

**Do clinical databases lead to  
improved quality of care?  
Diabetes databases say – NO!**

Knut Borch-Johnsen

Research Center for Quality in Health Care

University of Southern Denmark

Odense

# Clinical databases and improved care

- The challenge we are facing
- Clinical Diabetes Databases in the Nordic Countries
- Experiences from two Danish National Databases
- Different paths – but why?
- Future challenges

# No. of Type 2 diabetic patients in the world

(million)

135	215	300
1995	2010	2025



**BY 2025,**      **Developed countries : 72 Million**  
**Developing countries: 228 Million**

# Number of people with DM in the Nordic countries

	Denmark	Norway	Finland	Sweden	Iceland
2011	290	200	340	380	8
2030	330	250	380	430	13

# Clinical databases and improved care

- The challenge we are facing
- Clinical Diabetes Databases in the Nordic Countries
- Experiences from two Danish National Databases
- Different paths – but why?
- Future challenges

# Clinical databases in the Nordic Countries

	Denmark	Norway	Finland	Sweden	Iceland
Childhood Incidence	Yes (1996)	Yes (1980's)	Yes (1970's)	Yes (1980's)	Yes (1980's)
Childhood QoC	Yes (1996)	Yes (1990's)	No	Yes (1990's)	Yes (1990's)
Adult Incidence	Yes (1997)	No	(Yes) (1970's)	No	No
Adult QoC	Yes (2006)	Regional	Regional	Regional	?
Morbidity and Mortality	Yes (1997)	No	(Yes) (Not systematically)	Regional	?

# Clinical databases and improved care

- The challenge we are facing
- Clinical Diabetes Databases in the Nordic Countries
- Experiences from two Danish National Databases
- Different paths – but why?
- Future challenges

# Danish National Childhood Diabetes Register



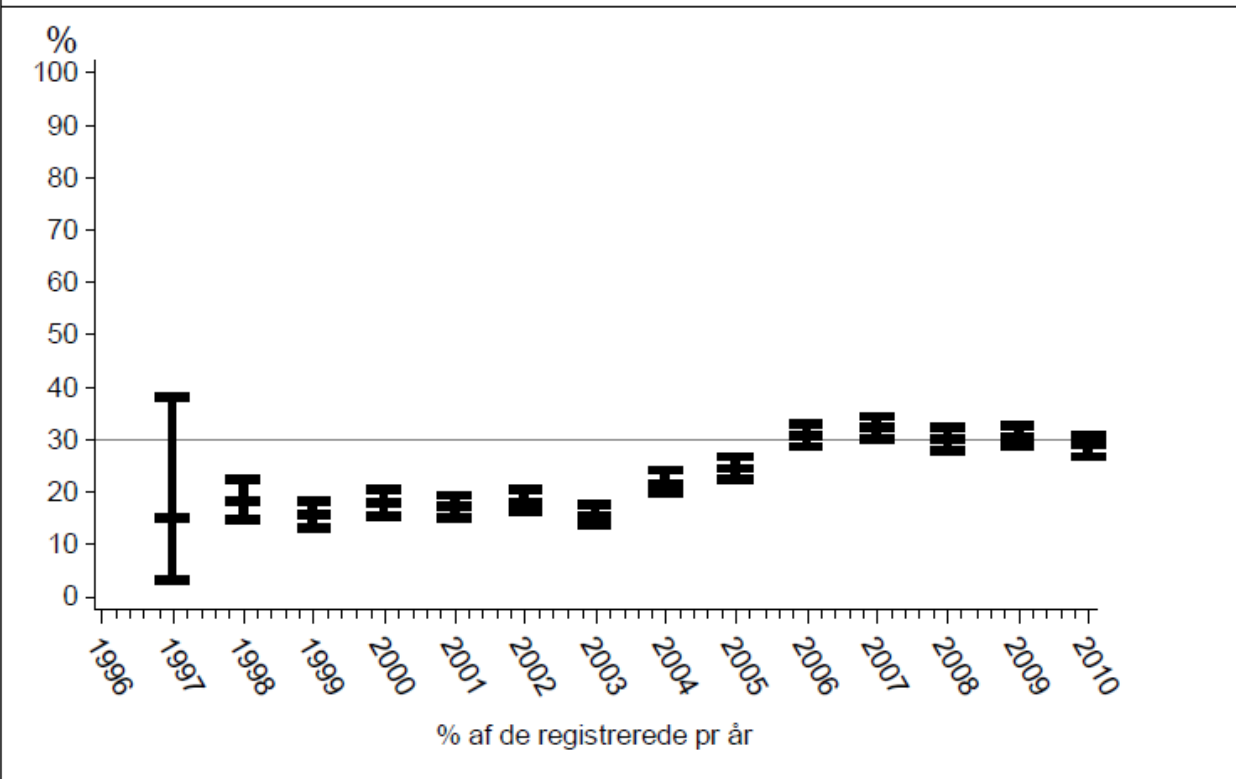
- Established 1996
- Includes all cases of T1DM before age 16 (ascertainment >98%)
- Annual monitoring of 9 indicators for QoC
- Standardized assessment of complications at 9, 12, 15, 18 and 21 years
- Total number by end 2010:  $n = 8,820$



# Proportion of patients with HbA1c < 7,5%

Figur 13

Andel af aktive patienter som har HbA1c under 7,5%

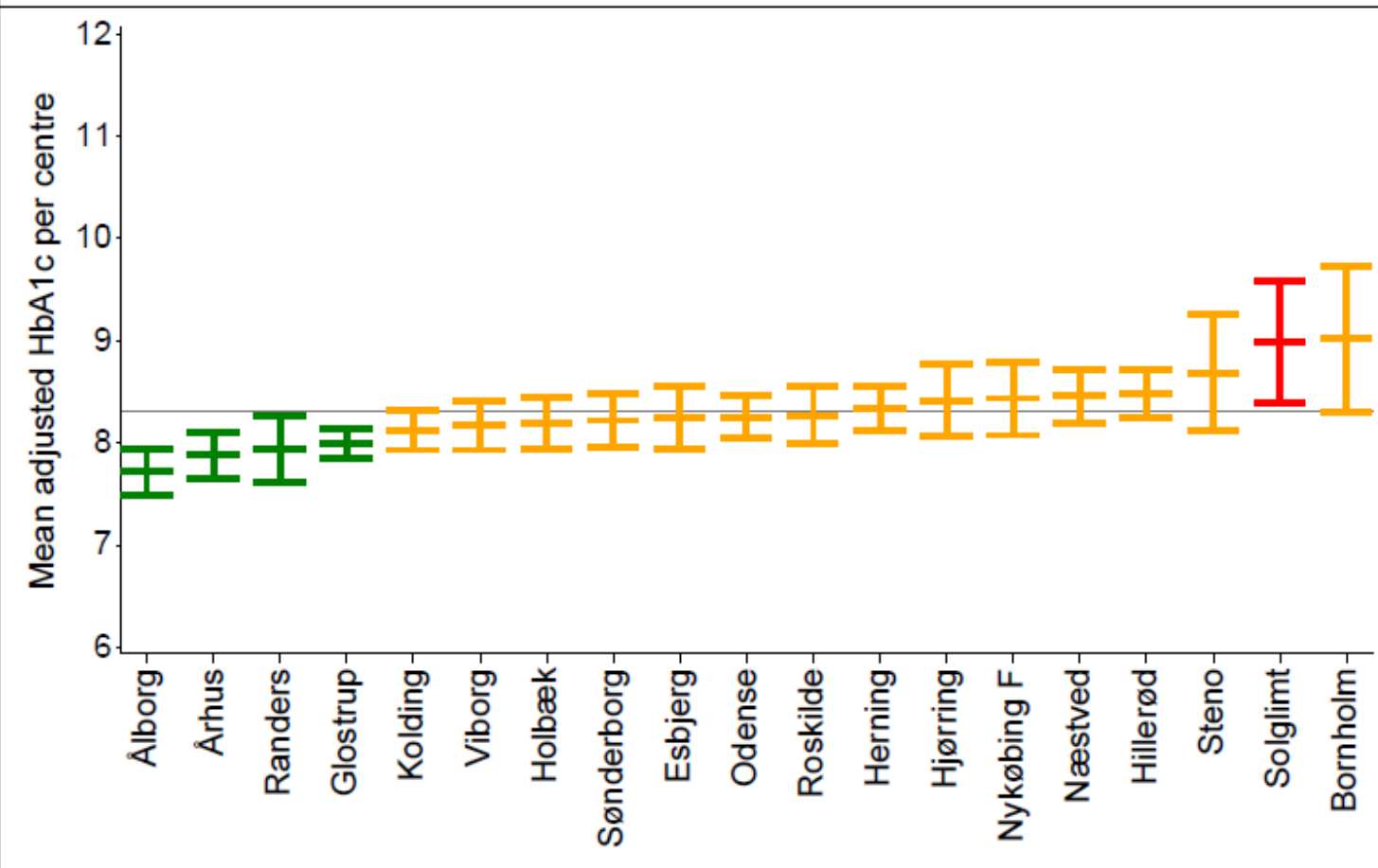


Kommentar: Som det fremgår af grafen, er der sket en forbedring med øget antal patienter, der opnår HbA1c <= 7,5% fra registerets start. Desværre er der ikke set en forbedring de seneste år, på trods af at andelen af patienter, der behandles på pumpe er øget væsentligt.

# Mean HbA1c (adjusted for age, gender, duration & ethnicity)

Figur 17

Gennemsnitlig HbA1c justeret



# Childhood DM Register - Trends

- During the period 1996 to 2010
  - Over all HbA1c levels reduced by 10%
  - Range of HbA1c (lowest clinic to highest clinic) significantly reduced
  - Major decrease in 2003 where data became publicly available
  - No further decrease 2006-2010
  - 10% decrease in HbA1c corresponds to 18% risk reduction for renal complications and 43% risk reduction for retinal complications

# Adult Diabetes Register

- Established as part of the National Indicator Project program
- Covers > 37,000 patients in DM out patient Clinics (ascertainment > 92%)
- Systematic reporting based on the "annual complication update screening"
- Process indicators covering 6 domains in 2 levels e.g.
  - Dyslipidemia
    - Fraction of pt.'s (30y +) with lipid status within last 24 months
    - Fraction of pt.'s (40+) with T2DM and with TC of 4,5mmol/l or more not on lipid-lowering therapy

# Lipid screening and lipid lowering treatment

Indikator: 3a. Andelen af patienter, som mindst hvert 2. år har fået foretaget lipidstatus						
Standard: 95 %						
Region	Standard opfyldt? Ja/ Nej	Periode: 1/3 2010 - 28/2 2011			Periode: 1/3 2009 - 28/2 2010	Periode: 1/3 2008 - 28/2 2009
		Antal patientforløb som opfylder kravet/antal patientforløb i alt	Antal (andel %) patientforløb, som mangler oplysninger relevant for indikator	Andel i % af patientforløbene som opfylder kravet (95% CI)	Andel i % af patientforløbene som opfyldte kravet (95% CI)	Andel i % af patientforløbene som opfyldte kravet (95% CI)
Region Hovedstaden	Nej	11458 /12671	0 (0)	90 (90-91)	87 (87-88)	89 (88-89)
Region Sjælland	Ja	4075/4107	0 (0)	99 (99-99)	85 (83-86)	99 (98-99)
Region Syddanmark	Ja	9638/9809	0 (0)	98 (98-99)	97 (97-98)	97 (96-97)
Region Midtjylland	Ja	5565/5654	0 (0)	98 (98-99)	98 (97-98)	97 (97-98)
Region Nordjylland	Ja	2734/2781	0 (0)	98 (98-99)	97 (96-98)	99 (97-100)
Landsresultat	Ja	33470 /35022	0 (0)	96 (95-96)	92 (92-93)	93 (93-94)

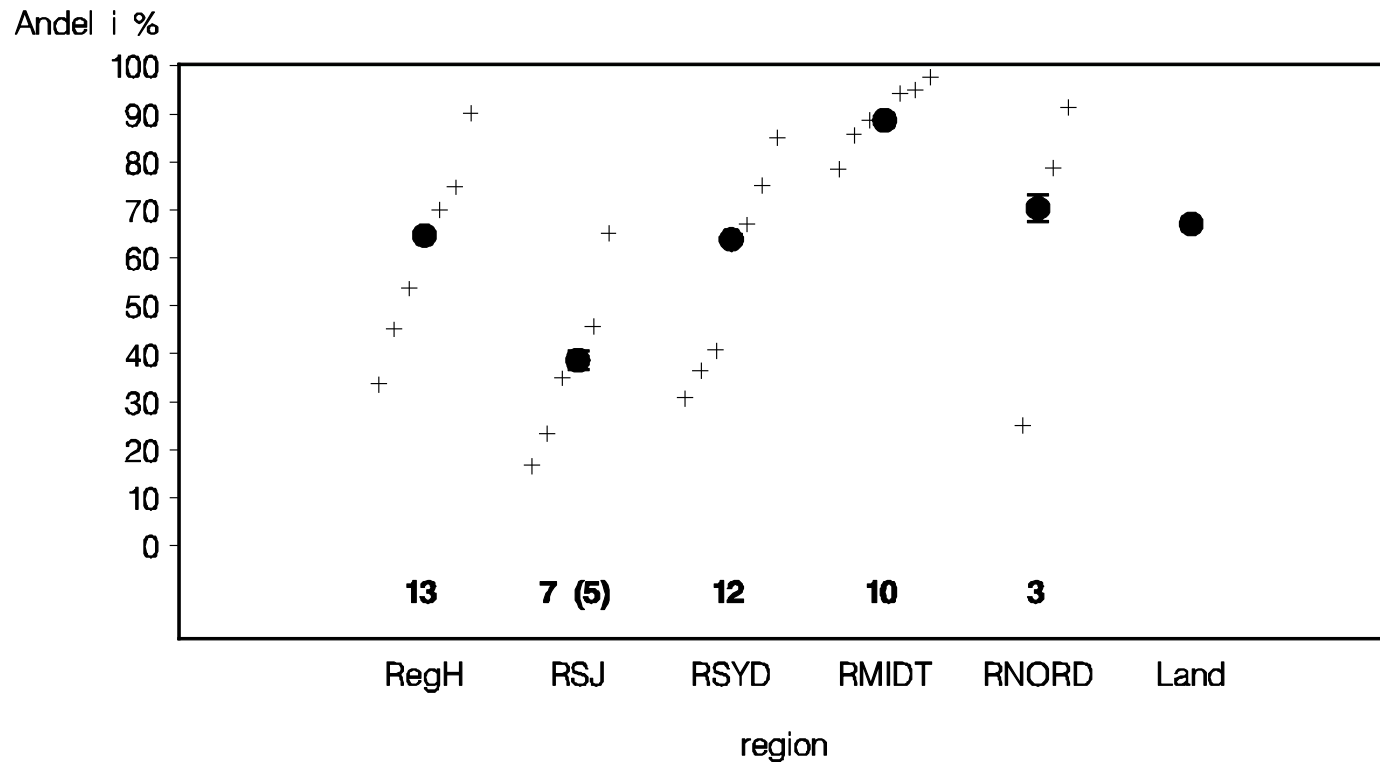
Indikator: 3b. Andelen af type 2 diabetikere over 40 år med totalcholesterol over 4,5 som ikke er sat i lipidsænkende behandling						
Standard: . %						
Region	Standard opfyldt? Ja/ Nej	Periode: 1/3 2010 - 28/2 2011			Periode: 1/3 2009 - 28/2 2010	Periode: 1/3 2008 - 28/2 2009
		Antal patienter som ikke er i behandling/ antal patienter i alt	Antal (andel %) patientforløb, som mangler oplysninger relevant for indikator	Andel i % af patienterne som ikke er i behandling (95% CI)	Andel i % af patienterne som ikke var i behandling (95% CI)	Andel i % af patienterne som ikke var i behandling (95% CI)
Region Hovedstaden	-	568/2233	4 (0)	25 (24-27)	28 (26-30)	30 (28-32)
Region Sjælland	-	278/825	1 (0)	34 (30-37)	62 (57-66)	51 (44-57)
Region Syddanmark	-	500/1642	33 (2)	30 (28-33)	34 (31-36)	33 (30-36)
Region Midtjylland	-	206/704	0 (0)	29 (26-33)	24 (21-27)	31 (28-34)
Region Nordjylland	-	101/309	0 (0)	33 (27-38)	33 (27-39)	42 (31-53)
Landsresultat	-	1653/5713	38 (1)	29 (28-30)	32 (31-33)	32 (31-34)

# ”All or none”

Indikator: All-or-None. Andelen af patienter med diabetes, som har fået alle undersøgelser (minus øjensus.)						
Standard: . %						
Region	Standard opfyldt? Ja/ Nej	Periode: 1/3 2010 - 28/2 2011			Periode: 1/3 2009 - 28/2 2010	Periode: 1/3 2008 - 28/2 2009
		Antal patientforløb som opfylder kravet/antal patientforløb i alt	Antal (andel %) patientforløb, som mangler oplysninger relevant for indikator	Andel i % af patientforløbene som opfylder kravet (95% CI)	Andel i % af patientforløbene som opfyldte kravet (95% CI)	Andel i % af patientforløbene som opfyldte kravet (95% CI)
Region Hovedstaden	-	10159 /13452	0 (0)	76 (75-76)	70 (70-71)	71 (70-72)
Region Sjælland	-	2952/4265	0 (0)	69 (68-71)	46 (44-48)	79 (77-81)
Region Syddanmark	-	8277 /10320	0 (0)	80 (79-81)	74 (73-74)	70 (69-71)
Region Midtjylland	-	5727/6126	0 (0)	93 (93-94)	94 (93-94)	88 (87-88)
Region Nordjylland*	-	2440/3034	0 (0)	80 (79-82)	83 (81-85)	90 (86-93)
Landsresultat	-	29555 /37197	0 (0)	79 (79-80)	74 (74-75)	75 (75-76)

# ”All or none” – by region and hospital

All-or-None. Andel af diabetespatienter, som har fået alle undersøgelser



# Adult diabetes QoC database - trends

- 2006-2011
  - Increasing ascertainment
  - More (but far from all) standards fulfilled
  - Variation between regions reduced
  - Variation between hospitals maintained



# Clinical databases and improved care

- The challenge we are facing
- Clinical Diabetes Databases in the Nordic Countries
- Experiences from two Danish National Databases
- Different paths – but why?
- Future challenges

# Different trends: Lung Cancer vs. Diabetes

- Higher success rate and lower "between center" variation in LC vs. DM
- LC characterized by
  - High public and political awareness
  - National standards for diagnosis and treatment
  - Patients "rights" clearly defined
  - High level of "management awareness"
- DM characterized by
  - Definite, but lower public and political awareness
  - National treatment guidelines – but not defined as standards
  - Patients "rights" not defined
  - Lower level of management awareness

# Clinical databases and improved care

- The challenge we are facing
- Clinical Diabetes Databases in the Nordic Countries
- Experiences from two Danish National Databases
- Different paths – but why?
- Future challenges

# Key challenges in Diabetes Care

- Over all – Standards are not reached
- All or None – a real challenge
  
- Variability – not between regions but between units – needs to be minimized
  - What differentiates "good apples" from "bad apples"
  - What incentives are used to drive the good in an even better direction?

# Impact of improved diabetes care in DK

*Excess mortality in patients with DM*

**Danish National Diabetes Register**

	Females	Males	Combined
<b>1997</b>	1,83	1,96	1,90
<b>2000</b>	1,76	1,92	1,84
<b>2005</b>	1,62	1,77	1,69
<b>2007</b>	1,54	1,69	1,62
<b>2008</b>	1,51	1,63	1,57
<b>2009</b>	1,48	1,70	1,59

**Thank you**

