



novo nordisk – a focused healthcare company

**Oral semaglutide
and production expansion**

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Forward-looking statements

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- 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
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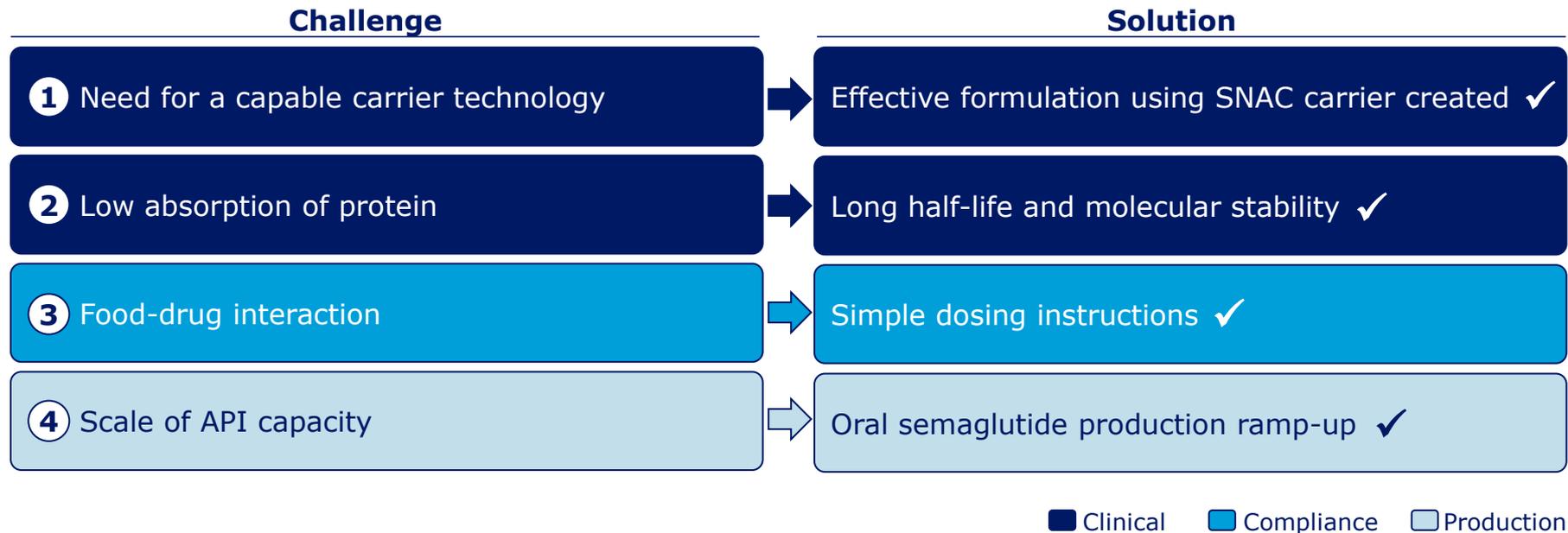
Please also refer to the overview of risk factors in 'Risk Management' on pp 40-43 of the Annual Report 2016.

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Important drug information

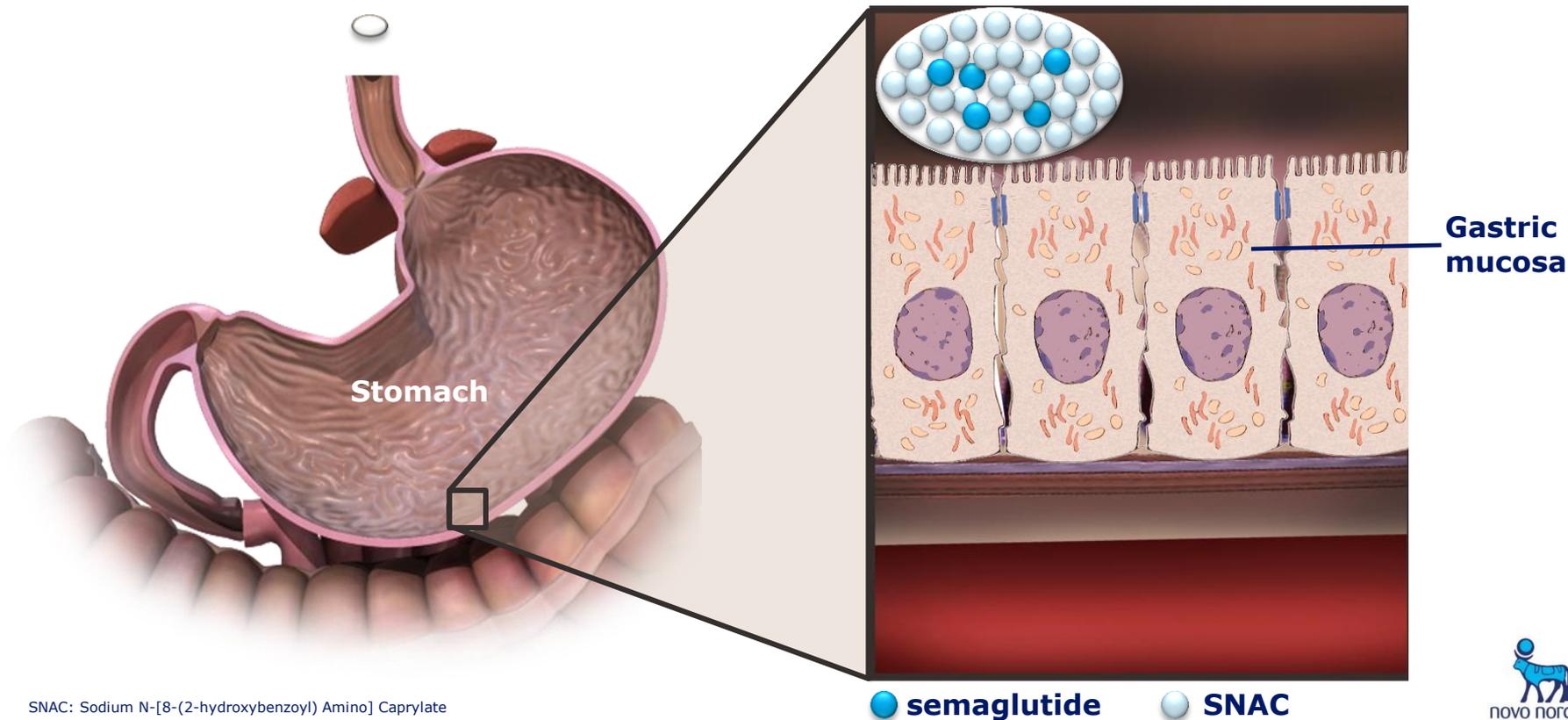
- Victoza® (liraglutide 1.2 mg & 1.8 mg) is approved for the management of type 2 diabetes only
- Saxenda® (liraglutide 3 mg) is approved in the US and EU for the treatment of obesity only

Succeeding with an oral formulation of a protein requires multiple factors to be in place



API: Active pharmaceutical ingredient; SNAC: Sodium N-[8-(2-hydroxybenzoyl) Amino] Caprylate

1 SNAC carrier facilitates semaglutide absorption



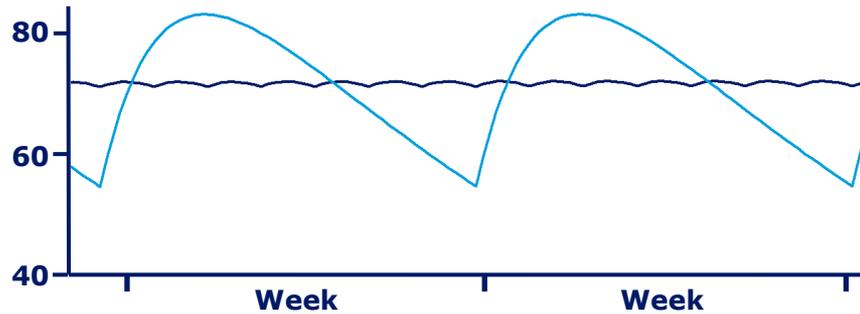
SNAC: Sodium N-[8-(2-hydroxybenzoyl) Amino] Caprylate

2 Long half-life and molecular stability

Lower day-to-day variability at steady state with once-daily semaglutide

Simulated semaglutide concentration (mM)

— Once-daily semaglutide sc
— Once-weekly semaglutide sc



Sc: Subcutaneous; mM: Millimolar

Semaglutide peptide characteristics

Long half life

- The long half-life of semaglutide and daily dosing limits day-to-day variability

Low molecular weight

- Compared to several other GLP-1 analogues, semaglutide has a low molecular weight, enabling absorption

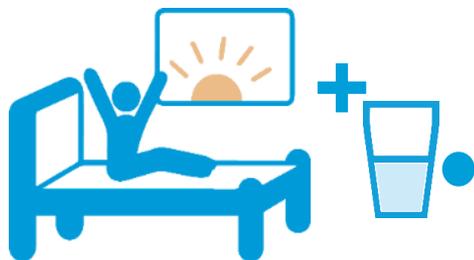
High potency

- Semaglutide proven to be highly potent

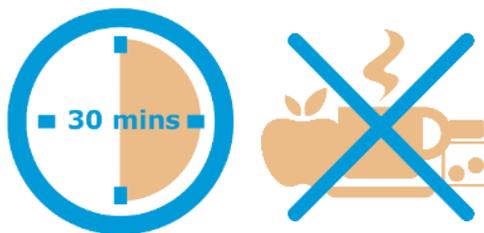
Molecular stability

- Semaglutide is more stable against degradation by gastrointestinal enzymes and stomach acid

3 Simple dosing instructions to avoid food-drug interaction



Wake up and take your tablet
with half a glass of water

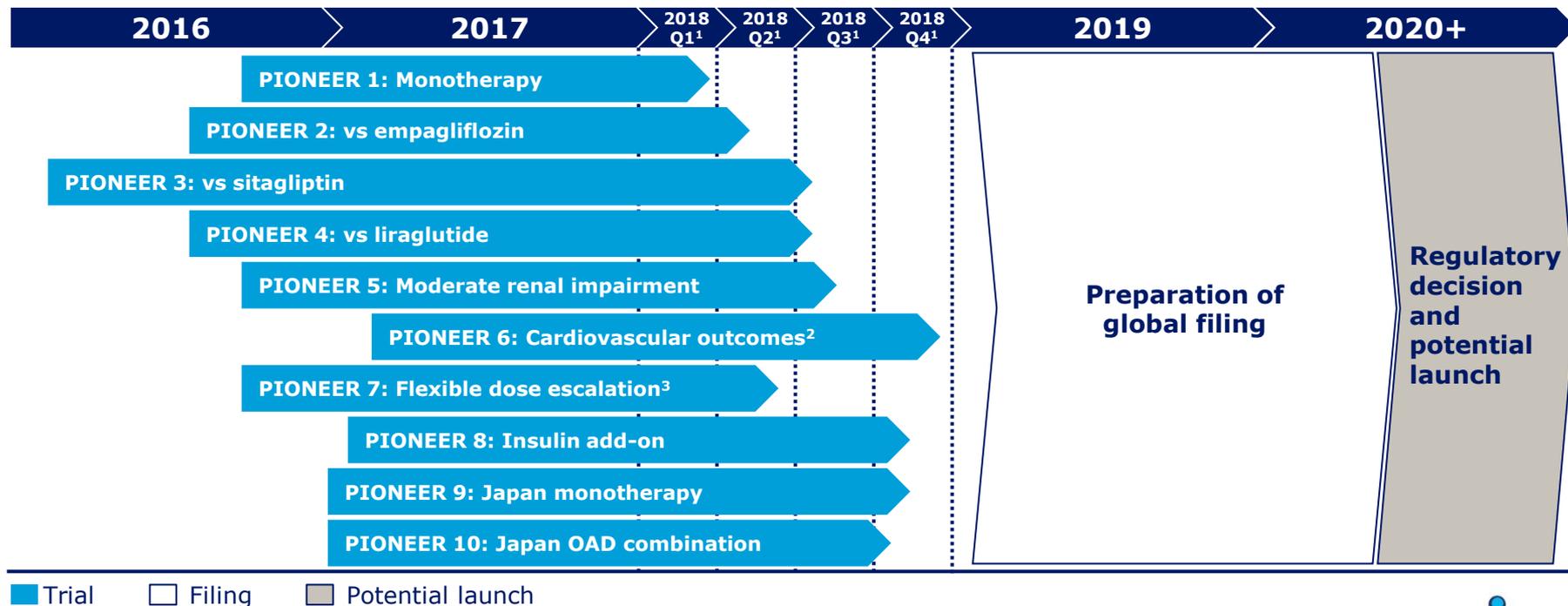


Wait at least 30 minutes
before eating or drinking



Have breakfast

Preparation of global filing of oral semaglutide expected during 2019 pending successful completion of phase 3 trials



¹ Expected to be published in the given quarter or in the subsequent quarterly company announcement; ² Trial to rule out cardiovascular risk; ³ To be followed by 52-week extension trial
 Note: Estimated timing of trials from first patient first visit to last patient last visit and subsequent completion of trial
 OAD: Oral anti-diabetic

4 Two new facilities under construction for production of oral semaglutide

API production in North Carolina and tablet production in Måløv

□ Production sites ■ Process steps



North Carolina, USA

- API production facility
- Expected completion: 2021¹



Måløv, Denmark

- Tablet production facility
- Expected ramp up: 2019

Fermentation

Recovery

Purification

Tableting

Packaging

API: Active pharmaceutical ingredient

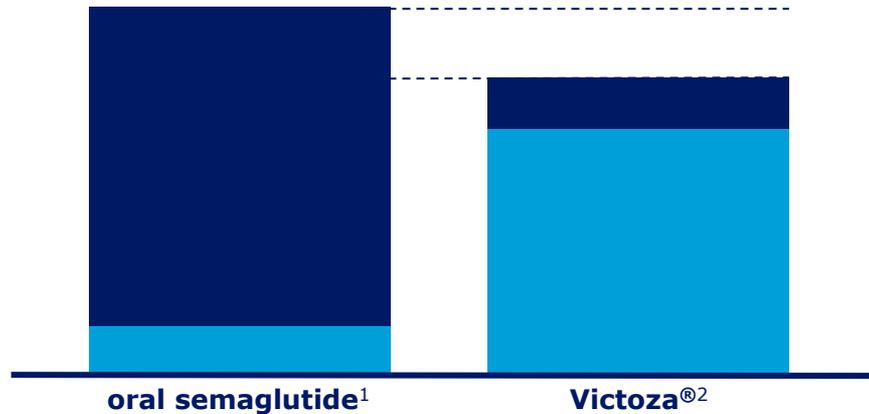
¹ API production for clinical trials and initial launch of oral semaglutide in Kalundborg

API constitute the majority of direct production cost for oral semaglutide

The unit cost composition differs between oral semaglutide and Victoza®

Illustrative

■ API cost ■ Delivery cost



Oral semaglutide gross margin expected to be on par with the current Novo Nordisk level

- Victoza® contributes positively to Novo Nordisk gross margin
- Oral semaglutide gross margin is expected to be on par with the current Novo Nordisk gross margin level following the initial ramp-up, assuming a price point similar to the current level of injectable GLP-1

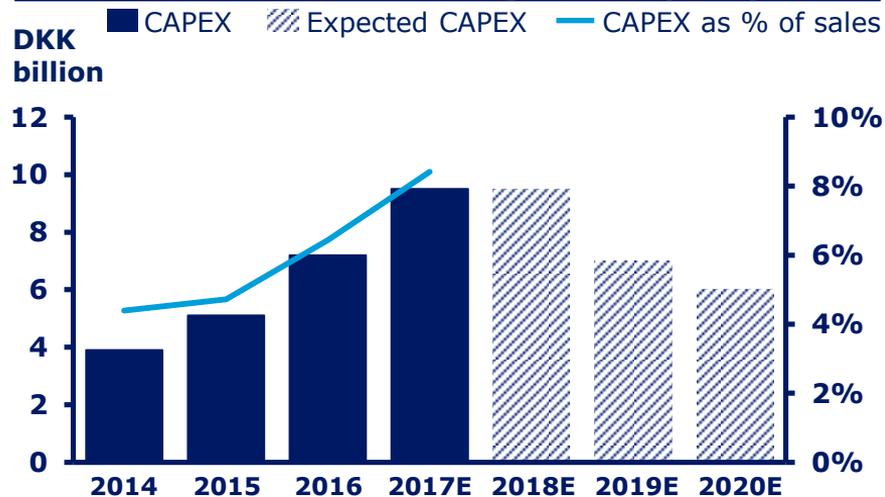
¹ Delivery cost for oral semaglutide: Tableting and packaging

² Delivery cost for Victoza®: Device including formulation, filling, assembly and packaging

API: Active pharmaceutical ingredient

Capital expenditure in 2018 expected to be broadly unchanged compared to 2017 level

Increased CAPEX level in 2017-2018 reflecting investments in oral semaglutide capacity



CAPEX expected to decline after 2018

CAPEX increase driven by USD ~2 billion investment in:

- Diabetes API production in Clayton, USA (USD ~1.8 billion)
- Tableting facility in Måløv, Denmark (USD ~0.2 billion)

2017-2020 CAPEX development:

- 2018 is expected to be similar to 2017
- 2019-2020 CAPEX expected to be around 2016 level as the construction activities for the API production facility in the US will gradually complete

CAPEX: Capital expenditure

API: Active pharmaceutical ingredient

Closing remarks

Effective formulation using SNAC carrier

Long half-life and molecular stability enabling protein absorption

Simple dosing instructions to avoid food-drug interaction

USD 2 billion production ramp-up for oral semaglutide

SNAC: Sodium N-[8-(2-hydroxybenzoyl) Amino] Caprylate