

Experiences from the Danish National Indicator Project

- Success factors for implementation
and improvement in quality of care



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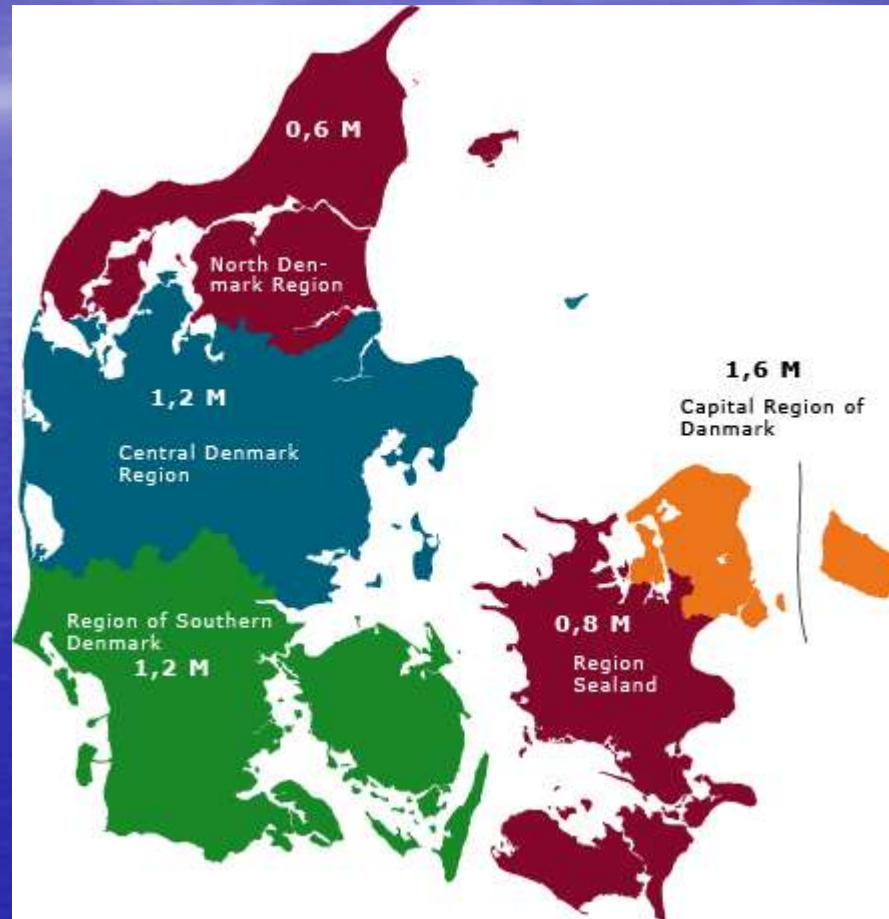
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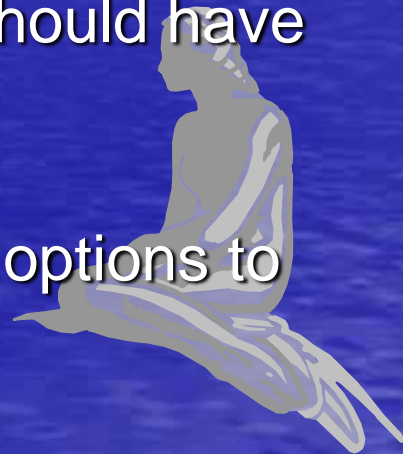
Regions in Denmark

North Denmark Region:
7,933,32 km²
578.839 citizens



The Danish Healthcare system

- Denmark has 5.3 mio. inhabitants
- The Danish Health Care System is mainly public owned and run
- The public health care services is financed by taxes
- The Health Care system is decentralized to 5 regions
- It is a fundamental principle, that all citizens should have free and equal access to health care services
- Freedom of choice of hospitals and improved options to change general practitioner



Denmark has unique opportunities for quality measurement and benchmarking

- **Denmark has developed Health and National Quality Registries**
- **Denmark has Unique Patient Identifier (UPI)**



Clinical indicators

Key messages:

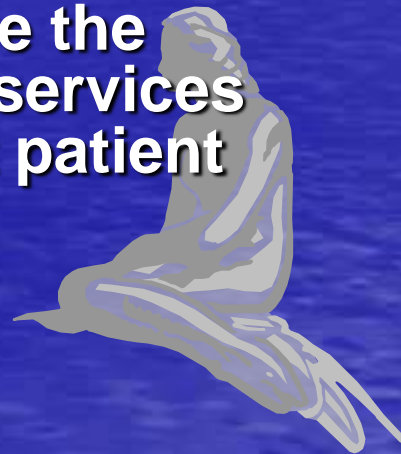
- Monitoring health care quality is impossible without the use of clinical indicators
- They create the basis for quality improvement, prioritization and transparency in the health care system
- It is imperative that clinical indicators are meaningful, scientifically sound, generalizable and interpretable
- To achieve this, clinical indicators must be developed, tested and implemented with scientific rigor



DEFINITIONS

Clinical indicators are:

- Measures that assesses a particular health care process or outcome
- Quantitative measures that can be used to monitor and evaluate the quality of important governance, management, clinical and support functions that affect patient outcomes.
- measurement tools or flags that are used as guides to monitor, evaluate and improve the quality of patient care, clinical support services and organizational functions that affect patient outcomes.



Performance and outcome measurement have different purposes:

- Document the quality of care
- Make comparisons (benchmarking)
- Make judgments and priorities
- Support accountability
- Support quality improvement
- Provide transparency



CHARACTERISTICS

The use of indicators should follow scientific principles.

They should be:

- Based on agreed definitions
- Specific and sensitive
- Valid and reliable
- Have discrimination ability
- Relate to identifiable events (relevant to clinical practice)
- Permit useful comparisons
- Be evidence based



What do we know about the quality of medical care?

- Lack of documentation about how major diseases are treated in the health care system
- Few goals for the quality of medical care
- Lack of outcome assessment
- Lack of resource evaluation
- Persisting variations
- Examples of underuse and overuse
- No formal monitoring systems

The principal quality problems and their prevalence and incidence are unknown



THE NATIONAL INDICATOR PROJECT

-a concerted action between:

- The Ministry of Health
- The National Board of Health
- The County Counsellors' Association
- The Scientific Societies
- The Danish Medical Association
- The Danish Nursing Association
- The Danish Physiotherapist Association



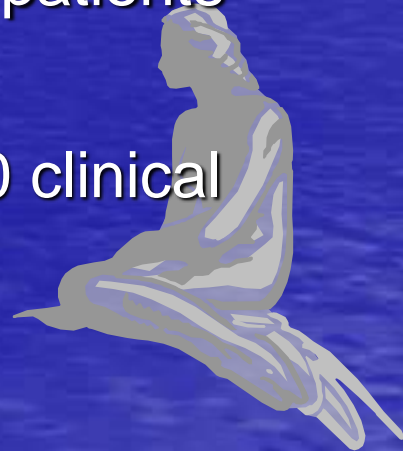
THE NATIONAL INDICATOR PROJECT

- All major diseases are evaluated
- Evidence based process and outcome indicators are derived by health professionals on national level
- Health professionals and clinical epidemiologists are responsible for data-collection, analyses, evaluation and interpretation of results
- Hospitals are compared at unit, county, national and international levels
- Audit activities are organised at county and national level
- Improvements are initiated if necessary

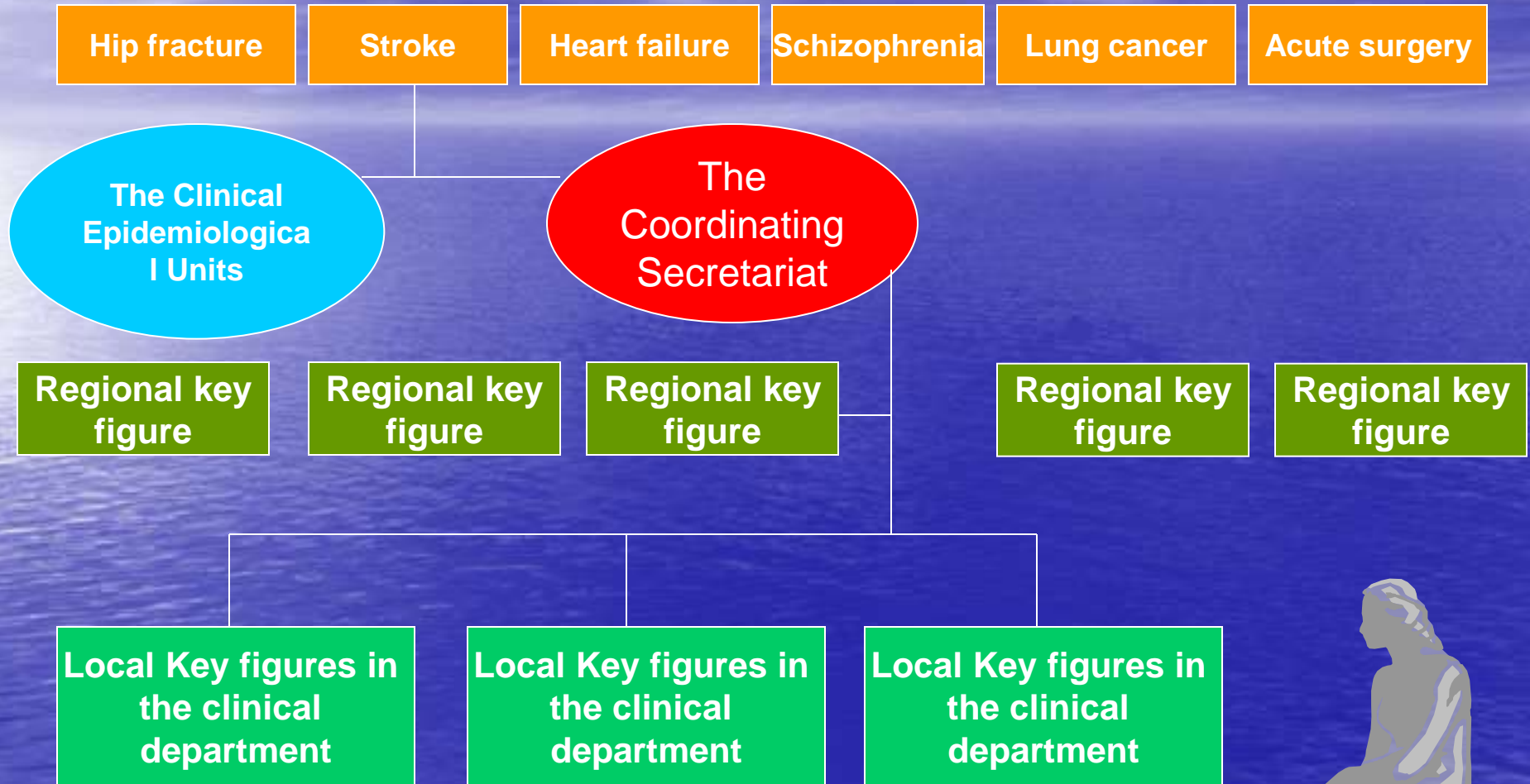


The Danish National Indicator Project

- Established in 2000 by medical/nursing societies and regions
- Funded by the 5 regions
- Mandatory participation by all public hospitals and relevant clinical departments in Denmark
- Comprising continuous reporting of all relevant patients with the diseases included
- Developed 10 indicator sets covering some 150 clinical indicators (80% process/20 % outcome)



THE ORGANISATION OF NIP



Basic principles – Professional ownership

- Health professionals develop evidence based standards and indicators for major diseases
- Health professionals assess and interpret results before public release of data
- Based on scientific and transparent methods



The Danish National Indicator Project

Aims

- Improving prevention, diagnostics, treatment and rehabilitation
- Promoting dialogue between professionals and management
- Documentation for management information and making priorities
- Information for patients and citizens

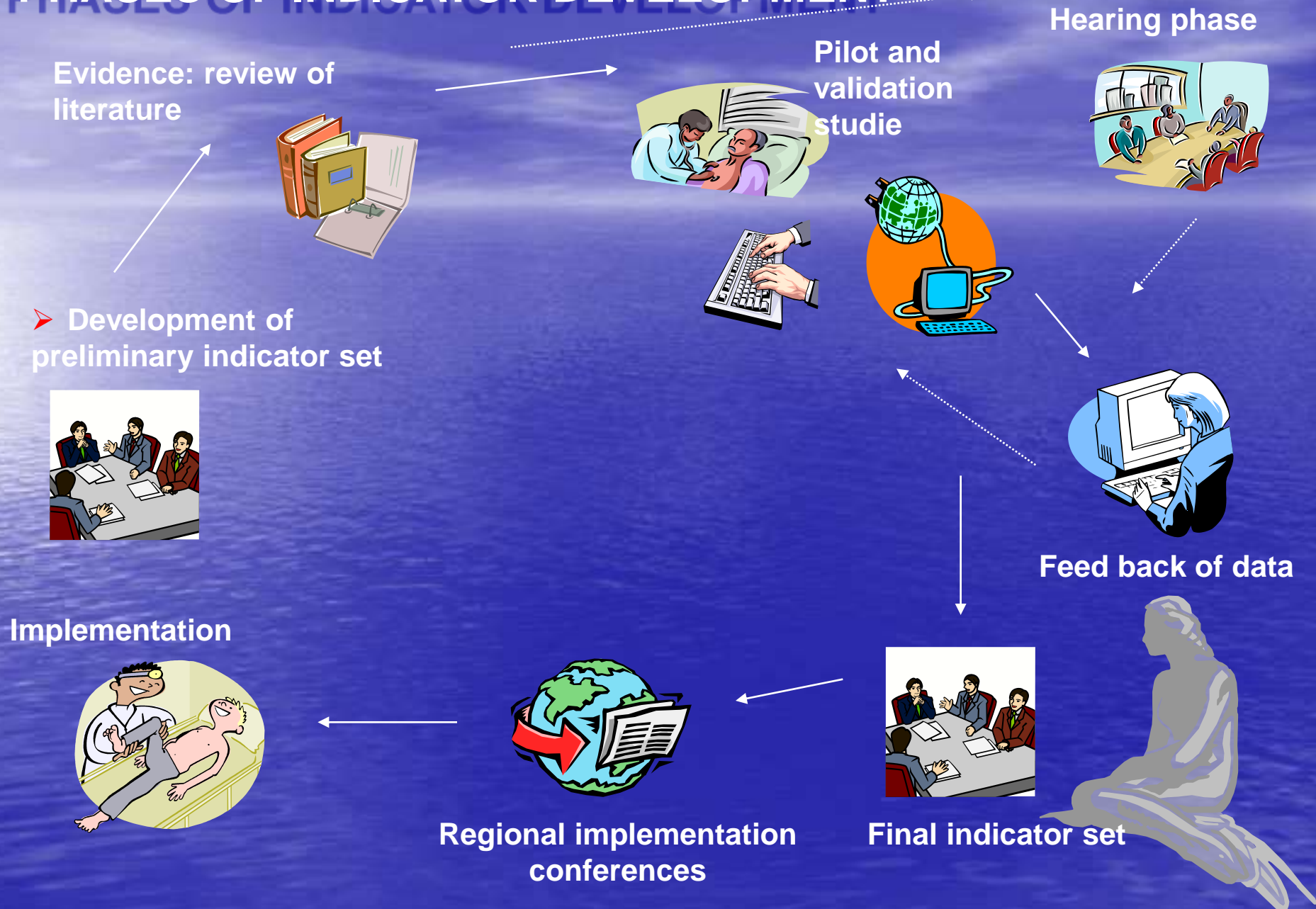


DISEASES

- Stroke
- Hip fracture
- Schizophrenia
- Acute surgery
- Heart failure
- Lung cancer
- Diabetes
- COLD
- Birth
- Depression



PHASES OF INDICATOR DEVELOPMENT



Development of clinical indicators I

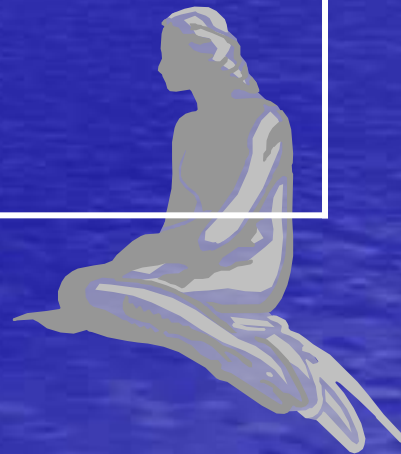
Planning phase

1. Choose the clinical area to evaluate:

- Importance (high volume, cost, variation)
- Opportunities for clinical intervention

2. Organize the measurement team

- Select group participants
- Organize and divide tasks



Development of clinical indicators II

Development phase

3. Provide an overview of existing evidence and practice

- Presentation of documentation and knowledge from the scientific literature for potential indicators
- Consensus about existing knowledge and practice

4. Select clinical indicators and standards

- Process indicators
- Outcome indicators
- Identify prognostic factors (risk adjustment)
- Consensus and rating procedures



Categories of evidence

Ia – Evidence from meta-analysis of randomized controlled trials	A
Ib – Evidence from at least one randomized controlled trial	
IIa – Evidence from at least one controlled study without randomization	B
IIb – Evidence from at least one other type of quasi-experimental study	
III – Evidence from descriptive studies, such as comparative studies, correlation studies and case-control studies	C
IV – Evidence from expert committee reports or opinions or clinical experience of respected authorities, or both	D

1. Eccles M. et al, *BMJ* 1998;316:1232-1235
2. West S et al, *AHRQ No. 02-Eo 16*, 2002



SELECT INDICATORS AND STANDARDS

Process or outcome indicators? I

- ***Process* denotes what is actually done in giving and receiving care**
- **Outcome denotes the effects of care on the health status of patients and populations**
- **A good process increases the likelihood of a good outcome**
- **The process of care do not signify quality until their relationship to desirable outcomes have been established**



SELECT INDICATORS AND STANDARDS

Process or outcome indicators? II

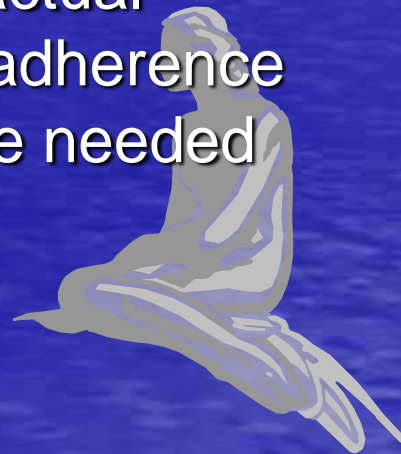
- **It is necessary to have established a relationship between a particular process and outcome**
- **The scientific literature can establish the linkage between process and outcome**
- **Clinical indicators should be evidence based to confirm this linkage**



RISK ADJUSTMENT

Process indicators

- For some process indicators risk adjustment plays a smaller role
- For other process measures risk adjustment may reveal that patient factors are influencing a measure
- The more closely an indicator measures the actual process of care delivered rather than patient adherence or other factors the less risk adjustment will be needed



RISK ADJUSTMENT

Outcome indicators

- Multiple factors contribute to health care outcomes
- The adequacy of controls for differences in case mix and other covariates are important when using outcome indicators
- Prognostic factors should be identified from the scientific literature



The patient

- Demographic factors (age, sex, height)
- Lifestyle factors (smoking, alcohol, weight, diet, physical exercise)
- Psychosocial factors (social status, education)
- Compliance

+

The illness

- Severity, prognosis
- Comorbidity

+

The treatment (prevention, diagnostics, care, rehabilitation, therapy and control)

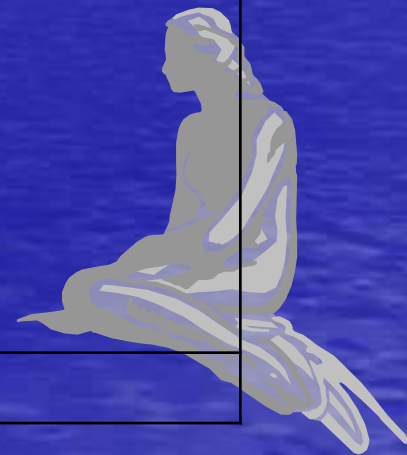
- Competence
- Technical equipment
- Evidence based clinical practice
- Efficacy, accuracy

+

The organization

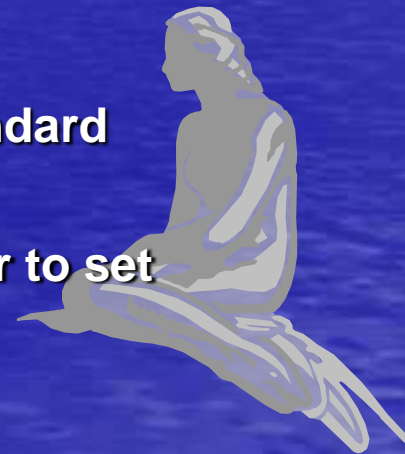
- Use of clinical guidelines
- Cooperation
- Delay

= OUTCOME



STANDARD SETTING

- A standard of care embodies acceptability of a performance or outcome rate
- If a desired attribute of care falls below the standard or an undesired attribute of care rises above this level, further evaluation or action is triggered
- The strength of evidence for both the clinical indicator and the related standard should ideally be evidence
- BUT: It is difficult
- The scientific literature does seldom report specific standard
- Clinician should interpret the scientific literature in order to set appropriate standards of care



Development of clinical indicators III

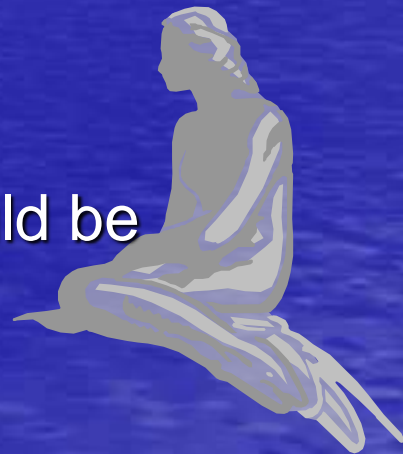
Development phase	<p>5. Design measure specification</p> <ul style="list-style-type: none">• Define indicators and standards• Identify target population• Inclusion and exclusion criteria• Risk adjustment strategy• Identify data sources• Describe data collection procedures• Develop an analytical plan <p>6. Perform pilot testing</p>
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DESIGN MEASURE SPECIFICATIONS I

Define the clinical indicator

- Exhaustive and exclusive measure specifications should be described
- Some indicators can be described as a proportion
- Some measures are dichotomous
- Some measures are continuous
- Each component related to the indicator should be described in detail



Development of clinical indicators IV

Implementation phase	<p>7. Data collection</p> <ul style="list-style-type: none">• Data from medical records, questionnaires, clinical databases and registers <p>9. Provide data analysis</p> <p>10. Interpretation of findings</p> <ol style="list-style-type: none">a. Analysis, evaluation, interpretationb. Professional discussions of data results <p>11. Implementation of improvements</p>
Monitoring phase Revision phase	<p>12. Continuous evaluation of performance</p> <p>13. Revision of clinical indicators</p>





Collection of data in DNIP

Data sources:

- Medical records
- Hospital/Regional IT systems (Lab., billing, adm.)
- National Patient Registry, Citizen registry
- **All data from each patient are linked to the civil registration number**

Registration form for each patient:

- Paper form
- Electronic form



Validation of data

Validation of data is carried out in 3 levels:

- Data registration: Interrater reliability
- Completeness of patient inclusion: Linkage of data from the National patient registry and data from the project database / a part of the feed back system
- Completeness - data reporting: validation by screen / a part of the feed back system



Clinical audit: External Professional Pressure

The audit process is organized

- Nationally
- Regionally / locally

.....regularly conducted once a year and furthermore in case of special requirement – with the aim of **INTERPRETATION**



Process Indicators in the Danish Indicator Project

- **Stroke**

- Stroke unit
- Treatment with platelet inhibitor
- Treatment with with anticoagulants
- CT/MR scan
- Assessment by a physiotherapist
- Assessment by an occupational therapist
- Assessment of nutritional status



Process Indicators in the Danish Indicator Project

- **Heart Failure**
 - Echocardiography
 - New York Heart Association Classification
 - Exercise training
 - Medicamentary treatment
 - Patient education



Process Indicators in the Danish Indicator Project

- **Hip Fracture**
 - Assessment of nutritional status
 - Pain
 - Acticity of Daily Living (ADL), before fracture
 - Acticity of Daily Living (ADL), after treatment
 - Prevention against fractures



Process Indicators in the Danish Indicator Project

- **Acute upper gastrointestinal bleeding**
 - Emergency endoscopy
 - Sub-acute endoscopy
 - Scheduled endoscopy
 - Therapeutic endoscopy
 - Pharmacologic ulcer treatment
 - Endoscopic treatment of rebleeding
 - Surgical treatment of primary or recurrent bleeding episode



Process Indicators in the Danish Indicator Project

Schizophrenia

- Diagnostic Proces
- Contact person
- Medication
- Side effects
- Family Intervention
- Psycho education
- Planned outpatient treatment at discharge
- Prevention of Suicide

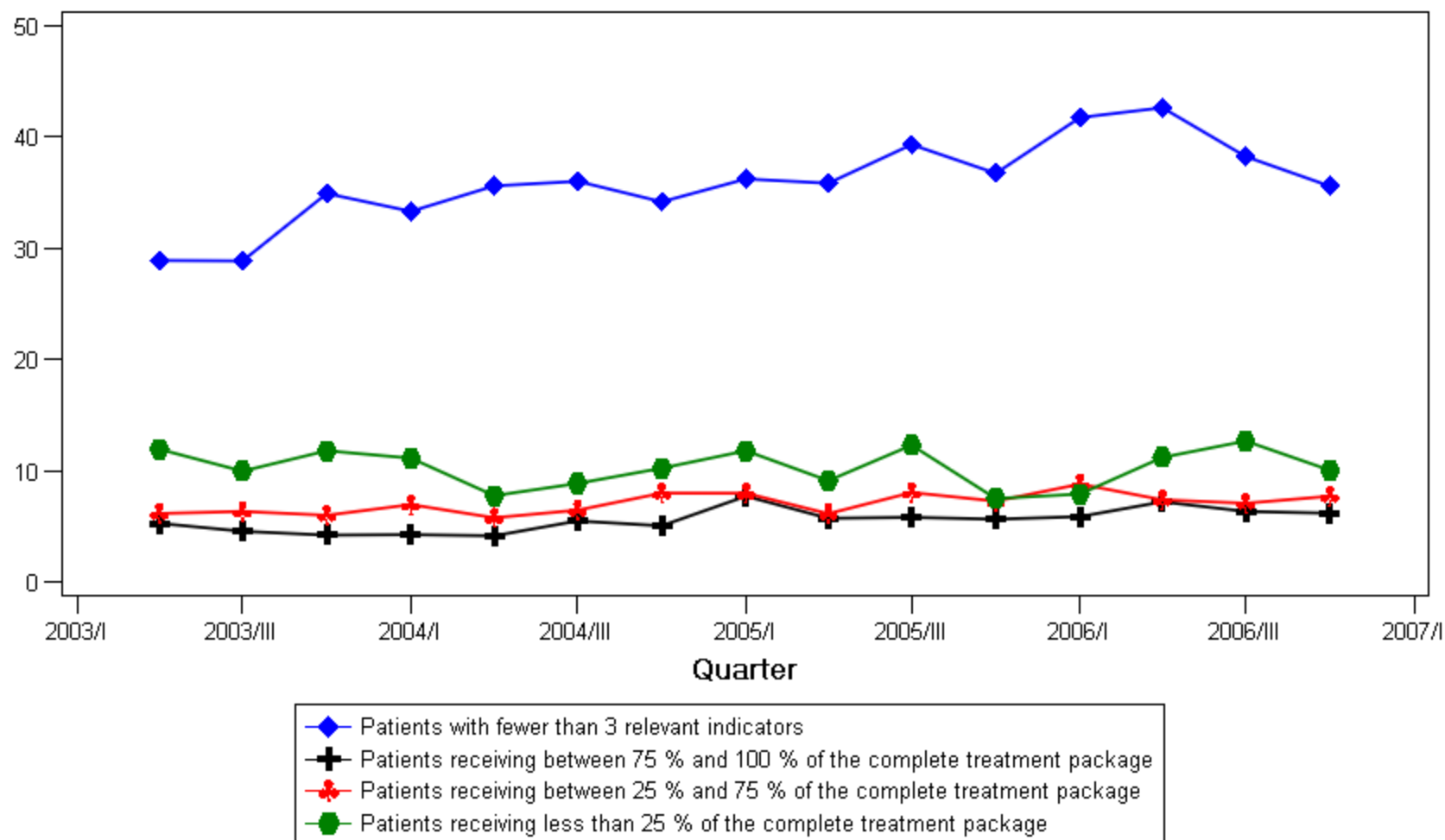


Between-Unit Variation of Improvement



Received percentage of complete treatment package vs. mortality, stroke

Percentage of patients who died within 30 days of admittance



Public disclosure of quality of care data:

- Positive effects on the quality of the process of care and clinical outcomes
- Can motivate hospitals and departments to focus on improvements
- Give patients opportunities to make informed choices of their medical care
- Transparency and accountability



Do public reporting have effects?

- Provider organizations seem to be sensitive and responsive to published information
- Quality reports act as a catalyst for improvement activities
- Public reporting is associated with both improved processes and outcomes of care



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- Positive effects on the quality of the process of care and clinical outcomes
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North Denmark Region - Psychiatric Sector – University Hospital

- △ Beds
- Emergency Psychiatric Ward
- Outpatient center



Process Indicators in the Danish Indicator Project

- Schizophrenia

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- Contact Person
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What did we do?

- Interventions

- Strong management focus
- Continuous supply of reliable feedback (data) to support positive developments.
- Systematically and regularly structured audit processes
- Development and implementation of tools (e.g. Checklists, Clinical Patient Pathways) to support local standard fulfillment.



www.sundhed.dk



www.nip.dk



Nordic Indicator Project on Quality of care

Jan Mainz

Chairman of the Steering Group for Common Nordic Indicators

Professor, Medical Director, Ph.D





Commission from the Nordic Council of Ministers

Nordic working group on quality measurement

Cooperation started 2000



Countries and autonomous territories



Denmark

Faroe Islands

Greenland

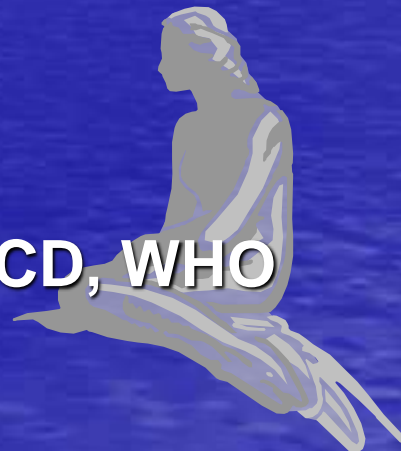
Finland

Åland

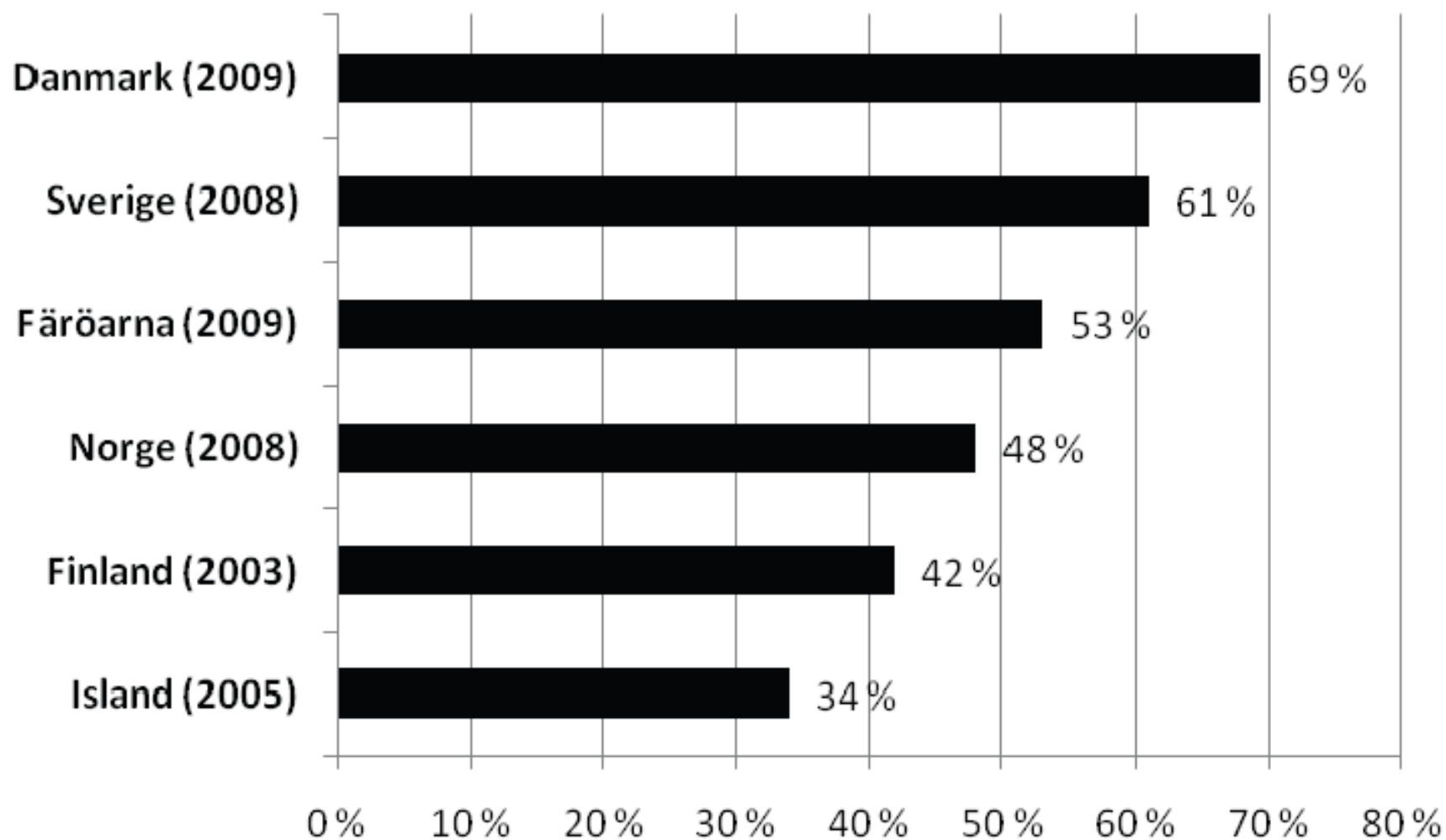


Aim of the cooperation

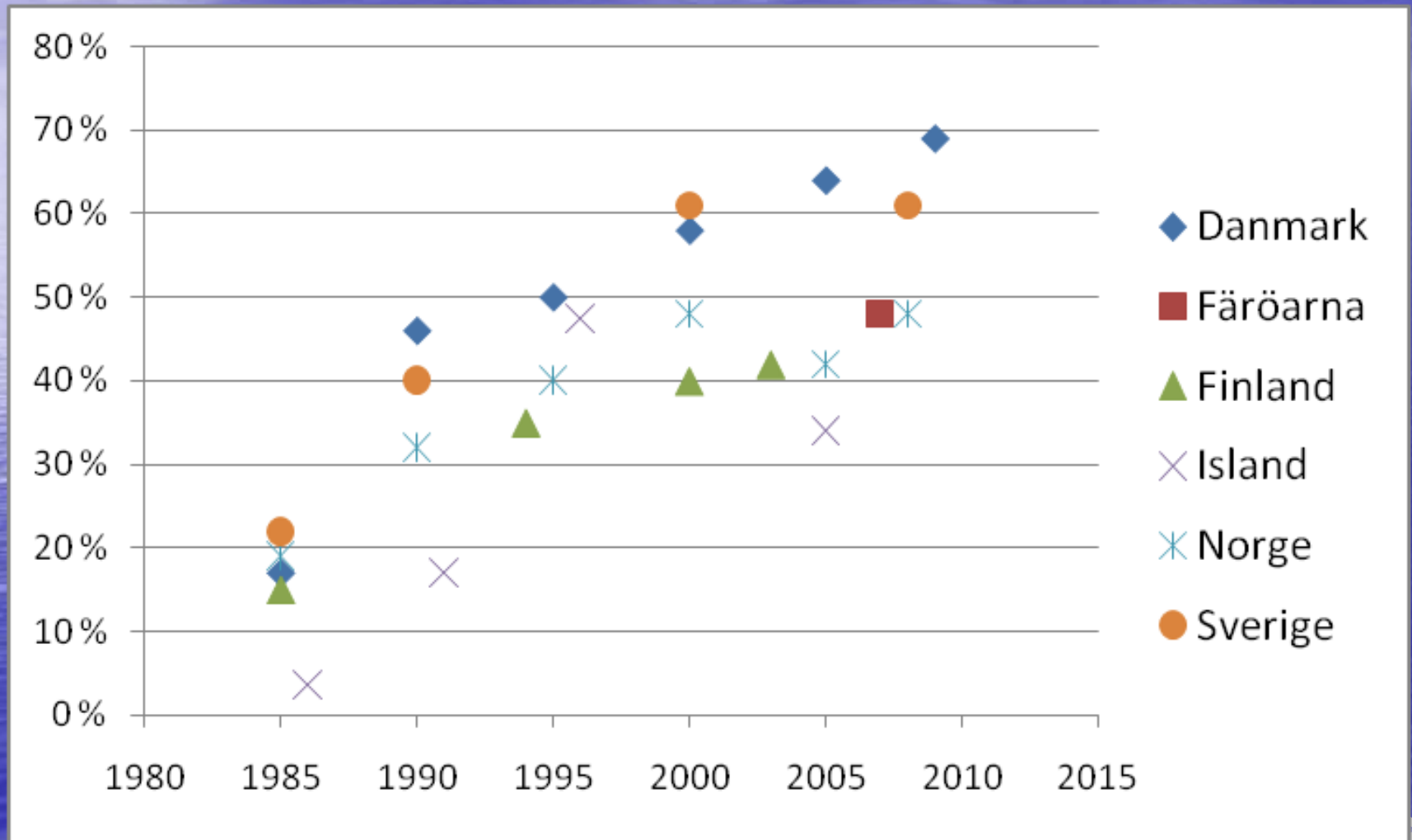
- To develop quality indicators for comparisons between the Nordic Countries
- To stimulate quality improvement
- To provide a basis for transparency and accountability in health care between the Nordic countries
- To coordinate Nordic collaboration with OECD, WHO and EU



Proportion of 12 years old without caries, %



Proportion of 12 years old without caries, % , 1980-2010



Strategies for High Performing Health Care Systems in OECD Countries



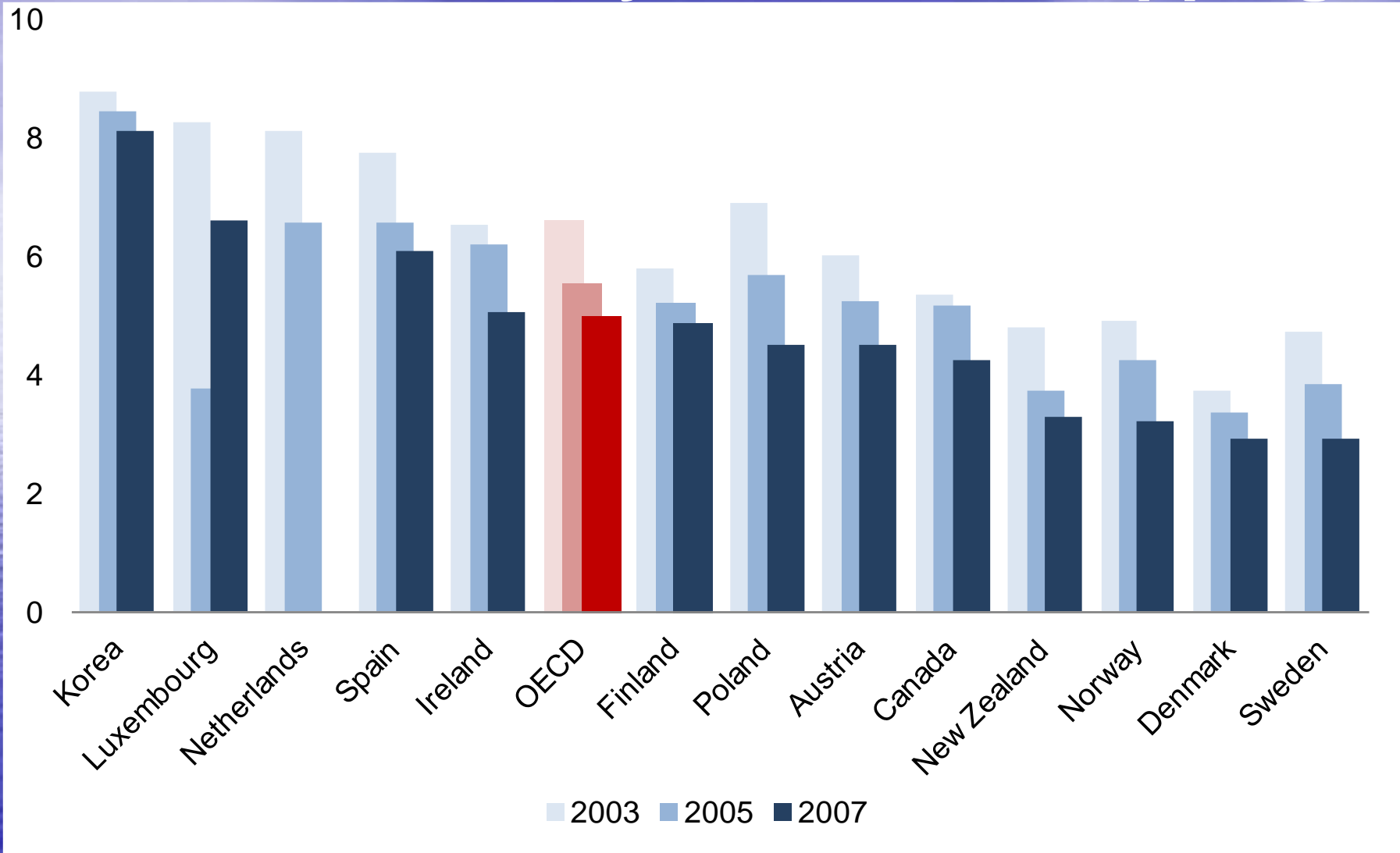
Health Care Quality Indicators

2011



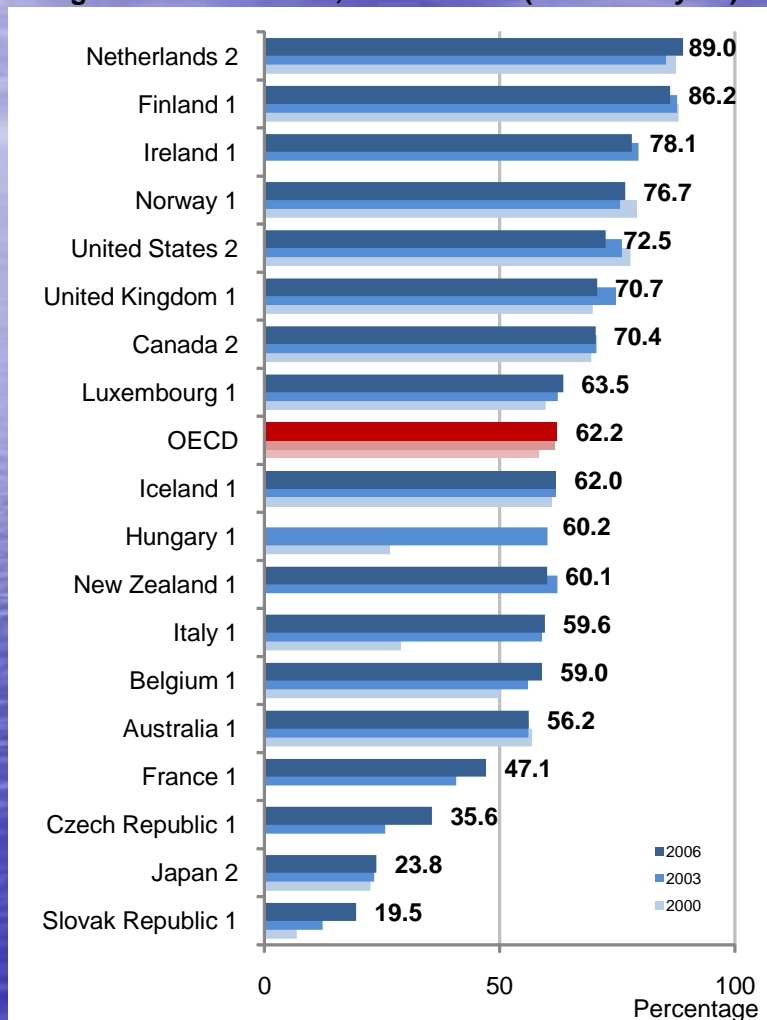
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Universitet

AMI case fatality rates are dropping

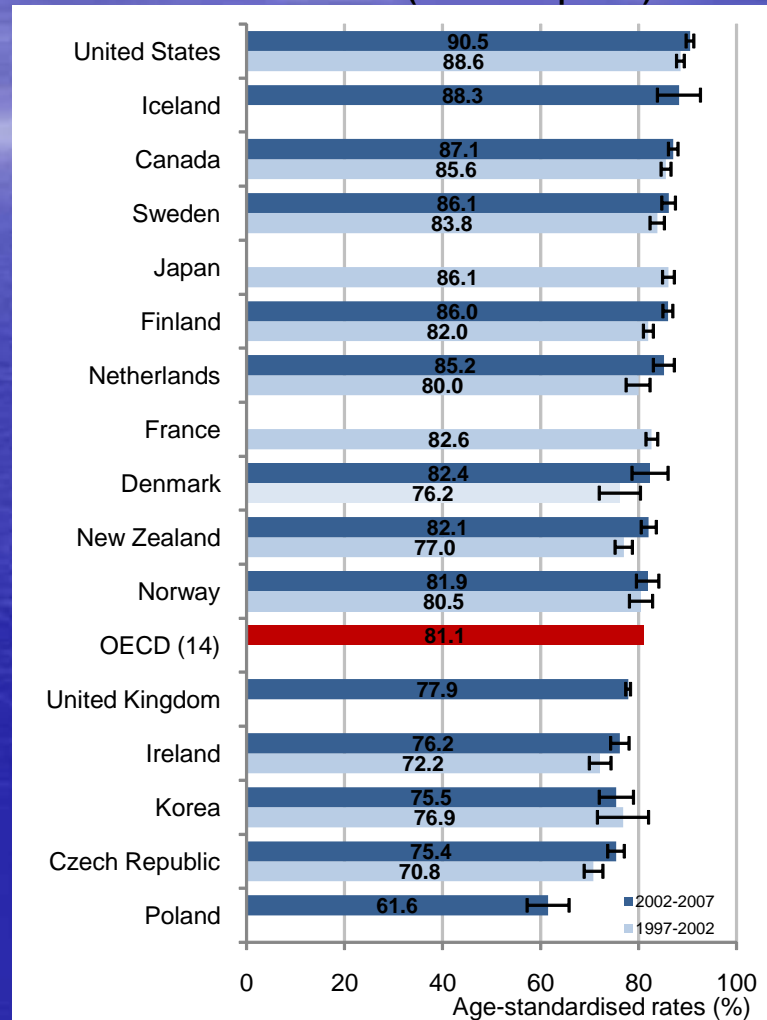


Cancer survival is improving

5.8.1. Mammography screening, percentage of women aged 50- 69 screened, 2000 to 2006 (or nearest year)



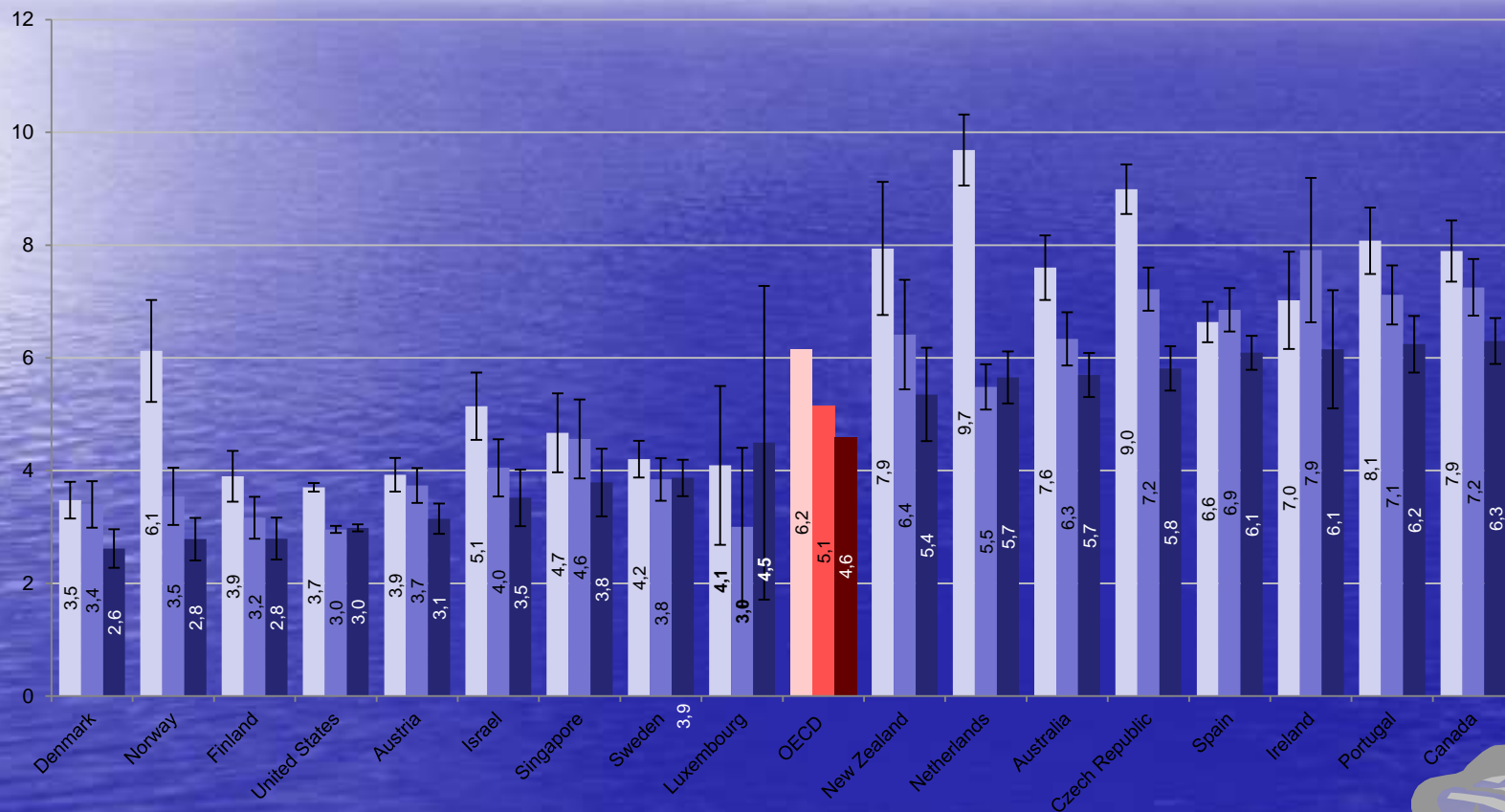
5.8.2 Breast cancer five-year relative survival rate, 1997-2002 and 2002-2007 (or nearest period)



Reduction in in-hospital case-fatality within 30 days after admission for ischemic stroke, 2000-09 (or nearest year)

Age-sex standardised rates per 100 patients

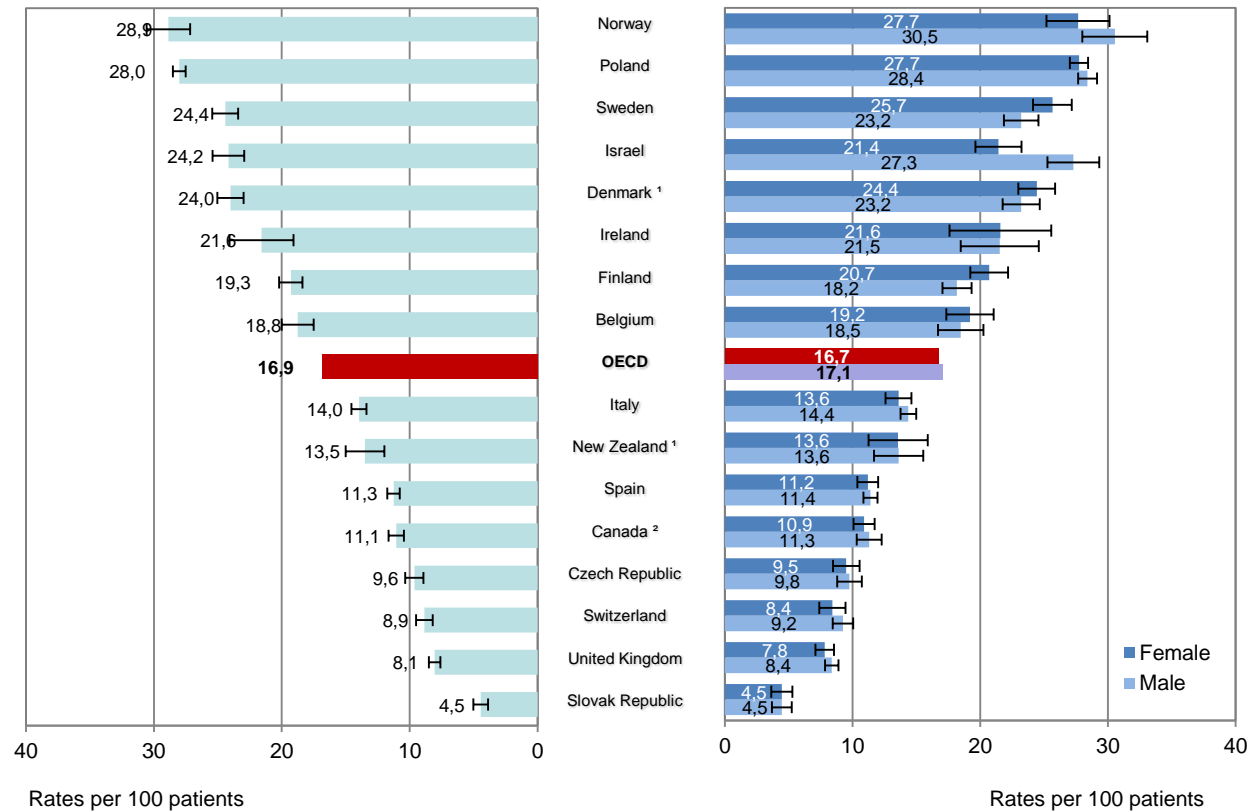
2000 2005 2009



Note: Rates age-sex standardised to 2005 OECD population (45+). 95% confidence intervals represented by H.

Source: OECD Health Data 2011.

Schizophrenia re-admissions to the same hospital, 2009 (or nearest year)



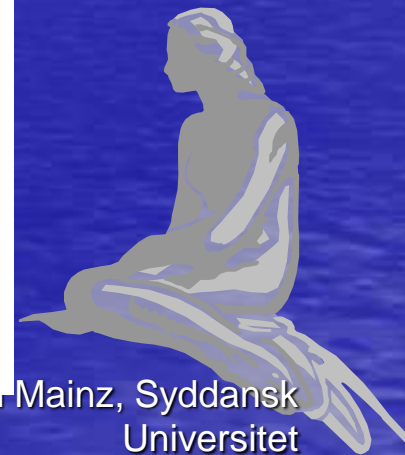
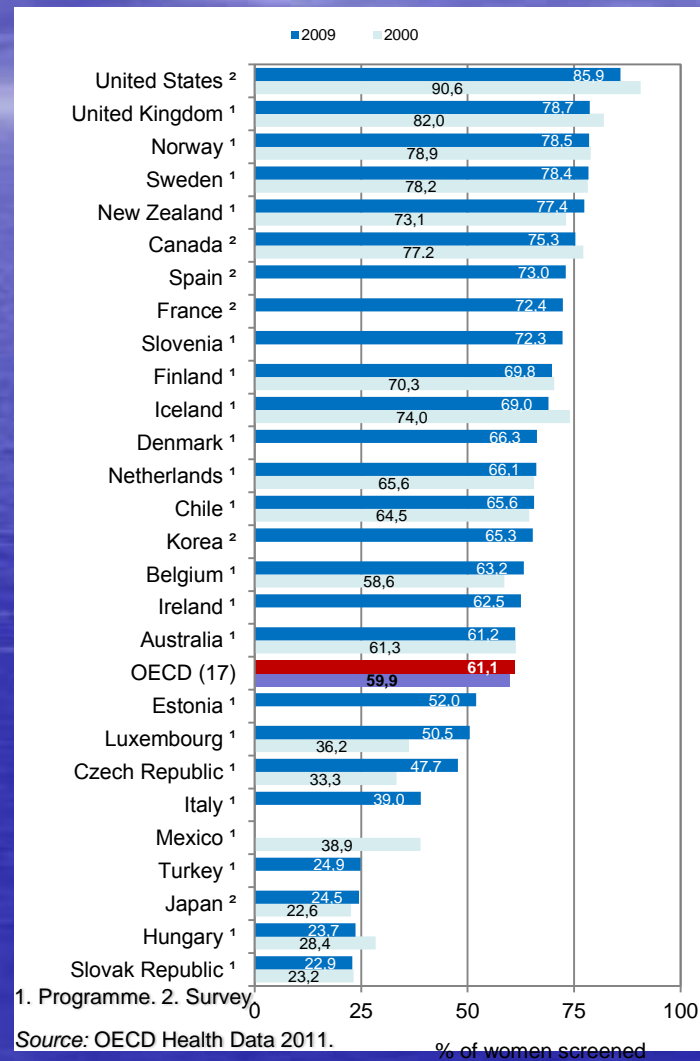
Rates age-sex standardised to 2005 OECD population. 95% confidence intervals represented by H.

1. Data do not include patients with secondary diagnosis of schizophrenia and bipolar disorder.

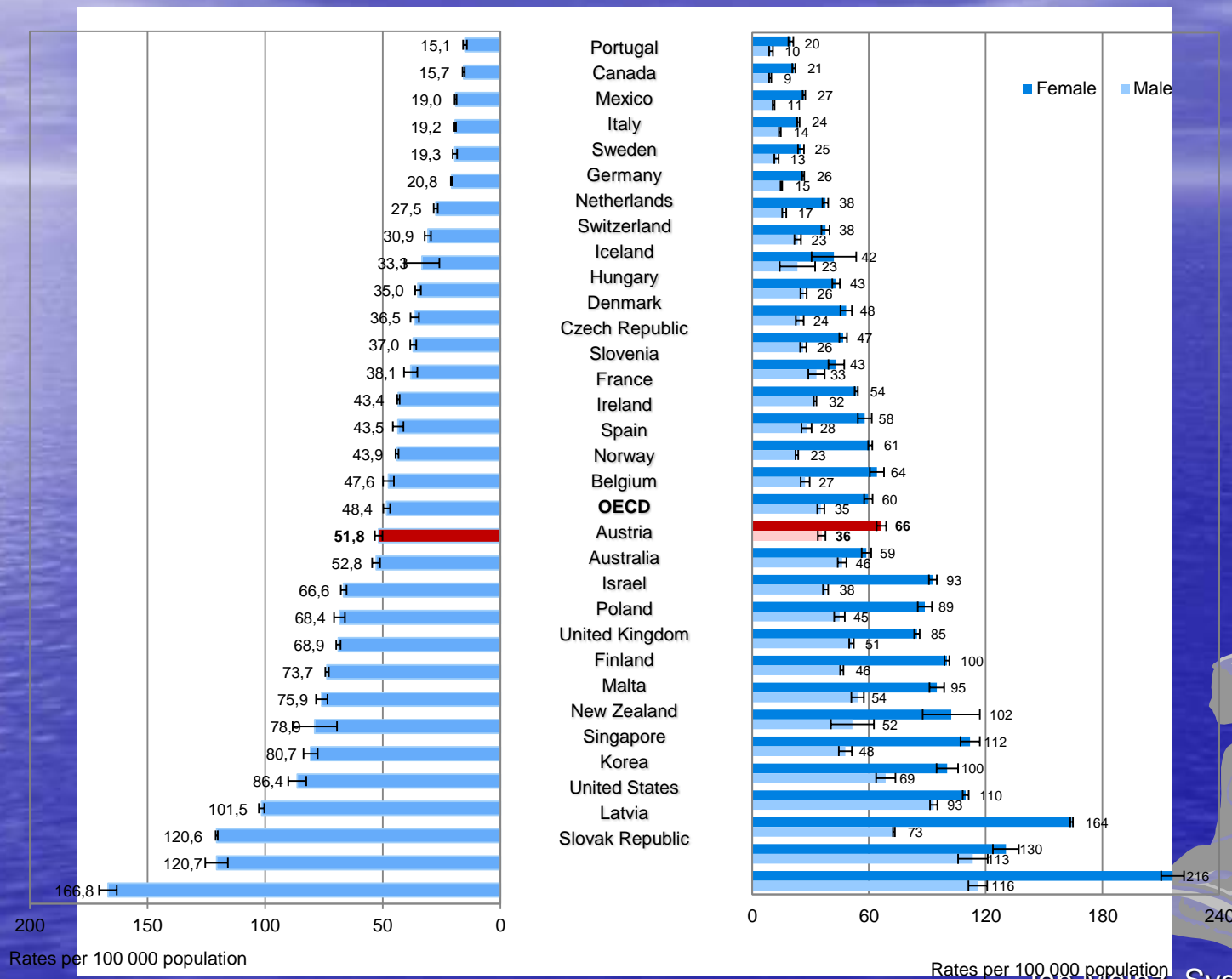
2. Only re-admissions within 30 days of the initial hospitalization were counted as re-admissions.

Source: OECD Health Data 2011.

Cervical cancer screening, percentage women screened aged 20-69, 2000 to 2009 (or nearest year)



Asthma hospital admission rates, population aged 15 and over, 2009 (or nearest year)



Note: Rates are age-sex standardised to 2005 OECD population. 95% confidence intervals are represented by H.

Source: OECD Health Data 2011.

Patient safety OECD

Area	Indicator name
Hospital-acquired infections	Decubitus ulcer (PSI 3)
	Infection due to medical care (PSI 7)
Operative and post-operative complications	Complications of anaesthesia (PSI 1)
	Iatrogenic pneumothorax (PSI 6)
	Postoperative hip fracture (PSI 8)
	Postoperative respiratory failure (PSI 11)
	Postoperative pulmonary embolism (PE) or deep vein thrombosis (DVT) (PSI 12)
	Postoperative sepsis (PSI 13)
	Accidental Puncture or Laceration (PSI 15)
Sentinel events	Foreign body left in during procedure (PSI 5)
	Transfusion reaction (PSI 16)
Obstetrics	Birth trauma – injury to neonate (PSI 17)
	Obstetric trauma – vaginal delivery with instrument (PSI 18)
	Obstetric trauma – vaginal delivery without instrument (PSI 19)
	Obstetric trauma - caesarean section (PSI 20)



Clinical indicators

Key messages:

- Monitoring health care quality is impossible without the use of clinical indicators
- they create the basis for quality improvement, prioritization and transparency in the health care system
- It is imperative that clinical indicators are meaningful, scientifically sound, generalizable and interpretable
- To achieve this, clinical indicators must be developed, tested and implemented with scientific rigor



What do we know about quality improvement?

- Improvements in care directly attributable to performance measurement are being repeatedly documented
- So, investment in quality measurement will get paid in terms of improvements of patient care



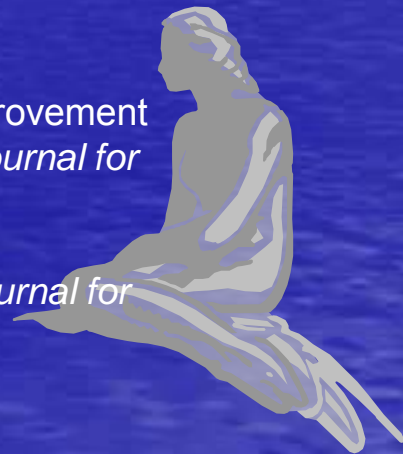
Which methods/strategies have effects on the quality of care?

Performance and outcome have documented effects:

- Improved quality of the proces of care
- Improved clinical outcomes

Kilde:

- Mainz J, Krog BR, Bjørnshave B, Bartels P. Nationwide continuous quality improvement using clinical indicators: The Danish National Indicator Project. *International Journal for Quality in Health Care* 2004.
- Mainz J. Quality indicators: essential for quality improvement. *International Journal for Quality in Health Care* 2004



What do we know about the quality of care?

- Quality improvement frameworks and methods have developed over the last 100 years
- Few countries are able to document the quality of their health care system nationwide
- Few countries have a mandatory system to track the quality of care delivered to their citizens
- There is a need for investment in quality measurement systems at national and international level



What is needed for nationwide quality improvement

- Development of a culture of quality improvement including education and training
- Quality systems to track valid data on the quality of care
- Structures and organisation to conduct quality systems
- And leadership, and leadership and leadership



More information

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