Nordisk Sales Force Effectiveness Study, POA 2 2015

Note: Fully engaged percentages based on percentage of physicians selecting a 4 (fully engaged) on a 1-4 point scale in terms of their engagement with the sales rep. during their most recent visit. n = number of physicians engaged.
Saxenda® now also commercially launched in Denmark and Canada and approved in Mexico

**Saxenda® global roll-out**

- Saxenda® approved in US, Europe, Canada and Mexico and launched in US, Denmark and Canada
- Global roll-out continues with 8-10 planned launches in 2016 with ongoing regulatory reviews in 10 countries

**Market feedback from Denmark and Canada**

- Saxenda® launched in Denmark and Canada in August 2015
- Initial market uptake in both markets are in line with expectations
- Most frequently asked questions are around efficacy and price
- Feedback from market indicates that familiarity with liraglutide is reassuring when considering using Saxenda®
Concluding remarks

- Global prevalence of obesity continues to increase
- US prescription for obesity medications are growing, however the value of the market remains small
- Saxenda® has established a significant presence in the US anti-obesity market
- Saxenda® launched in Denmark and Canada and 8-10 further launches planned for 2016
Pipeline and future portfolio in obesity

Mads Krogsgaard Thomsen
EVP & Chief Science Officer
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Novo Nordisk Obesity R&D – a 20-year journey

- **1994** Novo Nordisk begins researching GLP-1 in obesity
- **1997** Discovery of liraglutide
- **1999** Phase 1 start for liraglutide
- **2005** First obesity advisory board
- **2006** Liraglutide phase 2 dose-finding trial in obesity initiated
- **1997** Discovery of liraglutide
- **1999** Phase 1 start for liraglutide
- **2005** First obesity advisory board
- **2006** Liraglutide phase 2 dose-finding trial in obesity initiated
- **2013** SCALE phase 3 clinical programme initiated
- **2013** SCALE phase 3 clinical programme completed
- **Dec 2014** Saxenda® US approval
- **2013** Liraglutide 3 mg FDA and EMA submissions
- **Mar 2015** Saxenda® EU approval
- **Apr 2015** Saxenda® US launch
- **2009** SCALE phase 3 clinical programme initiated
- **2013** SCALE phase 3 clinical programme completed
- **Dec 2014** Saxenda® US approval
- **2013** Liraglutide 3 mg FDA and EMA submissions
- **Mar 2015** Saxenda® EU approval
- **Apr 2015** Saxenda® US launch

FDA: Food and Drug Administration; EMA: European Medicines Agency
Today, obesity is at the same level of R&D maturity as type 2 diabetes was two decades ago

BG: blood glucose; DCCT: Diabetes Control and Complications Trial; UKPDS: United Kingdom Prospective Diabetes Study; AOM: anti-obesity medication
Biologics for obesity are a core R&D focus area for Novo Nordisk

Key enablers for efficiencies within obesity research

- **Pathophysiology** of obesity and T2D is overlapping
  - Many peptide therapeutics will lead to improvement in both conditions

- **Size of peptide hormones** ideal for our core technologies
  - Peptide backbone engineering to optimise stability, kinetics and potency
  - Acylation to provide protraction via eg albumin binding

- **Drug formulation skills**
  - Enable formulation of peptide combination therapy with enhanced efficacy
  - Drug delivery expertise enables convenient administration of injection
  - Potential for oral administration

Obesity projects focused around four main strategic elements to optimise drug profile

- **Focused innovation around existing GLP-1 targets**
  - liraglutide
  - semaglutide

- **Innovation around known targets**
  - Amylin and PYY analogues
  - undisclosed preclinical targets

- **Innovation around new and emerging targets**
  - undisclosed preclinical projects

- **Drug combination therapy**
  - glucagon analogue combo
  - undisclosed preclinical projects

T2D: type 2 diabetes
The Novo Nordisk obesity pipeline is expanding

<table>
<thead>
<tr>
<th>Research¹</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Launched</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NN9838 – Amylin analogue</td>
<td>G530L – Glucagon analogue</td>
<td>Once-daily Semaglutide</td>
<td>Saxenda®</td>
</tr>
</tbody>
</table>

¹ Illustrative, not representative for exact number of research projects
Semaglutide has shown strong weight loss potential in type 2 diabetes compared to other GLP-1s

Weight loss for liraglutide and semaglutide in head-to-head trials versus other GLP-1s

<table>
<thead>
<tr>
<th>Baseline weight (kg)</th>
<th>LEAD-6¹</th>
<th>DURATION-6²</th>
<th>HARMONY-7³</th>
<th>Lira vs Lixi⁴</th>
<th>AWARD-6⁵</th>
<th>SUSTAIN-3⁶</th>
</tr>
</thead>
<tbody>
<tr>
<td>93</td>
<td>-3.2</td>
<td>-2.9</td>
<td></td>
<td>-0.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>93</td>
<td>-3.6</td>
<td>-2.7</td>
<td>-2.2</td>
<td>-4.3</td>
<td>-3.6</td>
<td>-1.9</td>
</tr>
<tr>
<td>92</td>
<td></td>
<td></td>
<td></td>
<td>-3.7</td>
<td>-2.9</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td>-4.3</td>
<td>-2.9</td>
<td>-5.6</td>
</tr>
</tbody>
</table>

Change in bodyweight (kg)

-3.2 to -2.9 kg

QD: once daily; BID: twice daily; QW: once weekly; * statistically significant difference

Semaglutide once daily phase 2 dose-finding trial in obesity is designed to optimise treatment outcomes

### Once daily semaglutide phase 2 trial design

- **Semaglutide 0.05 mg**
- **Semaglutide 0.1 mg**
- **Semaglutide 0.2 mg**
- **Semaglutide 0.3 mg**
- **Semaglutide 0.4 mg**
- **Semaglutide 0.3 mg fast escalation**
- **Semaglutide 0.4 mg fast escalation**
- **Placebo**
- **Liraglutide 3 mg**

935 people with obesity without diabetes

### Phase 2 trial purpose and endpoints

**Purpose**
- To assess and compare the dose response of five doses of QD sc semaglutide versus placebo in inducing and maintaining weight loss after 52 weeks
- To investigate two different dose escalation regimens

**Trial design**
- Randomised, controlled, double-blinded
- Diet and exercise counselling in all arms

**Primary endpoint**
- Relative change from baseline in body weight at 52 weeks

**Examples of secondary endpoints**
- Proportion of subjects with weight loss of \( \geq 5\% \) or \( \geq 10\% \) of baseline body weight at 52 weeks

### Results from phase 2 trial expected in 2017

1 Key inclusion criteria: Male or female \( \geq 18 \) years, BMI: \( \geq 30 \) kg/m\(^2\), Stable body weight (<5 kg change) \( \geq 90 \) days

Note: Once daily subcutaneous dosing in all arms, 4-week escalation steps in main arms, 2-week escalation steps in fast escalation arms

QD: once daily; sc: subcutaneous
**Long-acting obesity compounds in phase 1 development may have complimentary modes of action**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Mode of action</th>
<th>Administration</th>
<th>Clinical development status</th>
</tr>
</thead>
<tbody>
<tr>
<td>G530L – Glucagon analogue</td>
<td>• Stimulation of energy expenditure and satiety promoting a negative energy balance</td>
<td>• Once-daily subcutaneous injection in combination with liraglutide</td>
<td>• Phase 1 initiated Sep 2014 • Safety/PK of single ascending doses • 160 overweight/obese people • Expected completion H2 2016</td>
</tr>
<tr>
<td>NN9838 – Amylin analogue</td>
<td>• Reduced food intake, thought primarily to be mediated by amylin receptors located in the area postrema</td>
<td>• Once-daily subcutaneous injection</td>
<td>• Phase 1 initiated Dec 2014 • Safety/PK of single ascending doses • 58 overweight/obese people • Expected completion H1 2016</td>
</tr>
<tr>
<td>NN9747 – PYY analogue</td>
<td>• Reduced food intake via selective stimulation of the Y2 receptor</td>
<td>• Once-daily subcutaneous injection</td>
<td>• Phase 1 initiated Oct 2015 • Safety/PK of single and multiple doses • 120 overweight/obese people • Expected completion H1 2017</td>
</tr>
</tbody>
</table>

- **PK**: pharmacokinetic
Concluding remarks

- Obesity is at the same level of R&D maturity today as type 2 diabetes was two decades ago.
- Biologics for obesity is a core R&D domain for Novo Nordisk.
- Novo Nordisk’s obesity pipeline is expanding with now four compounds in clinical development.
- Semaglutide has shown strong weight loss potential – phase 2 obesity trial designed to optimise outcomes.
- Compounds in phase 1 development may have complimentary modes of action.