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## Application of Patient Safety Indicators in 16 OECD member countries using administrative hospital data

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## OECD HCQI Project

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**Health Care Quality Indicator Project** of the Organization for Economic Co-Operation and Development (OECD)

- Care for chronic conditions
- Care for mental disorders
- Cancer Care
- Care for communicable diseases

**Patient Safety**

- Information on health system performance for policymakers
- Data linkage to information on economics and resources
- Mutual learning among participating countries

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27.10.2009 S. Drösler 2

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## Background

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- Pilot in 2007 (7 countries, 12 Patient Safety Indicators, published in International Journal for Quality in Health Care 08/2009)
- 2008: 15 Patient Safety Indicators
- Calculation of rates is the responsibility of the countries
- Research and development project – no public reporting

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27.10.2009 S. Drösler 3

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## Background

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- Calculation of rates is the responsibility of the countries
- Research and development project – no public reporting
- Volunteering countries:
  - Belgium
  - Italy
  - Sweden
  - Canada
  - The Netherlands
  - Portugal
  - Denmark
  - New Zealand
  - UK (data from England)
  - Finland
  - Norway
  - USA
  - France
  - Singapore
  - Germany
  - Spain

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27.10.2009 S. Drösler 4

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## Objectives

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- Can AHRQ PSI definitions be applied on hospital data from an extended number of countries?
- What are the effects of internal standardization?
- Which factors compromise comparability across countries?
- What is the test-retest reliability (6 countries, 11 indicators)?

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27.10.2009 S. Drösler 5

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## Methods - Data Collection

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- Numerator and denominator populations
- Age / sex stratifications
- Average length of stay
- Mean numbers of secondary diagnoses
- Details on medical classifications and coding rules
- Details on electronic data systems

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27.10.2009 S. Drösler 6

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## Results – Calculation Samples

Country	Year of data collection	Study Population (in millions)	Estimated annual hospital discharges (in millions)	Average length of stay (calc data)	ICD Revision in use
Belgium	2004	1,51	1,78	8	9
Canada	FY 2006/07	1,93	2,88	6,4	10
Denmark	2007	1,01	0,9	4,2	10
Finland	2006	1,21	1,07	5,4	10
France	2006	18,91	16,95	3,6	10
Germany	2006	14,2 #	16,67	7,48	10
Italy	2005	7,31	8,41	6,7	9
Netherlands	2004	2,23	1,71	4,31	9
Norway	2006	1	0,82	3,7	10
New Zealand	FY 2006/07	0,68	0,59	3,4	10
Portugal	2006	0,9	0,9	7,1	9
Singapore	2007	0,45	0,43	5	9
Spain	2006	3,19	4,85	7,69	9
Sweden	2006	1,25	1,50	6,05	10
United Kingdom	FY 2006/07	11,82	7,75	2,92	10
United States	2006	32,98 #	33,51	4,6	9

# Estimations from samples, 10% in Germany, 20% overall in the USA

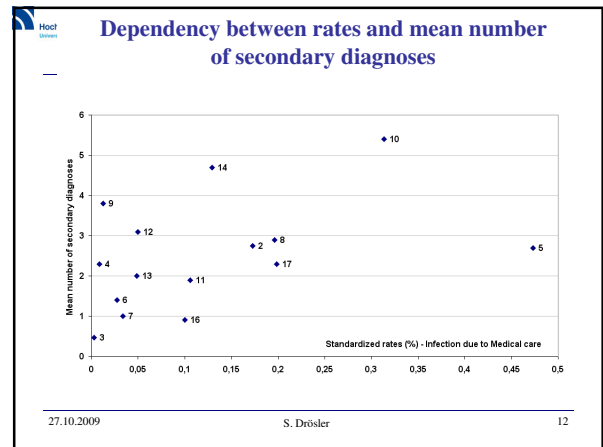
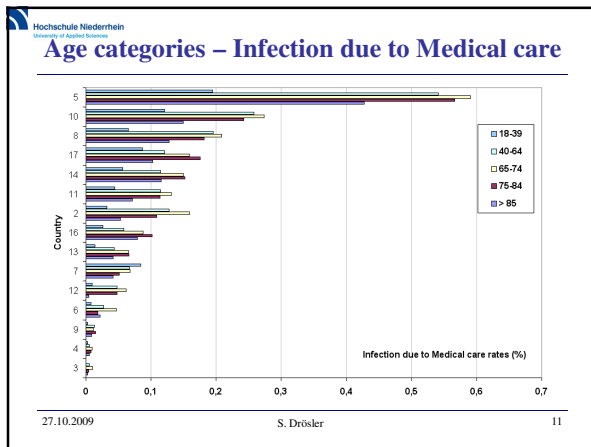
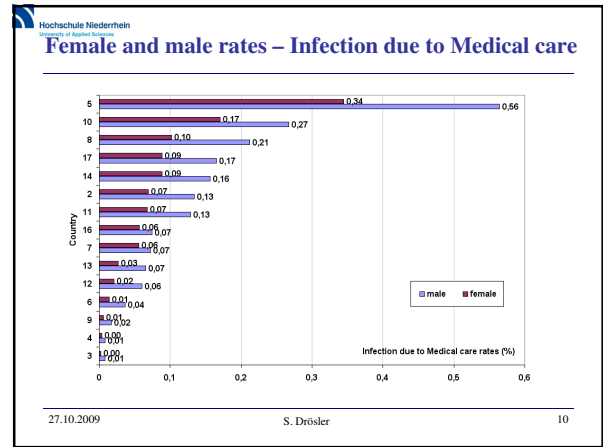
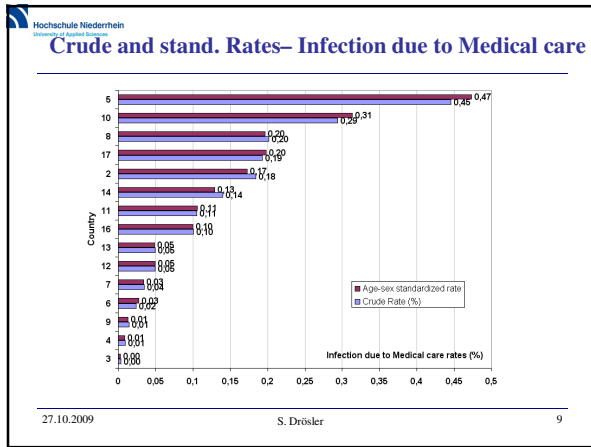
27.10.2009 S. Drösler 7

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## Results – PSI rates and variations

PSI	N (Countries)	Weighted Mean (% rate)	Weighted SD	Coefficient of Variation (W SD/ W Mean)
Complications of anaesthesia	14	0,05	0,04	82%
Decubitus ulcer	15	1,53	1,06	69%
Foreign body left in during procedure	16	0,01	0,00	48%
Iatrogenic Pneumothorax	10	0,05	0,02	43%
Infection due to Medical Care	16	0,13	0,08	64%
Postoperative hip fracture	13	0,02	0,01	65%
Postoperative respiratory failure	15	0,37	0,37	101%
Postoperative pulmonary embolism (PE) or deep vein thrombosis (DVT)	16	0,56	0,45	81%
Postoperative sepsis	16	0,64	0,50	78%
Technical difficulty with procedure	16	0,19	0,15	81%
Transfusion reaction	15	0,001	0,001	180%
Birth trauma - injury to neonate	15	0,32	0,31	97%
Obstetric trauma - vaginal delivery with instrument	16	10,09	6,60	65%
Obstetric trauma - vaginal delivery without instrument	16	2,54	1,47	58%
Obstetric trauma - caesarean section	15	0,30	0,20	64%

27.10.2009 S. Drösler 8



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## Test-Retest-Reliability

- Pearson's correlations on **country** level

Country	n (number of PSI rates (%))	Pearson's cc (p≤ 0,01)
Canada	11	0,99
Germany	8	0,94
Spain	11	0,98
Sweden	11	0,82
United Kingdom	11	0,998
USA	11	0,998

27.10.2009 S. Drösler 13

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- Pearson's correlations on **indicator** level (n= 6 countries)

PSI Title	Pearson's cc (p≤ 0,01, #p≤ 0,05)
Foreign Body Left In During Procedure	0,98
Selected Infections Due to Medical Care	0,92
Postoperative Hip Fracture	0,86 #
Postoperative PE / DVT	0,92
Postoperative Sepsis	0,995
Accidental Puncture or Laceration	0,99

27.10.2009 S. Drösler 14

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## Conclusions

- Method is applicable on international data of many countries
- Test-retest reliability is high on indicator and country level
- Significant variations in rates
- Age and gender populations are comparable among countries
- Amount of clinical coding has impact on rates
- Efforts to reduce the variability in the amount of coding are necessary

27.10.2009 S. Drösler 15

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27.10.2009 S. Drösler 16