

**cities  
changing  
diabetes**

# Cities Changing Diabetes

Addressing the diabetes risk  
factors in urban settings

# Cities Changing Diabetes


The Cities Changing Diabetes programme works to **map the problem** of obesity and type 2 diabetes in cities, **share learnings** and **act as a catalyst** for meaningful action, which can help bend the urban diabetes curve.

In partnership we are calling on every city to ask itself: 'What will it take to **bend the diabetes curve** in our city?'



**11** partner cities\*

\* Mexico City, Copenhagen, Houston, Tianjin, Shanghai, Johannesburg, Vancouver, Rome, Xiamen, Hangzhou and Beijing



more than  
**100**  
million citizens<sup>1</sup>

**cities  
changing  
diabetes**





# Representative of Novo Nordisk in Albania



**Bujar Spahija**

# Changing lives for 95 years






# Strong heritage within diabetes

Since the company was founded 95 years ago, we have been **changing diabetes**.

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



AUGUST AND MARIE KROGH

August and Marie Krogh obtained permission to produce insulin in Scandinavia in 1922

# The miracle of insulin

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



Teddy Ryder before and after treatment with insulin in 1922

# The discovery of insulin

Toronto University  
Yale University

Denmark



## Discovery of insulin

Charles Best and Frederick Banting became the first researchers in the world to produce an insulin extract.

**1921** TORONTO UNIVERSITY

## Permission to produce insulin in Scandinavia

On a lecture tour in North America, August and Marie Krogh obtained permission to produce insulin in Scandinavia.

**1922** YALE UNIVERSITY

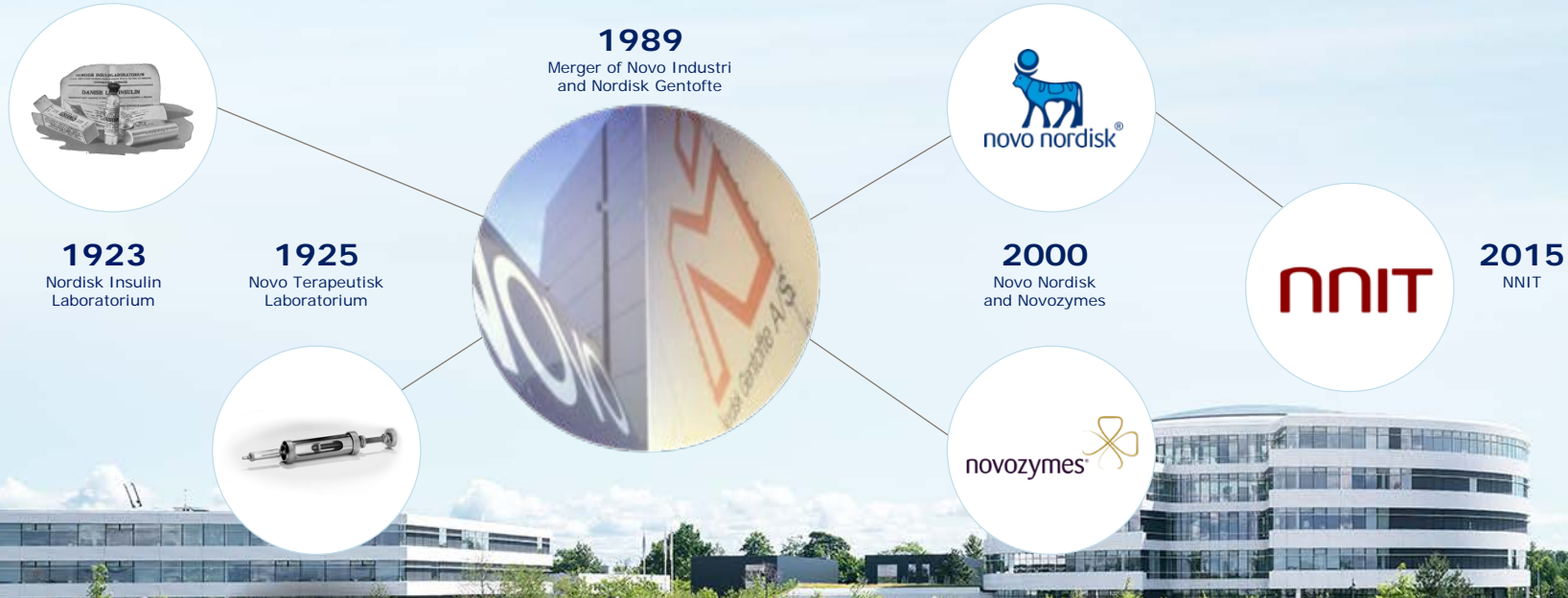
## Production of insulin in Scandinavia

Nordisk Insulinlaboratorium is founded in Denmark by Hans Christian Hagedorn and August Krogh. Nordisk produced the first insulin in Scandinavia

**1923** DENMARK

# The evolution of the company

## Timeline





# Novo Nordisk at a glance

Novo Nordisk is a global healthcare company with 95 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 diseases: haemophilia, growth disorders and obesity.



PRODUCTS MARKETING IN  
170 COUNTRIES



DIABETES

AFFILIATES IN COUNTRIES 79



R&D CENTRES

IN CHINA, DENMARK,  
UK AND US



OBESITY



EMPLOYS APPROXIMATELY  
42,100 PEOPLE

STRATEGIC  
PRODUCTION SITES

IN BRAZIL, CHINA, DENMARK,  
FRANCE AND US



GROWTH  
DISORDERS

DKK 112  
BILLION  
IN TOTAL REVENUE



APPROXIMATELY  
210,000  
SHAREHOLDERS



HAEMOPHILIA

SUPPLIER OF NEARLY  
HALF OF THE  
WORLD'S INSULIN

27,700,000

PEOPLE USE OUR  
DIABETES CARE PRODUCTS

# Product portfolio

This product portfolio overview represents Novo Nordisk's global portfolio. Not all products are available in all markets. Some products may be available under different product brand names in some markets. Please contact relevant local Novo Nordisk affiliates for further information.

## DIABETES CARE

New generation insulins

Tresiba®

Ryzodeg®

Xultophy®

Fiasp®

Modern insulins

Levemir®

NovoRapid®

NovoMix® 30

NovoMix® 50

NovoMix® 70

Glucagon-like peptide - 1

Victoza®

Ozempic®

Human insulins

Insulatard®

Actrapid®

Mixtard® 30

Diabetes devices & accessories

FlexTouch®

FlexPen®

NovoPen® 5

NovoPen® 4

NovoPen Echo®

InnoLet®

Oral antidiabetic agents

NovoNorm®

## OBESITY

Saxenda®

## HAEMOPHILIA

Novo Seven®

Novo Eight®

Novo Thirteen®

Refixia®

## HUMAN GROWTH HORMONE

Norditropin®

Norditropin FlexPro®

PenMate®

Norditropin NordiFlex®

NordiPen SimpleXx®

NordiLet®

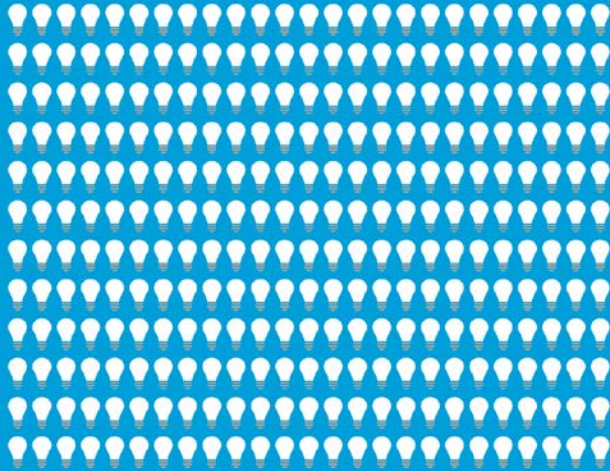
# Medicine is our key contribution



PARVANEH  
Research & Development  
Novo Nordisk, Denmark



10,000  
IDEAS



10

WILL BE TESTED  
ON PEOPLE



ONE

MAY REACH  
THE MARKET



## From idea to patient

Industry estimates that out of 10,000 ideas that begin in the lab, just 10 will ever reach the stage where they are tested on people. Out of that, one may reach the market.

The process normally takes 10 to 15 years from initial work in the lab until a product is launched on the market.

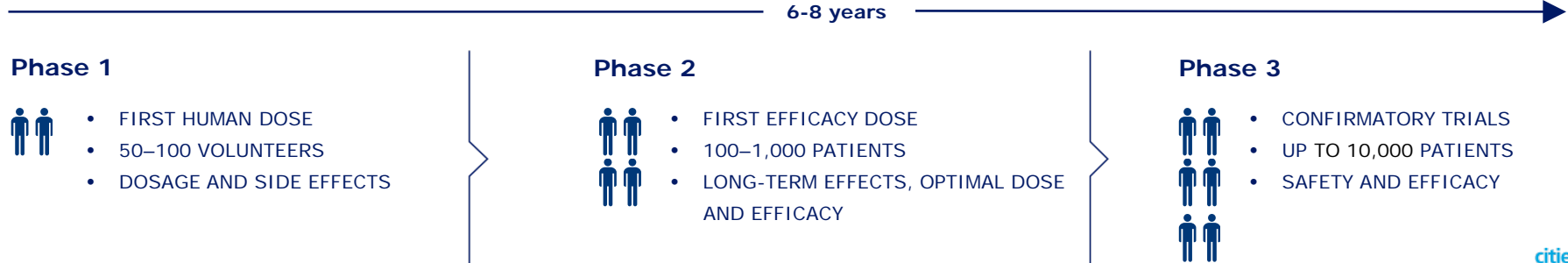
# 10-15 years from idea to patient

1 in 10,000 ideas make it to market

The average estimated development costs of a final drug is around USD 2.6 billion<sup>1</sup>

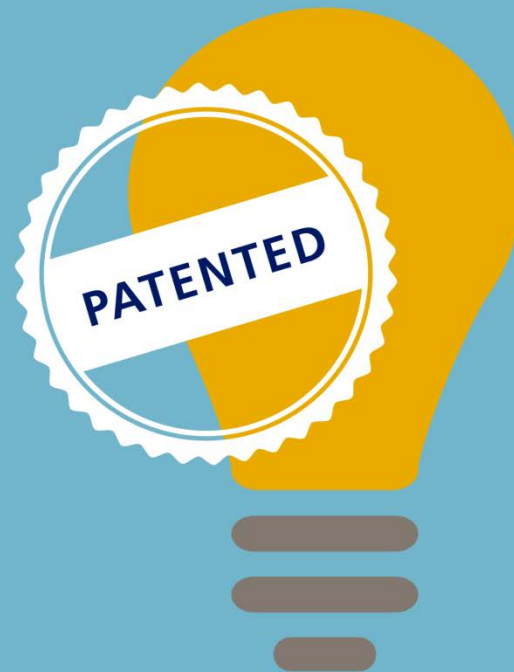


## Clinical trial programme:



# The importance of patents

- Patents are crucial for development of new therapies. They are at the heart of high-risk investment decisions.
- It typically takes 10-12 years and costs €1.1-1.3 billion to develop a new drug.
- Without appropriate return, there will be no investment in medical innovation, and without innovation, there will be no new therapies.





# Diabetes is a global health challenge



TODAY, 425 MILLION PEOPLE HAVE DIABETES.<sup>1</sup>  
BY 2045, IT IS ESTIMATED THAT

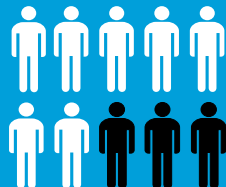
# 736 MILLION

PEOPLE WILL HAVE DIABETES GLOBALLY<sup>2</sup>



1 IN 2

PEOPLE WITH TYPE 2 DIABETES DO  
NOT KNOW THEY HAVE IT<sup>1</sup>



7 in 10

PEOPLE WITH DIABETES DO NOT ACHIEVE  
DESIRED TREATMENT OUTCOMES<sup>3</sup>

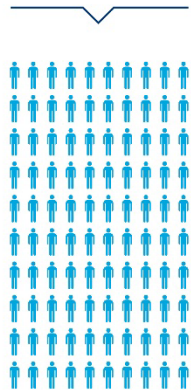
4 MILLION

DEATHS ARE CAUSED BY DIABETES  
ANNUALLY<sup>1</sup>



# The one rule we need to change

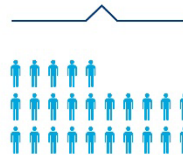
OF THE  
ESTIMATED  
425 MILLION<sup>2</sup>  
PEOPLE WITH  
DIABETES...



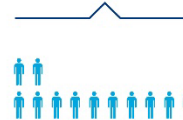
ABOUT  
50% ARE  
DIAGNOSED...



OF WHOM  
ABOUT 50%  
RECEIVE  
CARE...



OF WHOM  
ABOUT 50%  
ACHIEVE  
TREATMENT  
TARGETS...



OF WHOM  
ABOUT 50%  
ACHIEVE DESIRED  
OUTCOMES.



The Rule of Halves<sup>1</sup> illustrates the global diabetes situation. Only around 6% of people with diabetes live a life free from diabetes-related complications.

\* Actual rates of diagnosis, treatment, targets and outcomes vary in different countries.

1. Hart JT. Rule of Halves: implications of increasing diagnosis and reducing dropout for future workload and prescribing costs in primary care. Br J Gen Pract 1992; 42(356):116–119.
2. International Diabetes Federation. IDF Diabetes Atlas, 8th ed. International Diabetes Federation; 2017.



TONGYUAN LIU  
China  
Tongyuan has  
type 2 diabetes

changing  
diabetes®



CARL LYONS  
Denmark  
Carl has haemophilia A

life-  
changing  
careers™

# It takes more than medicine

to drive change and defeat diabetes and  
other serious chronic diseases



changing  
haemophilia™

NAOMI JOHNSON  
USA  
Sales Representative



# changing diabetes®

For 95 years Novo Nordisk has been changing diabetes. Our key contribution is to discover and develop better biological medicines and make them accessible to people with diabetes all over the world. However, it takes more than medicine to defeat diabetes. Our Changing Diabetes® commitment focuses on the largest unmet needs; addressing diabetes risk factors in urban areas, ensuring that people with diabetes are diagnosed earlier and have access to adequate care to be able to live their lives with as few limitations as possible. Working in partnerships we will continue to drive change to defeat diabetes with an unfailing belief: it can be done.

## KEY INITIATIVES:

**cities**  
changing  
diabetes

Base of the  
Pyramid

**team**  
**novo**  
**nordisk**

  
WORLD **DIABETES** FOUNDATION

  
world diabetes day  
14 November

changing  
diabetes®  
in children

changing  
diabetes®  
in pregnancy

**cities**  
changing  
diabetes

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more than  
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**cities  
changing  
diabetes**





# Team Novo Nordisk racing to change diabetes

Team Novo Nordisk is a global all-diabetes sports team spearheaded by the world's first all-diabetes professional cycling team. The team's mission is to **inspire, educate** and **empower people** affected by diabetes.



**27** athletes  
from **14**  
countries<sup>1</sup>



**+7** million  
followers on  
Facebook<sup>1</sup>



**500** events  
in **30+**  
countries<sup>1</sup>



# Changing Diabetes® in Children

The programme provides **access to care, including human insulin free of cost**, to children with type 1 diabetes.

Activities run in 13 low- and middle-income countries\* in collaboration with international and local partners.



**16,000**

children enrolled<sup>1</sup>



**138**

clinics established<sup>1</sup>



**> 10,500**

healthcare  
professionals  
trained<sup>1</sup>

TRÉSOR KOUADIO  
Trésor has type 1 diabetes  
and lives in Ivory Coast

\* Bangladesh, India, Cameroon, Democratic Republic of the Congo, Ethiopia, Guinea, Kenya, Tanzania, Uganda, Senegal, Ivory Coast, Sudan, and Myanmar

1. Data on file. Novo Nordisk A/S, 2017.  
Numbers are as of December 2017.

**cities  
changing  
diabetes**

# Changing Diabetes® in Pregnancy

The Changing Diabetes® in Pregnancy programme is advocating for **improved, testing, care and education for women with gestational diabetes (GDM)** in low- and middle-income countries.



**65,659**

women screened  
for GDM<sup>1</sup>



**181,296**

women reached  
through awareness  
raising<sup>1</sup>



**4,374**

healthcare  
professionals  
trained<sup>1</sup>

<sup>1</sup>. Data on file. Novo Nordisk A/S, 2017  
Numbers are as of December 2017.

DIANA TORRECILLA  
Diana had gestational diabetes  
in her third pregnancy and  
lives in Colombia





# Reaching the base of **cities changing diabetes**

The Base of the Pyramid programme works to **improve access to diabetes care** for the working poor at the **base of the economic pyramid**.

The programme runs in four countries.\*

Interventions range from ensuring stable and affordable supply of insulin to establishing diabetes clinics and centres of excellence.



**1,650**  
HCPs trained<sup>1</sup>

**2**

**million**  
people reached with  
awareness campaigns<sup>1</sup>



**5,600**  
patients  
receiving insulin<sup>1</sup>

\* Ghana, Kenya, Nigeria and Senegal

1. Data on file. Novo Nordisk A/S, 2017.  
Numbers are as of December 2017.



PAUL MWANGI  
Paul is a lab technician at the  
North Kinangop Catholic Hospital in  
Kenya



# Access to Insulin commitment

Our commitment to have low-cost insulin in our product portfolio and to make **human insulin available** to low-income countries and humanitarian organisations.\*

We provide **human insulin** at a guaranteed ceiling price not exceeding **20%** of the list price in the Western world.



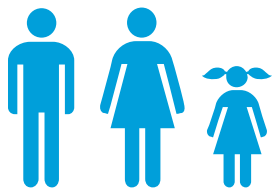
2018 maximum price  
**4 USD/vial**

\* Least developed countries (as defined by the United Nations), other low-income countries (as defined by the World Bank) and selected organisations providing relief in humanitarian situations.

# World Diabetes Day



On 14 November each year, the global diabetes community reach out to millions of people throughout the world to create awareness and advocacy about diabetes.



**1.9 million** people<sup>1</sup>



**103** countries<sup>1</sup>

engaged in Novo Nordisk-driven diabetes awareness and screening activities in 2017<sup>1</sup>

Novo Nordisk employees marking  
World Diabetes Day in the US





# World Diabetes Foundation



WORLD DIABETES FOUNDATION

The WDF was founded by Novo Nordisk in 2002 as an independent and non-profit foundation.

Its vision is to **alleviate human suffering related to diabetes** among those least able to withstand the burden of the disease.

Today, the WDF is a leading international funding agency supporting diabetes prevention and care in the developing world.



USD **137**  
million  
distributed

**535**

projects  
funded



**375,000**  
HCPs trained

SUSANNE BRIXTOFTE OLEJAS,  
WDF Programme Manager (left)  
with a partner during a field visit to Togo.

Numbers as of January 2018

cities  
changing  
diabetes

# changing haemophilia<sup>®</sup>

For more than three decades, Novo Nordisk has been committed to Changing Haemophilia<sup>®</sup>. In addition to the discovery and development of effective and safe biological medicines, we work with our global partners to advocate for and create better access to diagnosis and multidisciplinary care with a focus on joint health.

We aim for a future where all people living with haemophilia can live a life with as few limitations as possible.

## KEY INITIATIVES:







# World Haemophilia Day

Since 1989, patient groups worldwide have annually marked World Haemophilia Day on 17 April to raise awareness and understanding of haemophilia and other bleeding disorders. The date was chosen in honour of the World Federation of Haemophilia founder Frank Schnabel, who was born on that day.

In 2017 more than 13,400 people, from 41 countries, were engaged in Novo Nordisk-driven activities.



JAY LUCKEY  
USA  
Jay has haemophilia B

# Novo Nordisk Haemophilia Foundation (NNHF)

- A non-profit organisation founded in 2005 and based in Zurich, Switzerland.
- Dedicated to defining and funding sustainable programmes which improve access to quality care benefitting people with haemophilia and allied bleeding disorders in developing and emerging countries.
- Partnering with local community members and international experts within three focus areas: capacity building, diagnosis and registry, education and empowerment.
- From 2005 to 2017 the NNHF supported 246 programmes in 69 countries.

[www.nnhf.org](http://www.nnhf.org)





# novo nordisk Way

The Novo Nordisk Way describes who we are, where we want to go and the values that characterise our company.

# The Novo Nordisk Way

In 1923, our Danish founders began a journey to change diabetes.

Today, we are thousands of employees across the world with the passion, the skills and the commitment to drive change to defeat diabetes and other serious chronic diseases.





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more than  
**100**  
million citizens<sup>1</sup>

cities  
changing  
diabetes



# Diabetes is one of the **most pressing health challenges** of the decade

As of 2017

**425 million**

PEOPLE HAVE DIABETES<sup>1</sup>

As of 2045

**736 million**

PEOPLE WILL HAVE DIABETES  
when no action is taken<sup>2</sup>

## References

1. International Diabetes Federation. *IDF Diabetes Atlas*. 7th edn. Brussels, Belgium: International Diabetes Federation. 2015.2
2. Cities Changing Diabetes. Diabetes Projection Model, Global. Data on file. Novo Nordisk. Incentive, ed. Holte, Denmark 2017.

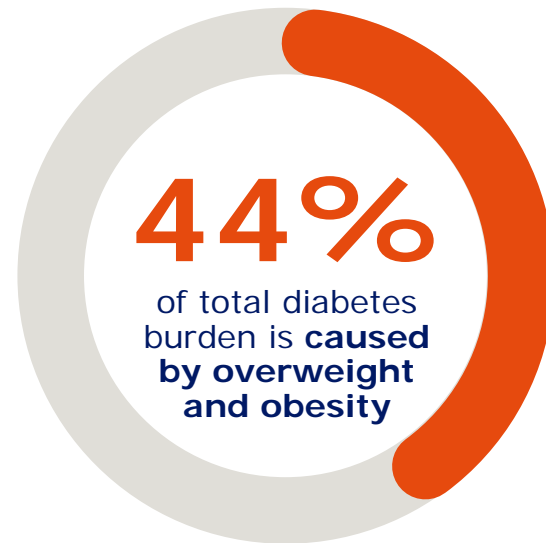
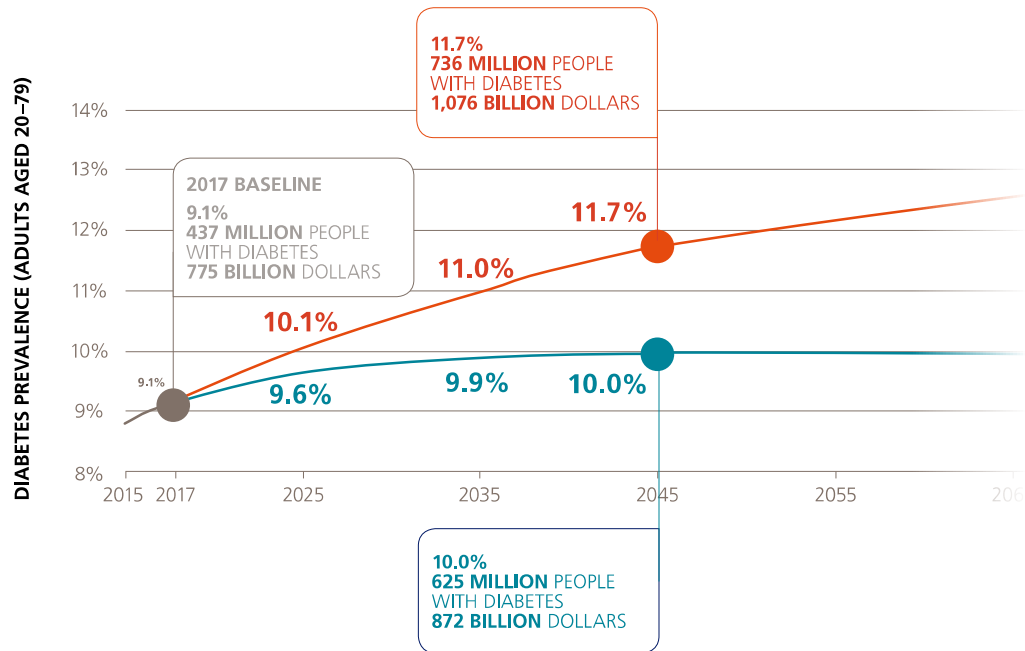
# Today, **two thirds** of people with diabetes live in cities<sup>1</sup>



## References

1. International Diabetes Federation. *IDF Diabetes Atlas*. 7th edn. Brussels, Belgium: International Diabetes Federation. 2015.

# The challenge we need to address

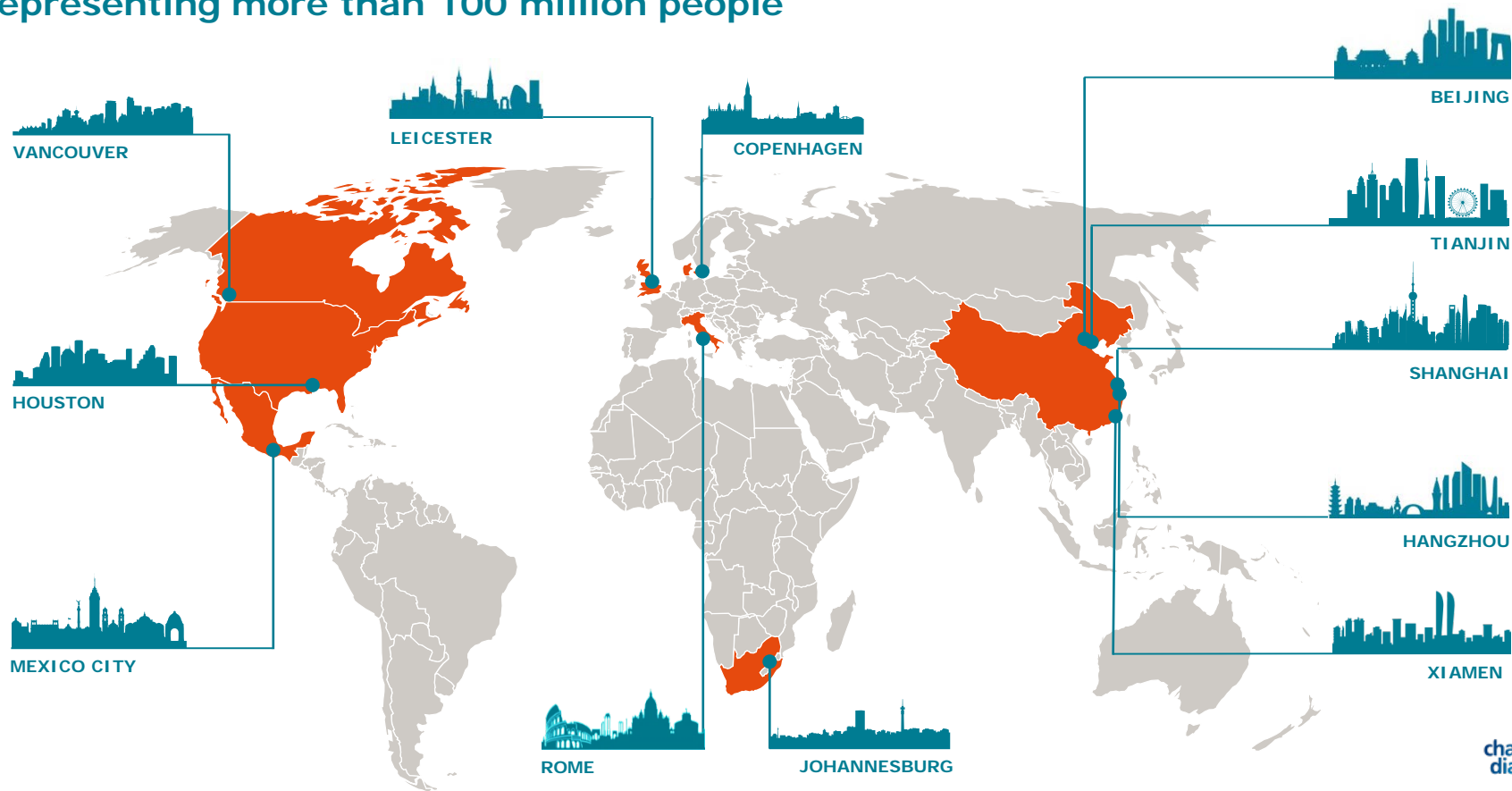


Source: Novo Nordisk 2017.



# The first 12 cities to change urban diabetes

Representing more than 100 million people



# PROGRAMME ELEMENTS

## MAP WE MAP THE PROBLEM IN CITIES ACROSS THE WORLD



Local factsheet



Rule of Halves Analysis



Diabetes Q Assessment



Diabetes Vulnerability Assessment

## ACT WE INITIATE SOLUTIONS TO TACKLE DIABETES



Health promoting policy



Community involvement in health



Urban planning



Health system strengthening

## SHARE WE SHARE INSIGHTS AND SOLUTIONS TO FIGHT URBAN DIABETES



Media outreach



Knowledge exchange visits



Stakeholder meetings



Publications



Global CCD Summit

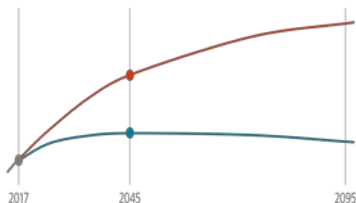


Speaker opportunities

# The Urban Diabetes Toolbox

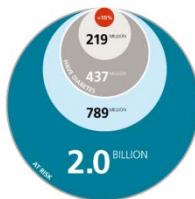
## Setting the Goal

Diabetes Projection model

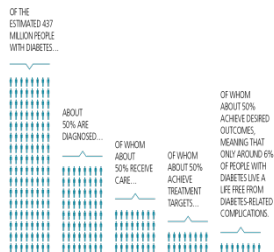


## Mapping the Challenge

Risk Monitor



Rule of Halves



## Understanding Risk and Vulnerability

Diabetes Vulnerability Assessment



Urban Diabetes Risk Assessment



## Designing Interventions

Global Networks



- Community action research network
- Global Peer support network
- Urban Planning network

Action Arenas



Health-promoting policy



Urban planning



Community involvement in health



Health system strengthening

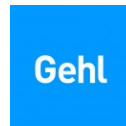


# Establishment of global theme-based knowledge networks

Peer Support network  
with



Urban planning masterclass  
with



Community Action Research  
with



Steno Diabetes Center  
Copenhagen

Healthy City Research  
Hub (North America) with



Academic knowledge  
network  
with





# Partnering to **ACT**



HEALTH-  
PROMOTING POLICY



URBAN  
PLANNING



COMMUNITY  
INVOLVEMENT  
IN HEALTH



HEALTH SYSTEM  
STRENGTHENING



# Cities Changing Diabetes is creating **shared value**



## BENEFITS FOR PEOPLE WITH DIABETES



Improved access to resources



Improved quality of life



Raise the voice of people with diabetes



## BENEFITS FOR THE CITY



Access to new insights about diabetes



Platform for action to reduce morbidity, raise productivity and cut spending



Public-private partnership to improve the city environment



## BENEFITS FOR NOVO NORDISK



Platform to raise the profile of diabetes and illustrate the unmet needs of people with diabetes



Access to stakeholders



Platform to profile Novo Nordisk and improve the company reputation



Brian Hilberdink  
General Manager, Canada

”

Trough CCD, I now have access to stakeholders in the city of Vancouver and Province of British Columbia that I would not have otherwise, and being able to instil in them the notion that Novo Nordisk truly wants to make a difference has a positive impact”

”

We are seeing a lot of different stakeholders from all levels of government, academic institutions and individual clinicians saying “yes let’s acknowledge that we have a [diabetes] problem, and good on you Novo Nordisk for being the impetus for change”



# Local Cities Changing Diabetes Steering Groups typically share following roles

## The City

- Interest to learn more about the diabetes situation in their city
- Willingness to address the findings, ie develop an action plan based on findings
- Willingness to exchange with the global CCD network (participate in Summit, networks etc.)
- Appoint a city responsible to take part in the local CCD core group

## Academia

- Conduct the research (RoH and Urban Diabetes Risk Assessment)
- Share, present and publish study findings
- Take part in the local CCD core group
- Take part in global CCD related meetings/networks

## Novo Nordisk

- Fund and support the research (RoH and Urban Diabetes Risk Assessment).
- Catalyst to convene the local stakeholder group on a regular basis
- Support local stakeholder participation in global CCD events (Summit and networks)

Expanding the local partner group to co-create actions

# Six signposts for future focus

**1** CROSS-CUTTING  
COLLABORATION

**2** HEALTH AND  
CLIMATE SYNERGIES

**3** FOOD SYSTEM  
DYNAMICS

**4** NEW URBAN  
AGENDA

**5** CHILDHOOD  
OBESITY

**6** VULNERABILITY  
AND RISK

# The Triple Bottom Line is about how we do business the right way

*"The Triple Bottom Line principle reminds us how we do business: we always strive to conduct our activities in a **financially**, **environmentally** and **socially** responsible way, because we know this is a prerequisite for a sustainable business and long-term value creation."*

Lars Fruergaard Jørgensen,  
President and Chief Executive Officer





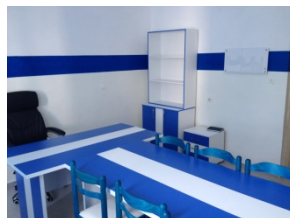
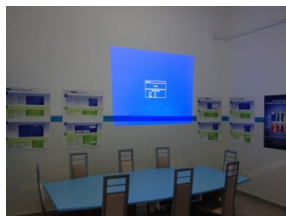
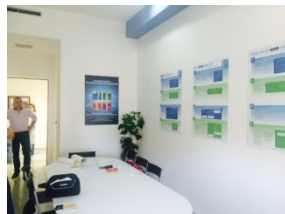


HEALTH SYSTEM  
STRENGTHENING

**RED**  
project

**R**ooms  
on  
**E**ducation  
for  
**D**iabetes

cities  
changing  
diabetes







# cities changing diabetes

THANK YOU





# cities changing diabetes

**JOIN THE GLOBAL FIGHT AGAINST URBAN DIABETES**

- [CitiesChangingDiabetes.com](https://CitiesChangingDiabetes.com)
- [#UrbanDiabetes](https://twitter.com/UrbanDiabetes)
- [@CitiesDiabetes](https://twitter.com/CitiesDiabetes)





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RIEKO YANAGISAWA and  
AKINORI WATANABE  
Japan