

# DIABETES REGISTRIES

Improvement of the quality of care in  
specialized diabetes centers  
(IQED, IQED-Foot & IQECAD)

17 May 2024

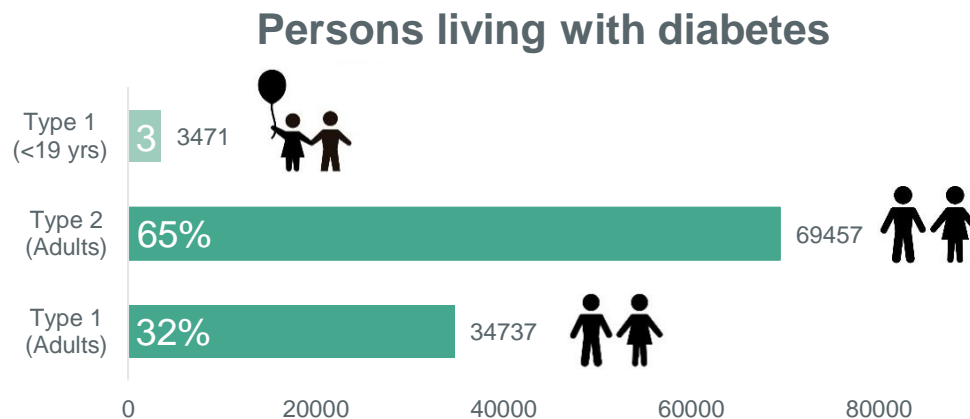
Suchsia Chao (responsible IQECAD)

Astrid Lavens (responsible IQED)

An-Sofie Vanherwegen (team leader, responsible IQED-Foot)

# Diabetes in numbers

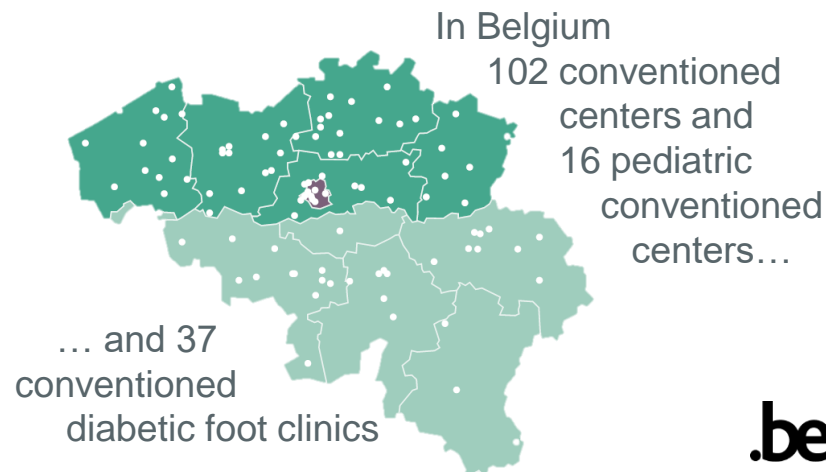
**Diabetes** is a **chronic disease** with a constantly **increasing prevalence worldwide**, characterized by chronic **hyperglycemia** which, over time, leads to **serious damage** to many organ systems, especially nerves and blood vessels.



Those diagnosed are also at risk for



Blindness and eyes problems  
Heart disease and/or stroke  
Kidney disease  
Neuropathy  
Foot problem or amputation



# Project responsible

3 projects financed by RIZIV/INAMI aimed at **measuring** and **improving quality of care** in **hospital-based** multidisciplinary centres treating:

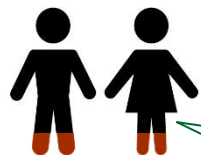


Initiative for **Quality** improvement and **Epidemiology** in **Diabetes**

Adult diabetic patients ( $\geq 2$  injections/day) → **IQED**



Astrid Lavens



Initiative for **Quality** improvement and **Epidemiology** in multidisciplinary **Diabetic Foot** clinics

Adult patients with severe diabetic foot ulcers → **IQED-Foot**



An-Sofie Vanherwegen



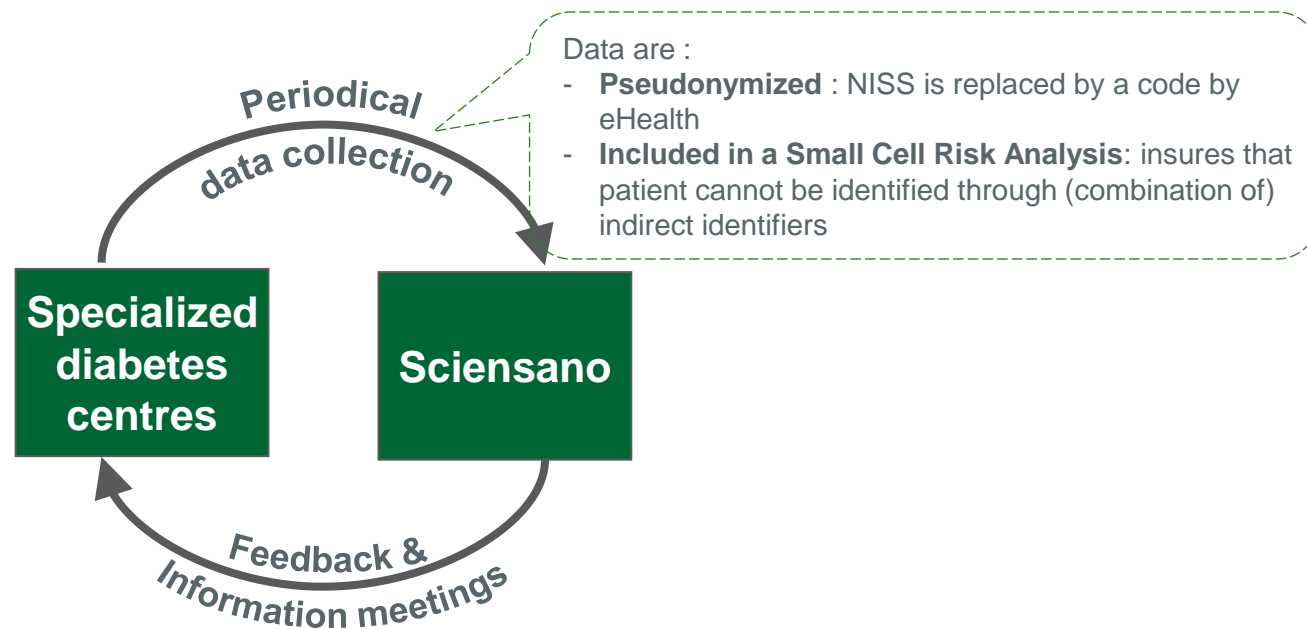
Initiative for **Quality Improvement** and **Epidemiology** in **Children** and **Adolescents** with **Diabetes**

Paediatric diabetic patients → **IQECAD**



Suchsia Chao

# Principle of the diabetes projects



# Principle of the diabetes projects

Periodical  
data collection

Data are :

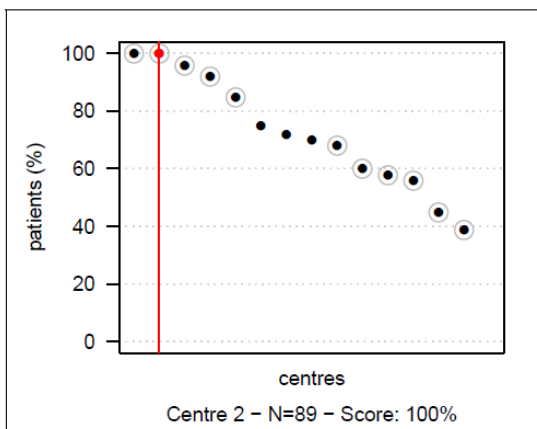
- **Pseudonymized** : NISS is replaced by a code by eHealth
- **Included in a Small Cell Risk Analysis**: insures that patient cannot be identified through (combination of) indirect identifiers,

Specialized  
diabetes  
centres

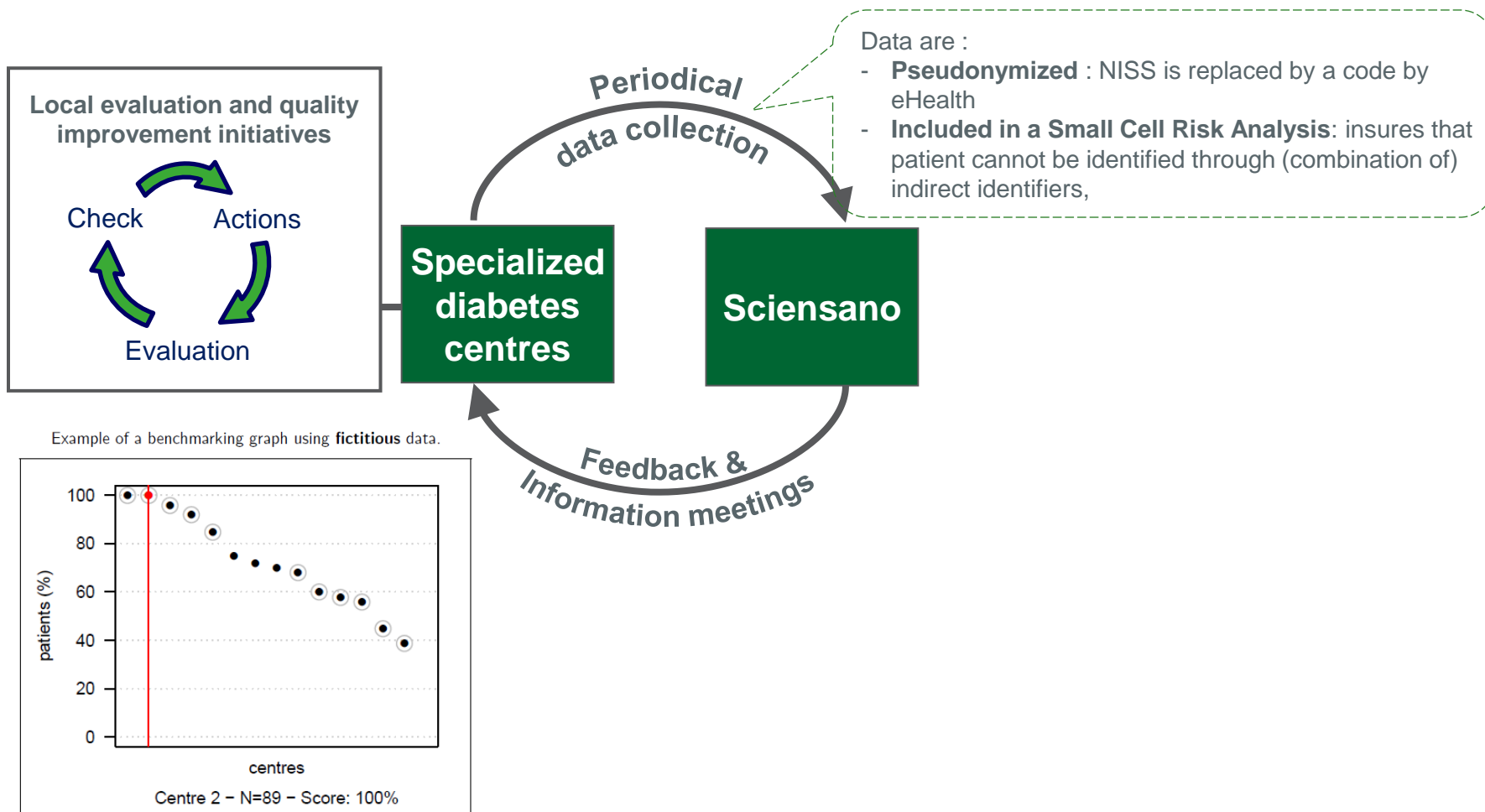
Sciensano

Feedback &  
Information meetings

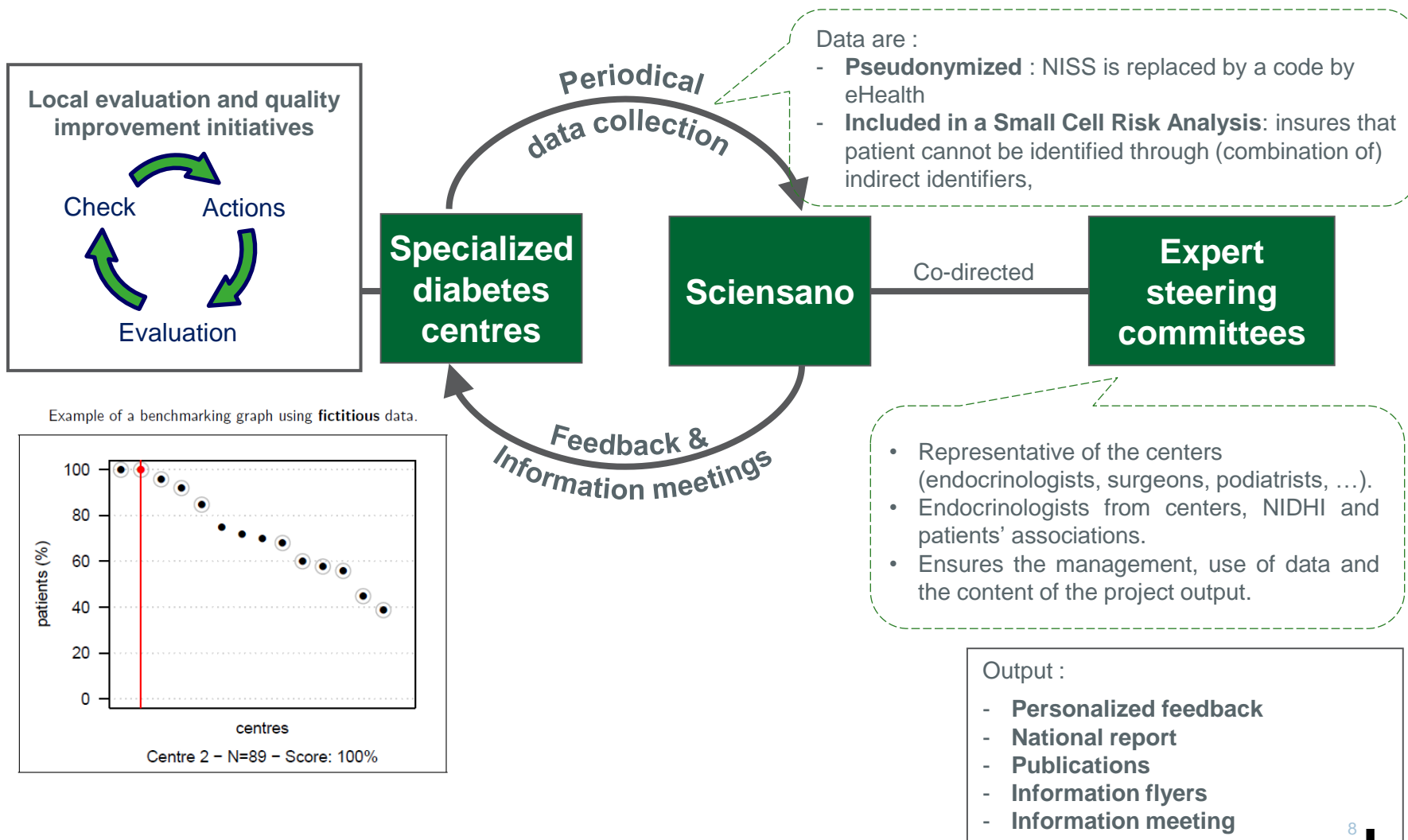
Example of a benchmarking graph using fictitious data.



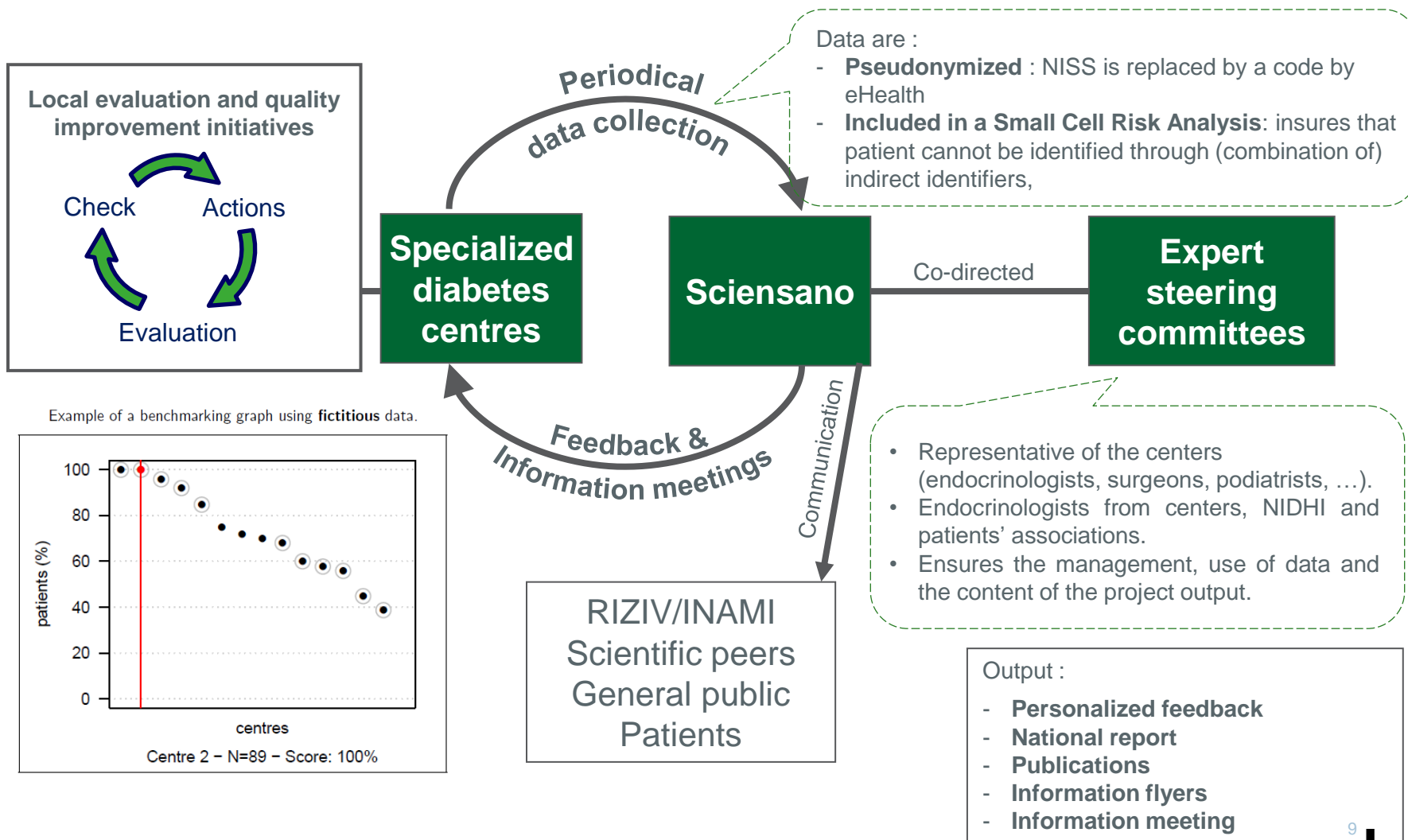
# Principle of the diabetes projects



# Principle of the diabetes projects

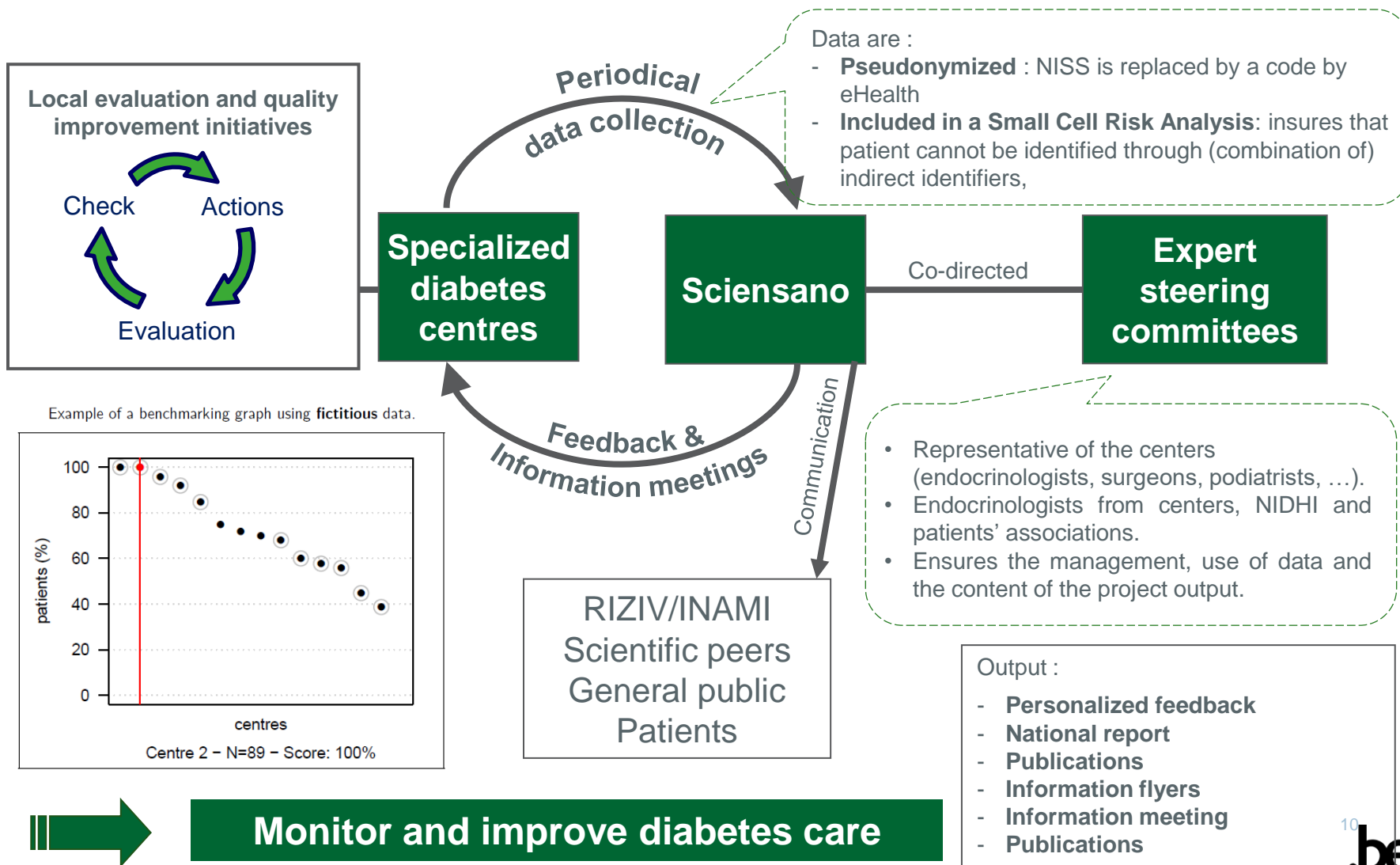


# Principle of the diabetes projects





# Principle of the diabetes projects



# Which data are collected?

IQECAD



IQED



IQED-foot



Patient ID (pseudonimized), sex, age, region, date of death, diabetes type, BMI, history of micro/macrovascular complications

Blood pressure, acute complications, HbA1c, insulin regimen, method of blood glucose measurement, medications and lipids measurement

Smoking status, transplants, foot ulcer, amputation, revascularisation treatment, foot specific examinations

Parents ethnicity, family structure, language barrier, psychosocial distress, puberty and comorbidities

Kidney function, waist circumference, medications for lowering blood glucose, hyperlipidaemia, hypertension and pain

Foot ulcer severity, localization, Charcot, treatment, healing, secondary prevention

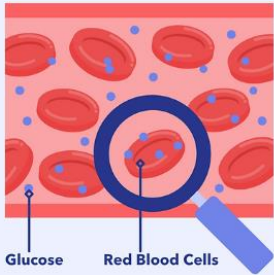
# IQECAD HIGHLIGHTS

Children and adolescents with diabetes

# IQECAD highlights



## Highlight #1 : Improvement of the glycated hemoglobin in most of the centers

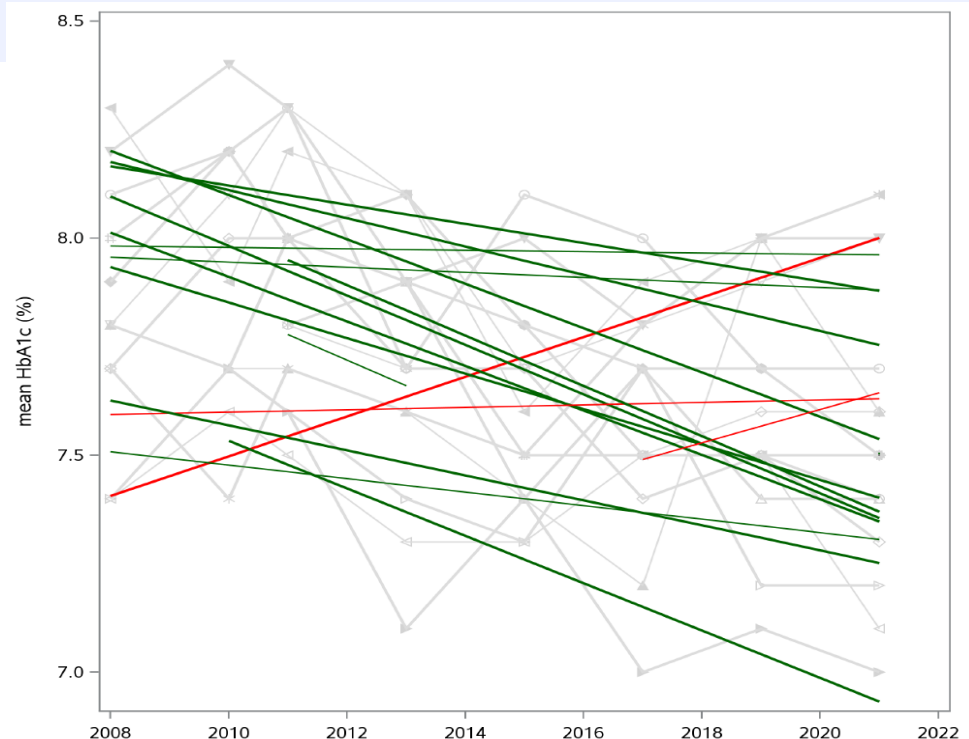


### Glycated hemoglobin (HbA1c)

- Measures the average **blood glucose levels over 3 months**
- ➔ Key biomarker that assesses long-term glucose control
- It correlates with the development of complications (lower level = less likely to develop complications).

### Since 2008 :

- An improvement in HbA1c was observed in 14 out of 17 centers.
- For 8 centers, this decrease was statistically significant (lines in **bold**)
- For 3 centers: HbA1c increased over time BUT had the lowest starting level.



# IQECAD highlights



## Highlight #2 : Belgium has good position in international HbA1c comparison

DIABETIC  
Medicine

DIABETES UK  
KNOW DIABETES. FIGHT DIABETES.

RESEARCH: EPIDEMIOLOGY

### International comparison of glycaemic control in people with type 1 diabetes: an update and extension

Regina Prigge, John A. McKnight, Sarah H. Wild , Aveni Haynes, Timothy W. Jones, Elizabeth A. Davis, Birgit Rami-Merhar, Maria Fritsch, Christine Prchla, Astrid Lavens, Kris Doggen ... [See all authors](#) 

First published: 10 December 2021 | <https://doi.org/10.1111/dme.14766> | Citations: 13

J. A. McKnight and S. H. Wild are joint senior authors.

[Read the full text](#) >



PDF



TOOLS



SHARE

### Abstract

#### Aims

To update and extend a previous cross-sectional international comparison of glycaemic control in people with type 1 diabetes.

#### International comparison (Prigge *et al*):

- 54,158 children aged < 15 years with type 1 diabetes
- 19 countries or regions between 2016 and 2020
- Median HbA1c (IQR) is presented in order of increasing HbA1c.

➔ Belgium has an excellent position in the ranking !

# IQECAD highlights



## Highlight #2 : Belgium has good position in international HbA1c comparison

Country/Region	Data source	N	Median HbA1c % (IQR)	Missing HbA1c (%)
Italy	regional	192	7.2 (6.8; 8.1)	0
Greece	clinic	26	7.2 (6.8; 7.6)	3.8
<b>Belgium</b>	<b>national</b>	<b>2,242</b>	<b>7.3 (6.7; 7.9)</b>	<b>1</b>
Denmark	national	1,869	7.4 (6.7; 8.0)	15.5
Austria	national	1,444	7.4 (6.8; 8.1)	0.6
Netherlands	clinic	583	7.4 (6.9; 8.1)	2.2
Germany	national	17,463	7.5 (6.8; 8.3)	1.3
Slovenia	national	382	7.5 (7.0; 8.1)	0
Australia	regional	627	7.6 (6.9; 8.2)	3.5
England	national	18,514	7.7 (7.0; 8.3)	6.1
Wales	national	1,045	7.7 (7.0; 8.4)	5.6
Scotland	national	1,960	7.8 (7.3; 8.5)	2.2
Finland	regional	131	7.8 (7.3; 8.4)	2.3
France	regional	40	8.0 (7.5; 8.5)	0
Hong Kong	national	228	8.1 (7.3; 9.0)	8.3
Ukraine	national	6,618	8.3 (7.3; 9.7)	13.3
New Zealand	regional	324	8.3 (7.4; 9.6)	8.8
Ireland	clinic	74	8.4 (7.5; 9.2)	12.2
Latvia	national	396	9.1 (7.8; 10.8)	12.1

### International comparison (Prigge *et al*):

- 54,158 children aged < 15 years with type 1 diabetes
- 19 countries or regions between 2016 and 2020
- Median HbA1c (IQR) is presented in order of increasing HbA1c.

→ Belgium has an excellent position in the ranking !

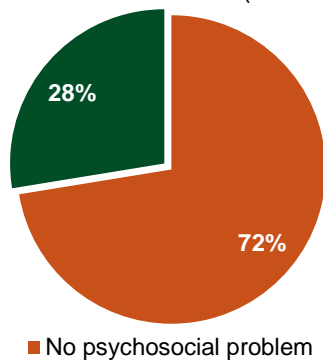
# IQECAD highlights



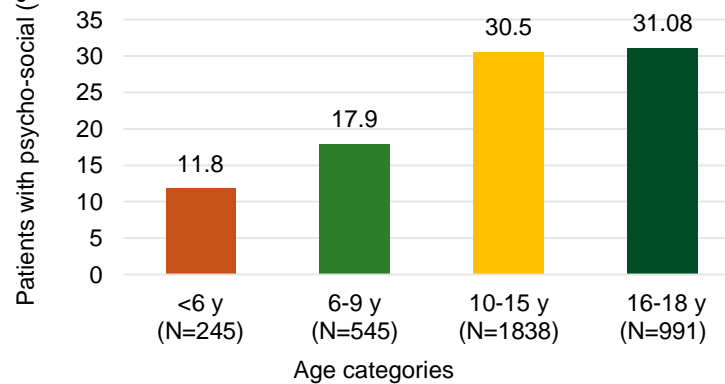
## Highlight #3 : In a near future, use of Patient-Reported Outcome Measures (PROMs) to screen psychosocial distress

- Psychosocial distress = unpleasant emotions an individual has when they are overwhelmed.
- **In diabetes:** Psychosocial distress impacts the quality of life of children with diabetes, complicates the effective disease management, treatment adherence, which can lead to long term complications.

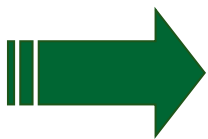
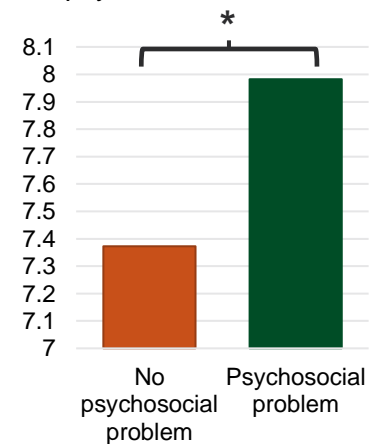
Proportion of children with psychosocial distress (N=3640)



Psycho-social distress by age



HbA1c and psycho-social distress



**Development of a platform (online questionnaire) to assess psychosocial distress in children with diabetes**

# IQED HIGHLIGHTS

Adults with diabetes ( $\geq 2$  insulin injections/day)



# IQED highlights

## Highlight #1 : Decrease in HbA1c in all age categories in people with T1D

> *Diabetes Technol Ther.* 2019 Feb;21(2):66-72. doi: 10.1089/dia.2018.0384. Epub 2019 Jan 18.

### State of Type 1 Diabetes Management and Outcomes from the T1D Exchange in 2016–2018

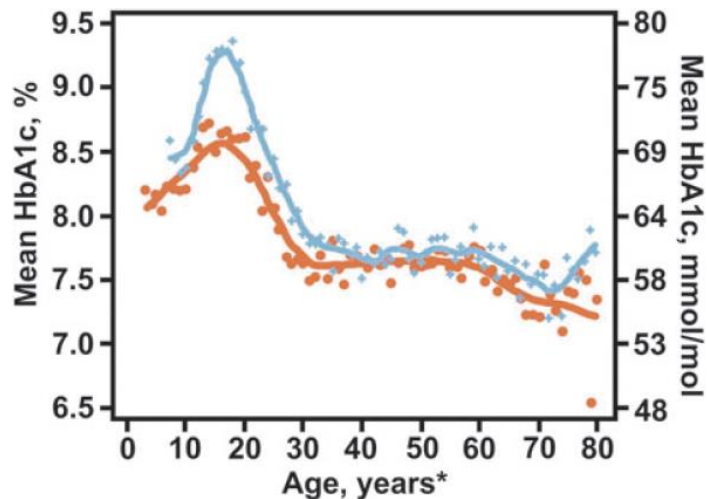
Nicole C Foster<sup>1</sup>, Roy W Beck<sup>1</sup>, Kellee M Miller<sup>1</sup>, Mark A Clements<sup>2</sup>, Michael R Rickels<sup>3</sup>, Linda A DiMeglio<sup>4</sup>, David M Maahs<sup>5</sup>, William V Tamborlane<sup>6</sup>, Richard Bergenstal<sup>7</sup>, Elizabeth Smith<sup>1</sup>, Beth A Olson<sup>7</sup>, Satish K Garg<sup>8</sup>

Observational Study > *Diabetes Technol Ther.* 2021 Aug;23(8):565-576.  
doi: 10.1089/dia.2021.0003. Epub 2021 Apr 27.

### Effect of an Integrated, Multidisciplinary Nationwide Approach to Type 1 Diabetes Care on Metabolic Outcomes: An Observational Real-World Study

Astrid Lavens<sup>1</sup>, Frank Nobels<sup>2</sup>, Christophe De Block<sup>3</sup>, Philippe Oriot<sup>4</sup>, Ann Verhaegen<sup>3</sup>, Suchsia Chao<sup>1</sup>, Kristina Casteels<sup>5,6</sup>, Thierry Mouraux<sup>7</sup>, Kris Doggen<sup>1</sup>, Chantal Mathieu<sup>8</sup>; Belgian Group of Experts IQED and IQECAD

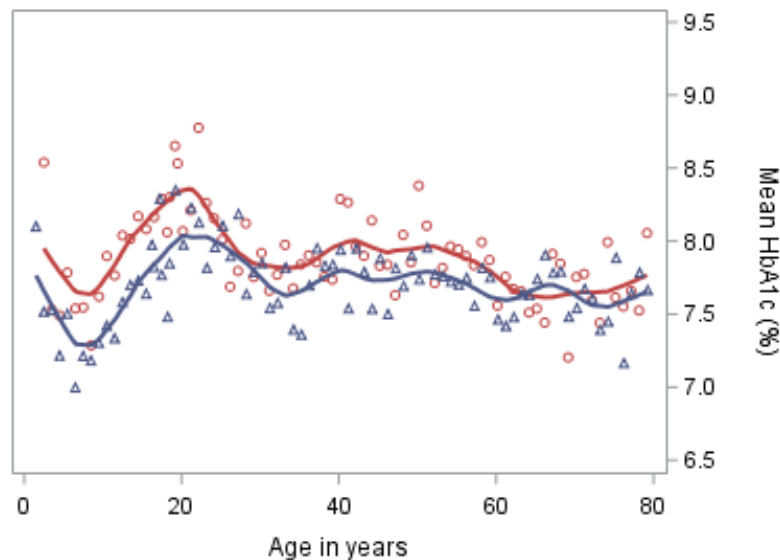
US - T1D Exchange Registry



**Overall mean HbA1c: + 0,6%  
(From 7.8% to 8.4%)**

Belgium - T1D IQED and IQECAD

2010-2012  
2016-2018



**Overall mean HbA1c: - 0,33%  
(from 8.1% to 7.7%)**

# IQED highlights

## Highlight #2 : Top 3 position glycemic control in people with T1D

Prigge, ..., Lavens, et al. Diab Med 2021

### 15-24 years

	Data	Male	Median HbA <sub>1c</sub>	HbA <sub>1c</sub> %	Missing HbA <sub>1c</sub>	Diabetes duration	CSII use		
15-24 years									
	England	National	43,115	53.5	72 (60; 88)	8.7 (7.6; 10.2)	18.7	69.1	11.2
	Germany	National	10,823	54.1	62 (53; 74)	7.8 (7.0; 8.9)	1.8	–	42.4
	Wales	National	5995	53.4	73 (61; 88)	8.8 (7.7; 10.2)	20.6	69.1	11.2
2	Sweden <sup>b</sup>	National	5175	55.9	58 (50; 70)	7.5 (6.7; 8.6)	2.4	82.1	40.6
3	Belgium	National	4692	53.3	60 (52; 69)	7.6 (6.9; 8.5)	2.2	71.5	12.8
	Scotland	National	4237	52.1	71 (60; 86)	8.6 (7.6; 10.0)	9.0	77.0	24.0
	Ukraine <sup>c</sup>	National	2665	52.5	72 (61; 88)	8.7 (7.7; 10.2)	10.0	62.8	1.0
	Norway <sup>b</sup>	National	1632	56.1	66 (55; 77)	8.2 (7.2; 9.2)	2.1	78.8	52.9
	Latvia	National	529	54.6	79 (64; 99)	9.4 (8.0; 11.2)	21.9	74.5	–
	Hong Kong	National	410	46.1	64 (54; 77)	8.0 (7.0; 9.2)	16.3	70.7	–
	Slovenia	National	355	54.9	61 (53; 70)	7.7 (7.0; 8.6)	0.8	76.9	74.6
	Australia <sup>d</sup>	Regional	484	50.2	64 (55; 78)	8.0 (7.2; 9.3)	1.9	73.6	48.1
	Italy	Regional	324	50.6	60 (53; 69)	7.6 (7.0; 8.5)	1.2	76.5	26.5
	Finland	Regional	177	53.1	68 (59; 76)	8.3 (7.5; 9.1)	4.5	–	–
	New Zealand	Regional	155	57.4	72 (58; 88)	8.7 (7.5; 10.1)	6.6	69.0	23.2
	Netherlands	Clinic	1392	46.8	63 (55; 75)	7.9 (7.2; 9.0)	2.9	83.1	60.6
	Canada	Clinic	419	51.1	67 (56; 79)	8.3 (7.2; 9.3)	17.7	83.9	41.3
	Ireland	Clinic	222	49.5	71 (62; 80)	8.6 (7.8; 9.5)	24.3	76.9	17.6
	France	Clinic	142	47.2	64 (53; 75)	8.0 (7.0; 9.0)	0.0	83.1	33.1
1	Greece	Clinic	122	53.3	56 (50; 66)	7.3 (6.7; 8.2)	5.7	76.2	21.3

## ≥25 years

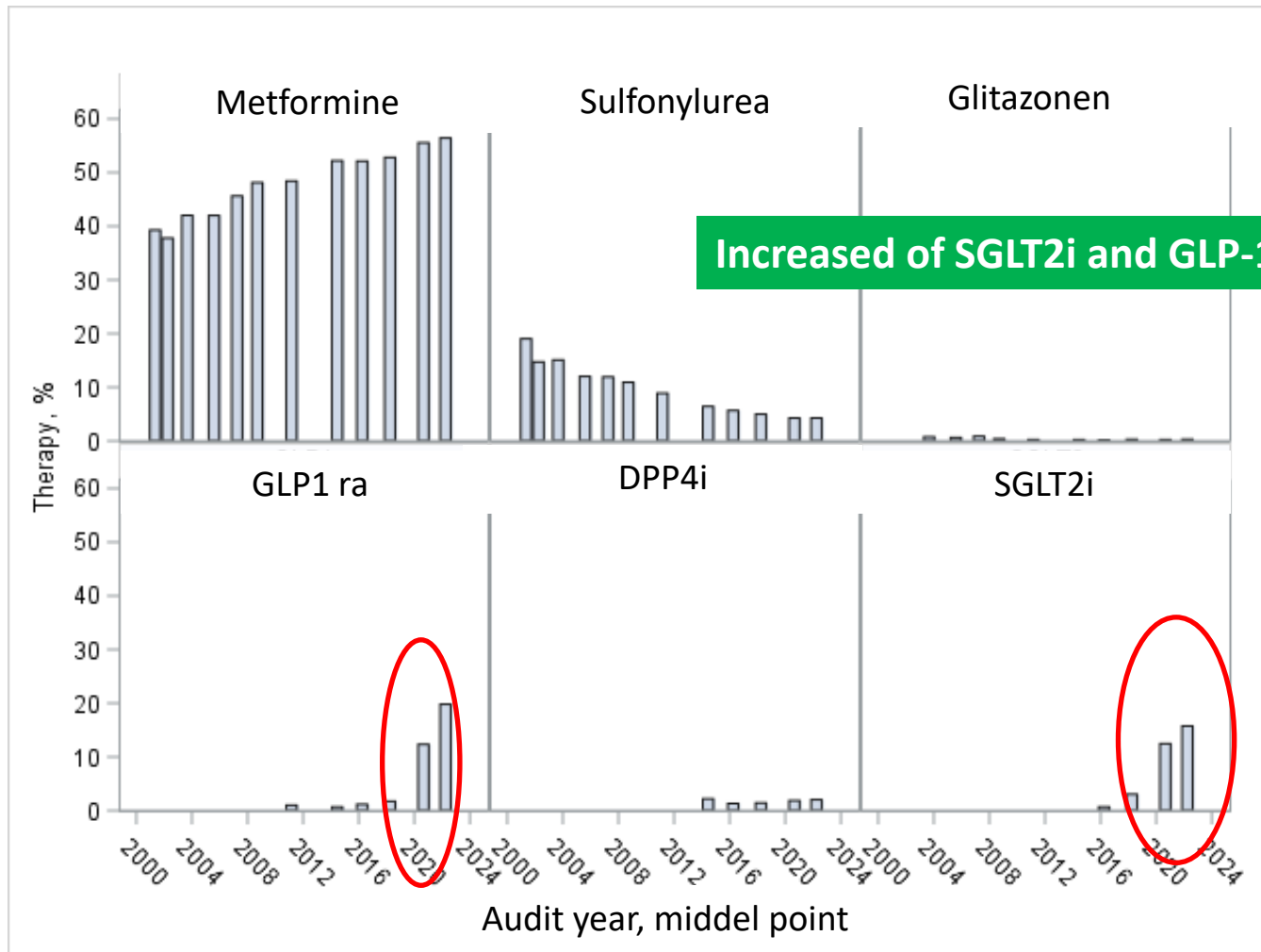
	Country or region	Data source	N	Male (%) <sup>a</sup>	Median HbA <sub>1c</sub> mmol/mol (IQR)	HbA <sub>1c</sub> % (IQR)	Missing HbA <sub>1c</sub> (%) <sup>a</sup>	Diabetes duration ≥5 years (%) <sup>a</sup>	CSII use (%) <sup>a</sup>
	≥ 25 years								
3	England	National	221,545	56.3	66 (57; 78)	8.2 (7.4; 9.3)	10.2	85.7	8.1
	Sweden	National	43,510	55.7	58 (51; 67)	7.5 (6.8; 8.3)	1.5	93.4	22.6
	Belgium	National	30,398	55.0	58 (52; 67)	7.5 (6.9; 8.3)	2.3	90.5	12.1
2	Wales	National	27,160	53.8	68 (58; 80)	8.4 (7.5; 9.5)	13.8	84.3	10.2
	Scotland	National	25,844	56.7	67 (58; 79)	8.3 (7.5; 9.4)	12.2	93.0	11.5
	Norway	National	12,136	55.1	61 (52; 70)	7.7 (7.0; 8.5)	2.4	90.5	30.9
	Germany	National	8644	51.9	58 (50; 68)	7.4 (6.7; 8.4)	7.2	–	12.4
	Latvia	National	1958	53.6	67 (57; 80)	8.3 (7.4; 9.5)	31.7	94.8	–
1	Hong Kong	National	1597	49.1	60 (51; 72)	7.6 (6.8; 8.7)	21.1	76.3	–
	Italy	Regional	2468	55.5	61 (53; 69)	7.7 (7.0; 8.5)	1.1	90.5	18.5
	Finland	Regional	1130	58.5	64 (56; 74)	8.1 (7.3; 8.9)	7.5	–	–
	Canada	Clinic	3454	54.5	62 (54; 70)	7.8 (7.0; 8.6)	8.7	90.7	36.2
	Ireland	Clinic	1341	53.5	66 (56; 76)	8.2 (7.3; 9.1)	45.4	91.2	11.4
	Netherlands	Clinic	720	49.4	56 (50; 65)	7.3 (6.7; 8.1)	5.8	93.2	60.8
	France	Clinic	644	51.1	64 (53; 75)	8.0 (7.0; 9.0)	0.0	91.2	59.9
	Greece	Clinic	358	45.0	58 (52; 68)	7.5 (6.9; 8.4)	2.0	89.5	19.3

# IQED highlights



## Highlight #3 : Adjunct therapy in people with T2D

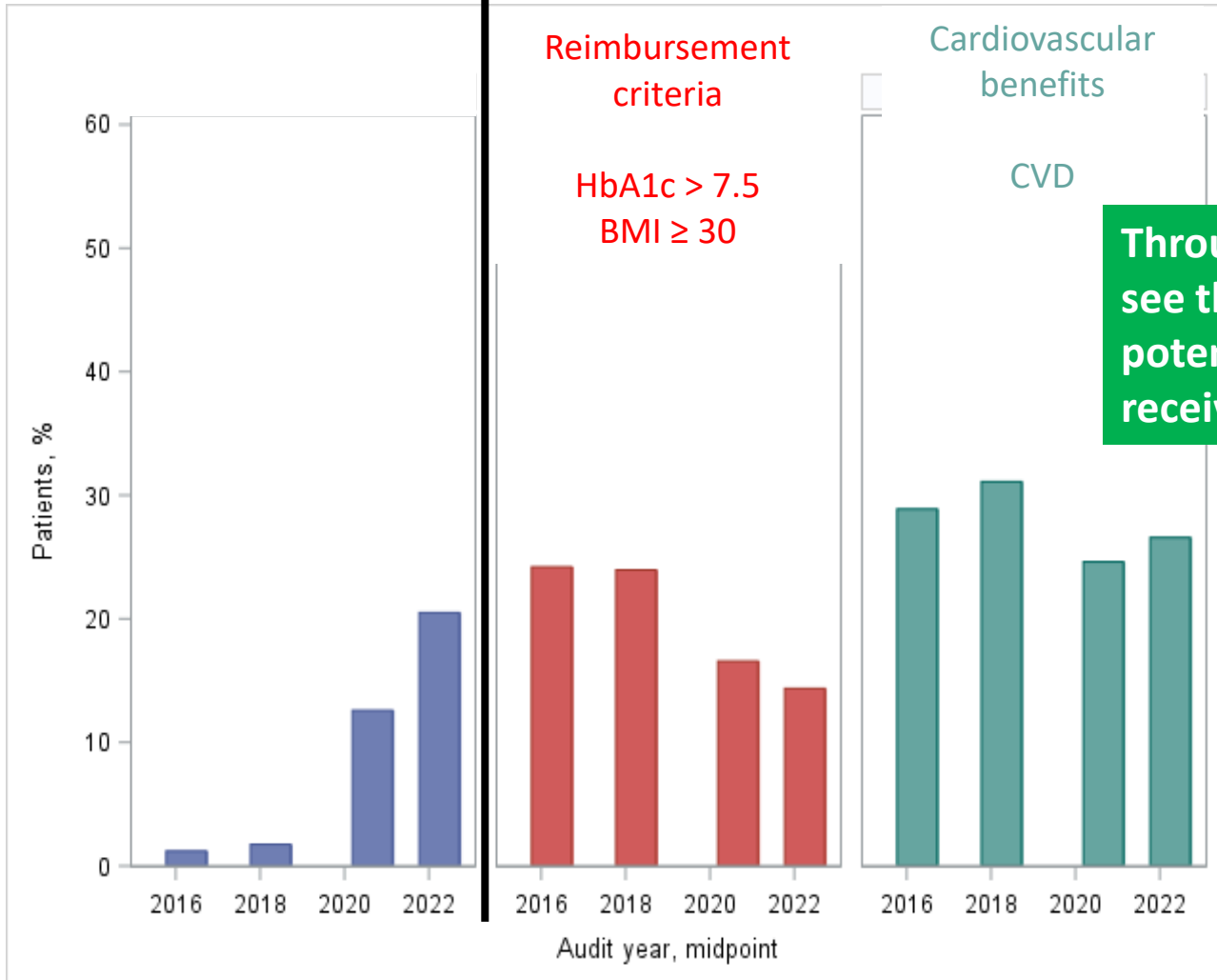
= Another treatment used together with the primary treatment.



**No GLP1 ra (\*)  
But eligible according to**

\* Patients on SGLT2i or DPP4i excluded

**+ GLP1 ra**



**Throughout the samples, we see that more and more the potential patients are actually receiving the medication**

*CVD defined as event or history of myocardial infarction, stroke (CVA), coronary revascularisation (PCI/CABG) or carotid revascularisation, or heart failure*

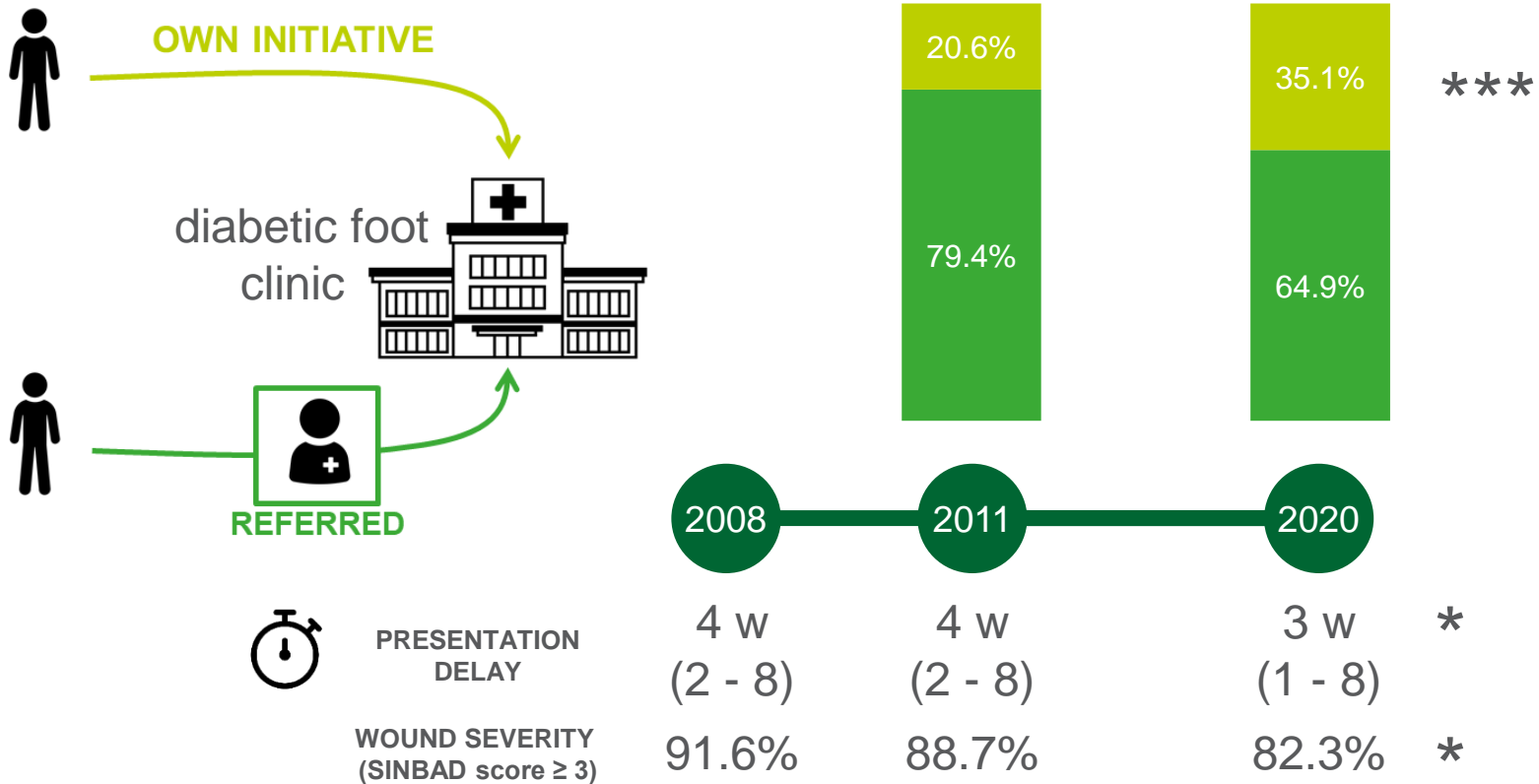
# IQED-FOOT HIGHLIGHTS

Adults with severe diabetic foot ulcers  
(Wagner  $\geq 2$ ) or active Charcot

# IQED-FOOT highlights



**Highlight #1:** People present sooner and more on their own initiative to the foot clinic with less severe wound



→ Visibility of the DFC improved.

→ Patients experience less barriers to contact the DFC directly.

# IQED-FOOT highlights



**Highlight #2** : The foot clinics use the individual feedback reports

## Impact survey after audit 5



20/35 DFC (57%)



75% internal evaluation (15/20)

93% used individual feedback (14/15)



93% took at least 1 quality

improvement initiative (14/15)





# IQED-FOOT highlights



## Highlight #2 : The foot clinics use the individual feedback reports

Impact survey after audit 5



Continuous improvement individual feedback report



20 (57%)



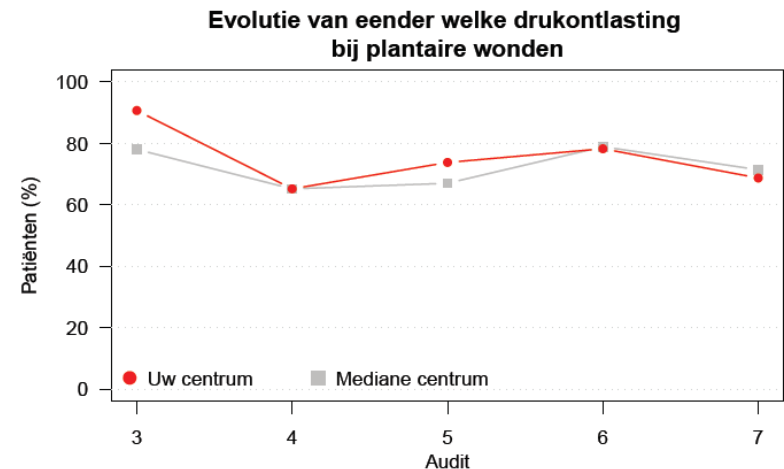
75% internal evaluation  
93% used individual feedback



93% took at least 1 quality improvement initiative



Audit 7: evolution of indicators



Audit 8: new indicators  
~ international guidelines

# IQED-FOOT highlights



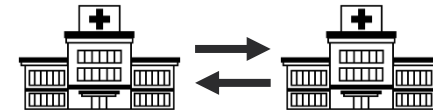
**Highlight #3 :** Several (additional) initiatives for quality improvement



## Information meeting with workshops

- 2-yearly
- Presented by GE members
- Topics ~ feedback foot clinics and GE, hot topics

## Portfolio



## Peer visits

- Individual or group
- Exchange on best practices and practical organisation
- Reduce variation between foot clinics



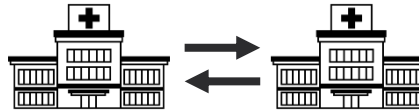
## Online symposium “Mind the gap”

- 3 focus talks
- Presented by GE members
- Active and open discussion on gaps and barriers for quality improvement

# IQED-FOOT highlights



## Highlight #3 : Several (additional) initiatives for quality improvement



### Peer visits

Aim? Exchange on best practices & reduce variation between foot clinics

Launched in 2023

- Overview of foot clinics open to visitors
- 2 group visits in OLV Aalst



1<sup>st</sup> evaluation in 2024

28 responses

- 11 participated to group visit
- 0 individual visits
- 2 received visitors

**79%**

Appreciated  
the concept

**91%**

Networking,  
exchanging  
experiences

**2** 

Action in own foot  
clinic after visit

**63%**

Recommends  
to colleagues

▶ No time

▶ Stimulate individual visits

## Contact

Diabetes in children and adolescents (IQECAD) • [iqecad@sciensano.be](mailto:iqecad@sciensano.be) •  
Diabetes in adults (IQED) • [iqed@sciensano.be](mailto:iqed@sciensano.be) •  
Diabetics foot (IQED-foot) • [iqedfoot@sciensano.be](mailto:iqedfoot@sciensano.be) •