



# The Future Diabetes Treatment

## From traditional structures to cross-sectorial collaboration

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*3rd Nordic Diabetic Foot Symposium, Helsinki, Finland – November 6<sup>th</sup>, 2018*

# Agenda

- Brief about diabetes prevalence
- The vision behind Steno Diabetes Center Copenhagen
- Screening, treatment and prevention of diabetic foot ulcers

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# Diabetes – a **global** challenge (IDF Atlas 2017)

**135**  
**1995**

**425**  
**2017**

**629** mio.  
**2045**



# Prevalence of diabetes in **Denmark**

- T1D: **0.5 %** (30.000 with T1D)
- T2D: **4.5 %** (240.000 with known T2D)
- T1D+T2D: **5.0 %** (270.000 with known T1D and T2D)

- Undiagnosed T2D: **1.0 %** (60.000)

- Pre-diabetes: **5.5 %** (292.000)

- Population in DK: 5.600.000

# Expected increase in diabetes in **Denmark**

- **Increasing prevalence** of 3% per year

Due to:

- **Stable incidence** (saturation point reached)
- **Decreasing mortality** (now 'only' an increased Standardized Mortality Ratio (SMR) of 50%)

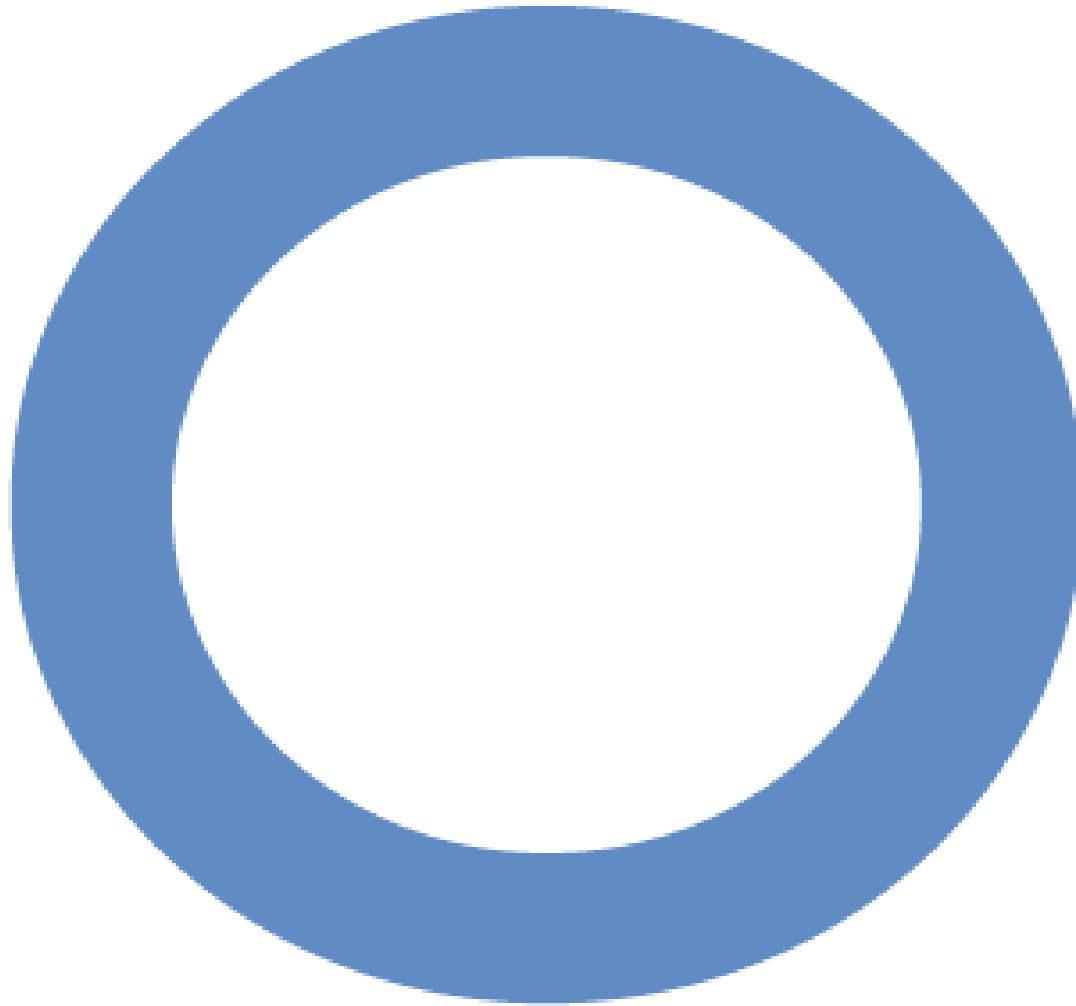
# Diabetes treatment in the Capital Region of Denmark

- T1D: **10%** of all diabetes patients
- T2D: **90%** of all diabetes patients

- Clinical control in the hospital sector: **20%** (19.000)
- Clinical control in the primary sector: **80%** (74.000)




# World Diabetes Day (UN): November 14th





Australian Government  
Department of Health

## Australian National Diabetes Strategy 2016–2020

  
SUNDHEDS-  
OG ÆLDREMINISTERIET

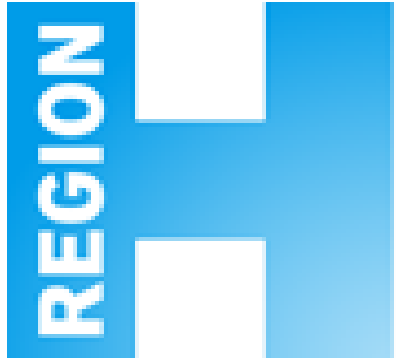
## DEN NATIONALE DIABETES- HANDLINGSPLAN

NOVEMBER 2017



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# Steno Diabetes Center Copenhagen

## Steno Diabetes Center Copenhagen (SDCC)

*SDCC as a new Public Private Partnership (PPP)-like collaborative structure*



Steno Diabetes Center  
Copenhagen

UNIVERSITY OF  
COPENHAGEN



# SDCC as a new (PPP-like) collaborative structure



# Private Foundations in Denmark



# Steno Diabetes Center (SDC)

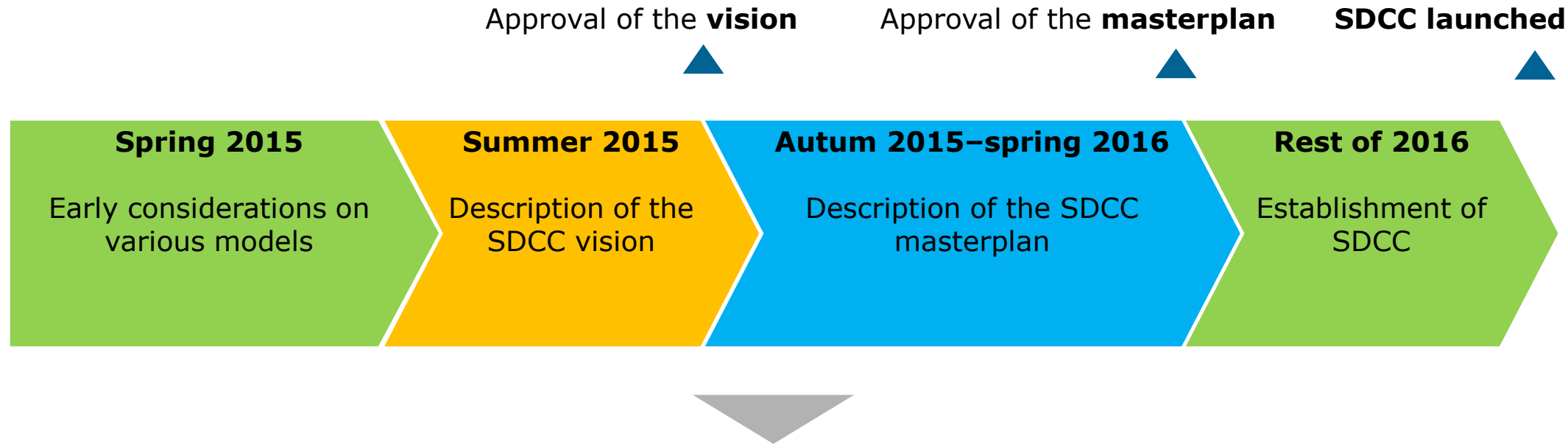
until December 31th, 2016



- SDC has treated **diabetes patients since 1932** with a diabetes population of **6.000** individuals with diabetes
- SDC have had a **strong international brand** within diabetes treatment and research (e.g. STENO 2 Study)
- SDC has been owned by **Novo Nordisk A/S** until December 31th, 2016
- Over decades there has been a significant development in the health care in **the Capital Region of Denmark**

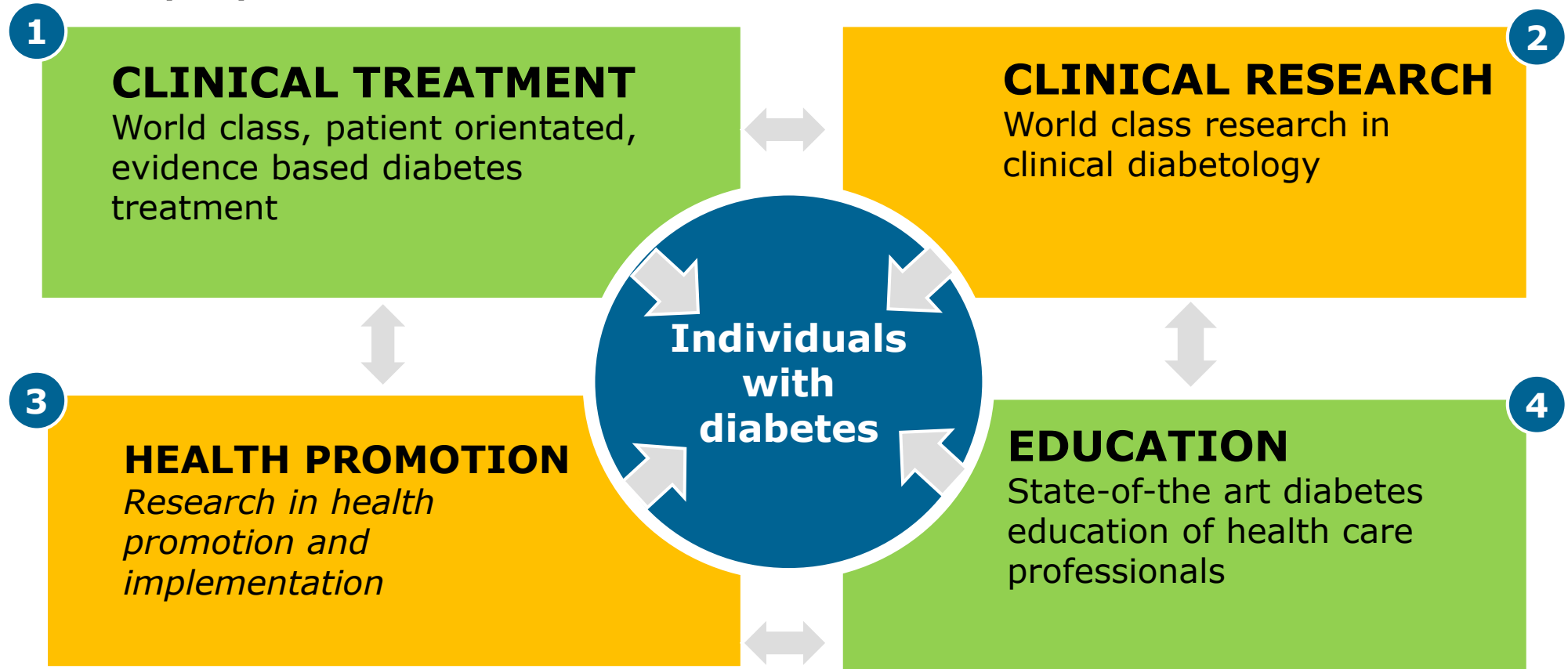
**Unique opportunity** to be a globally leading diabetes-center by a incorporation of SDC into the public health care system in the Capital Region of Denmark

# A new vision developed in collaboration between the **Capital Region of Denmark**, the **Novo Nordisk Foundation** and **Novo Nordisk A/S**



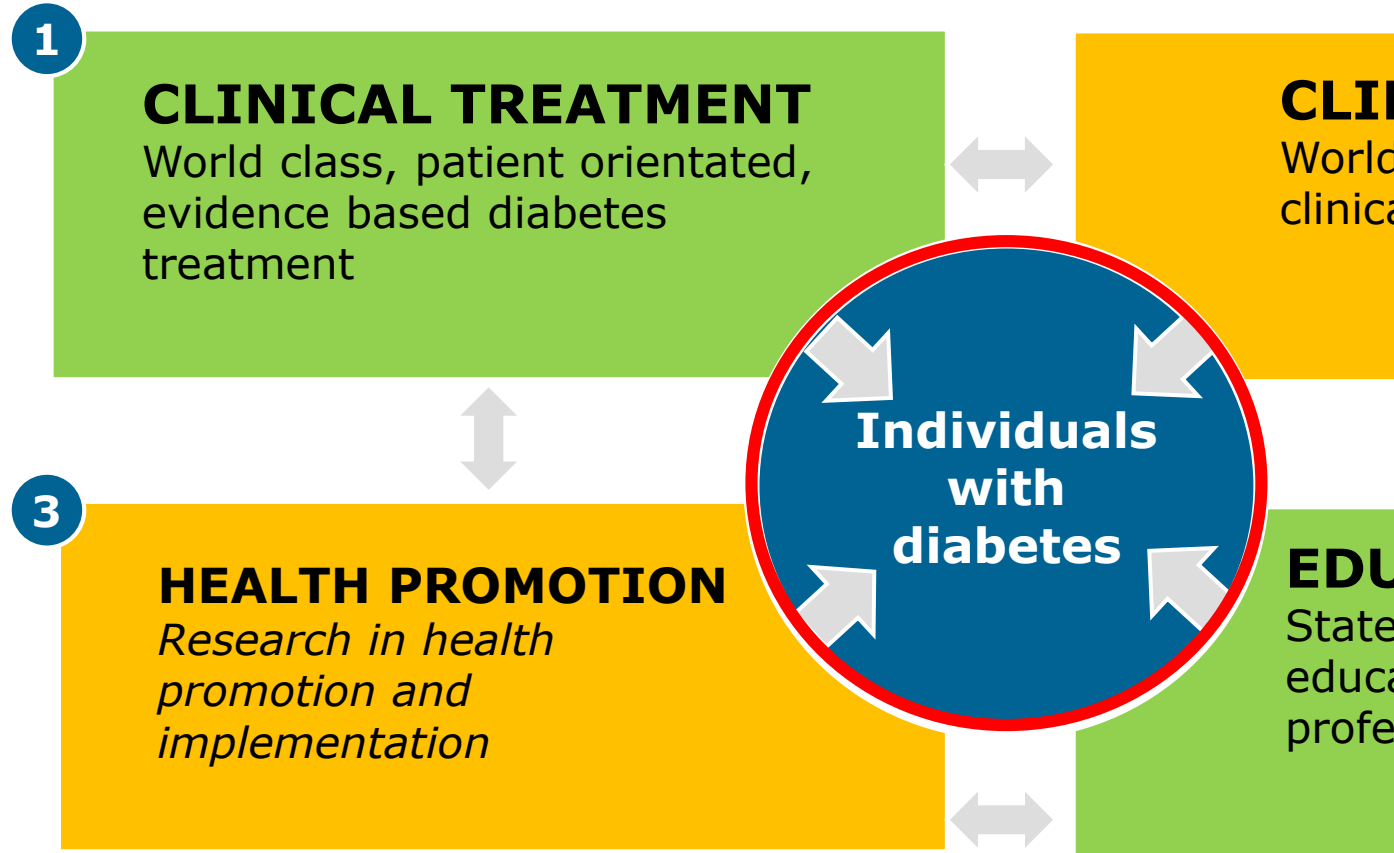
A grand total of **0.6 billion €** (4,3 billion DKK ), with a donation from the **Novo Nordisk Foundation** of **0.4 billion €** (2,95 billion DKK ) for the period 2017-2029

The ambition is to offer **world class treatment, research, education** and **prevention** for the benefit of the population with or at risk of diabetes



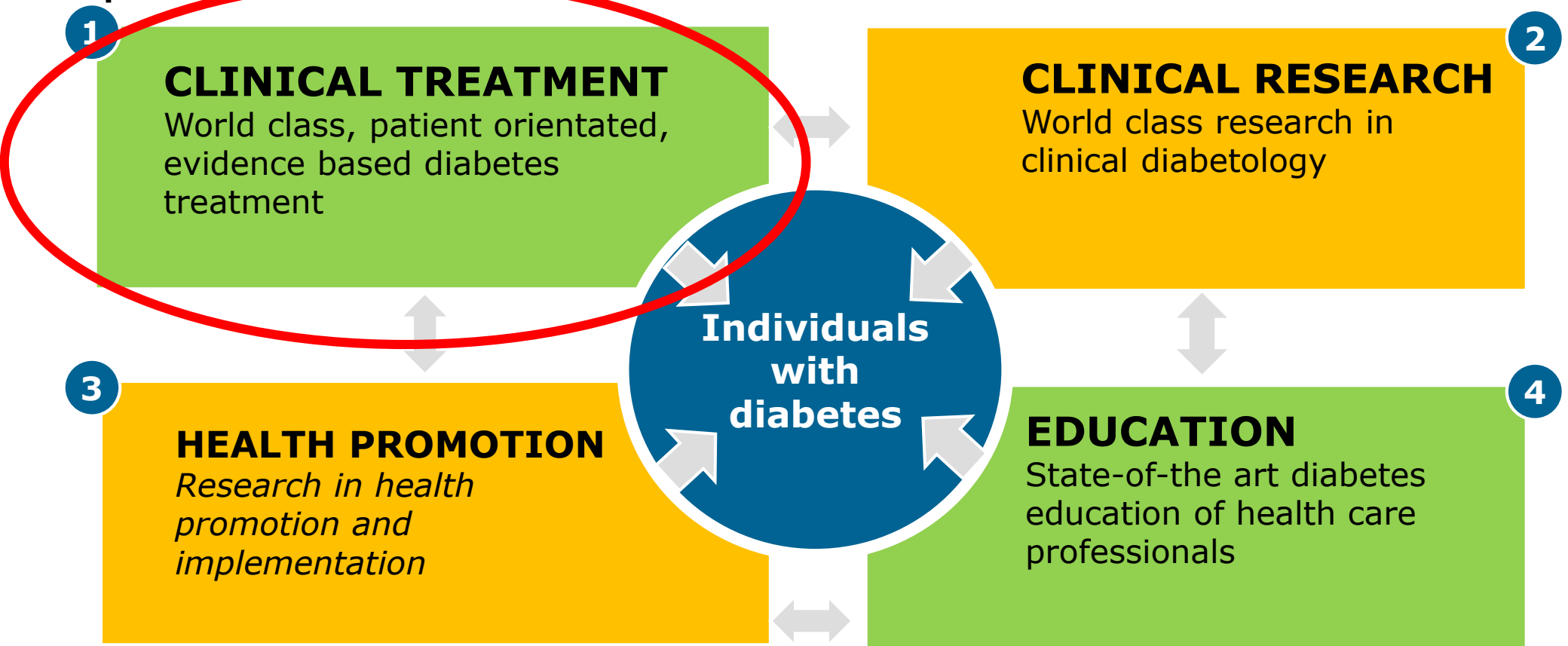
Each activity will be evaluated on **process data** (incl. PRE's), **outcome data** (incl. PRO's)

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# Cross-sectorial collaboration

## ENSURING STANDARD TREATMENT

- **Follow guidelines**
- Out-patient **screening and treatment**
- **Involvement of patients** in their own disease

## DEVELOPING NEW TREATMENT MODALITIES

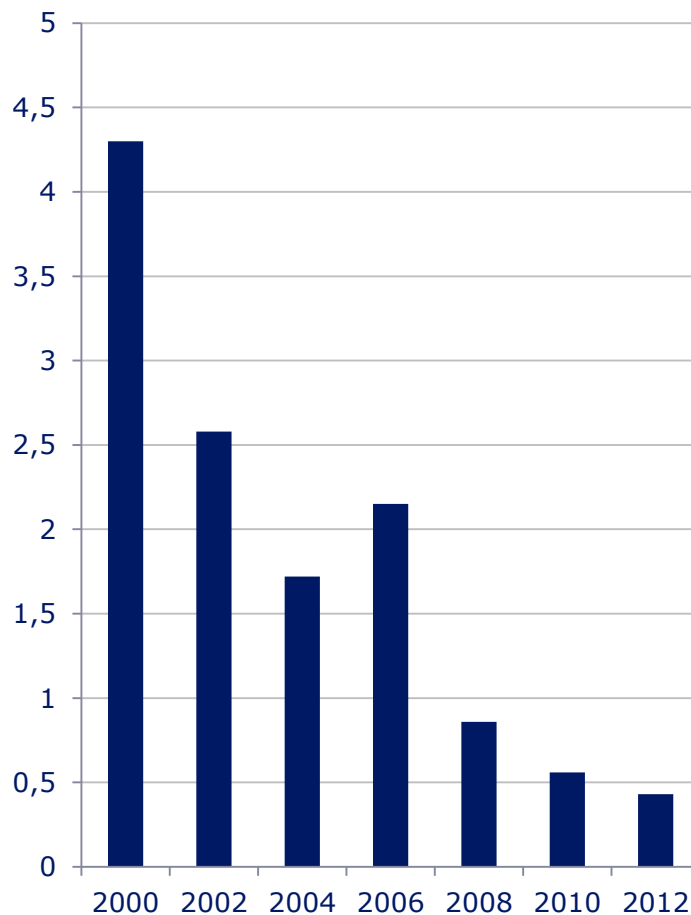
- **New and dedicated collaborations** between various stakeholders (hospital, municipalities and general practice)
- **New evidence** to achieve a patientcentered approach
- **Boosting the translation and implementation** of health research results into daily life

# **Survival:** Type 2-diabetes (Steno 2-study)

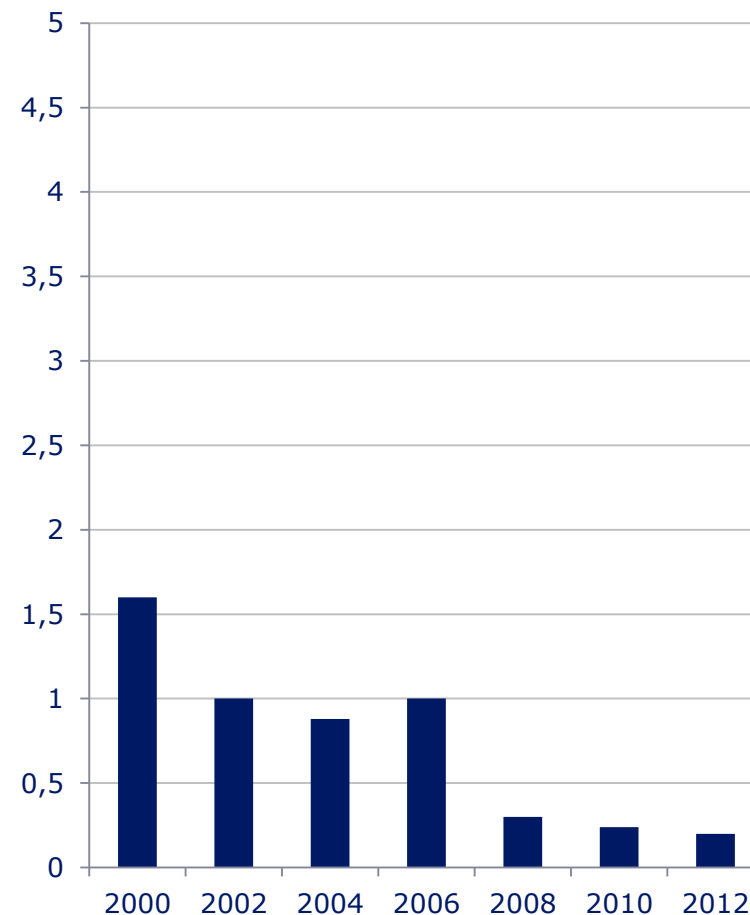


# High amputations – data from SDCC

Type 1-diabetes



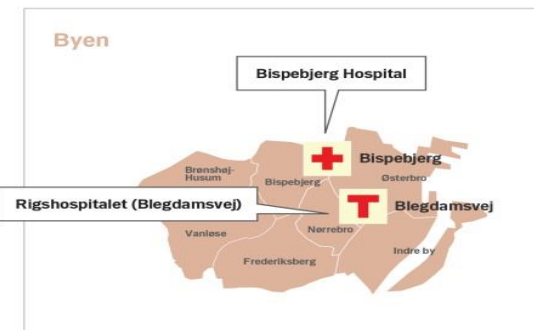
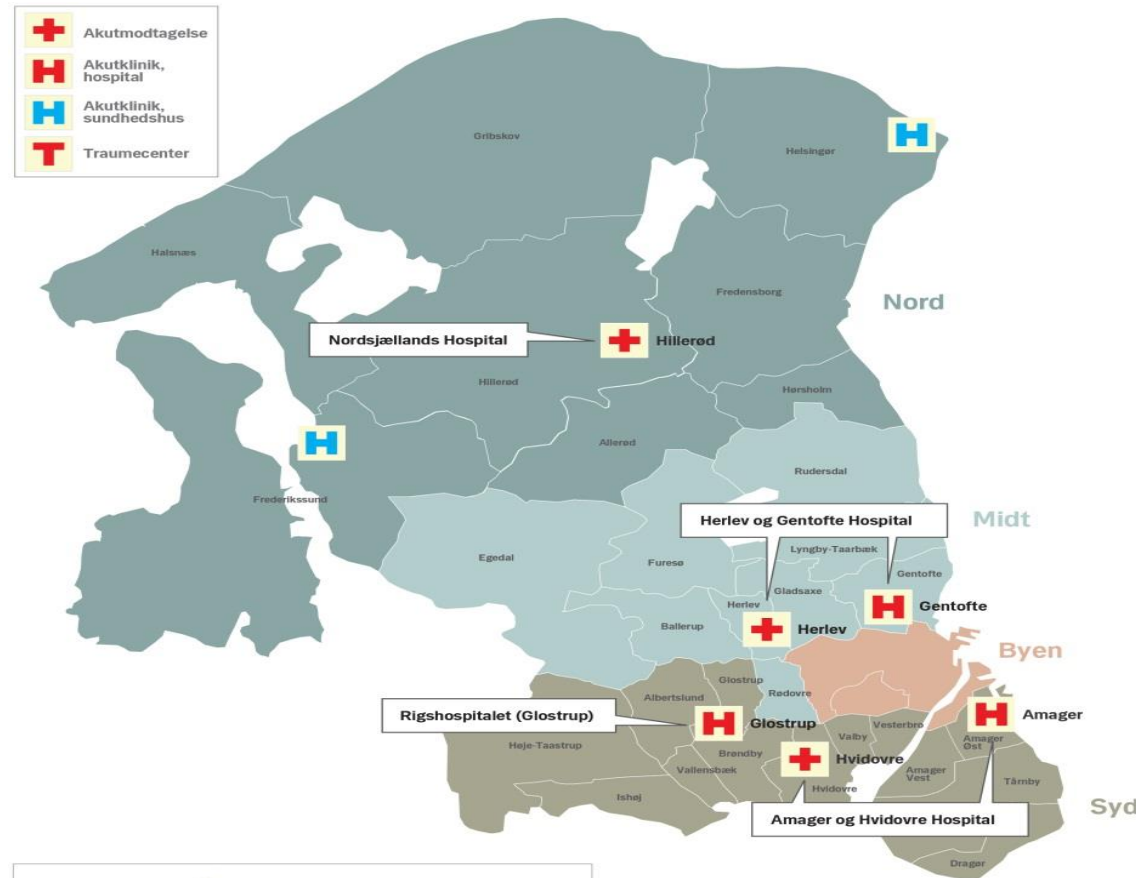
Type 2-diabetes



Amputations per  
1.000 patients  
per year

Jørgensen ME et al. Diabet Med. 2014; 31:443-447

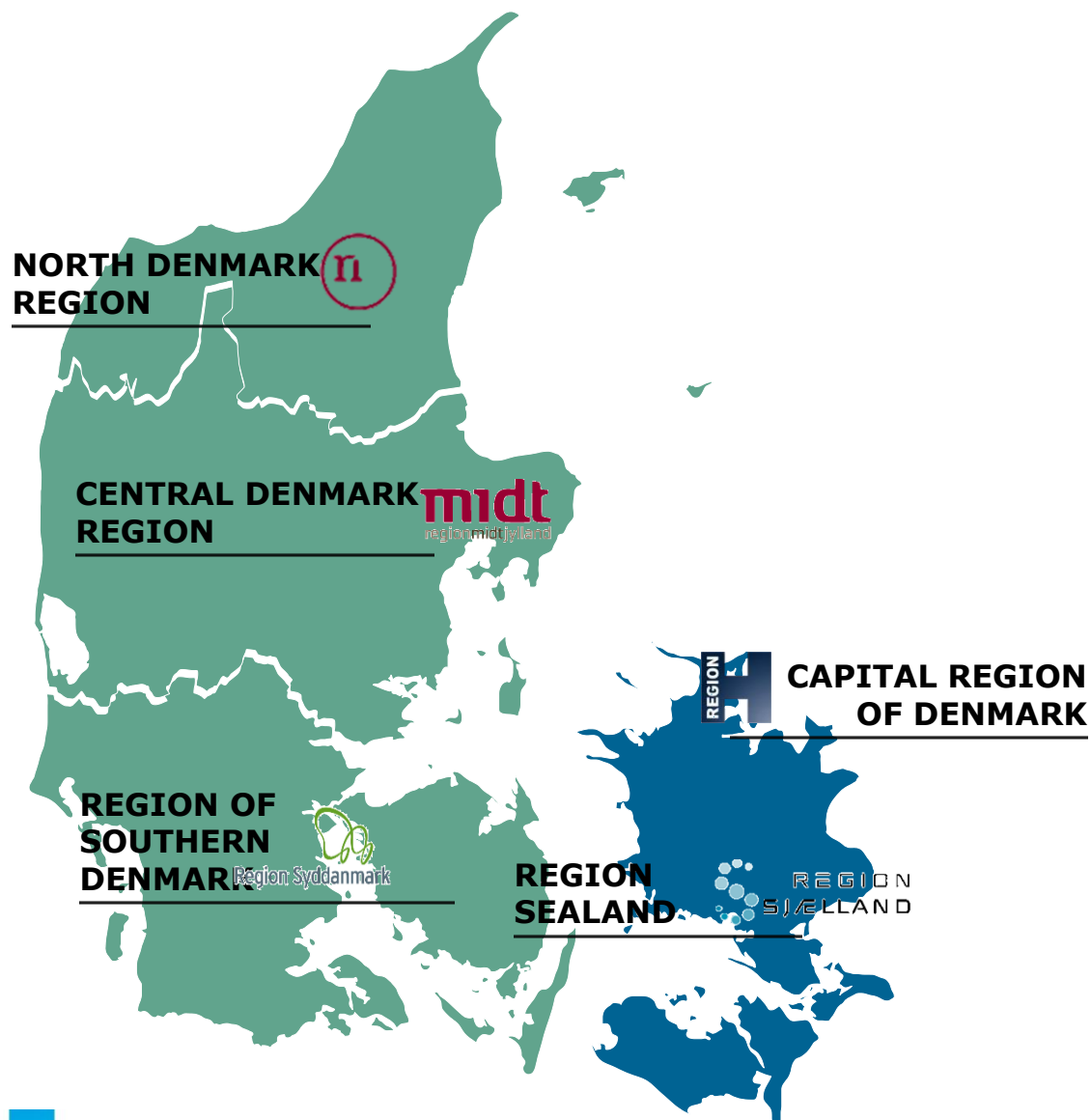
The overall ambition is to **increase the quality of diabetes care for all individuals with diabetes** in The Capital Region of Denmark



# Examples of the development of new treatment modalities within diabetes in 2017-2020

- 1. Multidisciplinary collaboration in the Capital Region of Denmark on co-morbidity in diabetes** within diabetic foot ulcer; diabetes and nephropathy; diabetes and cardiovascular disease
- 2. Focus on developing new tools to identify** individuals with type 1- or type 2-diabetes and psychological / psychiatric diseases
- 3. One-stop-shop-screening** for individuals with type 2-diabetes treated in GP, with a pilot project in 2018-2020
- 4. User-involvement** in treatment, clinical research, education and health care promotion activities (using PRE and PRO)

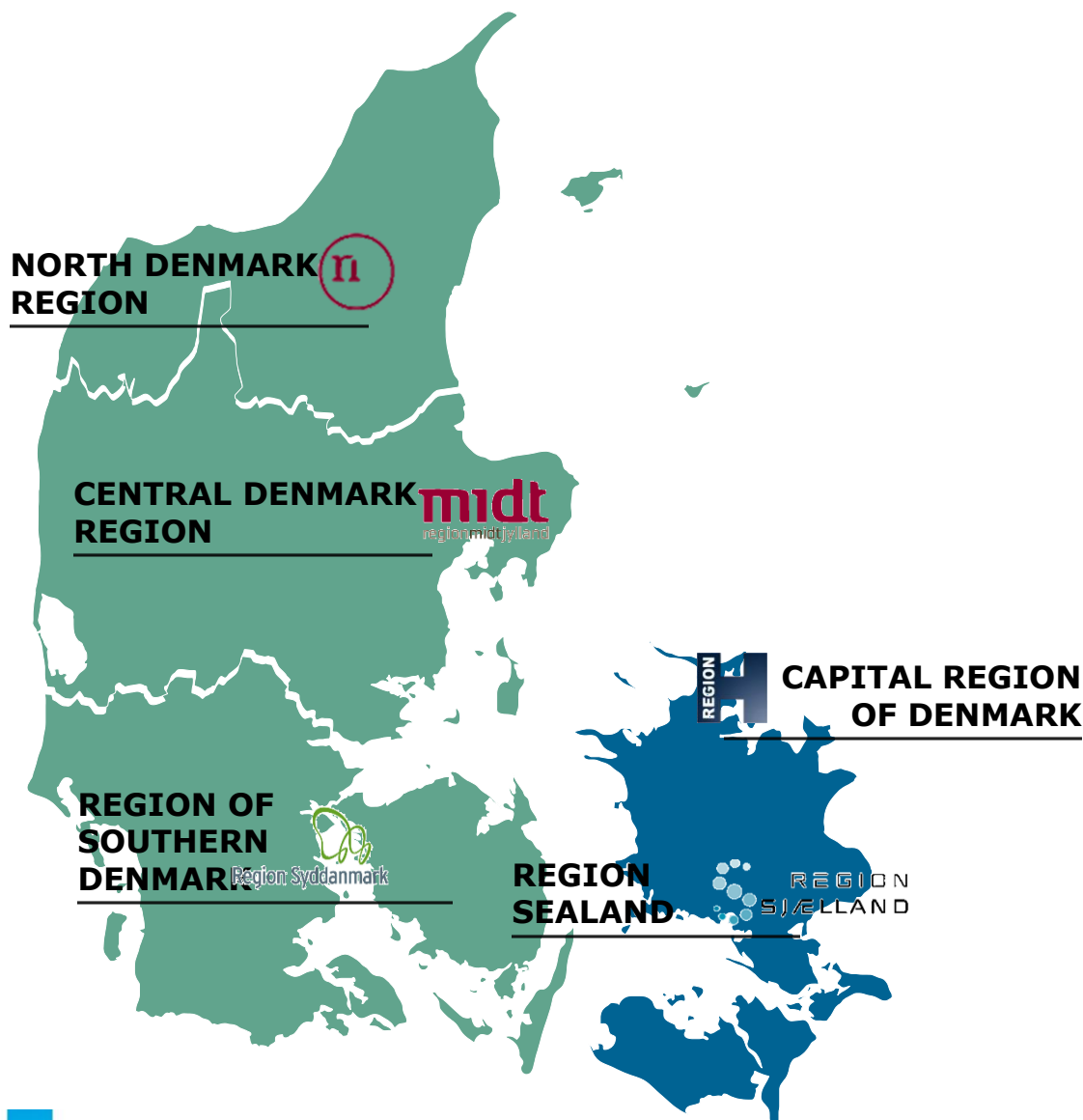
# The **5 regions** in Denmark



- **Capital Region of Denmark**  
Population: 1.800.000
- **Central Region of Denmark**  
Population: 1.300.000
- **Region of Southern Denmark**  
Population: 1.200.000
- **Region Sealand**  
Population: 850.000
- **North Denmark Region**  
Population: 600.000

# Steno Diabetes Centres in all 5 regions of Denmark

- **Steno centers to improve treatment quality for all danish diabetics through:**
  - Regional patient treatment
  - National collaboration on research, health promotion and health care education
  - Access to the total national diabetes population allowing big scale clinical trials
- The 4 other regions to establish Steno-Centers (Region of Southern Denmark (**SDCO**), Central Denmark Region (**SDCA**) and North Denmark Region (**SDCN**) was launched 1.1.18. Region Sealand (**SDCS**) will follow 1.1.19.



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# Prognostic studies in individuals with diabetes: Data from SDCC

Diabetologia

DOI 10.1007/s00125-013-3025-7

SHORT COMMUNICATION

## Time trends in mortality rates in type 1 diabetes from 2002 to 2011

Marit E. Jørgensen  
Bendix Carstensen

JCEM ONLINE

Brief Report—Endocrine Care

## Improved Survival Among Patients With Complicated Type 2 Diabetes in Denmark: A Prospective Study (2002–2010)

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DIABETICMedicine

DOI: 10.1111/dme.12320

### Short Report: Complications

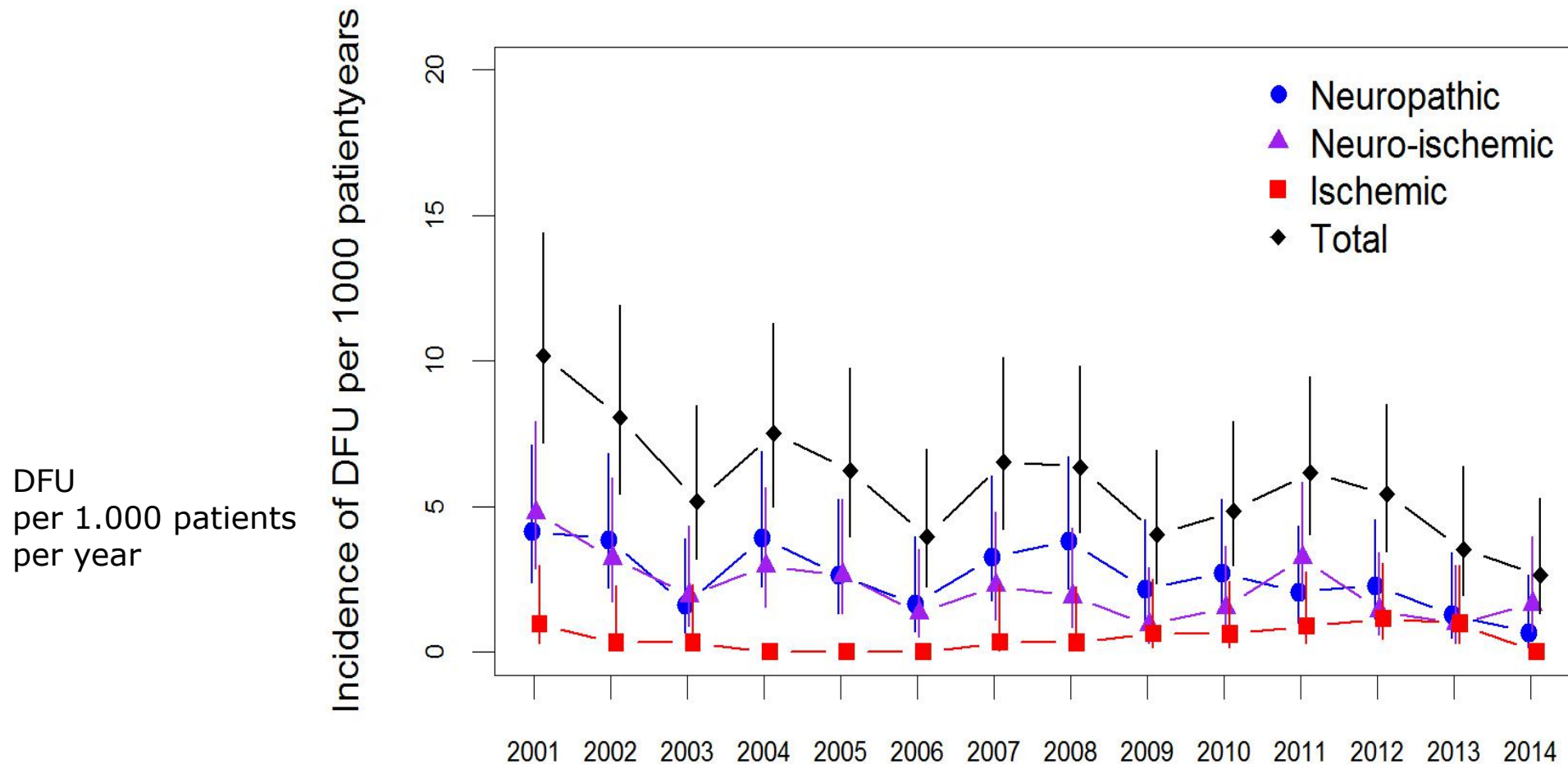
## Reduced incidence of lower-extremity amputations in a Danish diabetes population from 2000 to 2011

M. E. Jørgensen, T. P. Almdal and K. Færch

Steno Diabetes Center, Gentofte, Denmark

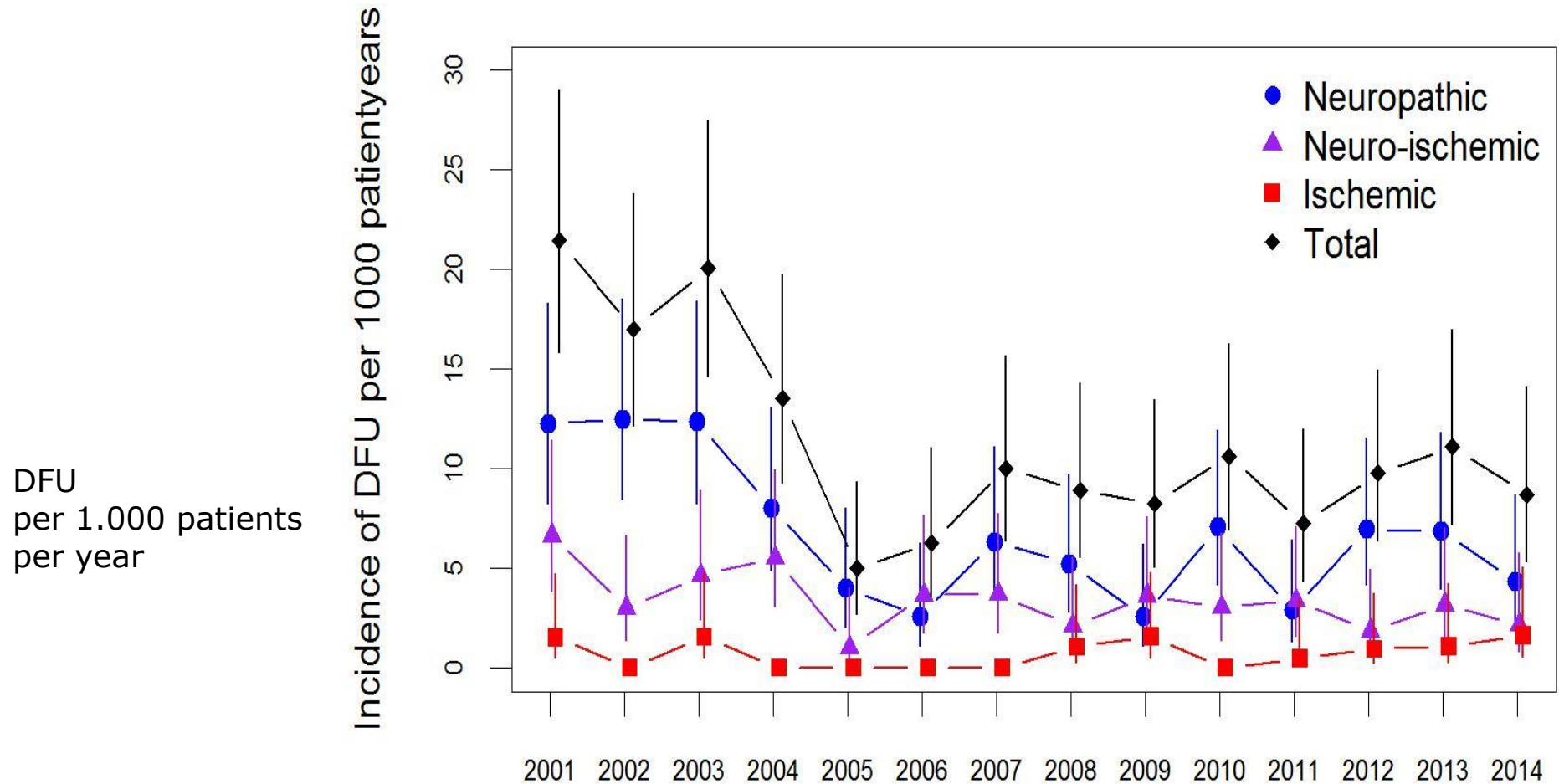
Accepted 18 September 2013

# Incidents of diabetic foot ulcers in type 1-diabetes: Data from SDCC



Diabetes Res Clin Pract. 2017 Aug;130:221-228

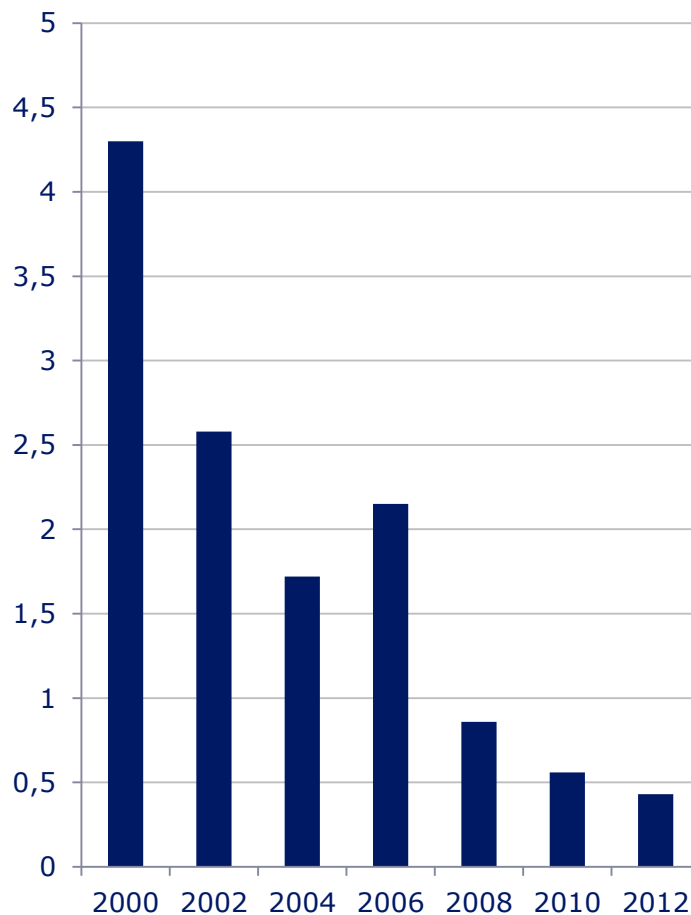
# Incidents of diabetic foot ulcers in type 2-diabetes: Data from SDCC



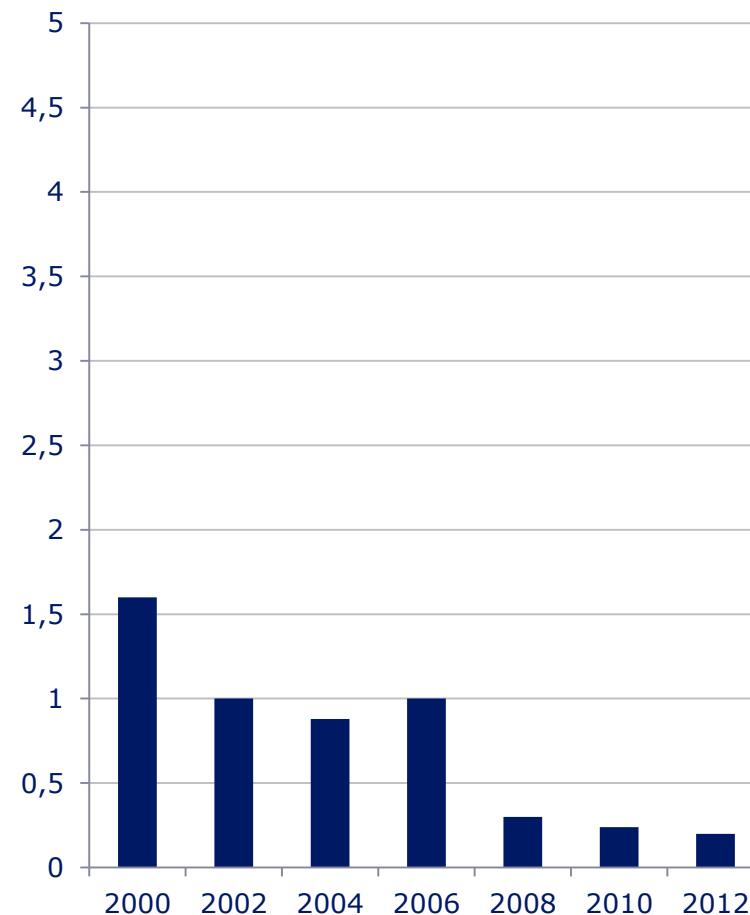
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# Cross-sectorial collaboration within SDCC

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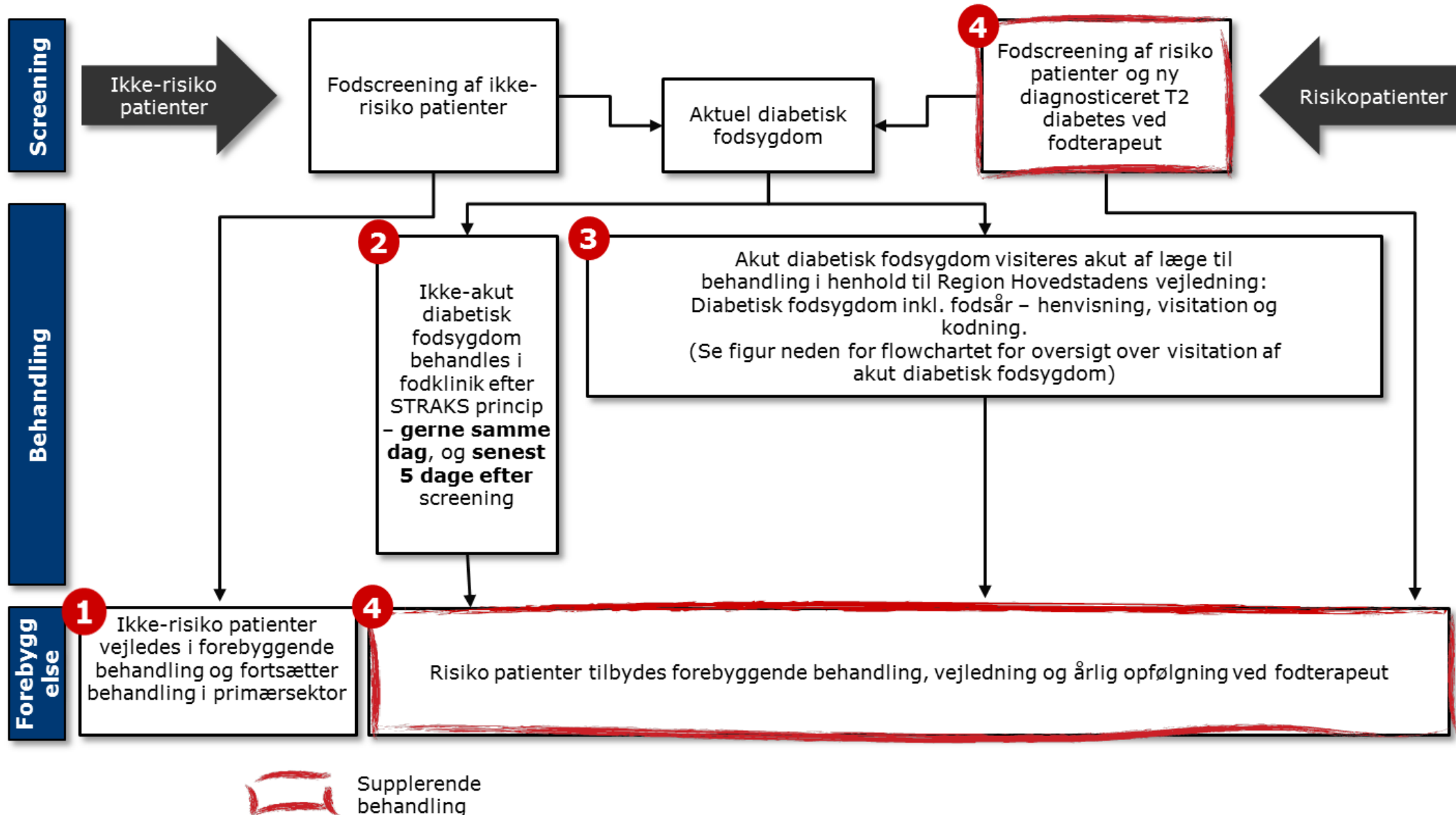
## DEVELOPING NEW TREATMENT MODALITIES

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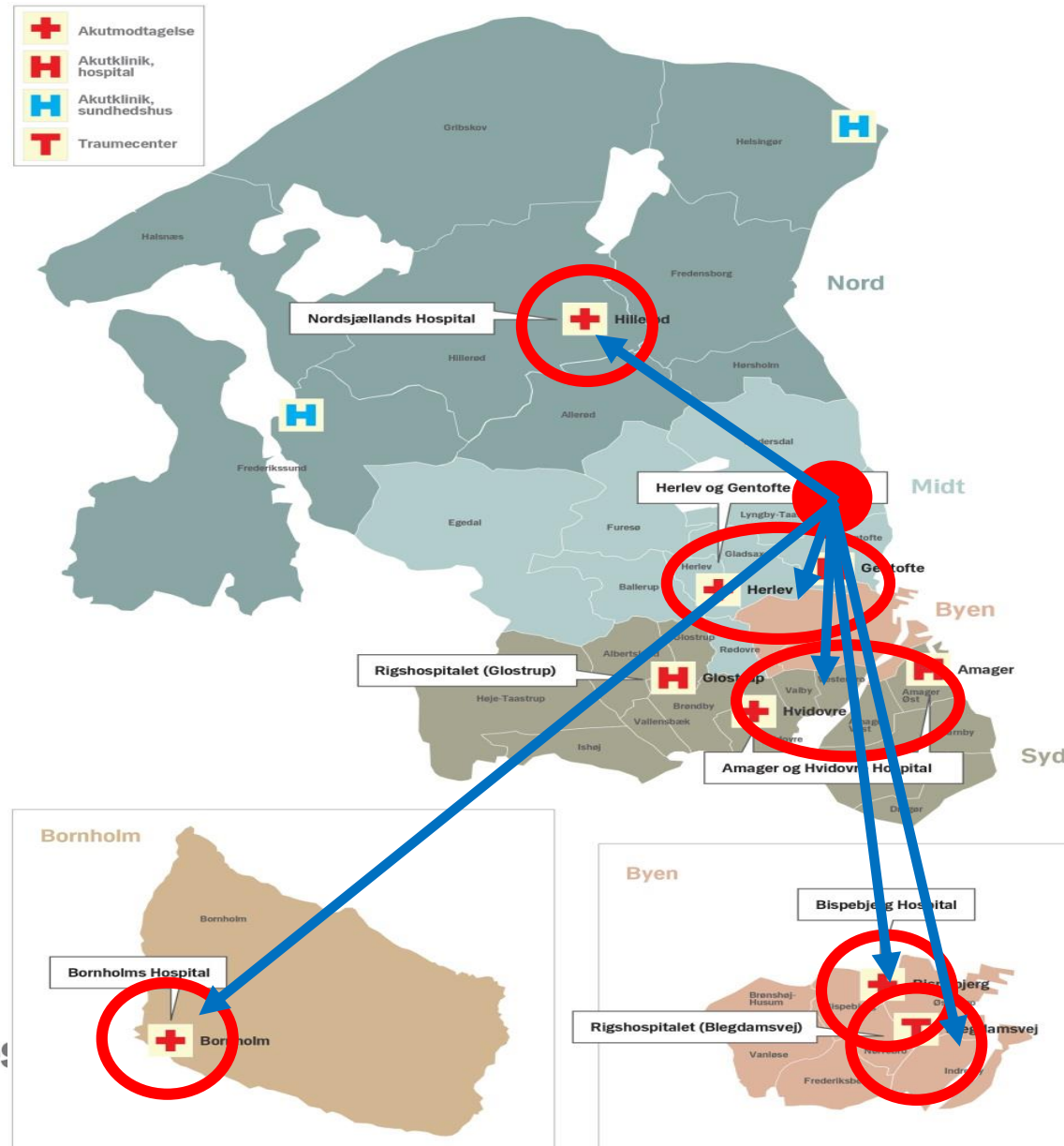
# High risk individuals with diabetes

- All individuals with actual or previous diabetic foot disease (including Charcot, other deformities or previous amputations)
- Neuropathy with vibrationvalue  $> 25$  V or abnormal monofilament test
- Ischemia - if the patient presents with DFU and ankle BP  $< 70$  mmHg and toe BP  $< 50$  mmHg the patient is referred to Department of Vascular Surgery at The National Hospital (Rigshospitalet))
- Nephropathy
- Visual impairment
- Elderly patients
- Co-morbidity

# Screening, treatment and prevention of diabetic foot disease in The Capital Region of Denmark



The overall ambition is to **disseminate the SDCC foot care model to all hospitals** in the Capital Region of Denmark



# Award: Foot of the year 2018 (Danish Podiatrists)

September 20th, 2018





## Steno Diabetes Center Copenhagen

### For further information:

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