Investor presentation
First half of 2016
Copenhagen, 5 August 2016
Agenda

- Highlights and key events
- Sales update
- R&D update
- Financials and outlook
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 2015 and Form 20-F, which are both filed with the SEC in February 2016 in continuation of the publication of the Annual Report 2015, and presentations made, 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
Highlights – First half of 2016

Sales development
- Sales increased by 7% in local currencies and 5% in Danish kroner
- USA grew by 7% in local currencies and accounted for 50% share of growth in local currencies
- International Operations and Region China grew by 11% and 10% in local currencies, respectively
- Victoza® increased by 14% in local currencies and accounted for 32% share of growth in local currencies
- New-generation insulin now accounts for 28% share of growth in local currencies

Research and Development
- Victoza® statistically significantly reduced the risk of major adverse cardiovascular events in the LEADER trial by 13%
- Tresiba® showed significant lower variance in the glucose-lowering effect compared to glargine U300 in PK/PD trial
- IDegLira received positive 16-0 vote in favour of approval from FDA Advisory Committee
- Phase 2a trial with oral insulin OI338GT completed with generally encouraging results

Financials
- Adjusted operating profit increased by 8% in local currencies
- Diluted earnings per share increased by 9% to 7.63 DKK per share, adjusted for the partial divestment of NNIT it increased by 23%
- 2016 financial outlook:
  - Sales growth is now expected to be 5-7% measured in local currencies (around 2% lower in reported currencies)
  - Adjusted operating profit growth is still expected to be 5-8% measured in local currencies (around 3% lower in reported currencies)
- An interim dividend of DKK 3.00 per share of DKK 0.20 will be paid in August 2016

1 Adjusted operating profit accounts for partial divestment of NNIT and out-licensing of assets for inflammatory disorders, both in 2015
All regions contribute to local sales currencies growth in the first half of 2016

**Sales as reported – first half of 2016**

- **Pacific** +9%  
- **Region China** +5%  
- **International Operations (2%)**  
- **Europe** +1%  

**Growth analysis – first half of 2016**

<table>
<thead>
<tr>
<th>Local currencies</th>
<th>Growth</th>
<th>Share of growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>7%</td>
<td>50%</td>
</tr>
<tr>
<td>Europe</td>
<td>2%</td>
<td>7%</td>
</tr>
<tr>
<td>International Operations</td>
<td>11%</td>
<td>21%</td>
</tr>
<tr>
<td>Region China</td>
<td>10%</td>
<td>14%</td>
</tr>
<tr>
<td>Pacific</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td><strong>Total sales</strong></td>
<td>7%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Sales of DKK 54,671 million (+5%)
Modest US sales growth in the second quarter reflects more challenging competitive environment

Modest sales growth in Q2 2016

Sales as reported  MAT quarterly local currency growth  Average local currency growth

Key factors impacting growth

- Sales growth primarily driven by Tresiba®, Victoza® and Saxenda®
- Declining sales of modern insulin due to impact from
  - Wholesaler inventory management
  - NovoLog® contract loss
  - Lower impact from list price increases
  - Phasing of rebates
- Decline in sales of haemophilia products due to increasing competitive pressure and clinical trial activities
Sales growth is driven by Victoza® and new-generation insulin

Sales as reported – first half of 2016

<table>
<thead>
<tr>
<th>Category</th>
<th>Growth</th>
<th>Share of growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes and obesity care</td>
<td>78%</td>
<td>76%</td>
</tr>
<tr>
<td>Haemophilia</td>
<td>9%</td>
<td>3%</td>
</tr>
<tr>
<td>Norditropin®</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Other biopharmaceuticals</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>Sales of DKK 54,671 million (+5%)</td>
<td>78%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Growth analysis – first half of 2016

<table>
<thead>
<tr>
<th>Local currencies</th>
<th>Growth</th>
<th>Share of growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>New-generation insulin¹</td>
<td>174%</td>
<td>28%</td>
</tr>
<tr>
<td>Modern insulin</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Human insulin</td>
<td>(1%)</td>
<td>(1%)</td>
</tr>
<tr>
<td>Victoza®</td>
<td>14%</td>
<td>32%</td>
</tr>
<tr>
<td>Other diabetes and obesity care²</td>
<td>25%</td>
<td>15%</td>
</tr>
<tr>
<td>Diabetes and obesity care³</td>
<td>7%</td>
<td>76%</td>
</tr>
<tr>
<td>Haemophilia³</td>
<td>(1%)</td>
<td>(1%)</td>
</tr>
<tr>
<td>Norditropin®</td>
<td>19%</td>
<td>20%</td>
</tr>
<tr>
<td>Other biopharmaceuticals⁴</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>Biopharmaceuticals</td>
<td>8%</td>
<td>24%</td>
</tr>
<tr>
<td>Total</td>
<td>7%</td>
<td>100%</td>
</tr>
</tbody>
</table>

¹ Comprises Tresiba®, Ryzodeg® and Xultophy®
² Primarily NovoNorm®, needles and Saxenda®
³ Comprises NovoSeven®, NovoEight® and NovoThirteen®
⁴ Primarily Vagifem® and Activelle®

Note: Norditropin® sales growth in the first half of 2016 is derived primarily from the USA reflecting a positive non-recurring adjustment to rebates in the Medicaid patient segment.
Victoza® maintains leadership in the faster growing US GLP-1 market

**US GLP-1 market development**

- **MAT GLP-1 TRx**
  - Total TRx
  - Growth rate

- **MAT volume**
  - GS volume growth rate

Source: IMS NPA MAT, June 2016

**US GLP-1 market TRx volume**

- **GLP-1 TRx volume**
  - Victoza®, exenatide
  - albiglutide, dulaglutide

**US GLP-1 market shares**

- **GLP-1 TRx market share**
  - Victoza®, exenatide
  - albiglutide, dulaglutide

Source: IMS NPA MAT, June 2016
Roll-out of new-generation insulin portfolio is progressing

**Key launch observations**

- **Tresiba®** launched in 45 countries with solid penetration in markets with similar reimbursement as insulin glargine

- **Ryzodeg®** commercially launched in Mexico, India, Bangladesh, Japan, Russia and now Lebanon

- **Xultophy®** launched in Switzerland, Germany, the United Kingdom, Sweden, Hungary and now Greece

**Tresiba® value share of basal insulin segment in selected countries, excl USA**

- Switzerland
- Netherlands
- Japan
- Sweden
- UK
- Argentina
- Greece
- Mexico
- Denmark
- Brazil
- Italy
- Spain

Note: Limited IMS coverage in India
Source: IMS Monthly value figures, May 2016
Steady uptake of Tresiba® in the USA

**Weekly US NBRx volume market shares**

- Tresiba®
- Levemir®
- NN Total Basal
- glargine U100
- glargine U300

**Tresiba® launched in the USA**

- Full commercial launch in January 2016 following specialist engagement in Q4 2015
- Tresiba® volume market share has reached 2.9%
- Tresiba® U200 accounts for approximately 80% of total Tresiba® volume

Note: The graph does not show NPH, which accounts for the residual market share.

Source: IMS weekly data, 15 July 2016, excludes Medicaid

NBRx: New-to-brand prescriptions; MS: Market share
Broad market access across the diabetes portfolio is expected to be maintained in the USA for 2017

**Current level of unrestricted market access for key Novo Nordisk products in the USA**

<table>
<thead>
<tr>
<th>Unrestricted market access</th>
<th>Commercial</th>
<th>Medicare part D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Victoza®</strong></td>
<td><img src="image" alt="Victoza®" /></td>
<td><img src="image" alt="Victoza®" /></td>
</tr>
<tr>
<td><strong>Levemir®</strong></td>
<td><img src="image" alt="Levemir®" /></td>
<td><img src="image" alt="Levemir®" /></td>
</tr>
<tr>
<td><strong>Tresiba®</strong></td>
<td><img src="image" alt="Tresiba®" /></td>
<td><img src="image" alt="Tresiba®" /></td>
</tr>
<tr>
<td><strong>Novolog®</strong></td>
<td><img src="image" alt="Novolog®" /></td>
<td><img src="image" alt="Novolog®" /></td>
</tr>
</tbody>
</table>

**US formulary negotiations and 2017 pricing**

- Majority of formulary negotiations for 2017 completed
- Market access anticipated to remain broad across the diabetes portfolio, at a level similar to 2016
- Tresiba® is expected to maintain more than 70% combined access for the patients in commercial channels and Medicare part D
- Based on the outcome of the formulary negotiations to date, net prices of the portfolio as a whole are expected to be moderately lower compared with the levels in 2016

Source: FingerTip Formulary, June 2016
Note: Unrestricted access excludes prior authorisation, step edits and other restrictions
Victoza® statistically significantly reduced the risk of major adverse cardiovascular events in the LEADER trial

13% reduction in 3-point MACE with Victoza® compared with placebo

<table>
<thead>
<tr>
<th>Hazard ratio = 0.87</th>
<th>95% CI (0.78;0.97)</th>
</tr>
</thead>
<tbody>
<tr>
<td>p&lt;0.001 for non-inferiority</td>
<td>p=0.011 for superiority</td>
</tr>
</tbody>
</table>

Key results and next step

- Superiority of Victoza® vs placebo was confirmed for time to first MACE in people with type 2 diabetes at high CV risk
- **Victoza® reduced the MACE risk by 13%** as well as CV and all-cause mortality by 22% and 15% respectively, compared with placebo when added to standard of care
- The result was consistent across sensitivity analyses
- Victoza® appeared to have a safe and well tolerated profile, generally consistent with previous studies for Victoza®
- **Next step:** Novo Nordisk will file for an inclusion of CV data in the label for Victoza® within the next three months

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1. Inclusion criteria: Adults above 50 years with type 2 diabetes and established CV disease, above 60 years with multiple CV factors, HbA1c ≥ 7.0%
2. MACE: major adverse cardiovascular events; 3-point MACE comprises cardiovascular death, non-fatal myocardial infarction and non-fatal stroke; CI: two-sided confidence interval

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Note: Indicated timeline as of financial release of first half of 2016 on 5 August 2016

CV: Cardiovascular
Tresiba® showed lower variability in the glucose-lowering effect compared to glargine U300 in PK/PD trial

**Within-subject variability in steady state**

<table>
<thead>
<tr>
<th>Day-to-day variability</th>
<th>Tresiba®</th>
<th>glargine U300</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2-4</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>4-6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>6-8</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>8-10</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>10-12</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>12-14</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>14-16</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>16-18</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>18-20</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>20-22</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>22-24</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Key results and next step**

- The day-to-day variability in the glucose-lowering effect was approximately **four-times lower with Tresiba®** compared to glargine U300 when evaluated by within-subject variance.

- Within-subject variability was consistently lower for Tresiba® than glargine U300 over the entire 24-hour period.

- Glargine U300 showed a statistically significantly* lower potency compared to Tresiba® of approximately 30%.

- **Next step:** Initiation of large 3b head-to-head trial study in type 2 diabetes to document clinical benefits including hypoglycaemia, with expected start in 2017.

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1 Day-to-day variability in 2-hours interval of AUCGIR (variance)

Note: 60 type 1 diabetic patients were enrolled and 57 completed the trial; Inclusion criteria: Age 18-65 years, diagnosis of type 1 diabetes, Fasting C-peptide <0.3 nmol/L, BMI: 18.5-29 kg/m², HbA1c: <9%

AUCGIR: area under glucose infusion curve

* p<0.001
Key development milestones

- IDegLira (NN9068) received a positive 16-0 vote in favour of approval from the FDA Advisory Committee
- Phase 2a trial with oral insulin OI338GT (NN1953) completed with generally encouraging results, while OI320GT (NN1957) was discontinued based on portfolio considerations
- Proof-of-concept phase 2a study with the GLP-1/GIP dual-agonist NN9709 met the primary end-point but will be discontinued due to portfolio considerations
- Long-acting factor IX (NN7999) filed for regulatory approval in the USA
R&D news flow with several regulatory decisions expected in the next six months

<table>
<thead>
<tr>
<th>Project</th>
<th>Past 3-6 months</th>
<th>Past 3 months</th>
<th>Within 3 months</th>
<th>In ~3-6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tresiba®</td>
<td>SWITCH 1</td>
<td></td>
<td>Variation application in the USA</td>
<td>DEVOTE</td>
</tr>
<tr>
<td>Once-weekly semaglutide</td>
<td>SUSTAIN 5</td>
<td></td>
<td>EASD - Detailed results from SUSTAIN 6</td>
<td>USA and EU submission</td>
</tr>
<tr>
<td></td>
<td>SUSTAIN 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victoza®</td>
<td>LEADER</td>
<td>Phase 2a</td>
<td>Variation application in the USA</td>
<td></td>
</tr>
<tr>
<td>VI338GT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xultophy®</td>
<td></td>
<td>FDA AdComm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faster-acting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N9-GP</td>
<td>Phase 3a 1</td>
<td>USA submission</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somapacitan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Indicated timeline as of financial release of first half of 2016 on 5 August 2016; ¹ Study conducted in adult growth hormone disorder
## Financial results – first half of 2016

<table>
<thead>
<tr>
<th>DKK million</th>
<th>H1 2016</th>
<th>H1 2015</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sales</strong></td>
<td>54,671</td>
<td>52,259</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Gross profit</strong></td>
<td>46,392</td>
<td>44,526</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Gross margin</strong></td>
<td>84.9%</td>
<td>85.2%</td>
<td></td>
</tr>
<tr>
<td><strong>Sales and distribution costs</strong></td>
<td>(13,608)</td>
<td>(13,322)</td>
<td>2%</td>
</tr>
<tr>
<td>Percentage of sales</td>
<td>24.9%</td>
<td>25.5%</td>
<td></td>
</tr>
<tr>
<td><strong>Research and development costs</strong></td>
<td>(6,635)</td>
<td>(6,285)</td>
<td>6%</td>
</tr>
<tr>
<td>Percentage of sales</td>
<td>12.1%</td>
<td>12.0%</td>
<td></td>
</tr>
<tr>
<td><strong>Administration costs</strong></td>
<td>(1,781)</td>
<td>(1,741)</td>
<td>2%</td>
</tr>
<tr>
<td>Percentage of sales</td>
<td>3.3%</td>
<td>3.3%</td>
<td></td>
</tr>
<tr>
<td><strong>Other operating income, net</strong></td>
<td>438</td>
<td>3,161</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Operating profit</strong></td>
<td>24,806</td>
<td>26,339</td>
<td>(6%)</td>
</tr>
<tr>
<td>Operating profit adjusted for non-recurring income</td>
<td>24,806</td>
<td>23,514</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Financial items (net)</strong></td>
<td>(251)</td>
<td>(3,306)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Profit before income tax</strong></td>
<td>24,555</td>
<td>23,033</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Tax</strong></td>
<td>(5,132)</td>
<td>(4,814)</td>
<td>7%</td>
</tr>
<tr>
<td>Effective tax rate</td>
<td>20.9%</td>
<td>20.9%</td>
<td></td>
</tr>
<tr>
<td><strong>Net profit</strong></td>
<td>19,423</td>
<td>18,219</td>
<td>7%</td>
</tr>
<tr>
<td>Diluted earnings per share (DKK)</td>
<td>7.63</td>
<td>7.02</td>
<td>9%</td>
</tr>
<tr>
<td>Diluted earnings per share (DKK) adjusted for partial divestment of NNIT</td>
<td><strong>7.63</strong></td>
<td><strong>6.20</strong></td>
<td>23%</td>
</tr>
</tbody>
</table>

1 Non-recurring income comprises the partial divestment of NNIT (DKK 2,376 million) and out-licensing of assets for inflammatory disorders (DKK 449 million), both in 2015
Negative currency impact in 2016 driven by unfavourable development in both hedged and unhedged currencies

**Hedged Currencies**

<table>
<thead>
<tr>
<th>Currency</th>
<th>2015 average</th>
<th>2016 average</th>
<th>Spot rate</th>
<th>Impact of a 5% move</th>
<th>Hedging (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD</td>
<td>673</td>
<td>669</td>
<td>665</td>
<td>2,000</td>
<td>12</td>
</tr>
<tr>
<td>CNY</td>
<td>107.0</td>
<td>101.9</td>
<td>100.1</td>
<td>300</td>
<td>11</td>
</tr>
<tr>
<td>JPY</td>
<td>5.56</td>
<td>6.07</td>
<td>6.54</td>
<td>180</td>
<td>12</td>
</tr>
<tr>
<td>GBP</td>
<td>1,028</td>
<td>946</td>
<td>880</td>
<td>80</td>
<td>12</td>
</tr>
<tr>
<td>CAD</td>
<td>526</td>
<td>504</td>
<td>509</td>
<td>75</td>
<td>11</td>
</tr>
</tbody>
</table>

**Non-hedged Currencies**

<table>
<thead>
<tr>
<th>Currency</th>
<th>2015 average</th>
<th>2016 average</th>
<th>Spot rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUB</td>
<td>11.06</td>
<td>9.68</td>
<td>9.97</td>
</tr>
<tr>
<td>INR</td>
<td>10.49</td>
<td>9.95</td>
<td>9.96</td>
</tr>
<tr>
<td>ARS</td>
<td>0.73</td>
<td>0.46</td>
<td>0.44</td>
</tr>
<tr>
<td>BRL</td>
<td>205</td>
<td>185</td>
<td>203</td>
</tr>
<tr>
<td>TRY</td>
<td>248</td>
<td>228</td>
<td>222</td>
</tr>
</tbody>
</table>

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1. DKK per 100; 2. As of 2 August 2016; 3. Operating profit in DKK million per annum; 4. Chinese Yuan traded offshore (CNH) and USD used as proxy

Note: Operating profit impact of one of the non-hedged currencies fluctuating 5% is in the range of DKK -15 to +30 million
## Financial outlook for 2016

<table>
<thead>
<tr>
<th>Category</th>
<th>Expectations 5 Aug 2016</th>
<th>Previous expectations 29 Apr 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales growth - local currencies</td>
<td>5-7%</td>
<td>5-9%</td>
</tr>
<tr>
<td>Sales growth - reported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating profit growth - local currencies</td>
<td>5-8%</td>
<td>5-9%</td>
</tr>
<tr>
<td>Operating profit growth - reported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial items (net)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective tax rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital expenditure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation, amortisation and impairment losses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free cash flow</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Expectations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Previous expectations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Loss of around DKK 600 million</strong></td>
<td>20-22%</td>
<td>20-22%</td>
</tr>
<tr>
<td><strong>Around DKK 7.0 billion</strong></td>
<td></td>
<td>Around DKK 7.0 billion</td>
</tr>
<tr>
<td><strong>Around DKK 3.0 billion</strong></td>
<td></td>
<td>Around DKK 3.0 billion</td>
</tr>
<tr>
<td><strong>Around DKK 38-41 billion</strong></td>
<td></td>
<td>Around DKK 35-38 billion</td>
</tr>
</tbody>
</table>

The financial outlook is based on an assumption of a continuation of the current business environment and given the current scope of business activities and has been prepared assuming that currency exchange rates remain at the level as of 2 August 2016.
Closing remarks

Solid market performance

- ≥10% annual diabetes care market growth driven by diabetes prevalence
- 27% value market share in diabetes care and solid leadership position
- 46% insulin volume market share with leadership position across all regions
- 45% modern and new-generation insulin volume market share
- 62% GLP-1 value market share with strong global leadership position

Promising pipeline

- The only company with a full portfolio of novel insulin products
- Semaglutide portfolio offers expansion opportunity with both injectable and oral administration
- Xultophy® supports promising outlook for insulin and GLP-1 combination therapy
- Saxenda® and multiple early stage development projects hold potential within obesity
- Broad pipeline within haemophilia and growth hormone disorders

Source: IMS MAT May 2016 volume and value (DKK) figures
Investor contact information

**Share information**

Novo Nordisk’s B shares are listed on the stock exchange in Copenhagen under the symbol ‘NOVO B’. Its ADRs are listed on the New York Stock Exchange under the symbol ‘NVO’. For further company information, visit Novo Nordisk on the internet at: novonordisk.com

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  haoe@novonordisk.com

**Upcoming events**

- **16 Sep 2016**  
  Investor presentation at the European Association for the Study of Diabetes (EASD)
- **28 Oct 2016**  
  Financial statement for the first nine months of 2016
- **02 Feb 2017**  
  Financial statement for 2016

*In North America:*

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  +1 609 235 8567  
  kpvj@novonordisk.com
Appendix

1. Novo Nordisk at a glance
2. Diabetes
3. Biopharmaceuticals
4. Financials
5. Sustainability
Novo Nordisk at a glance

**Global leader in diabetes care**

- A **focused** pharmaceutical company with **leading positions** in diabetes, haemophilia and growth hormone
- **Pursuit of double digit top line growth for diabetes care franchise** driven by diabetes pandemic
- Significant **growth opportunities** fuelled by global presence and strong R&D pipeline
- **High barriers to entry** in biologics
- **Operating profit growth** targeting **10%**
- **Earnings conversion to cash** targeting **90%**
- **Cash generated returned to shareholders**

**Global insulin market leadership**

- Global insulin market share: **46%**
  - Europe: Market share **46%**
  - Pacific: Market share **47%**
  - USA: Market share **37%**
  - Region China: Market share **55%**
  - International Operations: Market share **55%**

Source: IMS MAT May 2016 volume figures
## Novo Nordisk works with four strategic focus areas based on five core capabilities

<table>
<thead>
<tr>
<th>STRATEGIC PRIORITIES</th>
<th>CORE CAPABILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expand leadership in <strong>DIABETES</strong></td>
<td>Engineering, formulating, developing and delivering protein-based treatments</td>
</tr>
<tr>
<td>Expand leadership in <strong>GROWTH DISORDERS</strong></td>
<td>Deep disease understanding</td>
</tr>
<tr>
<td>Pursue leadership in <strong>OBESITY</strong></td>
<td>Efficient large-scale production of proteins</td>
</tr>
<tr>
<td>Pursue leadership in <strong>HAEMOPHILIA</strong></td>
<td>Planning and executing global launches of new products</td>
</tr>
<tr>
<td>Expand leadership in <strong>GROWTH DISORDERS</strong></td>
<td>Building and maintaining a leading position in emerging markets</td>
</tr>
</tbody>
</table>

**Novo Nordisk Way**

Driving change to defeat diabetes and other serious chronic conditions
Long-term financial targets are based on the pursuit of double digit growth for the diabetes care franchise

Reported Novo Nordisk diabetes care sales by treatment class

<table>
<thead>
<tr>
<th>Year</th>
<th>Insulin</th>
<th>GLP-1</th>
<th>Other diabetes care</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>40</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>2012</td>
<td>45</td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td>2013</td>
<td>50</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>2014</td>
<td>55</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>2015</td>
<td>60</td>
<td>30</td>
<td>10</td>
</tr>
</tbody>
</table>

Expected future growth drivers for Novo Nordisk’s diabetes care franchise

- **Volume growth:**
  Continued underlying growth of global diabetes market while GLP-1 segment growing at higher rate

- **Market share gains:**
  Market share gains driven by best in-class portfolio

- **Value upgrade:**
  Continued upgrade from older generations of insulin and GLP-1s and change in mix of product portfolio

1 CAGR in local currencies for 2011-2015
Novo Nordisk has leading positions in diabetes, haemophilia and growth disorders

### Diabetes

- **Market value**
- **Novo Nordisk value market share**
- **Global market position**

<table>
<thead>
<tr>
<th>DKK billion</th>
<th>May 2011</th>
<th>May 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>CAGR: 17.4%</td>
<td></td>
</tr>
</tbody>
</table>

### Haemophilia

<table>
<thead>
<tr>
<th>DKK billion</th>
<th>FY 2011</th>
<th>FY 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2</td>
<td>CAGR: 4.6%</td>
<td></td>
</tr>
</tbody>
</table>

### Growth disorders

<table>
<thead>
<tr>
<th>DKK billion</th>
<th>May 2011</th>
<th>May 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>CAGR: 3.5%</td>
<td></td>
</tr>
</tbody>
</table>

Note: Annual sales figures for Haemophilia A, B and inhibitor segment

1. CAGR for 5-year period
2. Source: IMS MAT May, 2016 value figures

Changing diabetes

Source: Company reports

Source: IMS MAT May, 2016 value figures

1. CAGR for 5-year period
2. Source: Company reports

Source: IMS MAT May, 2016 value figures
Top line growth driven by diabetes pandemic

Novo Nordisk reported quarterly sales by therapy

- Diabetes and obesity
- Haemophilia
- Norditropin®
- Other

Diabetes Atlas 7th Edition projects that 642 million people will have diabetes by 2040

- USA
- Europe
- Pacific
- Region China
- International Operations

Note: 20-79 age group

1 CAGR for 5-year period
2 Haemophilia includes NovoSeven®, NovoThirteen® (as of Q1 2013) and NovoEight® (as of Q1 2014)

Novo Nordisk has a strong leadership position within the growing diabetes care market

Global diabetes care market by treatment class

<table>
<thead>
<tr>
<th>DKK billion</th>
<th>GLP-1</th>
<th>Insulin</th>
<th>OAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2006</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 2016</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total market: CAGR\(^1\) 15.1%
Injectables: CAGR\(^1\) 19.7%
CAGR\(^1\) 18.2%
CAGR\(^1\) 10.3%

Global diabetes care value market share

- Novo Nordisk
- Sanofi
- Eli Lilly
- Merck
- AstraZeneca
- Novartis
- Takeda
- GSK

Source: IMS Monthly MAT May, 2016 value figures

\(^1\) CAGR for 10-year period
OAD: Oral Anti-diabetic
Source: IMS Monthly MAT May, 2016 value figures
Significant growth opportunities fuelled by strong R&D pipeline across all four strategic focus areas

**PHASE 1**
- LAI287 – QW basal insulin
- NN1406 – Mealtime insulin
- G530L – Glucagon analogue
- NN9838 – Amylin analogue
- NN9747 – PYY analogue
- NN7415 – Concizumab

**PHASE 2**
- O1338GT – Oral insulin
- Semaglutide – QD GLP-1
- Anti-IL-21 and lixagliptide
- Semaglutide – QD GLP-1

**PHASE 3**
- Semaglutide – QW GLP-1
- OG217SC – Oral GLP-1
- N8-GP – Long-acting rFVIII
- Somapacitan – QW GH

**SUBMITTED**
- Xultophy® (US)
- Faster-acting insulin aspart
- N9-GP – Long-acting rFIX

**APPROVED**
- Leveim®
- NovoRapid®
- NovoMix®
- Tresiba®
- Ryzodeg®
- Xultophy® (EU)
- Victoza®
- Saxenda®
- NovoSeven®
- NovoEight®
- NovoThirteen®
- Norditropin®

1 Approved in all triad markets (US, EU and Japan), unless noted
Growth opportunities supported by strong global presence in both sales and manufacturing

<table>
<thead>
<tr>
<th>Region</th>
<th>FTEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>~5,100</td>
</tr>
<tr>
<td>Europe</td>
<td>~2,800</td>
</tr>
<tr>
<td>International Operations</td>
<td>~5,400</td>
</tr>
<tr>
<td>Pacific</td>
<td>~1,400</td>
</tr>
<tr>
<td>Region China</td>
<td>~2,900</td>
</tr>
</tbody>
</table>

Total non-HQ/manufacturing FTEs: **17,600**

---

1 FTEs represent full-time equivalents in Novo Nordisk's sales regions (excludes a.o. employees in headquarter, research sites and manufacturing sites) as of June 2016

2 New Hampshire facility is currently under establishment
High barriers to entry in biologics

Novo Nordisk’s position is protected by patents and value chain setup

<table>
<thead>
<tr>
<th>Patent protection¹</th>
<th>Unique value chain position</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU/US</td>
<td>Research &amp; Development</td>
</tr>
<tr>
<td>2029²</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>2028/29</td>
<td>Commercialisation</td>
</tr>
<tr>
<td>2028/29</td>
<td></td>
</tr>
<tr>
<td>2018/19</td>
<td></td>
</tr>
<tr>
<td>exp 2015/17³</td>
<td></td>
</tr>
<tr>
<td>NovoMix (biphasic insulin aspart)</td>
<td>History of protein engineering</td>
</tr>
<tr>
<td>NovoRapid (insulin aspart)</td>
<td>Highly efficient, flexible and capital intensive manufacturing</td>
</tr>
<tr>
<td>Victoza</td>
<td>Global commercial footprint</td>
</tr>
<tr>
<td>norditropin</td>
<td></td>
</tr>
</tbody>
</table>

¹ List does not include all marketed Novo Nordisk products. ² Protected by patents on the individual compounds insulin degludec and liraglutide as listed. ³ Formulation patent expiration year ⁴ Assuming paediatric extension ⁵ Saxenda patent identical to the Victoza® patent

Source: Novo Nordisk

Significant barriers to entry for biosimilar players

<table>
<thead>
<tr>
<th>Research &amp; Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Need to show comparability in PK/PD trials</td>
</tr>
<tr>
<td>• Strict regulatory requirements in EU and US</td>
</tr>
<tr>
<td>• Requirement for both drug and device offering</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturing</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Significant economies of scale with incumbents</td>
</tr>
<tr>
<td>• Significant up-front CAPEX requirements with slow return on investment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commercialisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Large and fragmented target audience</td>
</tr>
<tr>
<td>• Cost pressure from payers</td>
</tr>
<tr>
<td>• On-going conversion to next generation drugs and slow market dynamics</td>
</tr>
</tbody>
</table>

PK: Pharmacokinetic, PD: Pharmacodynamic; CAPEX: Capital expenditure
Diabetes and obesity
Diabetes – the inability to manage blood sugar levels appropriately

**Facts about diabetes**

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces.¹

**Primary classifications:²**

**Type 1 diabetes:** Complete insulin deficiency due to destruction of beta-cells in the pancreas

**Type 2 diabetes:** Characterised by some degree of insulin resistance and insulin deficiency

---

¹ Diabetes fact sheet N°312, WHO, October 2013
**Insulin – a hormone enabling blood sugar to enter cells**

**Insulin enables glucose to become energy**

- Facilitates uptake of blood sugar into cells
- Inhibits glucose release from the liver

**The aim of insulin therapy is to recreate normal blood insulin profile**

- **Short-lived, rapidly generated meal-related peaks** *(prandial)*
- **Sustained Insulin profile** *(basal)*

**Liver**  
**Pancreas**  
**Muscle**  

Diabetes pandemic is fuelled by growing rates of obesity

US CDC data on obesity and diabetes prevalence among adults

<table>
<thead>
<tr>
<th>Year</th>
<th>Obesity prevalence (BMI ≥30 kg/m²)</th>
<th>Diabetes prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td><img src="image1" alt="Map of 1994 obesity prevalence" /></td>
<td><img src="image2" alt="Map of 1994 diabetes prevalence" /></td>
</tr>
<tr>
<td>2000</td>
<td><img src="image3" alt="Map of 2000 obesity prevalence" /></td>
<td><img src="image4" alt="Map of 2000 diabetes prevalence" /></td>
</tr>
<tr>
<td>2013</td>
<td><img src="image5" alt="Map of 2013 obesity prevalence" /></td>
<td><img src="image6" alt="Map of 2013 diabetes prevalence" /></td>
</tr>
</tbody>
</table>

CDC: Centers for Disease Control and Prevention
Poor diagnosis rates, lack of access to optimal treatment and poor glycaemic control remain global problems

Diagnosis and optimal treatment remains a challenge – the rule of halves

The worldwide challenge of glycaemic control:
Mean HbA$_1C$ in type 2 diabetes

UKPDS: Tight glycaemic control reduces risk of micro- and macrovascular complications

**Risk reduction by lowering HbA1c by 1%-point**

- Diabetes-related death: -21%*  
- Myocardial infarction: -14%  
- Microvascular complications: -37%*  
- Peripheral vascular disease: -43%*

* p<0.0001

**Relative risk reduction of intensive vs. conventional treatment (%)**

<table>
<thead>
<tr>
<th>Condition</th>
<th>1997</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microvascular disease</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Diabetes-related death</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>All-cause mortality</td>
<td>6</td>
<td>13</td>
</tr>
</tbody>
</table>

*Statistically significant improvement*


Insulin is the ultimate care for people with diabetes

Progression of type 2 diabetes and treatment intensification

Distribution of patients and value across treatment classes

Note: Patient distribution across treatment classes is indicative and based on data for US, UK, Germany and France. Value figures based on IMS MAT May 2016
Source: IMS PharMetrix claims data, IMS disease analyser, IMS Midas

OAD: Oral Anti-diabetic
The insulin market is comprised of three segments

**Insulin action profiles**
- **Fast-acting**
- **Premix**
- **Long-acting**

**Global insulin volume market by segment**

- **Fast-acting**: CAGR volume: 5.0%, CAGR value: 20.3%
- **Premix**: 37% in 2011, 39% in 2016
- **Long-acting**: 29% in 2011, 27% in 2016

Note: US trend data reflect changes to IMS data collection coverage and methodology as of January 2012.
Source: IMS Monthly MAT volume and value May (DKK) figures
## Medications used for the treatment of type 2 diabetes

<table>
<thead>
<tr>
<th>Class</th>
<th>HbA$_{1c}$ change</th>
<th>Hypoglycaemia</th>
<th>Weight change</th>
<th>CVD risk factors</th>
<th>Dosing (pr. day)</th>
<th>Contraindication/undesired effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metformin</td>
<td>1.5</td>
<td>No</td>
<td>Neutral</td>
<td>Minimal</td>
<td>2 OADs</td>
<td>Kidney, liver</td>
</tr>
<tr>
<td>Sulfonylurea</td>
<td>1.5</td>
<td>Yes</td>
<td>Gain</td>
<td>None</td>
<td>1 OAD</td>
<td>Essentially none</td>
</tr>
<tr>
<td>TZDs</td>
<td>0.5 - 1.4</td>
<td>No</td>
<td>Gain</td>
<td>Variable</td>
<td>1 OAD</td>
<td>CHF, liver</td>
</tr>
<tr>
<td>DPP-IV inhibitors</td>
<td>0.6 - 0.8</td>
<td>No</td>
<td>Neutral</td>
<td>TBD</td>
<td>1-2 OAD</td>
<td>None</td>
</tr>
<tr>
<td>SGLT-2 inhibitors</td>
<td>0.5 - 0.9</td>
<td>No</td>
<td>Loss</td>
<td>TBD</td>
<td>1 OAD</td>
<td>Genital infections, urinary tract infections</td>
</tr>
<tr>
<td>GLP-1</td>
<td>1.0 - 2.0</td>
<td>No</td>
<td>Loss</td>
<td>TBD</td>
<td>Varies</td>
<td>GI side effects, MTC</td>
</tr>
<tr>
<td>Long-acting insulin</td>
<td>1.5 - 2.5</td>
<td>Yes</td>
<td>Gain</td>
<td>TG and HDL</td>
<td>1 injection</td>
<td>Hypoglycaemia</td>
</tr>
<tr>
<td>Fast-acting insulin</td>
<td>1.5 - 2.5</td>
<td>Yes</td>
<td>Gain</td>
<td>TG and HDL</td>
<td>1-4 injections</td>
<td>Hypoglycaemia</td>
</tr>
</tbody>
</table>

Note: TG and HDL: Beneficial effect on triglycerides and HDL cholesterol; CHF: Congestive heart failure; GI: Gastro intestinal; MTC: Medullary thyroid cancer; TZD: thiazolidinediones; OAD: Oral anti-diabetic; TBD: to be defined.

Sustained double-digit growth in insulin market

Global insulin market growth

Volume contribution
- Rising prevalence of diabetes
- Growing overweight and obesity prevalence
- Ageing of populations
- Rising diagnosis rates and treatment rates
- Intensification of insulin regimens

Mix/price contribution
- Conversion to modern insulin and new-generation insulin
- Continued device penetration

The fundamental growth drivers of the insulin market

1 CAGR for 5-year period
2 IMS market value figures reflect list prices and do not account for rebates
Source: IMS Monthly MAT May, 2016 value figures
Solid insulin volume growth across regions

**Novo Nordisk regions**

<table>
<thead>
<tr>
<th>Region</th>
<th>Market value(^1) bDKK</th>
<th>Volume growth</th>
<th>Mix/price growth</th>
<th>2016 bDKK</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>140.4</td>
<td>3%</td>
<td>24%</td>
<td>178.2</td>
</tr>
<tr>
<td>Europe</td>
<td>27.6</td>
<td>3%</td>
<td>2%</td>
<td>28.8</td>
</tr>
<tr>
<td>International Operations(^2)</td>
<td>9.1</td>
<td>7%</td>
<td>-4%</td>
<td>9.3</td>
</tr>
<tr>
<td>Region China(^2)</td>
<td>6.2</td>
<td>9%</td>
<td>9%</td>
<td>7.2</td>
</tr>
<tr>
<td>Pacific</td>
<td>9.0</td>
<td>2%</td>
<td>0%</td>
<td>9.1</td>
</tr>
</tbody>
</table>

**Market volume composition**

- USA: 51%, 38%, 11%
- Europe: 40%, 40%, 20%
- International Operations\(^2\): 30%, 24%, 46%
- Region China\(^2\): 15%, 21%, 46%
- Pacific: 43%, 36%, 21%

**Volume market shares**

- USA: 63%, 37%
- Europe: 54%, 46%
- International Operations\(^2\): 45%, 55%
- Region China\(^2\): 45%, 55%
- Pacific: 53%, 47%

---

\(^1\) IMS market value figures reflect list prices and do not account for rebates

\(^2\) IMS only covers part of the channels in International Operations and Region China

Source: IMS May 2015 & 2016 Monthly MAT volume and value (DKK) figures
Stable global insulin volume growth

Regional insulin volume growth

- USA
- Europe
- Int. Operations
- Pacific
- World
- Region China

Regional insulin volume market split

- USA
- Europe
- Int. Operations
- Region China
- Pacific

Note: Data is sensitive to changes in IMS data collection and reporting methodology
Source: IMS Monthly MAT May, 2016 volume figures

Note: Data is sensitive to changes in IMS data collection and reporting methodology
Source: IMS Monthly MAT May, 2016 volume figures
Maintaining global insulin leadership by sustaining modern insulin market share

Novo Nordisk global volume market share across insulin classes

1 Includes animal insulin. 2 Annual value of total insulin class. 3 Includes new generation insulin
Note: Data is sensitive to changes in IMS data collection and reporting methodology
Source: IMS, Monthly MAT May, 2016 value and volume figures
Strong underlying insulin market growth and sustained global volume market share

Global insulin market

- Device penetration
- Modern insulin penetration

Global modern insulin volume market shares

- Novo Nordisk
- Sanofi
- Eli Lilly

Note: Data is sensitive to changes in IMS data collection and reporting methodology, does not add up to 100% due to other players
Source: IMS Monthly MAT May, 2016 volume figures

1 Includes new-generation insulin
2 CAGR for 5-year period
3 Includes new-generation insulin
Note: Data is sensitive to changes in IMS data collection and reporting methodology

Source: IMS Monthly MAT May, 2016 volume and value (DKK) figures
Novo Nordisk’s modern insulin continue strong performance within their respective segments

1 CAGR for 5-year period
Note: Modern insulin (MI) penetration is of total segment, ie including animal and human insulin; NG: new-generation; Data is sensitive to changes in IMS data collection and reporting methodology
Source: IMS Monthly MAT May, 2016 volume figures
Improved US modern insulin market share

**US insulin market by segments**
- Device penetration
- Modern Insulin penetration

**US modern insulin volume market shares**
- Novo Nordisk
- Sanofi
- Eli Lilly

---

### Improved US modern insulin market share

**Graph 1:**
- **CAGR volume:** 2.3%
- **CAGR value:** 28.5%

**Graph 2:**
- **Fast-acting**
- **Premix**
- **Long-acting**

**Sources:**
- IMS Monthly MAT May, 2016 volume and value (DKK) figures
- IMS Monthly MAT May, 2016 volume figures
Novo Nordisk’s modern insulins maintain market share in expanding US insulin market

US fast-acting insulin

CAGR volume\(^1\): 3.2%  
MI penetration: 83.0%

US premix insulin

CAGR volume\(^1\): (5.7%)  
MI penetration: 53.0%

US long-acting insulin

CAGR volume\(^1\): 4.0%  
MI penetration: 85.5%

---

\(^1\) CAGR for 5-year period

Note: US trend data reflect changes to IMS data collection coverage and methodology as of January 2012. Modern insulin (MI) penetration is of total segment, i.e., including human insulin.

Source: IMS Monthly MAT May, 2016 volume figures
US health insurance is dominated by few large commercial payers with slow expansion of public insurance coverage

US Population by health insurance status expected to remain stable in coming years

<table>
<thead>
<tr>
<th></th>
<th>Managed care</th>
<th>Medicare</th>
<th>Medicaid</th>
<th>Uninsured</th>
<th>US population (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>52%</td>
<td>15%</td>
<td>15%</td>
<td>3%</td>
<td>321</td>
</tr>
<tr>
<td>2018E</td>
<td>51%</td>
<td>16%</td>
<td>18%</td>
<td>9%</td>
<td>329</td>
</tr>
</tbody>
</table>

Note: Medicaid expansion and Public Exchange estimates are based on implementation of existing Affordable Care Act. Medicaid Rx figures do not include dual eligibles covered in Part D or CHIP. Exchanges include Public Exchanges only; Private Exchanges are part of Managed Care; Centers for Medicare and Medicaid Services Office of the Actuary, Congressional Budget Office (CBO), National Association of State Budget Officers (NASBO), US Census and HSG estimates.

Source: Adapted from Health Strategies Group 2015 report

In 2015 PBM covered 245 million lives and the market has consolidated

1 2015 chart reflects current year contractual status as of November 2015; estimates based on press releases and public information. PBM: Pharmacy Benefit Manager

Note: Covers all main channels (Managed Care, Medicare Part D and Medicaid); market share based on claim adjudication coverage, i.e. not on formulary/rebate decision power.

Source: Health Strategies Group
Sustained leadership position on the European modern insulin market

European insulin market by segments

- **Device penetration**
- **Modern Insulin penetration**

<table>
<thead>
<tr>
<th>CAGR volume&lt;sup&gt;1&lt;/sup&gt;: 2.5%</th>
<th>CAGR value&lt;sup&gt;1&lt;/sup&gt;: 3.7%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Penetration</strong></td>
<td><strong>tMU</strong></td>
</tr>
<tr>
<td>100%</td>
<td>180</td>
</tr>
<tr>
<td>80%</td>
<td>160</td>
</tr>
<tr>
<td>60%</td>
<td>140</td>
</tr>
<tr>
<td>40%</td>
<td>120</td>
</tr>
<tr>
<td>20%</td>
<td>100</td>
</tr>
<tr>
<td>0%</td>
<td>80</td>
</tr>
</tbody>
</table>

- **Fast-acting**
- **Premix**
- **Long-acting**

European modern insulin<sup>3</sup> volume market shares

- **Novo Nordisk**
- **Sanofi**
- **Eli Lilly**

<table>
<thead>
<tr>
<th>May 2011</th>
<th>May 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>46%</td>
<td>35%</td>
</tr>
<tr>
<td>35%</td>
<td>30%</td>
</tr>
<tr>
<td>18%</td>
<td>20%</td>
</tr>
</tbody>
</table>

<sup>1</sup> CAGR for 5-year period
<sup>2</sup> Includes new-generation insulin
<sup>3</sup> Includes new-generation insulin

Source: IMS Monthly MAT May, 2016 volume and value (DKK) figures

Source: IMS Monthly MAT May, 2016 volume figures, numbers do not add up to 100% due to smaller insulin manufacturers.
Stable leadership position in International Operations

**International Operations insulin market by segments**

- **Device penetration**
- **Modern Insulin penetration**

<table>
<thead>
<tr>
<th>Segment</th>
<th>CAGR volume $^1$: 11.0%</th>
<th>CAGR value $^1$: 7.7%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast-acting</td>
<td>100%</td>
<td>80%</td>
</tr>
<tr>
<td>Premix</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>Long-acting</td>
<td>20%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Penetration**

<table>
<thead>
<tr>
<th>Device penetration</th>
<th>Modern Insulin penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>20%</td>
</tr>
<tr>
<td>20%</td>
<td>40%</td>
</tr>
<tr>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>60%</td>
<td>80%</td>
</tr>
<tr>
<td>80%</td>
<td>100%</td>
</tr>
</tbody>
</table>

1 CAGR for 5-year period. 2 Includes new generation insulin.

Note: IMS only covers the following 13 markets in IO (retail data): Algeria, Argentina, Brazil, Colombia, Egypt, India, Mexico, NZ, Russia, Saudi Arabia, South Africa & Turkey.

Source: IMS Monthly MAT May, 2016 volume and value (DKK) figures

---

**International Operations insulin volume market shares**

<table>
<thead>
<tr>
<th>Company</th>
<th>2011</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novo Nordisk</td>
<td>55%</td>
<td>55%</td>
</tr>
<tr>
<td>Sanofi</td>
<td>17%</td>
<td>18%</td>
</tr>
<tr>
<td>Eli Lilly</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Biocon</td>
<td>17%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Note: Only top-4 shown

Source: IMS Monthly MAT May, 2016 volume figures, numbers do not add up to 100% due to smaller insulin manufacturers.
Sustained leadership position in the Chinese insulin market

**Chinese insulin market by segments**

- **Device penetration**
- **Modern Insulin penetration**

**Chinese insulin volume market shares**

- **Novo Nordisk**
- **Sanofi**
- **Eli Lilly**
- **Shanghai Fosun**
- **Tonghua Dongbao**

**CAGR volume**: 14.6%

**CAGR value**: 23.4%

**Fast-acting**

**Premix**

**Long-acting**

---

1 CAGR for 5-year period

Note: IMS covers around 50% of the total Chinese market (hospital data)

Source: IMS Monthly MAT May, 2016 volume and value (DKK) figures

---

Note: Only top 5 shown

Source: IMS Monthly MAT May, 2016 volume figures, numbers do not add up to 100% due to smaller insulin manufacturers not included
Expanding market leadership position in Japan

Japanese insulin market by segments

- Device penetration
- Modern Insulin penetration

Japanese modern insulin volume market shares

- Novo Nordisk
- Sanofi
- Eli Lilly

1 CAGR for 5-year period
2 Includes new-generation insulin

Source: IMS Monthly MAT May, 2016 volume and value (DKK) figures

Source: IMS Monthly MAT May, 2016 volume figures
Promising Tresiba® performance strengthens total insulin market share in Japan

Source: IMS Monthly May, 2016 value figures

Source: IMS Monthly May, 2016 value figures
GLP-1 effect dependent on level of blood glucose – which reduces risk of hypoglycaemia

**GLP-1 mechanism of action when blood sugar levels increase**
- Increases insulin secretion in the pancreas
- Reduces glucagon secretion in the liver
- Slows gastric emptying in the gut
- Creates sense of satiety in the brain

**GLP-1 lowers blood glucose in patients with type 2 diabetes**

<table>
<thead>
<tr>
<th>Glucose (mmol/L)</th>
<th>Type 2 diabetes patients, no GLP-1</th>
<th>Type 2 diabetes patients, with GLP-1</th>
<th>Healthy controls receiving saline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The 9% GLP-1 share of the global diabetes care market is increasing, opportunities for further penetration remain.

### Global GLP-1 market

<table>
<thead>
<tr>
<th>GLP-1 value in bDKK</th>
<th>Share of total diabetes care market</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2011</td>
<td>May 2016</td>
</tr>
<tr>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>10</td>
<td>2%</td>
</tr>
<tr>
<td>20</td>
<td>4%</td>
</tr>
<tr>
<td>30</td>
<td>6%</td>
</tr>
<tr>
<td>40</td>
<td>8%</td>
</tr>
<tr>
<td>50</td>
<td>10%</td>
</tr>
</tbody>
</table>

**CAGR value**: 37.4%

### Victoza® sales and GLP-1 value market share of total diabetes care market

- **US**: 10%
- **Europe**: 9%
- **Pacific**: 4%
- **IO**: 3%
- **China**: 1%

Source: Novo Nordisk reported sales for first half of 2016 and IMS May, 2016 data

1. CAGR for 5-year period

Source: IMS Monthly MAT May, 2016 value figures (DKK) Global GLP-1 market

---

**Source:** Novo Nordisk reported sales for first half of 2016 and IMS May, 2016 data
Increasing global GLP-1 volume growth across all regions

Regional GLP-1 volume growth

May 2013 | May 2016
---|---
USA | USA
Europe | Europe
Int. Operations | Int. Operations
Pacific | Pacific
World | World
Region China | Region China

Note: Data is sensitive to changes in IMS data collection and reporting methodology
Source: IMS Monthly MAT May, 2016 volume figures

Regional GLP-1 volume market split

May 2013 | May 2016
---|---
USA | USA
Europe | Europe
Int. Operations | Int. Operations
Pacific | Pacific
Region China | Region China

Note: Data is sensitive to changes in IMS data collection and reporting methodology
Source: IMS Monthly MAT May, 2016 volume figures
The GLP-1 segment accounts for 10% of the total diabetes care market in the US

**Key observations for Victoza® in the US market**

- Victoza® volume market share within the GLP-1 segment is 52%¹
- Around 70% of commercial and around 80% of Medicare Part D lives are covered without restrictions²
- Around 65% of new patients are new to treatment or from OAD-only regimens³
- Close to 70% of prescriptions are for the 3-pen pack

---

¹ CAGR for 5-year period
Source: IMS Monthly MAT May, 2016 value figures (DKK)

² IMS monthly NPA data, June 2016

³ Fingertip Formulary, July 2016
The GLP-1 segment accounts for 9% of the total diabetes care market in Europe

European GLP-1 market

- **Victoza®**
- **lixisenatide**
- **exenatide**
- **dulaglutide**

CAGR value\(^1\): 24.1%

GLP-1 value in bDKK

<table>
<thead>
<tr>
<th>GLP-1 value in bDKK</th>
<th>Share of total diabetes care market</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>2</td>
<td>4%</td>
</tr>
<tr>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td>4</td>
<td>8%</td>
</tr>
<tr>
<td>5</td>
<td>10%</td>
</tr>
<tr>
<td>6</td>
<td>12%</td>
</tr>
</tbody>
</table>

May 2011 - May 2016

\(^1\) CAGR for 5-year period
Source: IMS Monthly MAT May, 2016 value figures (DKK)
The GLP-1 segment accounts for around 3% of the total diabetes care market in International Operations.

**International Operations GLP-1 market**

<table>
<thead>
<tr>
<th>GLP-1 value in bDKK</th>
<th>Share of total diabetes care market</th>
</tr>
</thead>
</table>

**Victoza® value market share in International Operations**

<table>
<thead>
<tr>
<th>GLP-1 value market share</th>
</tr>
</thead>
</table>

CAGR value\(^1\): 73.6%

\(^1\) CAGR for 5-year period

Source: IMS Monthly MAT May, 2016 value figures (DKK)
The GLP-1 segment accounts for around 4% of the total diabetes care market in Pacific

---

**Pacific GLP-1 market**

- **GLP-1 value in bDKK**
- **Share of total diabetes care market**

**CAGR value**: 40.3%

---

**Victoza® value market share in Pacific**

- **GLP-1 value market share**
  - **May 2011**
  - **May 2016**

\[ \text{Source: IMS Monthly MAT May, 2016 value figures (DKK)} \]

---

1. CAGR for 5-year period
   
   Source: IMS Monthly MAT May, 2016 value figures (DKK)
Victoza® maintain a strong position in the global DPP-IV, GLP-1 and SGLT-2 segment

Segment value

<table>
<thead>
<tr>
<th>DKK billion</th>
<th>May 2011</th>
<th>May 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAGR(^1) value:</td>
<td>35.1%</td>
<td></td>
</tr>
</tbody>
</table>

Share of segment value growth

<table>
<thead>
<tr>
<th>2014 vs 2015</th>
<th>2015 vs 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>14%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Segment value market shares

<table>
<thead>
<tr>
<th>Victoria®</th>
<th>Other GLP-1</th>
<th>SGLT-2</th>
<th>DPP-IV</th>
</tr>
</thead>
</table>

\(^1\) CAGR for 5-year period
Note: Segment only includes DPP-IV, GLP-1 & SGLT-2. Other oral anti-diabetic agents and insulin excluded
Source: IMS MAT May 2016 value figures
Key Novo Nordisk diabetes care products remain broadly available in the US

Value market shares of key Novo Nordisk products in the US

- **Victoza®**
- **NovoLog®**
- **Levemir®**

<table>
<thead>
<tr>
<th>Year</th>
<th>Victoza®</th>
<th>NovoLog®</th>
<th>Levemir®</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2011</td>
<td>20%</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>May 2016</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
</tr>
</tbody>
</table>

% unrestricted market access of key Novo Nordisk products in the US

<table>
<thead>
<tr>
<th>Year</th>
<th>Victoza®</th>
<th>NovoLog®</th>
<th>Levemir®</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2011</td>
<td>0%</td>
<td>40%</td>
<td>80%</td>
</tr>
<tr>
<td>July 2016</td>
<td>20%</td>
<td>60%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: IMS NSP May 2016; data displayed as MAT value share
Note: Market shares: NovoLog®: share of rapid acting insulin segment; Levemir®: share of basal insulin segment; Victoza®: share of GLP-1 segment

Source: FingerTip Formulary, July 2016
Note: Unrestricted access excludes prior authorisation, step edits and other restrictions
Levemir® access based on FlexTouch® Pen; NovoLog® access based on FlexPen®
Overview of current and future products in Novo Nordisk’s diabetes portfolio

When basal insulin is not enough

- **Once-daily optimisation**
  - ** Förhandsbetes inom makt**
  - **Optimalt betes inom makt**
  - **Optimalt betes inom makt**

- **Mealtime insulin control**
  - **Faster acting insulin aspart**
  - **NovoMix**
  - **NovoRapid**

When it’s time for insulin

- **Tresiba**
- **Xultophy**

When metformin is not enough

- **Semaglutide**
- **Victoza**
- **Levemir**
- **Insulatard**

Second generation analogues

First generation analogues

Human insulin

---

1 Pending clinical development programmes and regulatory processes for semaglutide and faster-acting insulin aspart
### R&D pipeline: Diabetes and obesity

<table>
<thead>
<tr>
<th>Product/project</th>
<th>Type</th>
<th>Indication</th>
<th>Status (phase)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xultophy® (NN9068)¹</td>
<td>Combination of insulin degludec and liraglutide</td>
<td>Type 2</td>
<td>Filed</td>
</tr>
<tr>
<td>Faster-acting insulin aspart (NN1218)</td>
<td>New formulation of insulin aspart</td>
<td>Type 1+2</td>
<td></td>
</tr>
<tr>
<td>Semaglutide (NN9535)</td>
<td>Once-weekly GLP-1 analogue</td>
<td>Type 2</td>
<td></td>
</tr>
<tr>
<td>OG217SC (NN9924)</td>
<td>Long-acting once-daily oral GLP-1 analogue</td>
<td>Type 2</td>
<td></td>
</tr>
<tr>
<td>O1338GT (NN1953)</td>
<td>Long-acting oral basal insulin analogue</td>
<td>Type 2</td>
<td></td>
</tr>
<tr>
<td>Semaglutide QD (NN9535)</td>
<td>Once-daily GLP-1 analogue</td>
<td>Type 2</td>
<td></td>
</tr>
<tr>
<td>Anti-IL-21 and liraglutide (NN9828)</td>
<td>Immuno-metabolic combination of Anti-IL-21 and liraglutide</td>
<td>Type 1</td>
<td></td>
</tr>
<tr>
<td>LAI287 (NN1436)</td>
<td>Long-acting once-weekly basal insulin analogue</td>
<td>Type 1+2</td>
<td></td>
</tr>
<tr>
<td>Mealtime insulin (NN1406)</td>
<td>Liver-preferential mealtime insulin</td>
<td>Type 1+2</td>
<td></td>
</tr>
<tr>
<td>PYY (NN9748)</td>
<td>Peptide YY analogue</td>
<td>Type 1+2</td>
<td></td>
</tr>
<tr>
<td>Semaglutide QD (NN9536)</td>
<td>Once-daily GLP-1 analogue</td>
<td>Obesity</td>
<td></td>
</tr>
<tr>
<td>GS30L (NN9030)</td>
<td>Glucagon analogue</td>
<td>Obesity</td>
<td></td>
</tr>
<tr>
<td>NN9838</td>
<td>Long-acting amylin analogue</td>
<td>Obesity</td>
<td></td>
</tr>
<tr>
<td>PYY (NN9747)</td>
<td>Peptide YY analogue</td>
<td>Obesity</td>
<td></td>
</tr>
</tbody>
</table>

¹ Approved in EU on 18 Sep 2014
Limited HbA$_{1c}$ difference, but lower severe hypoglycaemia rate and greater weight loss with Victoza® in LEADER trial

Limited difference in HbA$_{1c}$ maintained throughout trial

- ETD: -0.40%
  - 95% CI [-0.45; -0.34]

Reduction in severe hypoglycaemia

- ERR=0.68
  - 95% CI (0.51; 0.91)

Statistically significantly greater weight loss with Victoza®

- ETD: -2.26 kg
  - 95% CI [-2.54; -1.99]

ETD: estimated treatment difference, i.e., estimated mean change from baseline to month 36; ERR: estimated rate ratio
All components of 3-point MACE contributed to the reduction in cardiovascular risk in the LEADER trial

<table>
<thead>
<tr>
<th></th>
<th>Cardiovascular death</th>
<th>Non-fatal myocardial infarction</th>
<th>Non-fatal stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with an event (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-9 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR = 0.78</td>
<td>95% CI (0.66;0.94)</td>
<td>p=0.007</td>
<td></td>
</tr>
<tr>
<td>HR = 0.88</td>
<td>95% CI (0.75;1.03)</td>
<td>p=0.11</td>
<td></td>
</tr>
<tr>
<td>HR = 0.89</td>
<td>95% CI (0.72;1.11)</td>
<td>p=0.30</td>
<td></td>
</tr>
</tbody>
</table>

HR: hazard ratio; CI: confidence interval
Tresiba® shows lower rate of hypoglycaemia than insulin glargine U100 in SWITCH trials – filing expected Q3 2016

**Note:** The prevalence of hypoglycaemia is measured during the maintenance period; Blood glucose confirmed hypoglycaemia is defined as <56 mg/dL (<3.1 mmol/L); The confirmatory secondary endpoint of proportions of subjects experiencing severe hypoglycaemia during the maintenance period did not reach statistical significance in the SWITCH 2 trial. * Statistically significant; BG: Blood glucose; PYE: Patient years exposed.
Semaglutide significantly reduces the risk of major adverse cardiovascular events in the SUSTAIN 6 trial

**SUSTAIN 6 trial design**

- **Semaglutide 0.5 mg QW**
- **Semaglutide 1.0 mg QW**
- **Placebo 0.5 mg QW**
- **Placebo 1.0 mg QW**

~3,300 patients with type 2 diabetes

**Week 0**  
**Treatment duration**  
**104 weeks**

**Headline results**

- **Non-inferiority demonstrated** for the primary endpoint of major cardiovascular events (MACE) with semaglutide compared with placebo, with a statistically significant reduction of MACE.

- The trial accrued around 250 MACE.

- The primary endpoint of the study was defined as the composite outcome of the first occurrence of cardiovascular death, non-fatal myocardial infarction or non-fatal stroke.

- **Safety profile** of semaglutide in SUSTAIN 6 was as expected and consistent with previous semaglutide clinical studies.

- **Next step:** Detailed data to be presented at European Association for the Study of Diabetes (EASD) on 16 September 2016.

---

1 Inclusion criteria: Age ≥ 50 years with clinical evidence of CV disease or ≥ 60 years with subclinical evidence of CV disease, HbA₁c ≥ 7.0 %, standard-of-care treatment 0-2 OAD, basal or pre-mix insulin with/without 0-2 OAD  
OAD: Oral anti-diabetic
In phase 3a trials semaglutide shows best in-class potential on HbA$_{1c}$ reduction across treatment cascade

Comparison of HbA$_{1c}$ lowering effect in SUSTAIN 1, 2, 3, 4 and 5 trials

<table>
<thead>
<tr>
<th></th>
<th>SUSTAIN 1</th>
<th>SUSTAIN 2</th>
<th>SUSTAIN 3</th>
<th>SUSTAIN 4</th>
<th>SUSTAIN 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline % patients HbA$_{1c}$ ≤7%</td>
<td>72%</td>
<td>74%</td>
<td>78%</td>
<td>73%</td>
<td>79%</td>
</tr>
<tr>
<td>Sema 1 mg</td>
<td>8.1%</td>
<td>8.1%</td>
<td>8.4%</td>
<td>8.2%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Sema 0.5 mg</td>
<td>*</td>
<td>-0.5</td>
<td>-0.9</td>
<td>-0.8</td>
<td>-1.4</td>
</tr>
<tr>
<td>Placebo</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Sitagliptin 100 mg</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Exenatide QW</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Insulin glargine QD</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

* p < 0.001; QD: once daily; QW: once weekly; sema: semaglutide
Source: Novo Nordisk on file (NN9535-3623, NN9535-3624, NN9535-3625, NN9535-3626, NN9535-3627)
In phase 3a trials semaglutide shows best in-class weight lowering potential across treatment cascade

Comparison of weight lowering effect in SUSTAIN 1, 2, 3, 4 and 5 trials

* p < 0.001; QD: once daily; QW: once weekly; sema: semaglutide
Source: Novo Nordisk on file (NN9535-3623, NN9535-3624, NN9535-3625, NN9535-3626, NN9535-3627)
Competitive Tresiba® label across all three triad markets

<table>
<thead>
<tr>
<th>Tresiba® label characteristics in triad markets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US</strong></td>
</tr>
<tr>
<td>• Half-life of 25 hours and duration of action of at least 42 hours</td>
</tr>
<tr>
<td>• Day to day variability of 20%</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
</tr>
<tr>
<td>• Duration of action beyond 42 hours</td>
</tr>
<tr>
<td>• Four times lower day-to-day variability vs insulin glargine</td>
</tr>
<tr>
<td><strong>Japan</strong></td>
</tr>
<tr>
<td>• Duration of action up to 26 hours in Japanese patients</td>
</tr>
<tr>
<td>• Four times lower day-to-day variability vs insulin glargine</td>
</tr>
</tbody>
</table>

**Profile**
- Non-inferior HbA1c reduction
- Numerically greater FPG reduction
- Numerically lower insulin dose

**Efficacy**
- Overall safety consistent with insulin
- Hypoglycaemia rates for Tresiba®, but not comparator
- Overall safety consistent with insulin
- Lower rate of overall and nocturnal hypoglycaemia
- Overall safety consistent with insulin
- Lower rate of nocturnal hypoglycaemia in Asian subjects

**Safety**
- In case of missed dose take as soon as possible
- Injection any time of day
- Up to 80 and 160 units per injection
- Adjusting injection time when needed
- Up to 80 and 160 units per injection

**Convenience**
- Observed in majority of the trials

---

3 Observed in majority of the trials
US Tresiba® label reflects the distinctly different product features compared to competitor basal insulins

<table>
<thead>
<tr>
<th>Duration of action</th>
<th>glargine U100</th>
<th>glargine U300</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least 42 hours²</td>
<td>Up to 24 hours³</td>
<td>Up to 36 hours⁴</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Administration and dosing</th>
<th>glargine U100</th>
<th>glargine U300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once daily at any time of day⁵</td>
<td>Once daily at any time of day, at the same time every day⁶</td>
<td>Once daily at any time during the day, at the same time every day⁷</td>
</tr>
<tr>
<td>Numerically lower dose needed vs glargine U100⁸</td>
<td></td>
<td>Higher dose needed vs glargine U100⁹</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pen device</th>
<th>glargine U100</th>
<th>glargine U300</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 units/pen¹⁰</td>
<td>300 units/pen</td>
<td>450 units/pen</td>
</tr>
<tr>
<td>160 units max per injection¹⁰</td>
<td>80 units max per injection</td>
<td>80 units max per injection</td>
</tr>
<tr>
<td>No push button extension</td>
<td>Push button extension</td>
<td>Push button extension</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In-use time</th>
<th>glargine U100</th>
<th>glargine U300</th>
</tr>
</thead>
<tbody>
<tr>
<td>56 days at room temperature</td>
<td>28 days at room temperature</td>
<td>42 days at room temperature</td>
</tr>
</tbody>
</table>

Note: Comparison based on US Package Inserts (PI) for listed products, not based on head to head comparisons.

¹ Based on Glucose Infusion Rate (GIR) data from euglycemic clamp studies; ² Tresiba PI section 12.2; ³ glargine U100 PI section 12.2; ⁴ glargine U300 PI section 12.2; ⁵ Tresiba PI Highlights section; ⁶ glargine U100 PI Highlights section; ⁷ glargine U300 PI Highlights section; ⁸ Tresiba PI section 14; ⁹ glargine U300 PI section 14.1; ¹⁰ Tresiba U200 PI
Real-world data for Tresiba® confirms strong clinical profile and enables uptake

Study aim and key results

- **Study aim:** Exploring whether the higher cost of insulin degludec compared with insulin detemir or insulin glargine is justified by improved clinical outcomes
- **Key results** (all statistically significant)
  - mean reduction in HbA1c from 8.5% to 8.2%
  - median reduction of 12% of total insulin dose
  - reduction of hypoglycaemic events of 22% and reduction of nocturnal hypoglycaemic events of 56%
- **Conclusion:** Insulin degludec was clinically useful and economically justifiable for the patients with type 1 diabetes
- Controlled studies are needed to confirm these benefits in a larger sample of real-world patients

---

1 The study followed 347 consecutive type 1 diabetes patients who switched to Tresiba® from existing insulins according to predefined switching criteria such as twice daily injection, HbA1c outside acceptable levels or unstable glucose and/or repeated hypoglycaemic events. A total of 10 patients were on human insulin and continuous subcutaneous insulin infusion.
2 Median follow-up time

Source: Changes in HbA1c, insulin dose and incidence of hypoglycaemia in patients with type 1 diabetes after switching to insulin degludec in an outpatient setting: an observational study, Lena Landstedt-Hallin, CMRO, 8 June 2015
## Competitive European label for Xultophy®

Xultophy® is indicated for the treatment of adults with type 2 diabetes in combination with oral glucose-lowering agents

| Profile | • Xultophy® is a fixed combination product consisting of insulin degludec and liraglutide having complementary mechanisms of action to improve glycaemic control  
• Administered as dose steps: One dose step contains 1 unit of insulin degludec and 0.036 mg of liraglutide |
| Efficacy | • On average HbA₁c reduction of 1.9%¹ from baseline to end of trial confirmed to be superior against all comparators²  
• On average 2.7 kg weight loss from baseline in patients inadequately controlled on basal insulin |
| Convenience | • Once-daily administration at any time of the day, preferably at the same time of the day  
• The pre-filled pen can provide from 1 up to 50 dose steps in one injection |
| Safety | • Lower rates of confirmed hypoglycaemia than with insulin degludec in patients on metformin +/- pioglitazone  
• Fewer experienced gastrointestinal side effects than patients treated with liraglutide |

¹ Source: DUAL® I (NN9068-3697), DUAL® II (NN9068-3912)  
² Insulin degludec, liraglutide and placebo
Xultophy® has documented strong efficacy across the treatment cascade

### Xultophy® key clinical results

<table>
<thead>
<tr>
<th></th>
<th>DUAL I Add-on to metformin ± Pio n = 833</th>
<th>DUAL II Add-on to metformin ± basal insulin n = 199</th>
<th>DUAL III Switch from GLP-1 n = 292</th>
<th>DUAL IV Add-on to SU ± metformin n = 289</th>
<th>DUAL V Switch from insulin glargine n = 557</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean trial start HbA₁c (%)</td>
<td>8.3</td>
<td>8.7</td>
<td>7.8</td>
<td>7.9</td>
<td>8.4</td>
</tr>
<tr>
<td>Mean trial end HbA₁c (%)</td>
<td>6.4</td>
<td>6.9</td>
<td>6.4</td>
<td>6.4</td>
<td>6.6</td>
</tr>
<tr>
<td>HbA₁c change (%)</td>
<td>-1.9</td>
<td>-1.9</td>
<td>-1.3</td>
<td>-1.45</td>
<td>-1.8</td>
</tr>
<tr>
<td>% to target &lt; 7% (%)</td>
<td>80.6</td>
<td>60.3</td>
<td>75.3</td>
<td>79.2</td>
<td>71.6</td>
</tr>
<tr>
<td>% to target &lt; 6.5% (%)</td>
<td>69.7</td>
<td>45.2</td>
<td>63.0</td>
<td>64.0</td>
<td>55.4</td>
</tr>
<tr>
<td>Confirmed hypoglycaemia (Episodes per 100 PYE)</td>
<td>180.2</td>
<td>153.4</td>
<td>282</td>
<td>351.7</td>
<td>343.3</td>
</tr>
<tr>
<td>Weight change (kg)</td>
<td>-0.5</td>
<td>-2.7</td>
<td>+2.0</td>
<td>+0.5</td>
<td>-1.4</td>
</tr>
</tbody>
</table>

Note: Typical confirmed hypoglycaemia event rates for treatment with basal insulin are 142-369 episodes per 100 PYE (based on insulin glargine event rates from trials NN1250-3586, 3579 and 3672) where the FPG target and hypoglycaemia definition is similar to the DUAL trials.

Source: Novo Nordisk Trial IDs: DUAL I (NN9068-3697), DUAL II (NN9068-3912), DUAL III (NN9068-3851), DUAL IV (NN9068-3951), DUAL V (NN9068-3952)
Faster-acting insulin aspart provides superior glucose control vs NovoRapid® in onset 1 trial

Creating a new formulation that satisfies an unmet medical need

Faster-acting insulin aspart is an innovative formulation of insulin aspart:

- Vitamin B3 (nicotinamide)\(^1\) added to increase early absorption
- Naturally occurring amino acid (arginine)\(^1\) added to obtain stability

Faster-acting insulin aspart is intended to address unmet medical need:

- Faster absorption mimics physiological insulin action profile
- A better profile for pump and future closed loop systems

\(^1\) Concentration many times below recommended dietary daily intake

\[HbA_{1c}\text{ reduction in onset 1 trial after 26 weeks}\]

- Faster aspart (pm)
- Faster aspart (mt)
- NovoRapid® (mt)

Source: Novo Nordisk on file (NN1218-3852)
Oral peptide delivery – the gastro-intestinal route poses many challenges to absorption of intact macromolecules

**Challenges**

1. Breakdown of drug in the stomach/gastrointestinal tract
2. Passage across the gut barrier into the circulation
3. Ensuring a long circulation half-life

**Solutions**

1. Stabilisation of peptide backbone and side chain
2. Tablet formulation including carrier and/or coating
3. Engineered systemic protraction mechanism
Oral semaglutide dose dependently reduced HbA$_{1c}$ and body weight in a 26-week phase 2 trial in type 2 diabetes

**HbA$_{1c}$ reduction from a mean baseline of 7.9%**

- Placebo
- Sema 2.5 mg
- Sema 5 mg
- Sema 10 mg

**Weight loss from a mean base line of 92 kg**

- Sema 20 mg
- Sema 40 mg
- Sema 1 mg sc

Inclusion criteria: Type 2 diabetes; 7.0% ≤ HbA$_{1c}$ ≤ 9.5%; treatment with diet and exercise with or without metformin; sc: subcutaneous; sema: semaglutide

Source: Novo Nordisk on file (NN9924-3790)
PIioneer, the global phase 3a programme for oral semaglutide to include >9,300 people with type 2 diabetes

<table>
<thead>
<tr>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PIONEER 1</strong>: monotherapy</td>
<td><strong>PIONEER 2</strong>: vs empagliflozin</td>
<td><strong>PIONEER 3</strong>: vs sitagliptin</td>
</tr>
<tr>
<td>26 weeks, n=704</td>
<td>52 weeks, n=816</td>
<td>78 weeks, n=1,860</td>
</tr>
<tr>
<td><strong>PIONEER 4</strong>: vs liraglutide</td>
<td><strong>PIONEER 5</strong>: moderate renal impairment</td>
<td><strong>PIONEER 6</strong>: cardiovascular outcomes</td>
</tr>
<tr>
<td>52 weeks, n=690</td>
<td>26 weeks, n=324</td>
<td>Event driven (&gt;122 MACE), n=3,176</td>
</tr>
<tr>
<td><strong>PIONEER 7</strong>: flexible dose escalation</td>
<td><strong>PIONEER 8</strong>: insulin add-on</td>
<td><strong>PIONEER 9</strong>: JAPAN monotherapy</td>
</tr>
<tr>
<td>52 weeks, n=500</td>
<td>26+26 weeks, n=720</td>
<td>52 weeks, n=230</td>
</tr>
<tr>
<td><strong>PIONEER 10</strong>: JAPAN OAD combination</td>
<td><strong>PIONEER 10</strong>: JAPAN OAD combination</td>
<td>52 weeks, n=336</td>
</tr>
</tbody>
</table>

Note: Preliminary estimated timing of trials from first patient first visit (FPFV) to last patient last visit (LPLV), n = approximate number of randomised people; MACE: Major Cardiovascular Events; OAD: oral anti-diabetic
Phase 2a trial with oral insulin OI338GT completed with generally encouraging results

**Phase 2a study design**

- OI338GT + met ± DPP-IV
- Insulin glargine + met ± DPP-IV
- Placebo

50 insulin naive people with type 2 diabetes

**Headline results and next step**

- The results were generally encouraging with a **decrease in fasting plasma glucose** of approximately 2.5mmol/L for both treatment arms
- OI338GT generally appeared to have a safe and well tolerated profile
- No severe hypoglycaemic episodes were reported and overall hypoglycaemia levels appeared similar for OI338GT and insulin glargine treated subjects
- **Next step:** Therapeutic use and investment needs will be assessed of the oral insulin programme, more information will follow H2

---

Met: Metformin; DPP-IV: Dipeptidyl peptidase-4

1 Inclusion criteria: Subjects diagnosed (clinically) with type 2 diabetes mellitus for at least 180 days prior to the day of screening; age of 18-70 years (both inclusive) and BMI of 25.0-40.0 kg/m² (both inclusive)
Anti-IL 21 in combination with liraglutide is an alternative approach for the treatment of type 1 diabetes

Phase 2 trial design

304 newly diagnosed people with type 1 diabetes

- Anti-IL-21 + liraglutide 1.8 mg
- Placebo + liraglutide 1.8 mg
- Anti-IL-21 + placebo
- Placebo + placebo

Week 0 Dosing 54 Observation 80

Rationale for Anti-IL 21 and liraglutide combination product for T1D

- Anti-IL 21 plays an important role in autoimmunity with potential effect on immune disorder
  - Effector cells (T and B lymphocytes and natural killer cells)
  - Pro-inflammatory cytokines
  - Autoantibodies
  - Chemokines
  - Matrix metalloproteinase (MMPs)

- GLP-1 receptor agonist may promote beta-cell recovery
  - Decrease beta-cell stress/apoptosis
  - Stimulate beta-cell neogenesis
  - Expansion of beta-cell mass in rodent models

Inclusion criteria: Subjects diagnosed as type 1 diabetes for not more than 12 weeks prior to randomisation; age 18-45 (both inclusive)

Note: If liraglutide 1.8 mg is not tolerated 1.2 mg is administered. ANTI-IL: interleukin

Source: NN9828-4150

T1D: type 1 diabetes; MOA: mode of action
Insulin LAI287 offers potential for once-weekly dosing

LAI287 pharmacodynamic profile is compatible with once-weekly dosing

Key results of phase 1 trial

- The trial evaluated short term efficacy and safety during five weeks of treatment
- LAI287 showed dose-dependent exposure and a variability comparable to that of insulin degludec
- Terminal half-life of 185 hours supporting a once-weekly dosing regimen
- LAI287 generally appeared safe and well tolerated, with most frequent adverse event being hypoglycaemia
- The side effects observed in the phase 1 trial will be further investigated

Source: Novo Nordisk on file (NN1436-4057) 48 people with type 2 diabetes, multiple dose, dose escalation trial

Note: pharmacokinetic simulation
Liver-preferential mealtime insulin analogue has potential to reduce hypoglycaemia and weight gain

**The liver is important for insulin action**

- Liver: Glucose production
- Muscle: Glucose uptake
- Fat: Glucose uptake

**Rationale and expected benefits of physiologically distributed insulin**

**Rationale**

- Elevated hepatic glucose release drives overall higher PPG in people with type 2 diabetes compared to healthy individuals
- >50% of endogenous insulin secretion is cleared by the liver
- Insulinisation of peripheral tissues with current insulin analogues is higher than for endogenous insulin

**Potential benefits**

- Mimics physiology of insulin distribution secreted from pancreas
- Less hypoglycaemia
- Less weight gain

**Next steps**

- Phase 1 trial with liver-preferential mealtime insulin (NN1406) initiated

---

**Investor presentation                      First half of 2016**

---

**PPG**: post prandial glucose

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>Class I BMI 27-29.9</th>
<th>Class II BMI 30-34.9</th>
<th>Class III 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>

¹ Normal blood glucose without hypertension and/or dyslipidemia
² Normal blood glucose with hypertension and/or dyslipidemia
³ Impaired Fasting Glucose with or without hypertension and/or dyslipidemia
⁴ Type 2 diabetes with or without hypertension and/or dyslipidemia

### 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

---

¹ Finkelstein et al. Health Affairs 28, no. 5 (2009): w822-w831
³ Ma et al. Obesity (Silver Spring) 2009;17:1077-85
⁴ Obesity. Decision resources, Inc. December 2010:38
Significant unmet need in obesity management

### Insufficient treatment options

- **All people with obesity**
- **People diagnosed**
- **People Rx treated***

### Significant gaps in obesity treatment

- **Mean weight loss**
  - **Low**
  - **Medium**
  - **High**

- **Complexity of treatment**
  - **Low**
  - **Medium**
  - **High**

- **Anti-obesity medication with weight loss of 5-10%**
- **Bariatric surgery**
- **Diet and exercise**

---

Source: Diagnosis rate, Practice Fusion March 2014 & Treatment rate, Understanding the Treatment Dynamics of the Obesity Market, IMS Database (NPA), August 2014

*Rx=prescription, i.e. treated with anti-obesity medication (AOM)
Small but growing market for anti-obesity medication in the US

Value of US obesity market remains relatively small, but it is growing

USD million


550 500 450 400 350 300 250 200 150 100 50 0

Few people treated with AOM, but in recent years launches have fuelled market growth

Generic TRx volume
Branded TRx volume
AOM TRx volume

Phentermine and topiramate launch
Lorcaserin launch
Saxenda® launch
Naltrexone HCI and bupropion HCI launch

Note: Phentermine and topiramate is the fixed combination; naltrexone HCI and bupropion HCI is the second fixed dosed combination to market. AOM: anti-obesity medication
Source: IMS NPA Monthly, June 2016

Source: IMS NSP Monthly, February 2016
### Steady prescription uptake for Saxenda® in the US

**Prescription volume uptake of anti-obesity medications (AOM) recently launched in the US**

<table>
<thead>
<tr>
<th>TRx Volume (000)</th>
<th>Saxenda®</th>
<th>Belviq®</th>
<th>Qsymia®</th>
<th>Contrave®</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2015</td>
<td>62</td>
<td>40</td>
<td>37</td>
<td>16</td>
</tr>
<tr>
<td>June 2016</td>
<td>62</td>
<td>40</td>
<td>37</td>
<td>16</td>
</tr>
</tbody>
</table>

**Key observations**

- Saxenda® has been launched in the US, Canada, Denmark, Italy, Australia, Mexico and now Germany, Belgium, Brazil and Israel
- Saxenda® is the leader in value market share at ~42% among branded AOM in the US
- While competitors have recently reduced their promotional efforts, Novo Nordisk remains confident in the long-term obesity market growth and the evolving Novo Nordisk obesity portfolio

Note: IMS reporting for new launches may reflect data instability due to small volume and/or supplier reporting.

Source: IMS NPA TRx, monthly, June 2016

Source: IMS NSP, Monthly data, June 2016
Saxenda® targeted at patients with BMI ≥35 and weight-related comorbidities

**Saxenda® market approach**

- **Clear patient segmentation**
- **Focused prescriber targeting**
- **Clear product value proposition**
- **Focus on engaging prioritised payers and employers**

**Saxenda® launch execution**

- Focus on patients with BMI ≥35 with weight-related comorbidities
- Focus on current prescribers of anti-obesity medication and GLP-1
- Strengthened by 3-year clinical data
- Formulary coverage emerging with more than 50 million lives\(^1\) covered

**Aspiration**

Build the market

---

*BMI: body mass index*

*\(^1\) Potential lives covered, based on employer opt-ins*
# Competitive US label for Saxenda®

Saxenda® approved in the US for chronic weight management in individuals with a BMI ≥30, or ≥27 in the presence of at least one weight-related comorbidity

| **Profile**          | • GLP-1 receptor agonist – a physiological regulator of appetite and calorie intake  
|                      | • Saxenda® is the first and only GLP-1 receptor agonist approved for weight management |
| **Effect on body weight** | • 9 in 10 lose weight and **1 in 3 people lose more than 10%** of their body weight  
|                      | • **Average weight loss of 9.2%** in completers at one year |
| **Effect on comorbidities** | • **Improvements** in cardiometabolic risk factors such as hypertension and dyslipidaemia  
| **Safety**            | • **Boxed warning** on thyroid C-cell tumours  
|                      | • **Precautions** on acute pancreatitis, acute gallbladder disease, serious hypoglycaemia, heart rate increase, renal impairment, hypersensitivity and suicidal ideation |

---

1 Examples include hypertension, type 2 diabetes and dyslipidemia.  
2 Saxenda® US Package Information.  
3 When used with an insulin secretagogue
Semaglutide once daily phase 2 dose-finding trial in obesity is designed to optimise treatment outcomes

**Once-daily semaglutide phase 2 trial design**

935 people with obesity without diabetes

- 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
- liraglutide 3 mg

**Phase 2 trial purpose and endpoints**

**Purpose**
- To assess and compare the dose response of five doses of once-daily 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 ≥ 5% or ≥ 10% of baseline body weight at 52 weeks

**Results from phase 2 trial expected in 2017**

QD: once-daily; sc: subcutaneous

---

1 Key inclusion criteria: Male or female ≥18 years, BMI: ≥30 kg/m², Stable body weight (<5 kg change) ≥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
## Long-acting obesity compounds in phase 1 development may have complimentary modes of action

### Key features of compounds in phase 1 development for obesity

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

Locations

- Head and neck
- Nose and gums
- Joints
- Gut
- Kidneys
- Muscles
- Joints

Consequences of bleedings

- Bleeding in the joint space causes a strong inflammatory reaction which predisposes to further bleeding
- Inadequate or delayed treatment of repeated joint bleeds results in a “target joint”
- The joint is tense, swollen and extremely painful and the mobility is restricted
- Eventually the cartilage erodes completely and permanent joint damage (arthropathy) occurs
- Treatment of arthropathy is orthopaedic surgery
Haemophilia is a rare disease with severe unmet medical needs

### Number of people with haemophilia A and B and haemophilia with inhibitors

- **Haemophilia A**
  - App. 350,000 patients
- **Haemophilia B**
  - App. 70,000 patients
- **Inhibitor segment**
  - App. 3,500-4,000 patients

### Low diagnosis and treatment rates within haemophilia

<table>
<thead>
<tr>
<th>Category</th>
<th>Average percentage of people with haemophilia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosed</td>
<td>45%</td>
</tr>
<tr>
<td>Treated</td>
<td>15%</td>
</tr>
<tr>
<td>Prophylactic</td>
<td>6%</td>
</tr>
<tr>
<td>Pristine joints</td>
<td>3%</td>
</tr>
</tbody>
</table>

Source: World Federation of Haemophilia – Annual Global Survey 2012, UDC database in the US

Note: The inhibitor segment represents people with haemophilia and high titre inhibitors to their normal replacement treatment.

Global haemophilia market is growing by mid-single digit

Sales of recombinant coagulation factors

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>NovoSeven®</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coagil VII®</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obizur®¹</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recombinate®/Advate®</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kogenate®/Helixate®</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xyntha®/Refacto®</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eloctate®</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NovoEight®</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rFVIIa</td>
<td>5.05</td>
<td>4.10</td>
</tr>
<tr>
<td>rFVIII</td>
<td>3.50</td>
<td>3.50</td>
</tr>
<tr>
<td>rFIX</td>
<td>11.82</td>
<td>11.82</td>
</tr>
</tbody>
</table>

CAGR²: 4%

CAGR²: 7%

CAGR²: 13%

DKK billion

Strategic positioning of Novo Nordisk’s haemophilia portfolio

<table>
<thead>
<tr>
<th>Novo Nordisk compound</th>
<th>Status</th>
<th>Strategic position</th>
</tr>
</thead>
<tbody>
<tr>
<td>NovoSeven®</td>
<td>Launched</td>
<td>Maintain market leadership</td>
</tr>
<tr>
<td>NovoEight®</td>
<td>Launched</td>
<td>Establish presence in a competitive market place</td>
</tr>
<tr>
<td>N8-GP</td>
<td>Phase 3³</td>
<td>Contribute to market conversion</td>
</tr>
<tr>
<td>N9-GP</td>
<td>Phase 3⁴</td>
<td>Establish new treatment paradigm</td>
</tr>
<tr>
<td>NovoThirteen®</td>
<td>Launched</td>
<td>Launch first recombinant product</td>
</tr>
</tbody>
</table>

¹ Obizur® only indicated for acquired haemophilia
² CAGR for 5-year period
³ Submission of N8-GP expected 2017/2018 pending expansion of production capacity
⁴ Submitted to the to the European Medicines Agency in January 2016; Submission with the US Food and Drug Administration in May 2016

Source: Company reported sales for 2010 and 2015
NovoSeven® – a unique biologic for the treatment of rare bleeding disorders

**NovoSeven® reported sales**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Sales (DKK billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2 2011</td>
<td>2.0</td>
</tr>
<tr>
<td>Q2 2016</td>
<td>2.5</td>
</tr>
</tbody>
</table>

CAGR¹ 1.3%

**Key NovoSeven® properties**

- **Product characteristics**: powder and solvent for solution for intravenous injection, available in multiple doses, stable at room temperature
- **MixPro®** administration system launched in 2013
- **Indications**: treatment of spontaneous and surgical bleedings in:
  - Haemophilia A or B patients with inhibitors
  - Acquired haemophilia
  - Congenital FVII deficiency
  - Glanzmann’s thrombasthenia²

¹ CAGR for 5-year period

² Only indicated in Europe and the US
NovoEight® is launched in the US, Europe and Japan for the treatment of people with haemophilia A

Indications:
• Treatment and prophylaxis of bleeding in patients with congenital factor VIII deficiency for all age groups

Key product characteristics:
• Reliability: No inhibitor development in PTPs in one of the largest pivotal trial programmes of any approved rFVIII (n=213)
• Purity and safety: First rFVIII to use a 20nm filter in its purification process
• Portability: Room temperature stability with storage at 30 degrees celsius

Launch status:
• NovoEight® is available in the US, Japan, India and 17 European countries

---

1 Picture is not intended for promotional purposes

2 NovoEight® Summary of Product Characteristics. 3 Iorio A et al., Blood 2012; 120(4): 720 – 727. 4 NovoEight® Prescribing Information

PTP: Previously treated patient
**NovoThirteen®**, a recombinant FXIII, provides efficacious and safe haemostatic coverage

---

**Example from NovoThirteen® promotional campaign**

---

**NovoThirteen® properties and launch performance**

**Indication:**
- Long term prophylactic treatment of bleeding in adult and paediatric patients with congenital factor XIII A-subunit deficiency

**Key product characteristics:**
- NovoThirteen® is the only recombinant product for prophylaxis
- NovoThirteen® is well tolerated and has low volume dosing
- NovoThirteen® effectively prevents bleeds and provides a convenient once-monthly regimen

**Launch status:**
- NovoThirteen® is approved in Australia, Bahrain, Brazil, Canada, Colombia, EU, Iceland, Israel, Japan, Kuwait, Oman, Qatar, Saudi Arabia, Switzerland, and the US

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1 Picture is not intended for promotional purposes
# R&D pipeline: Haemophilia and growth disorders

<table>
<thead>
<tr>
<th>Product/project</th>
<th>Type</th>
<th>Indication</th>
<th>Status (phase)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N9-GP (NN7999)¹</td>
<td>GlycoPEGylated long-acting rFIX</td>
<td>Haemophilia B</td>
<td>1 2 3 Filed</td>
</tr>
<tr>
<td>N8-GP (NN7088)</td>
<td>GlycoPEGylated long-acting rFVIII</td>
<td>Haemophilia A</td>
<td></td>
</tr>
<tr>
<td>Concizumab (NN7415)</td>
<td>Monoclonal anti-TFPI</td>
<td>Haemophilia A, B and with inhibitors</td>
<td></td>
</tr>
<tr>
<td>Somapacitan (NN8640)²</td>
<td>Once-weekly human growth hormone</td>
<td>Growth disorder</td>
<td></td>
</tr>
</tbody>
</table>

¹ Submitted to the European Medicines Agency in January 2016 and the US Food and Drug Administration in May 2016; ² Phase 3 completed in Adult Growth Hormone Deficiency (AGHD)
N9-GP administered once weekly reduces median bleeding rate to 1.0 episode per year in phase 3 trial

Paradigm 2 headline results (phase 3)

- Steady-state half-life of 110 hours
- Median bleeding rate for patients treated on demand was 15.6 episodes per year
- Patients on once-weekly prophylactic treatment had a median bleeding rate of 1.0 episode per year when treated with 40 IU/kg
- Among patients receiving 40 IU/kg:
  - 99% of bleeding episodes treated with only one infusion
  - Two thirds of patients experienced complete resolution of bleeding into target joints
- N9-GP appeared to have a safe and well tolerated profile with no patients developing inhibitors

Next steps

- N9-GP Submitted to the European Medicines Agency in January 2016 and to the US Food and Drug Administration in May 2016

N8-GP administered every fourth day reduces median bleeding rate to 1.3 episode per year in phase 3 trial

**N8-GP phase 1 pharmacokinetics**

<table>
<thead>
<tr>
<th>FVIII activity (IU/mL)</th>
<th>FVIII</th>
<th>N8-GP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose 50 IU/kg (n=8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One stage clot assay</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pathfinder 2 headline results (phase 3)**

1. PK documented single dose half-life of 18.4 hours and mean trough level before next dose of 8%
2. Patients on every fourth day prophylaxis (50 IU/kg) had a median ABR of 1.3
3. 95% of mild to moderate bleeds managed with 1-2 doses
4. N8-GP appeared to have a safe and well tolerated profile
5. One patient developed inhibitors, as expected in a population of previously treated haemophilia A patients

**Pathfinder 2 extension trial results**

- 55 patients with ≤2 bleeds during 6 months in the main phase were randomised 2:1 to either once-weekly (75 IU/kg) or every fourth day (50 IU/kg) treatment for 180 days
- Patients in both treatment arms had a median ABR of 0

**Next steps**

- Expansion of production capacity; US/EU submission 2018

Novo Nordisk continues to expand leadership within human growth hormone (hGH) market

Development in global hGH market

- **CAGR volume**: 6.3%
- **CAGR value DKK**: 3.5%

Growth hormone volume market share

- **Novo Nordisk**: 31%
- **Eli Lilly**:
- **Merck Kgaa**:
- **Pfizer**:
- **Sandoz**:
- **Roche**:

---

1 CAGR for 5-year period

Source: IMS Monthly MAT Apr, 2016 volume figures and value (DKK) figures

Source: IMS Monthly MAT Apr, 2016 volume figures
Solid Norditropin® sales growth

**Norditropin® reported sales**

<table>
<thead>
<tr>
<th>DKK billion</th>
<th>Q2 2011</th>
<th>Q2 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CAGR\(^1\) 12.8%

**Key Norditropin® properties**

- **Product characteristics:** Premixed, prefilled multi-use delivery systems available in multiple strengths, and stable at room temperature
- **Expanded indications:** GHD, GHDA, Noonan Syndrome, Turner Syndrome, SGA indication, Idiopathic short stature
- **Easy to use FlexPro® device**
- **Medical and Clinical support programmes**
- **Patient support programmes**

\(^1\) CAGR for 5-year period
Financials
Novo Nordisk has delivered sustained double digit growth throughout the last decade

Sales growth in local currencies 2006–2015

- Sales growth
- Average growth

Operating profit growth in local currencies 2006–2015

- Operating profit growth
- Average growth

Note: Numbers for 2007 and 2008 are adjusted for the impact of the discontinuation of pulmonary insulin projects; Number for 2015 is adjusted for the non-recurring income related to the partial divestment of NNIT with the dotted component representing this income; average is calculated excluding the effect of the 2015 non-recurring income.
Solid sales growth driven by the US, International Operations and Region China

**Reported annual sales**

<table>
<thead>
<tr>
<th>Year</th>
<th>Diabetes</th>
<th>Biopharmaceuticals</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>76%</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>78%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>78%</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>79%</td>
<td></td>
</tr>
</tbody>
</table>

CAGR\(^1\) 12.9%

**Reported annual sales split by region**

<table>
<thead>
<tr>
<th>Year</th>
<th>USA</th>
<th>Europe</th>
<th>Int. Operations</th>
<th>Region China</th>
<th>Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>38%</td>
<td>13%</td>
<td>29%</td>
<td>13%</td>
<td>8%</td>
</tr>
<tr>
<td>2015</td>
<td>53%</td>
<td>5%</td>
<td>19%</td>
<td>14%</td>
<td>9%</td>
</tr>
</tbody>
</table>

\(^1\) CAGR for 4-year period
Solid operating profit growth driven by diabetes

Operating profit

<table>
<thead>
<tr>
<th>Year</th>
<th>Operating profit</th>
<th>Operating profit as % of sales</th>
<th>Operating profit growth vs last year</th>
<th>Operating profit growth in local currencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>18%</td>
<td></td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>22%</td>
<td></td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>32%</td>
<td></td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>7%</td>
<td></td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>43%</td>
<td></td>
<td>21%</td>
<td></td>
</tr>
</tbody>
</table>

Operating profit therapy split

<table>
<thead>
<tr>
<th>Year</th>
<th>Diabetes</th>
<th>Biopharm</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>65%</td>
<td>35%</td>
</tr>
<tr>
<td>2015</td>
<td>72%</td>
<td>28%</td>
</tr>
</tbody>
</table>

1 2015 numbers exclude the impact on operating profit resulting from the non-recurring income related to the partial divestment of NNIT
Profitability per segment

**Diabetes P&L – full year 2015**

- Sales: DKK 80 billion (40% growth)
- COGS: DKK 60 billion (16% decrease)
- S&D: DKK 20 billion (12% decrease)
- R&D: DKK 10 billion (4% decrease)
- Admin: DKK 5 billion (4% decrease)
- OOI: DKK 20 billion (increase)
- OP: DKK 24 billion (11% decrease) - 40%

**Biopharmaceuticals**¹ P&L – full year 2015

- Sales: DKK 100 billion (15% decrease)
- COGS: DKK 80 billion (11% decrease)
- S&D: DKK 20 billion (14% decrease)
- R&D: DKK 10 billion (4% decrease)
- Admin: DKK 5 billion (4% decrease)
- OOI: DKK 30 billion (increase)
- OP: DKK 20 billion (1% increase) - 57%

P&L: Profit and Loss; COGS: Cost of goods sold; OOI: Other operating income; OP: Operating profit

¹ Excluding inflammation
Decline in relative COGS level combined with stable investment level

### Cost of Goods Sold (COGS)
- **DKK billion**
- **COGS as % of sales**
- **COGS**

### Capital Expenditure (CAPEX)
- **DKK billion**
- **CAPEX as % of sales**
- **CAPEX**
Limited future productivity gains expected, reflecting an increasing level of manufacturing complexity and maturity

After significant improvements, reductions in unit costs of mature products are declining

The complexity of molecules by number of API sidechain production steps is increasing

Index

2005 2015

Number of process steps

1993 2015

NovoRapid/NovoMix FlexPen®
NovoRapid/NovoMix Penfill®
Levemir FlexPen®
Victoza®

API: active pharmaceutical ingredient
**Long term financial targets:**
Operating profit growth and operating margin

**Operating profit growth**
- New long term financial target
- Previous long term financial targets

<table>
<thead>
<tr>
<th>Year</th>
<th>Previous Target</th>
<th>New Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>0%</td>
<td>15%</td>
</tr>
<tr>
<td>2012</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>2013</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>2014</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>2015</td>
<td>30%</td>
<td>35%</td>
</tr>
</tbody>
</table>

**Operating margin**
- Previous long term financial targets

<table>
<thead>
<tr>
<th>Year</th>
<th>Previous Target</th>
<th>New Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>2011</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>2012</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>2013</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>2014</td>
<td>25%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Note: The long term financial targets are based on an assumption of a continuation of the current business environment.

1 New long-term target established in connection with the full year 2015 report

2 A new target for operating margin has not been established
Long term financial targets:
Operating profit after tax to net operating assets and cash to earnings

Note: The long term financial targets are based on an assumption of a continuation of the current business environment

1 New long-term target established in connection with the full year 2015 report
Organic growth enables steady cash return to shareholders via dividends and share repurchase programmes

**Annual cash return to shareholders**

<table>
<thead>
<tr>
<th>Year</th>
<th>Share repurchase</th>
<th>Interim dividend</th>
<th>Dividend</th>
<th>Free cash flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>12</td>
<td>8</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>14</td>
<td>10</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>2014</td>
<td>15</td>
<td>12</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>2015</td>
<td>17.5</td>
<td>13</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>2016E</td>
<td>14</td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Share repurchase programmes have enabled continued reduction in share capital**

- **Share repurchase programmes**
  - 2012: 560 million
  - 2013: 550 million
  - 2014: 530 million
  - 2015: 520 million
  - 2016E: 510 million

- **CAGR**
  - -2.3%

**Note:** Dividends are allocated to the year of dividend pay. For 2016 expected free cash flow is DKK 38-41 billion. Share repurchase programmes run for 12 months starting February until end January of the following year.
### Stable ownership structure
- secured through A and B-share structure

<table>
<thead>
<tr>
<th>Share structure</th>
<th>The Novo Nordisk Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Novo Nordisk Foundation</strong></td>
<td>• The Novo Nordisk Foundation is a self-governing institution that:</td>
</tr>
<tr>
<td></td>
<td>• provides a stable basis for Novo Nordisk</td>
</tr>
<tr>
<td></td>
<td>• supports scientific, humanitarian and social purposes</td>
</tr>
<tr>
<td><strong>Novo A/S</strong></td>
<td>• All strategic and operational matters are governed by the board and management of Novo Nordisk</td>
</tr>
<tr>
<td><strong>Institutional and private investors</strong></td>
<td>• Overlapping board memberships ensure that the Novo Nordisk Foundation and Novo Nordisk share vision and strategy</td>
</tr>
</tbody>
</table>

- **A shares** 537m shares
- **B shares** 2,013m shares

Note: Treasury shares are included in the capital but have no voting rights
Sustainability

The Novo Nordisk Way

We build on the purpose set by our founders and live by their values: The Novo Nordisk Way sets the direction and unites us around a common purpose in the pursuit of our aspirations.

The Triple Bottom Line Business Principle

The Triple Bottom Line Principle guides how we do business responsibly and how we make decisions that consider the interests of stakeholders and the long-term interests of our shareholders.
In 2015, good progress was made towards achieving the long-term sustainability goals

1. Patients reached with diabetes care products: 2011: 0 million, 2015: 5 million
   - Realised: 5 million
   - Target: 5 million

   - Realised: 4 points
   - Target: 4 points

3. Energy consumption³: 2011: 1,000,000 GJ, 2015: 3,000,000 GJ
   - Realised: 3,000,000 GJ
   - Target: 3,000,000 GJ

4. Operating profit growth: 2011: 0%, 2015: 20%
   - Realised: 20%
   - Target: 20%

---

1. Novo Nordisk estimate; ² Average score in annual employee survey (1-5); ³ Target not to exceed
Changing Diabetes® encompasses multilevel projects that tackle the global diabetes pandemic

‘Rule of Halves’: only \(~6\%\) of people with diabetes achieve desirable outcomes

Changing Diabetes® addresses the largest potentials to overcome the ‘Rule of Halves’

1. Early diagnosis:
   - \(~200\) million people are left undiagnosed

2. Treatment to target:
   - Over 30\% will have at least one complication when diagnosed

3. Urban diabetes:
   - Urban living can lead to 5 times higher risk of diabetes in emerging countries
   - \(~65\%\) of people with diabetes live in urban areas globally

* Actual rates of diagnosis, treatment, targets and outcomes vary in different countries
** Recommended glucose levels
Cities Changing Diabetes aims to break the ‘Rule of Halves’ and stop urban diabetes from ruining millions of lives

Global partnerships to develop an approach to fight urban diabetes

- Map the challenge in selected cities
- Share learning and best practices on how to break the ‘Rule of Halves’
- Implement action plans with local partners

Seven partner cities are addressing the threat of urban diabetes

- Copenhagen
- Mexico City
- Shanghai
- Johannesburg
- Houston
- Tianjin
- Vancouver

2/3 of people living with diabetes live in urban areas

Urban diabetes: Type 2 diabetes in cities
Novo Nordisk is committed to the continued development of its employees

Employee health and safety and engagement are key focus areas for management

- **41,571** FTE employees and 6% growth vs LY\(^1\)
- **4.3** engagement with the Novo Nordisk Way
- **90.9%** retention rate
- **3.0** accidents per million working hours

Novo Nordisk is committed to building a diverse and inclusive organisation

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Appointments*</th>
<th>Sr. Managers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>63%</td>
<td>59%</td>
<td>89%</td>
</tr>
<tr>
<td>2015</td>
<td>59%</td>
<td>56%</td>
<td>86%</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>37%</td>
<td>41%</td>
<td>11%</td>
</tr>
<tr>
<td>2015</td>
<td>41%</td>
<td>44%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Note: numbers refer to FY2015, except for FTEs
FTE: full-time employees
\(^1\) Excluding employees in NNIT A/S, which was divested in 2015

* All appointments to management positions, incl. internal promotions and external hires, ex. NNIT