

Søren Bregenholt

R&D External Relation, Sourcing & Strategy
Novo Nordisk A/S

Diabetes was a fatal disease before 1922

Life expectancy was three years for people with diabetes before the discovery of insulin

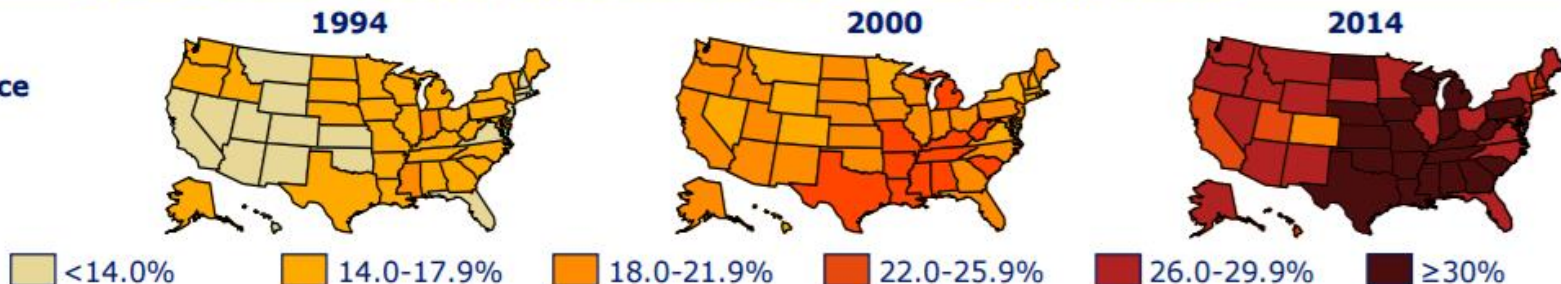


Teddy Ryder before and after treatment with insulin in 1922

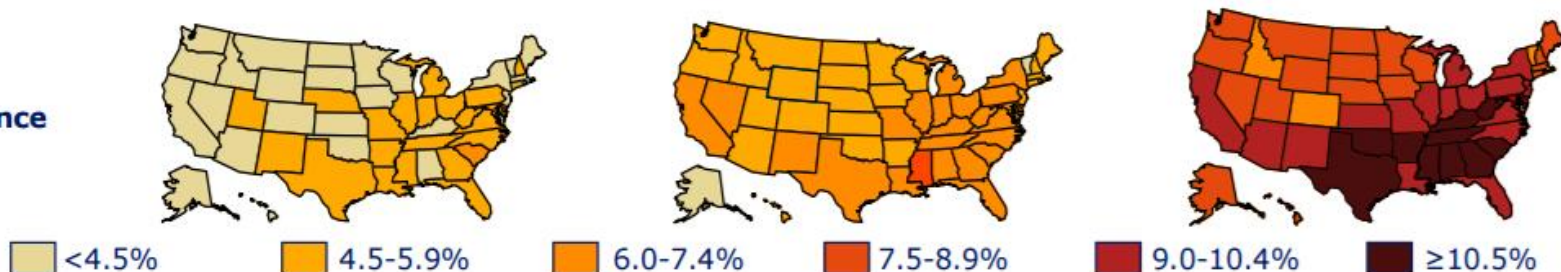
Diabetes pandemic is fuelled by growing rates of obesity

US CDC data on obesity and diabetes prevalence among adults

Obesity prevalence
(BMI ≥ 30 kg/m²)



Diabetes prevalence



CDC: Centers for Disease Control and Prevention

Source: CDC's Division of Diabetes Translation. National Diabetes Surveillance System available at <http://www.cdc.gov/diabetes>

Novo Nordisk at a glance

Novo Nordisk is a global healthcare company with more than 90 years of innovation and leadership in diabetes care.

This heritage has given us experience and capabilities that also enable us to help people defeat other serious chronic conditions: haemophilia, growth disorders and obesity.



2015 R&D spend
~2 BILLION USD



TOP 3
SCIENCE EMPLOYER IN
SCIENCE MAGAZINE RANKING



EMPLOYS APPROX
42.000 PEOPLE

FOCUS ON PROTEINS

INSULIN > 90 YEARS
GROWTH HORMONE > 50 YEARS
BLOOD CLOTTING FACTORS > 30 YEARS
GLP-1'S > 25 YEARS



SPONSORING
~120
PHD'S AND POSTDOCS

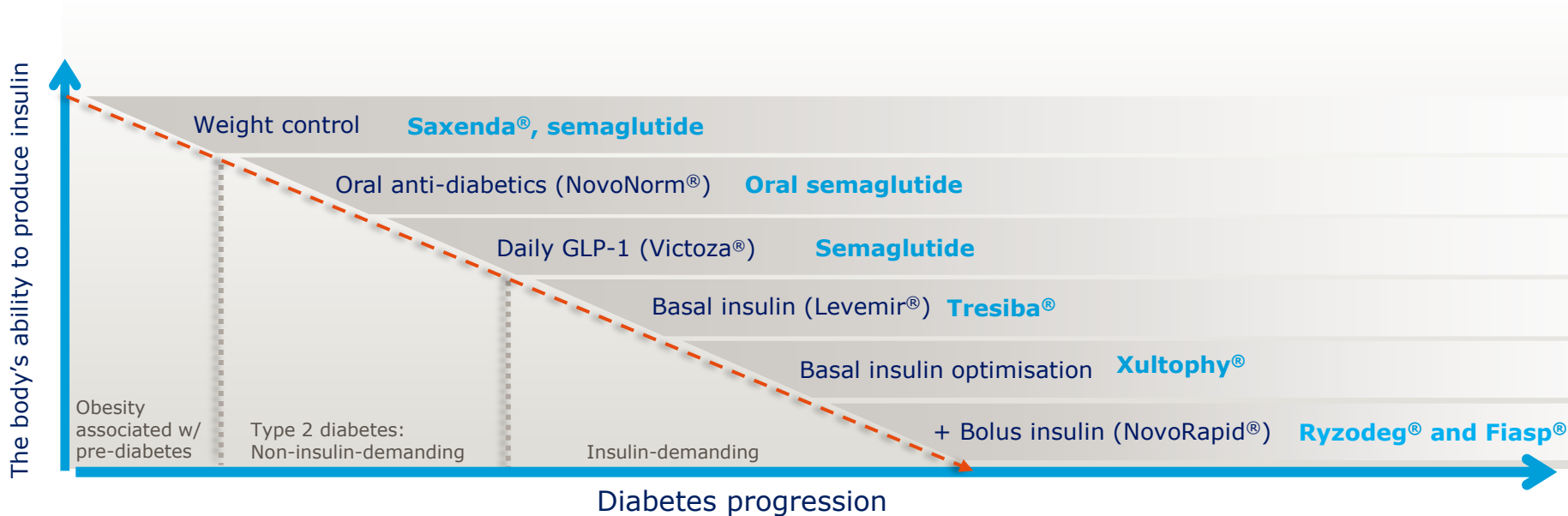


1 BRAZIL, CHINA, DENMARK,
FRANCE AND US
**STRATEGIC
PRODUCTION
SITES**

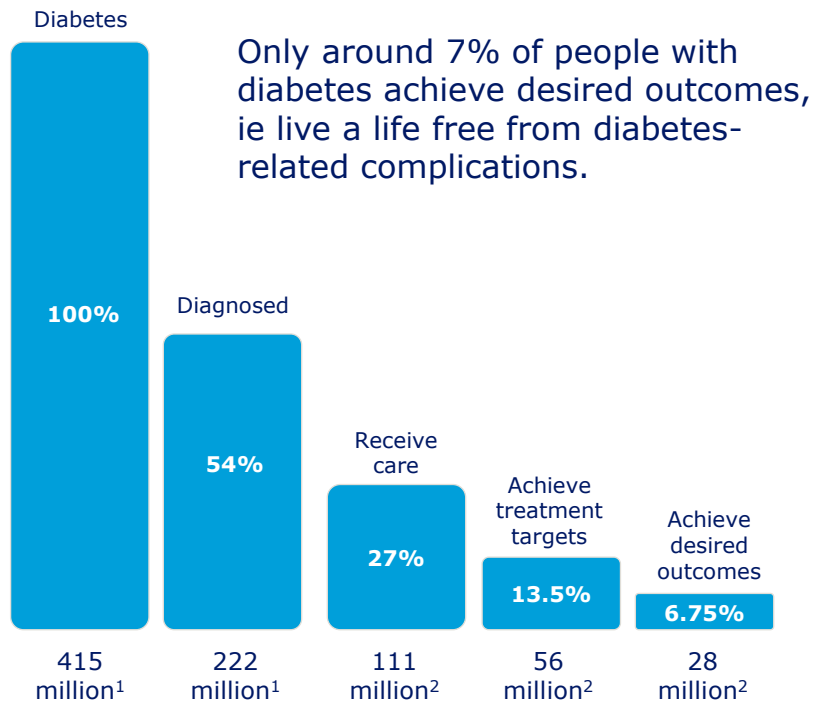
7.000 PEOPLE
EMPLOYS IN R&D APPROX



Novo Nordisk seeks to help patients “from A-Z”

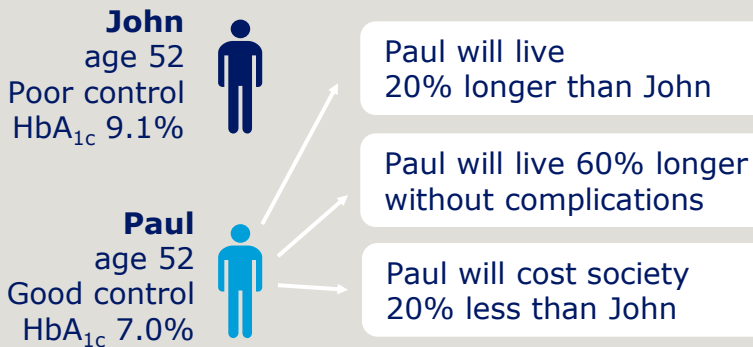


Significant **unmet needs** still exist within diabetes care



BENEFITS - OF TIGHT GLYCAEMIC CONTROL

John and Paul have recently been diagnosed with diabetes:



¹International Diabetes Federation. *IDF Diabetes Atlas*, 7th edition, 2015 update.

² Rule of half applies in estimate. (Source for rule of half: Hart J.T., Br J Gen Pract 1992, March; 42(356):116-119, and W.C.S. Smith, A.J. Lee, I.K. Coombie, H. Tunstall-Pedoe, Br. Med. J, 300 (1990): 981-983.)

Our core capabilities not only enables us to raise the innovation bar, but also makes us a preferred partner

FORMULATION



RATIONAL DESIGN



EXPRESSION



MEDICAL & CLINICAL



DELIVERY SYSTEMS



...and we believe there still is space for innovation within our core insulin and GLP-1 areas...

Patient unmet needs

Improve on
glucose control



Convenience
benefits

Co-morbidity
benefits

Innovation categories and unmet needs addressed

PK optimised

- Improve glucose control
- Reduce hypoglycaemia
- Reduce administration frequency
- Enable flexible dosing



Oral delivery

- Increase compliance
- Improve convenience



Selective

- Reduce hypoglycaemia
- Provide weight benefit
- Provide comorbidity benefits



Combos

- Improve glucose control
- Reduce hypoglycaemia
- Provide weight benefit
- Provide comorbidity benefits

$$1+1=3$$

What we seek

We are always pioneering new innovation within our fields

We engage in strategic partnerships with academia, and are interested in hearing from you if you are working on elucidating biology in our disease areas.

We are e.g. interested in partnering to identify new therapeutic targets or collaborate if you are spearheading new technologies for molecule identification or drug delivery systems.



ADJACENT DISEASE AREAS OF HIGH UNMET NEED

- NASH
- Diabetic kidney disease
- Cardiovascular disease



DIABETES INNOVATION

- Novel peptide and peptidomimetic insulins and GLP-1s
- Focus on added benefit to glucose control:
 - CV improvement
 - Weight loss



OBESITY INNOVATION

Proteins or peptides for obesity treatment:

- Addressing comorbidities
- Affecting e.g. appetite regulation and energy expenditure



HAEMOPHILIA INNOVATION

- Novel subcutaneous bypassing therapies for haemophilia A and haemophilia with inhibitors
- Subcutaneous delivery of long-acting coagulation factors



PROTEIN TECHNOLOGIES

- Technologies for expressing, modifying or producing proteins and peptides
- Formulation and drug delivery technologies for proteins and peptides

Novo Nordisk approaches to external innovation

What we seek:

- New compounds
- New technologies
- Novel IPR
- Know-how
- Talents

Our approach:

Serial in-licensing

Selecting and prioritising clusters



Partnerships



Massachusetts
Institute of
Technology



Co-location



Open innovation



As experts in translational science we can offer

- World-class **protein and peptide technology expertise** including expression, engineering, formulation and delivery via innovative devices
- State of the art **in vivo models**
- Industry leading **translational capabilities** from basic research to clinical trials
- In-depth **disease and patient understanding**
- Solid **platforms for** clinical development and **trial execution**
- **Large scale manufacturing capabilities** of therapeutic proteins and peptides
- Well **established presence and access** to all global markets
- Widely **recognized ethical standards**

Novo Nordisk is are regarded as an excellent partner



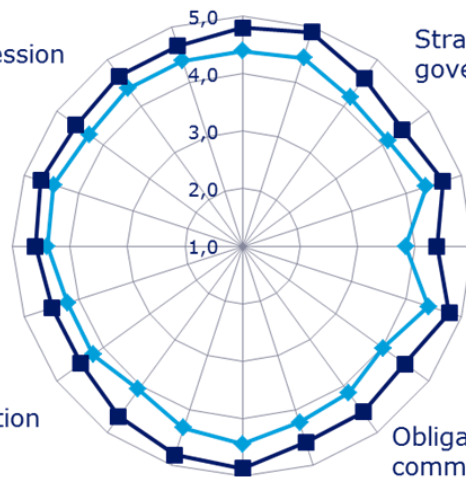
2015 alliance survey

Overall impression

Strategic alignment & governance

Communication

Obligations & commitment



Novo Nordisk rating of partner

Partner's rating of Novo Nordisk



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