The development and use of quality indicators in health care

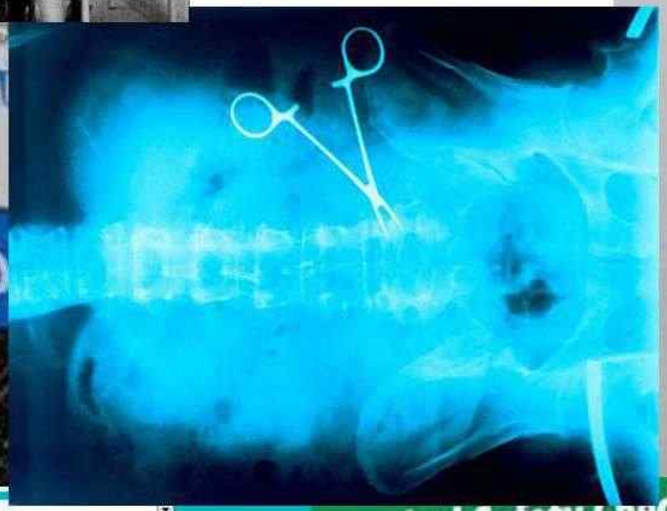
Niek Klazinga, Thessaloniki, April 24th 2014


Daily Mail
4-PAGE PULLOUT
femail magazine
1,200 needless deaths, sobbing patients abused and humiliated, staff bullied to meet targets. Yet a secret inquiry into failing hospital STILL finds that . . .
NO ONE'S TO BLAME
I'm ready to quit The One Show, threatens Chiles

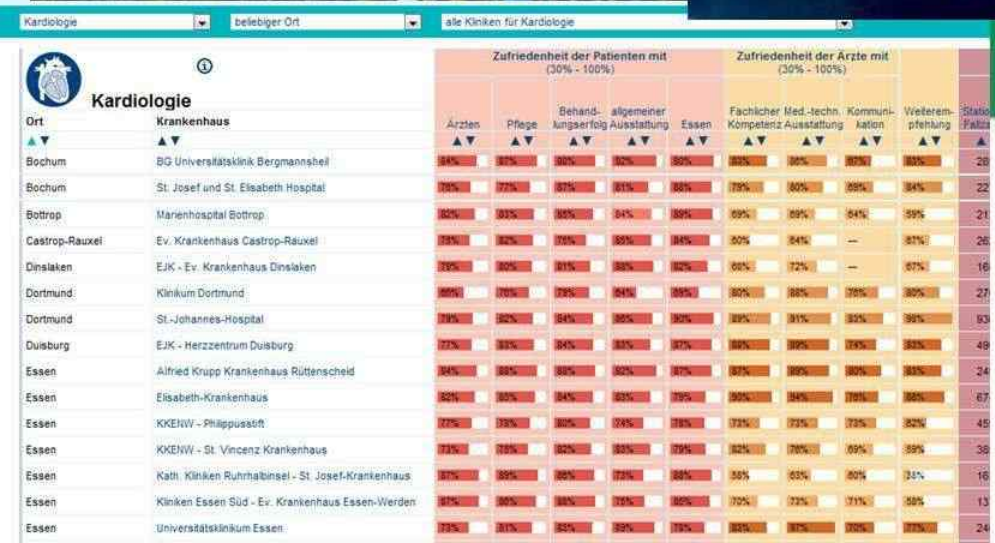

INDEPENDENT
STYLE ARTS & ENTS TRAVEL MONEY
Gadgets & Tech Motoring Dating
NHS
Babies left to die as

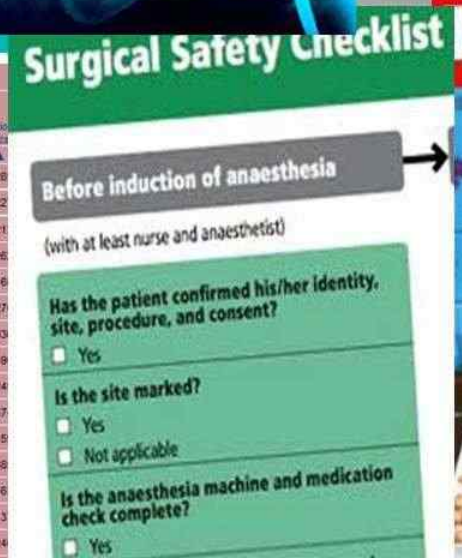

THE DR FOSTER HOSPITAL GUIDE 2009


Mid Staffordshire
Stafford Hosp




HOW SAFE IS YOUR HOSPITAL?
Do not use if seal is broken


Kardiologie
beliebiger Ort
alle Kliniken für Kardiologie
Kardiologie
Zufriedenheit der Patienten mit (30% - 100%)
Zufriedenheit der Ärzte mit (30% - 100%)
Ort
Krankenhaus
Ärzten
Pflege
Behand-lungserfolg
allgemeiner Ausstattung
Essen
Fachlicher Kompetenz
Med.-techn. Ausstattung
Kommuni-kation
Weiterem-pfehlung
Bochum
BG Universitätsklinik Bergmannsheil
Bochum
St. Josef und St. Elisabeth Hospital
Bottrop
Marienhospital Bottrop
Castrop-Rauxel
Ev. Krankenhaus Castrop-Rauxel
Dinslaken
EJK - Ev. Krankenhaus Dinslaken
Dortmund
Klinikum Dortmund
Dortmund
St.-Johannes-Hospital
Duisburg
EJK - Herzzentrum Duisburg
Essen
Alfred Krupp Krankenhaus Rüttenscheid
Essen
Elisabeth-Krankenhaus
Essen
KKENW - Philippusstift
Essen
KKENW - St. Vincenz Krankenhaus
Essen
Kath. Kliniken Ruhrhalbinsel - St. Josef-Krankenhaus
Essen
Kliniken Essen Süd - Ev. Krankenhaus Essen-Werden
Essen
Universitätsklinikum Essen


Surgical Safety Checklist
Before induction of anaesthesia
(with at least nurse and anaesthetist)
Has the patient confirmed his/her identity, site, procedure, and consent?
Yes
Is the site marked?
Yes
Not applicable
Is the anaesthesia machine and medication check complete?
Yes


AMERICA'S BEST HOSPITALS
U.S. News & WORLD REPORT
DOUBLE ISSUE
EXCLUSIVE RANKINGS OF TOP MEDICAL CARE
HEART DISEASE, CANCER, PEDIATRICS, AND 14 MORE SPECIALTIES

Principle 1

- An indicator should relate to a box and be part of a circle

Principle 2

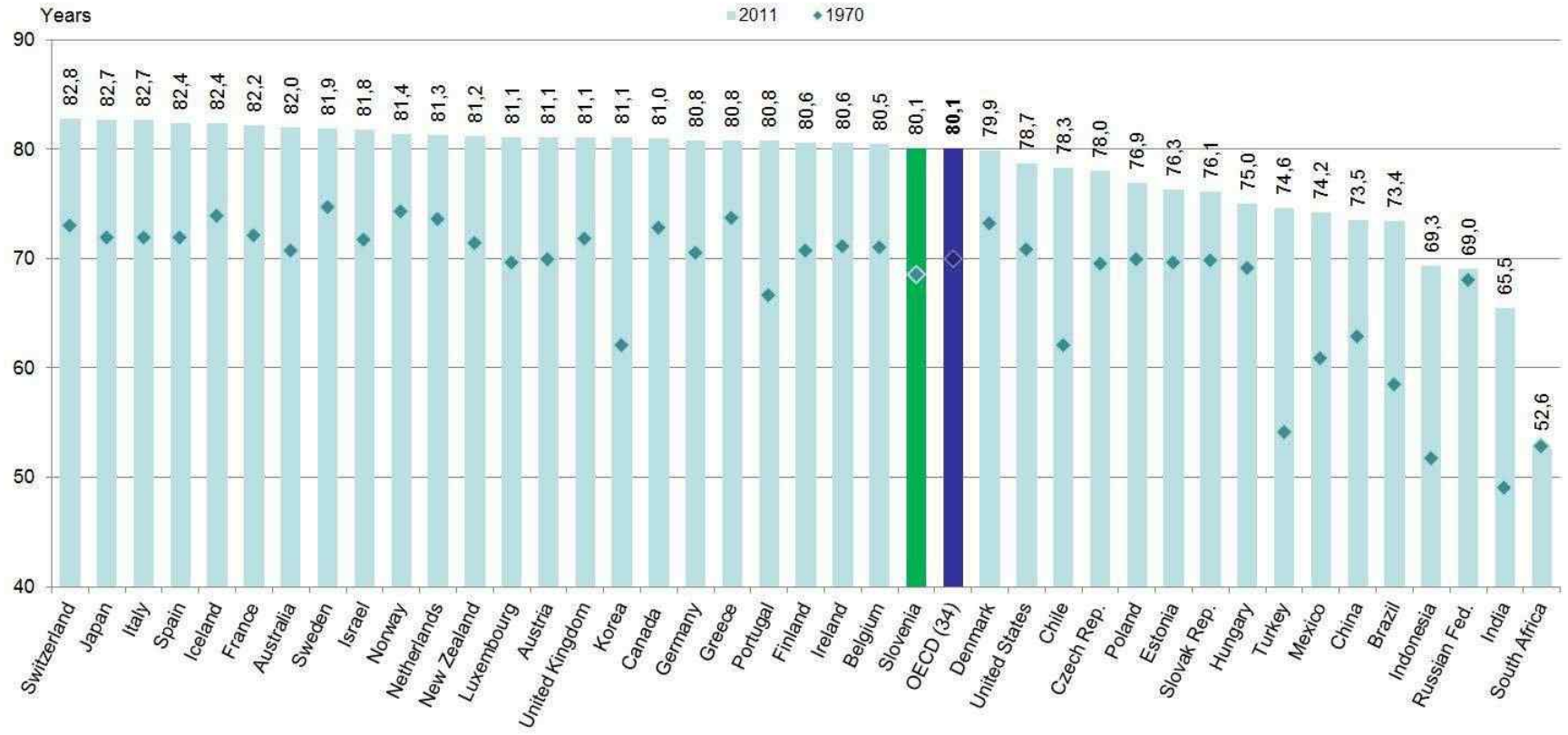
- A good indicator is reliable, valid, feasible and actionable

menu

- Context
- Development and use of indicators in OECD's HCQI program and link with strengthening the national data infrastructure.
- Links with (national) quality strategies and performance of hospitals (DuQue project)
- From measurement to improvement

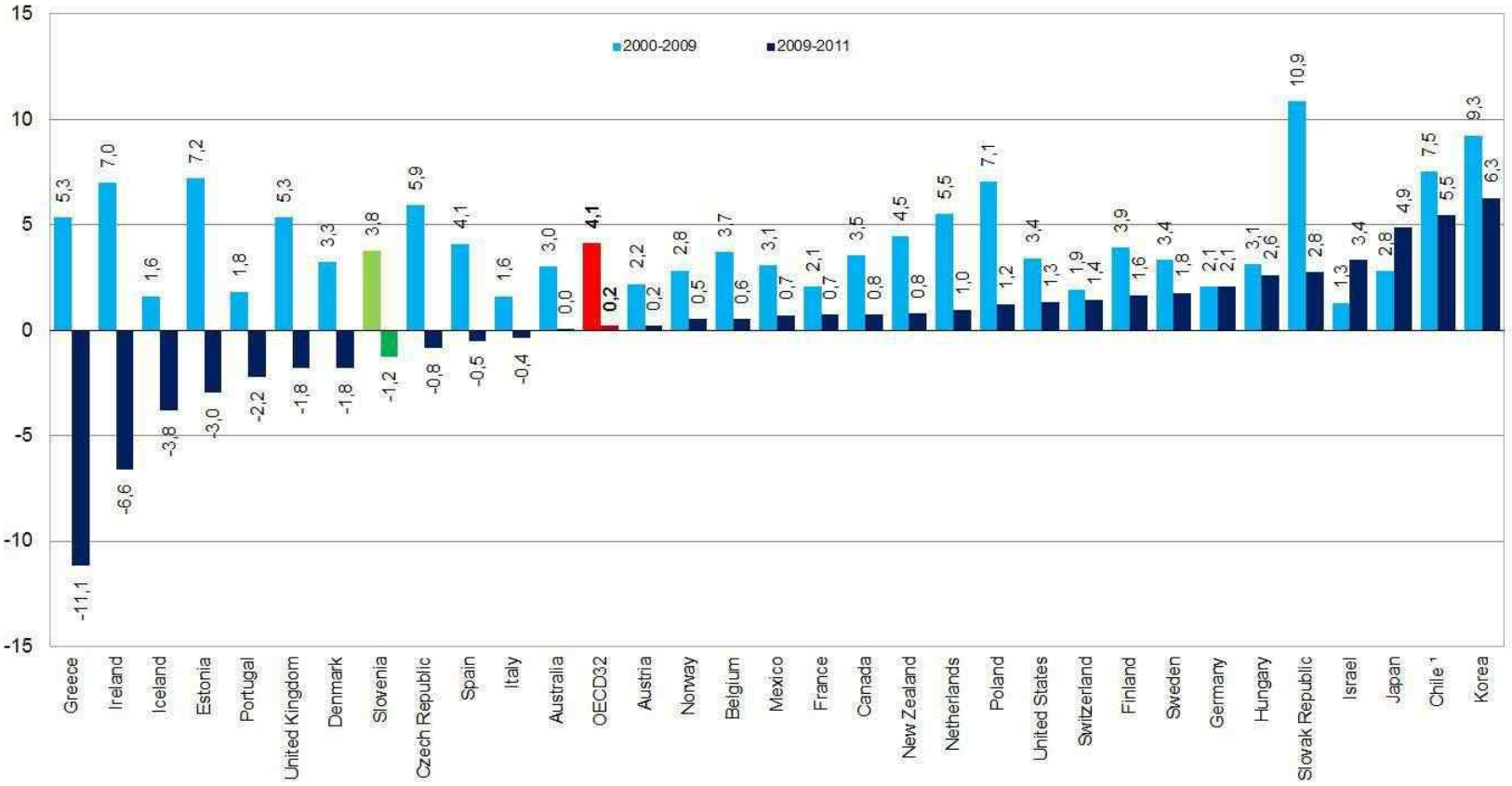
Context on the basis of OECD statistics

Life expectancy at birth, 1970 and 2011 (or nearest year)



Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en; World Bank for non-OECD countries.

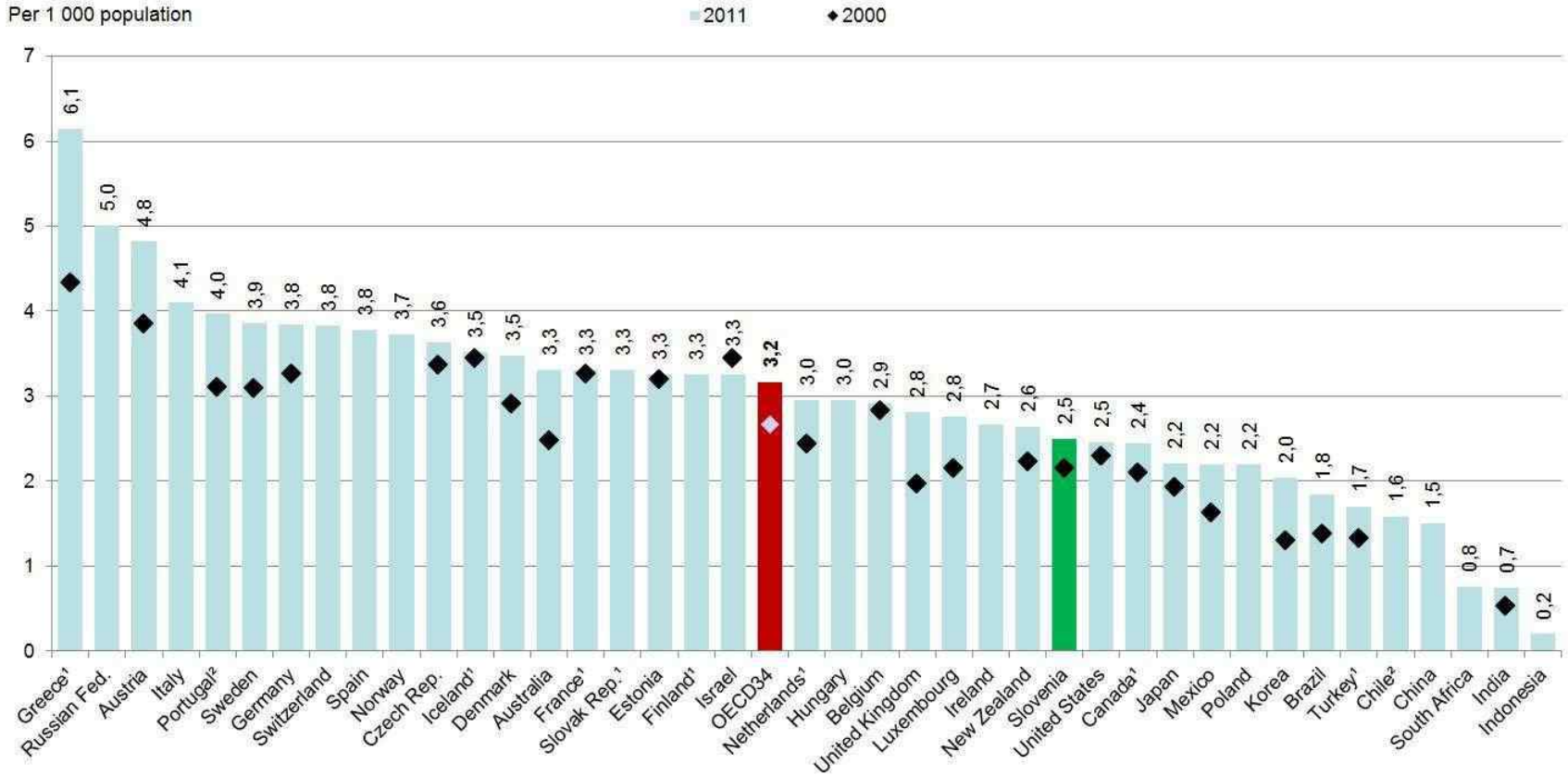
Annual average growth rate in per capita health expenditure, real terms, 2000 to 2011 (or nearest year)



1. CPI used as deflator.

Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

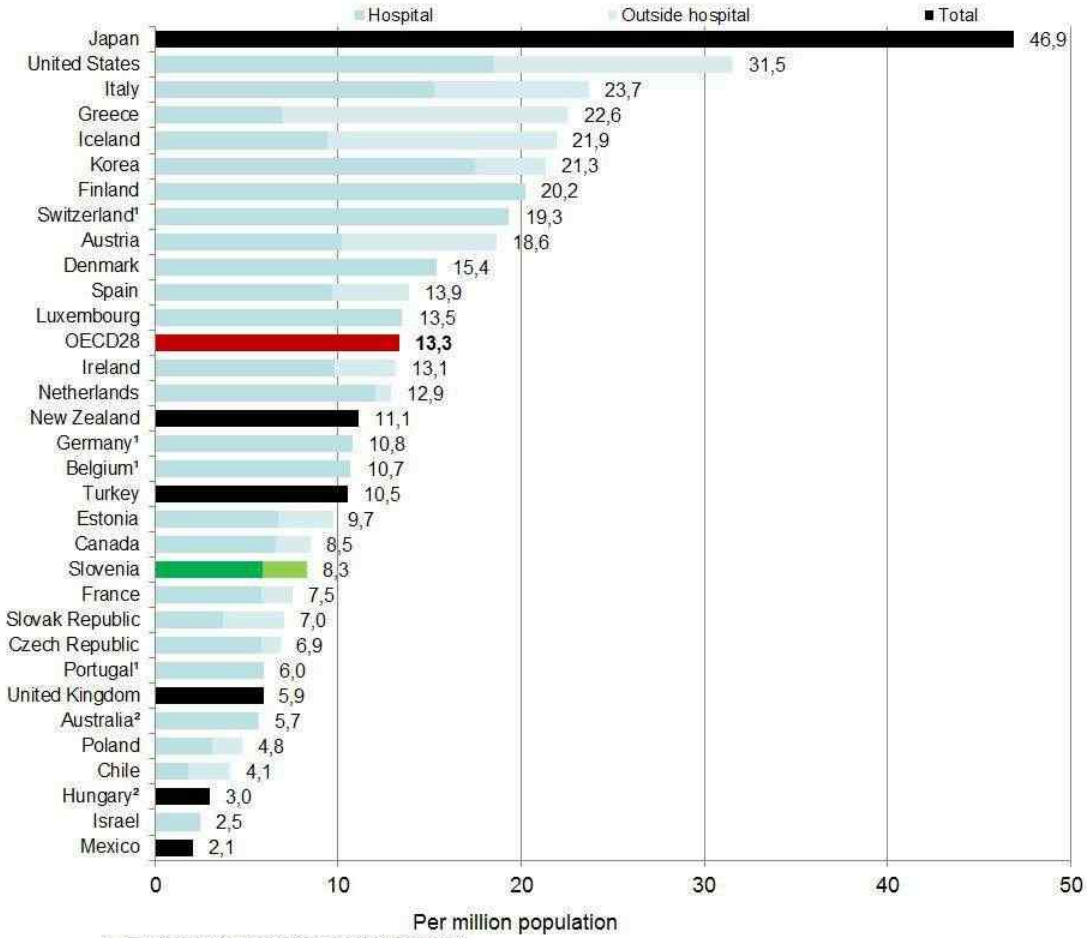
Practising doctors per 1 000 population, 2000 and 2011 (or nearest year)



1. Data include not only doctors providing direct care to patients, but also those working in the health sector as managers, educators, researchers, etc. (adding another 5-10% of doctors). 2. Data refer to all doctors licensed to practice (resulting in a large over-estimation of the number of practising doctors in Portugal).

Source: *OECD Health Statistics 2013*, http://dx.doi.org/10.1787/health-data-en.

MRI units, 2011 (or nearest year)



1. Equipement outside hospital not included.
2. Only equipment eligible for public reimbursement.

Source: *OECD Health Statistics 2013*, http://dx.doi.org/10.1787/health-data-en.

Development and use of quality indicators in OECD's HCQI program and the link with strengthening the information infrastructure

Quality measures

- Structure, process, outcome
- Sentinel events and rate ratio's
- Indicators on professionals, services, hospitals and health systems
- Indicators on quality and safety
- - reliability
- - validity
- - feasibility
- - actionability

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

The Quality of Health Care Delivered to Adults in the United States

Elizabeth A. McGlynn, Ph.D., Steven M. Asch, M.D., M.P.H., John Adams, Ph.D., Joan Keesey, B.A., Jennifer Hicks, M.P.H., Ph.D., Alison DeCristofaro, M.P.H., and Eve A. Kerr, M.D., M.P.H.

ABSTRACT

BACKGROUND

We have little systematic information about the extent to which standard processes involved in health care — a key element of quality — are delivered in the United States.

METHODS

We telephoned a random sample of adults living in 12 metropolitan areas in the United States and asked them about selected health care experiences. We also received written consent to copy their medical records for the most recent two-year period and used this information to evaluate performance on 439 indicators of quality of care for 30 acute and chronic conditions as well as preventive care. We then constructed aggregate scores.

RESULTS

Participants received 54.9 percent (95 percent confidence interval, 54.3 to 55.5) of recommended care. We found little difference among the proportion of recommended preventive care provided (54.9 percent), the proportion of recommended acute care provided (53.5 percent), and the proportion of recommended care provided for chronic conditions (56.1 percent). Among different medical functions, adherence to the processes involved in care ranged from 52.2 percent for screening to 58.5 percent for follow-up care. Quality varied substantially according to the particular medical condition, ranging from 78.7 percent of recommended care (95 percent confidence interval, 73.3 to 84.2) for senile cataract to 10.5 percent of recommended care (95 percent confidence interval, 6.8 to 14.6) for alcohol dependence.

CONCLUSIONS

The deficits we have identified in adherence to recommended processes for basic care pose serious threats to the health of the American public. Strategies to reduce these deficits in care are warranted.

From RAND, Santa Monica, Calif. (E.A.M., S.M.A., J.A., J.K., J.H., A.D.); the Veterans Affairs (VA) Greater Los Angeles Health Care System, Los Angeles (S.M.A.); the Department of Medicine, University of California Los Angeles, Los Angeles (S.M.A.); the VA Center for Practice Management and Outcomes Research, VA Ann Arbor Health Care System, Ann Arbor, Mich. (E.A.K.); and the Department of Medicine, University of Michigan, Ann Arbor (E.A.K.). Address reprint requests to Dr. McGlynn at RAND, 1700 Main St., P.O. Box 2138, Santa Monica, CA 90407, or at beth_mcglynn@rand.org.

N Engl J Med 2003;348:2635-45.

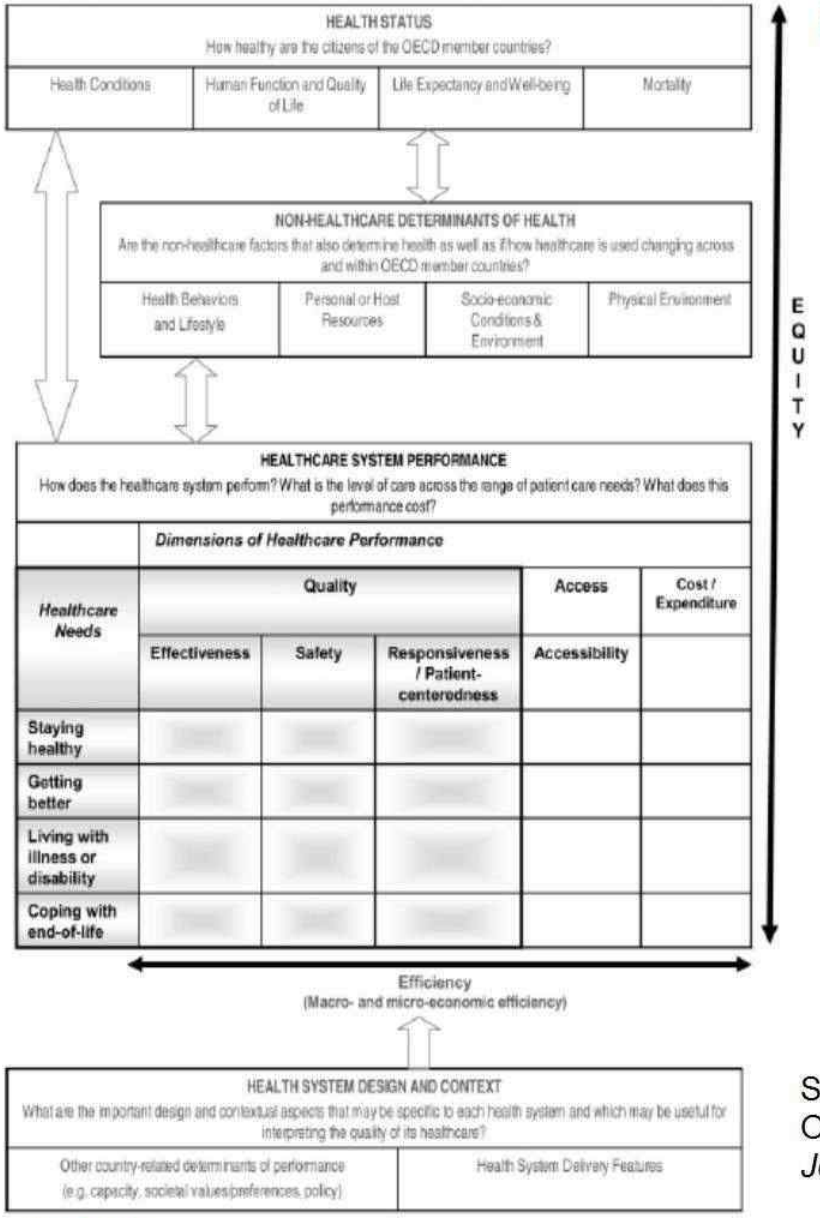
Quality concept that is used by OECD

- Effectiveness
- Safety
- Patient centeredness

- Staying healthy, getting better, living with disabilities and end of life are core health system functions (IoM model)
- Quality of Health Care is one of the determinants of health (Lalonde model)

Conceptual Framework for OECD Health Care Quality Indicator (HCQI) Project.

(shaded area represents the current focus of the HCQI Project)

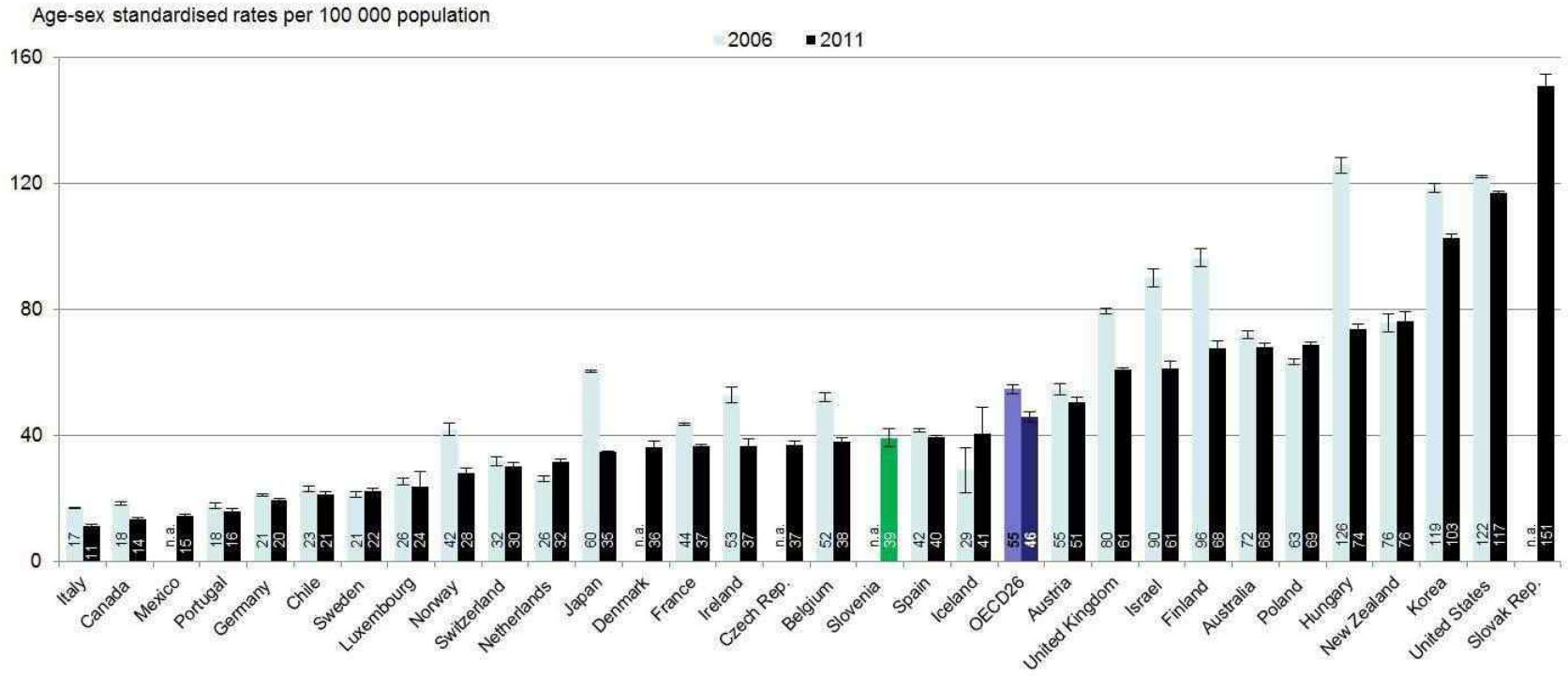


Source: Arah OA, et al. A conceptual framework for the OECD Health Care Quality Indicators Project. *International Journal Quality Health Care*. 2006; Sep 18; Suppl.1:5-13.

Measuring quality of care

- Admission rates for chronic diseases
- 30-day case fatality rates for admission after AMI, Stroke
- Cancer survival rates
- Mental Health Care
- Patient safety indicators
- Patient experiences

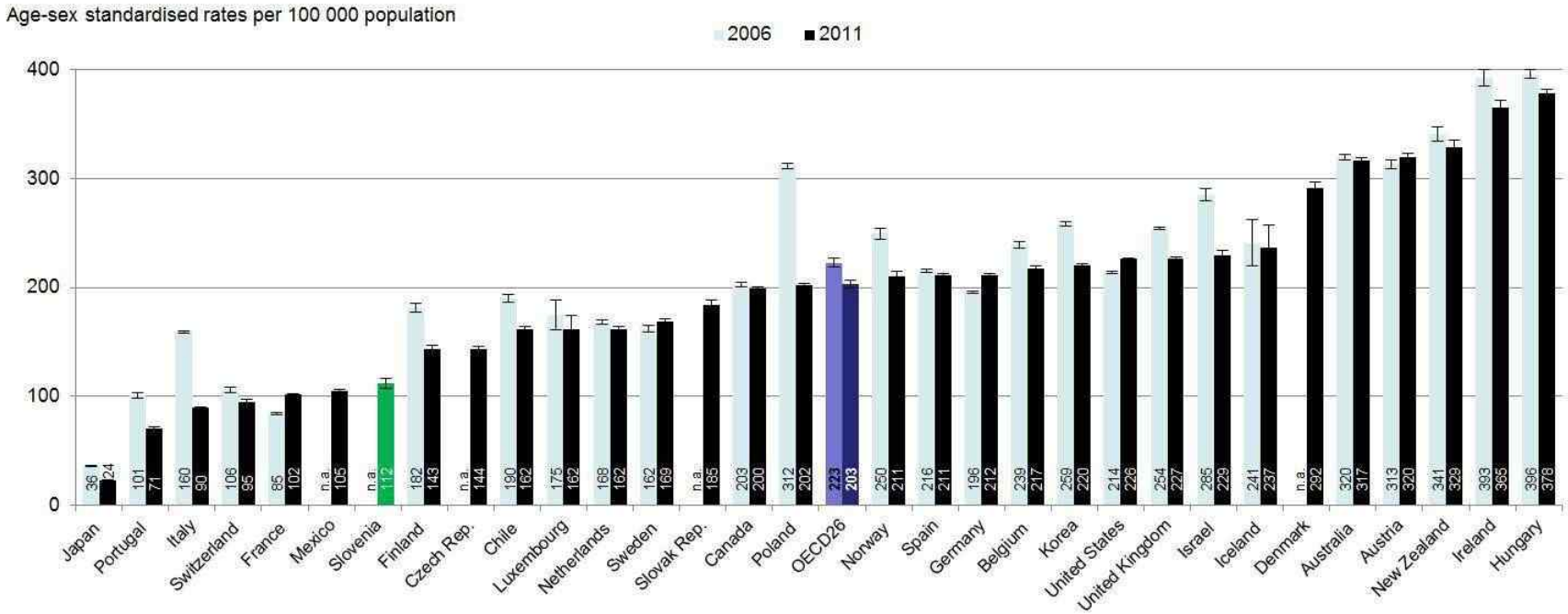
Asthma hospital admission in adults, 2006 and 2011 (or nearest year)



Note: 95% confidence intervals represented by H.

Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

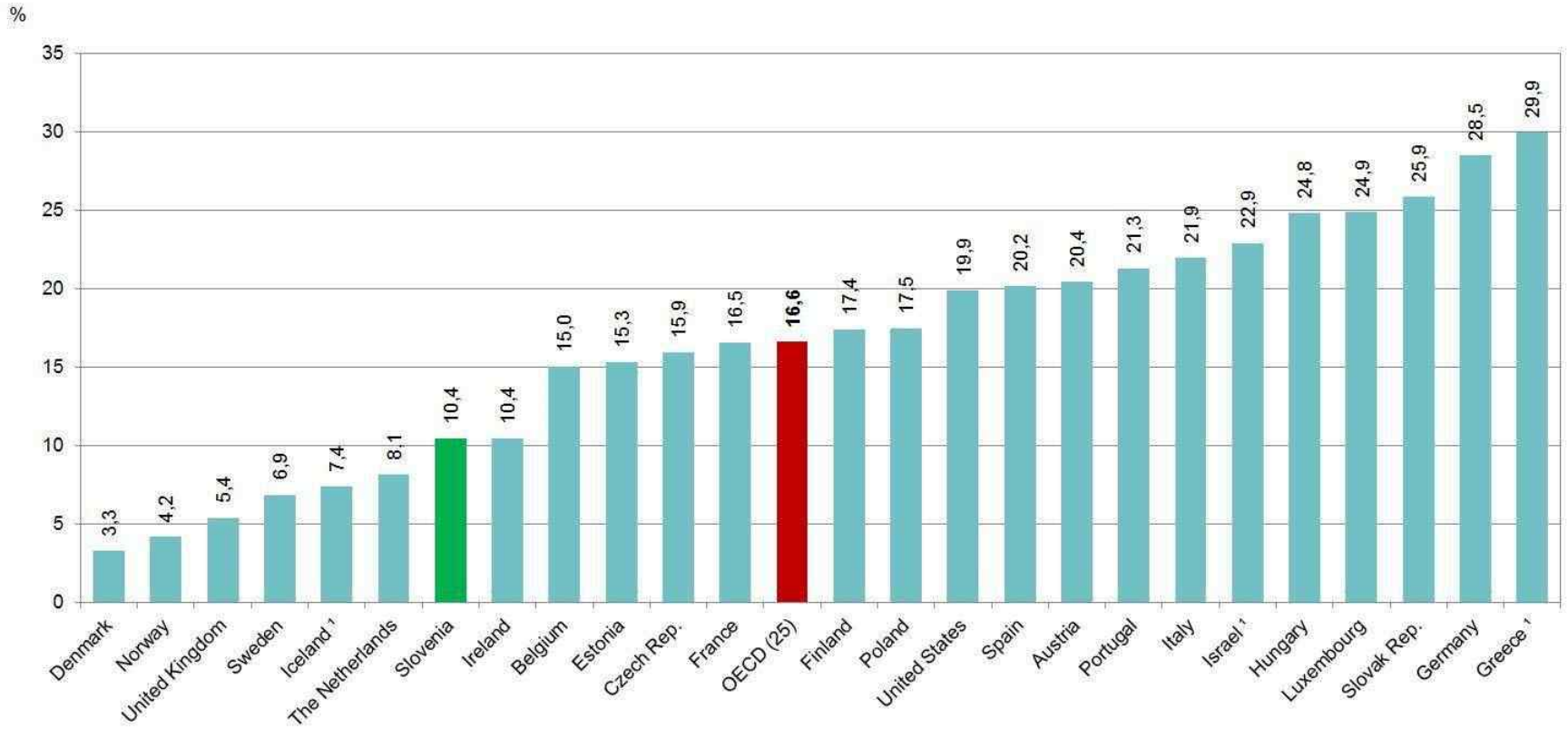
COPD hospital admission in adults, 2006 and 2011 (or nearest year)



Note: 95% confidence intervals represented by H.

Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

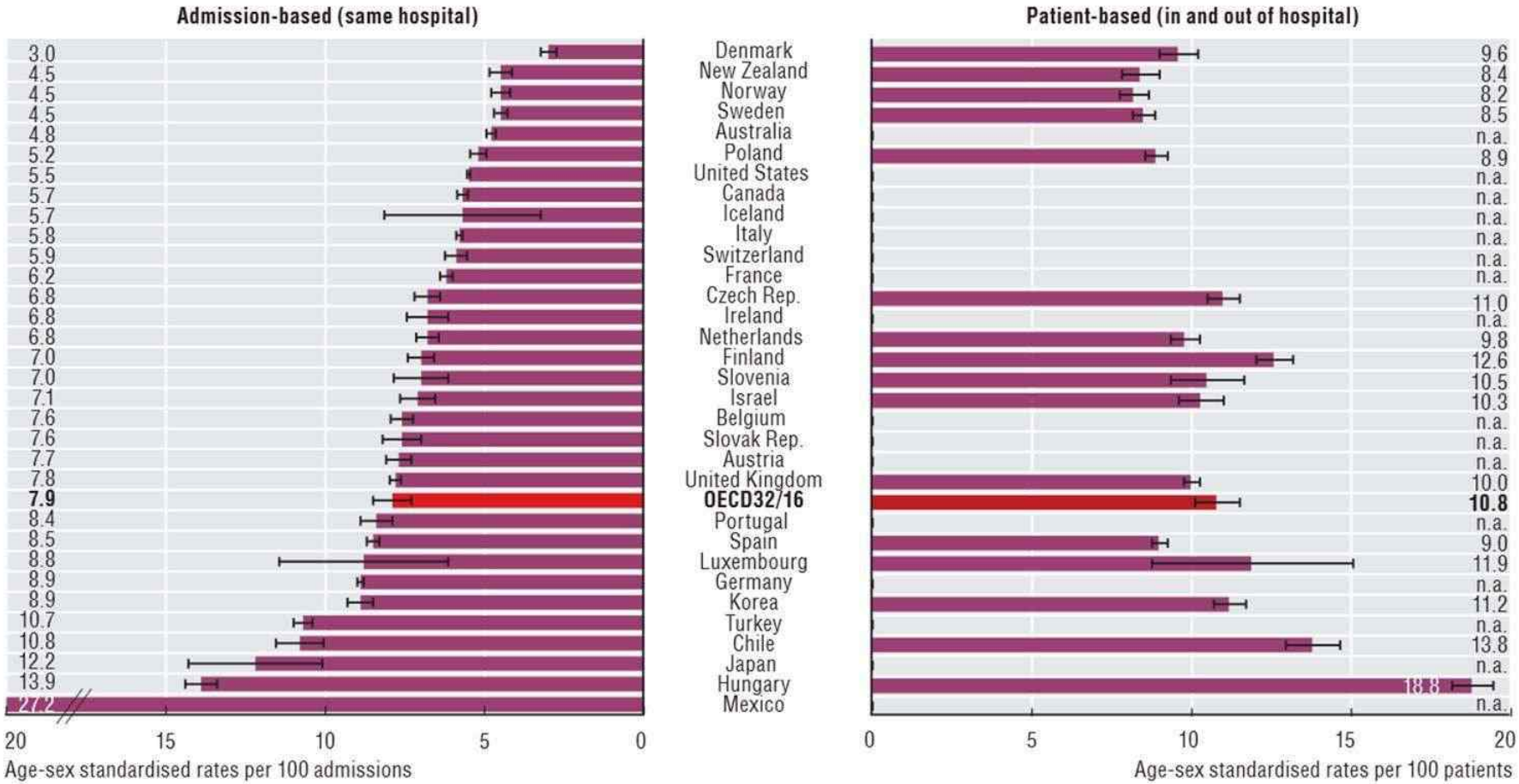
Cephalosporins and quinolones as a proportion of all antibiotics prescribed, 2010 (or nearest year)



1. Data refer to all sectors (not only primary care).

Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en, IMS for United States.

Case-fatality in adults aged 45 and over within 30 days after admission for AMI, 2011 (or nearest year)

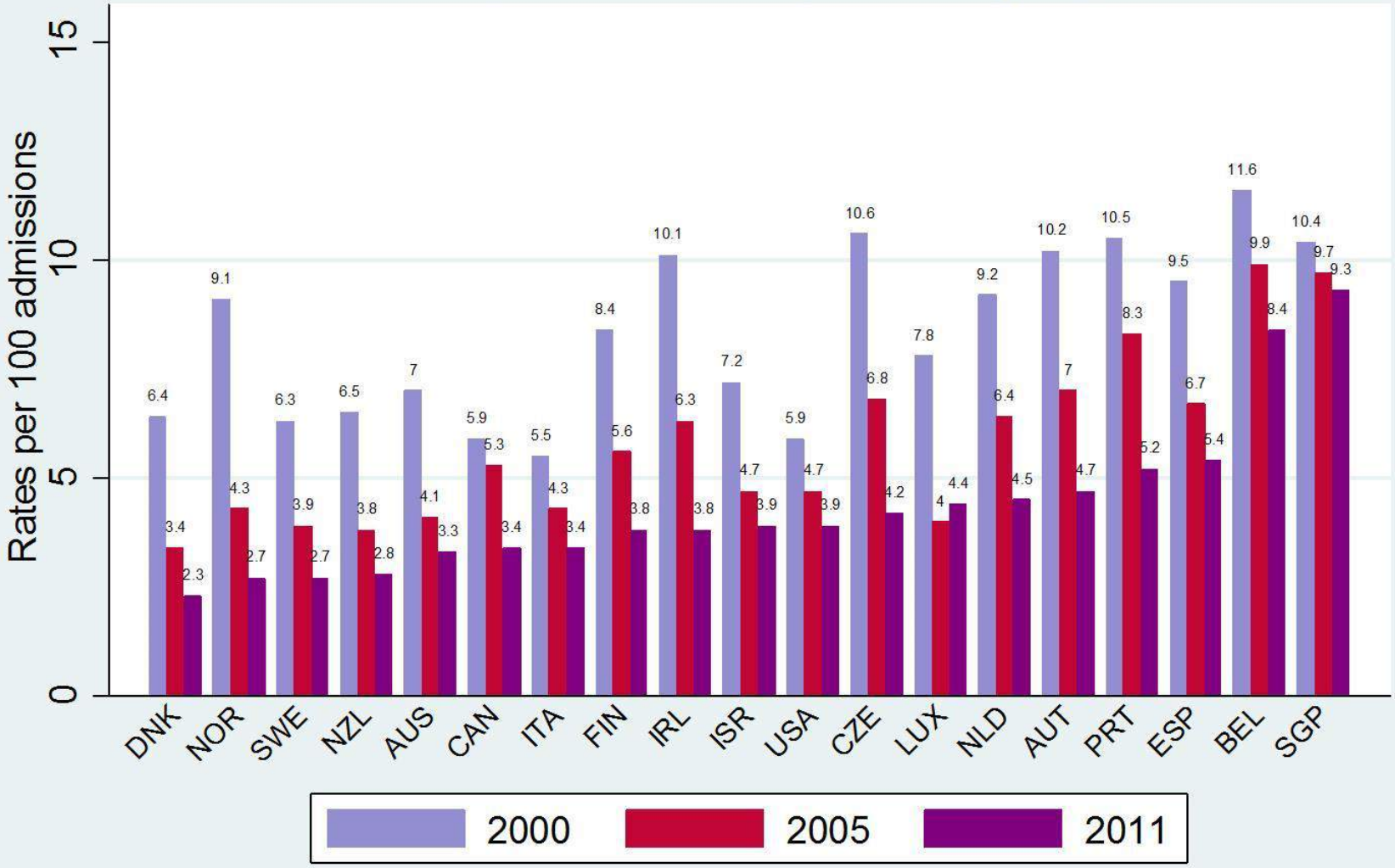


Note: 95% confidence intervals represented by |—|.

Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

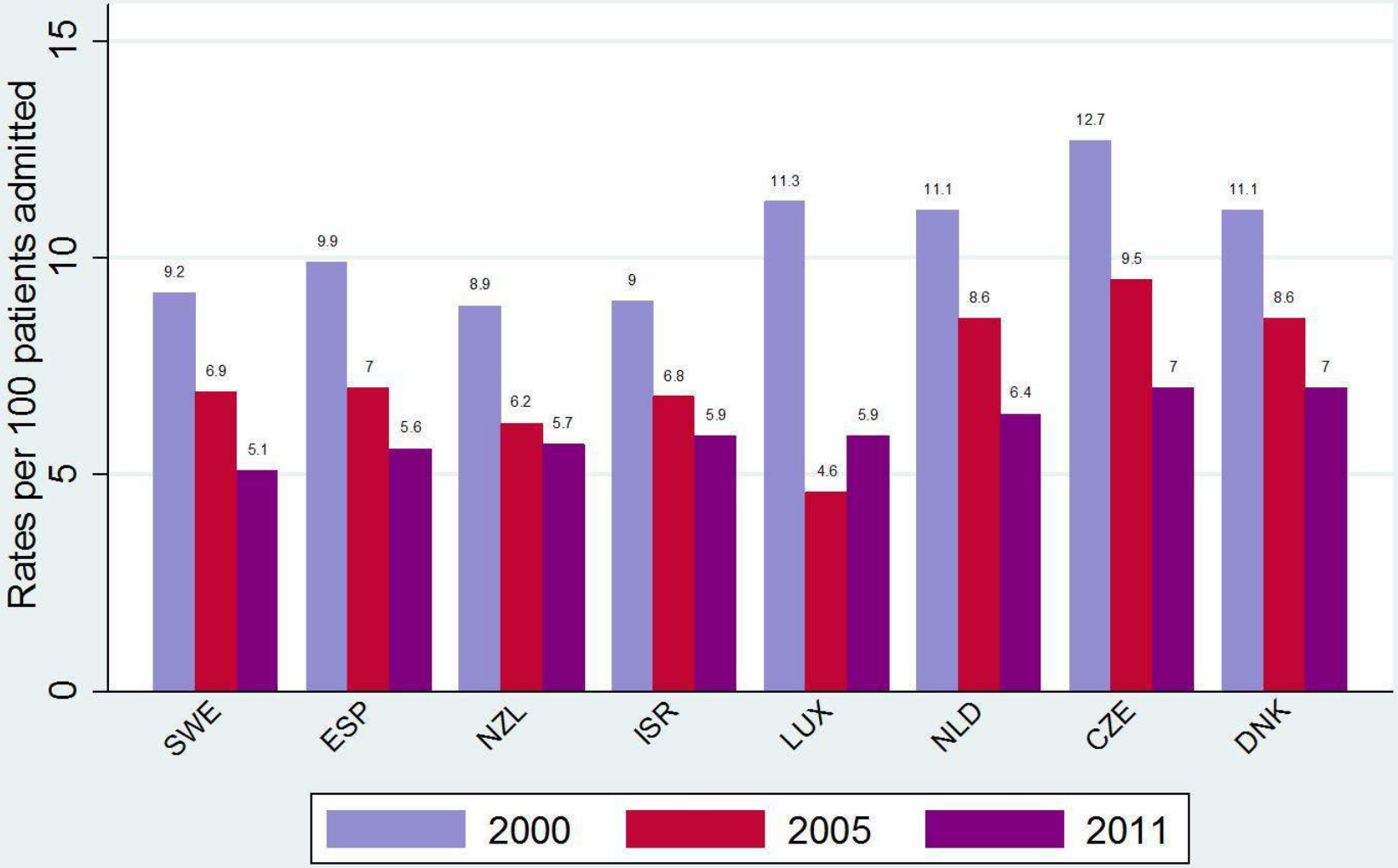
AMI Case-Fatality (admission-based)

2000, 2005 and 2011 (or nearest year)

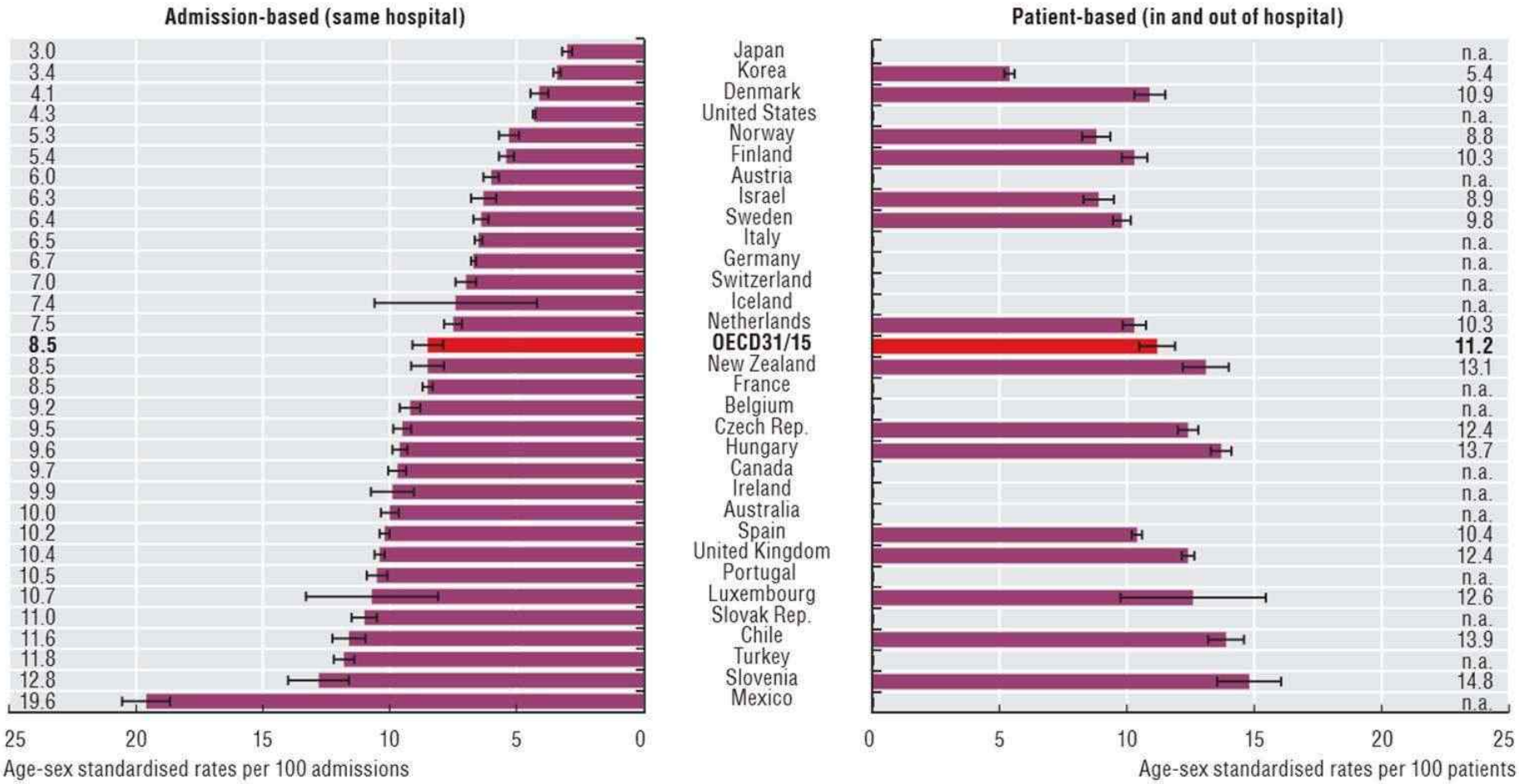


AMI Case-Fatality (in- and out-of-hospital)

2000, 2005 and 2011 (or nearest year)



Case-fatality in adults aged 45 and over within 30 days after admission for ischemic stroke, 2011 (or nearest year)

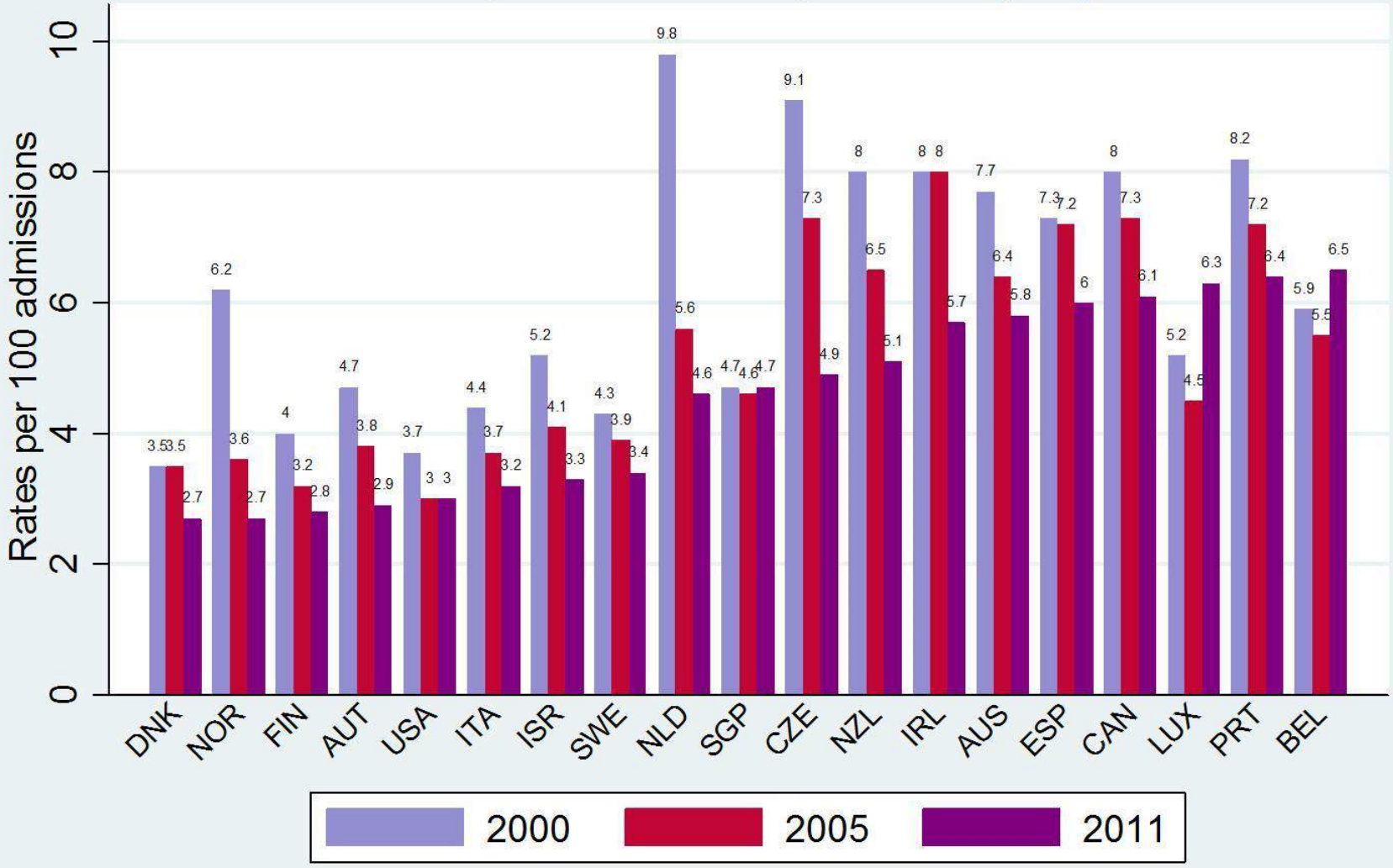


Note: 95% confidence intervals represented by |—|.

Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

Ischemic Stroke Case-Fatality (admission-based)

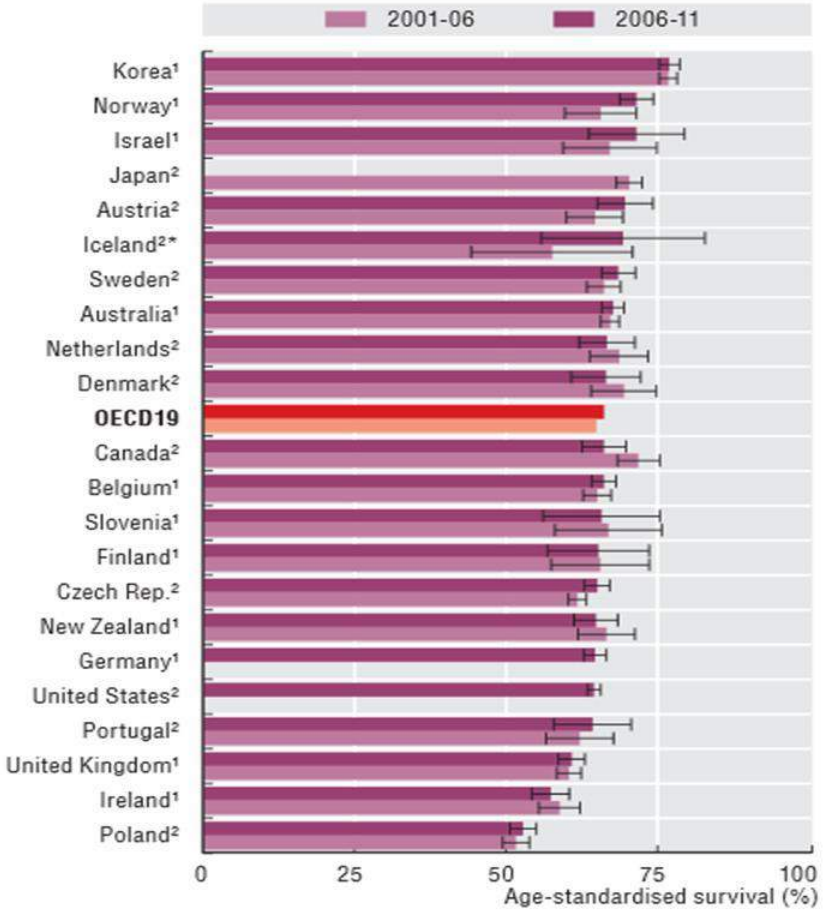
2000, 2005 and 2011 (or nearest year)



Breast cancer, five year relative survival, 2006-2011

Note: 95% confidence intervals represented by |—|.
1. Period analysis.
2. Cohort analysis.
* Three-period average.
Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

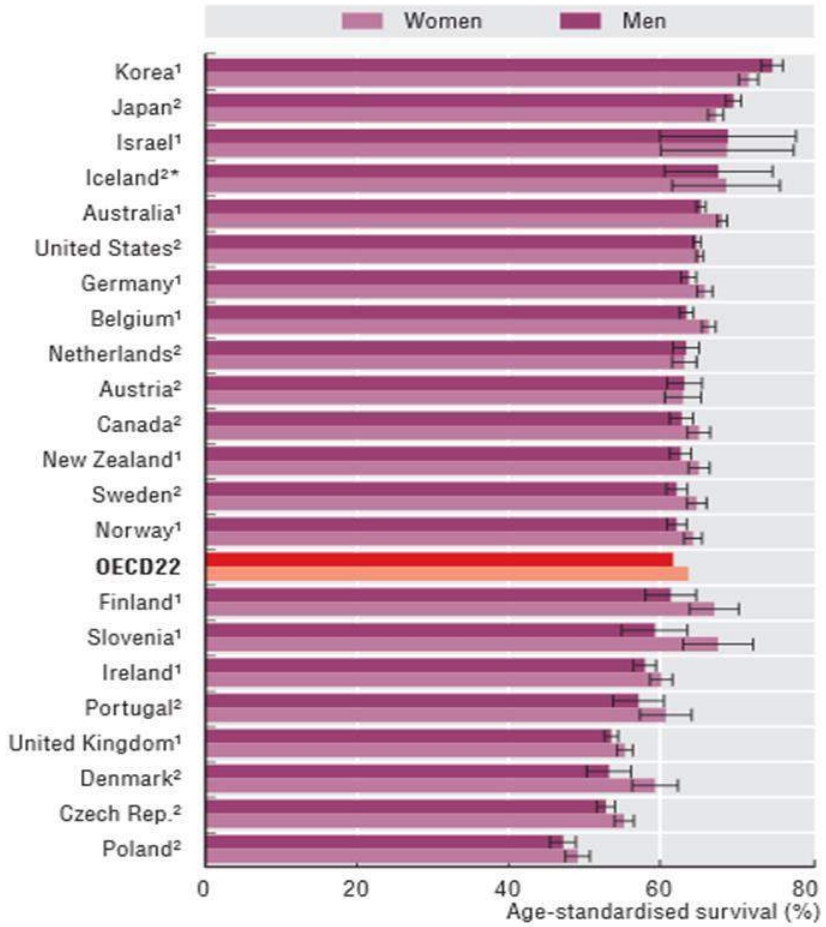
Cervical cancer, five year relative survival, 2006-2011



Note: 95% confidence intervals represented by |—|.
1. Period analysis.
2. Cohort analysis.
* Three-period average.

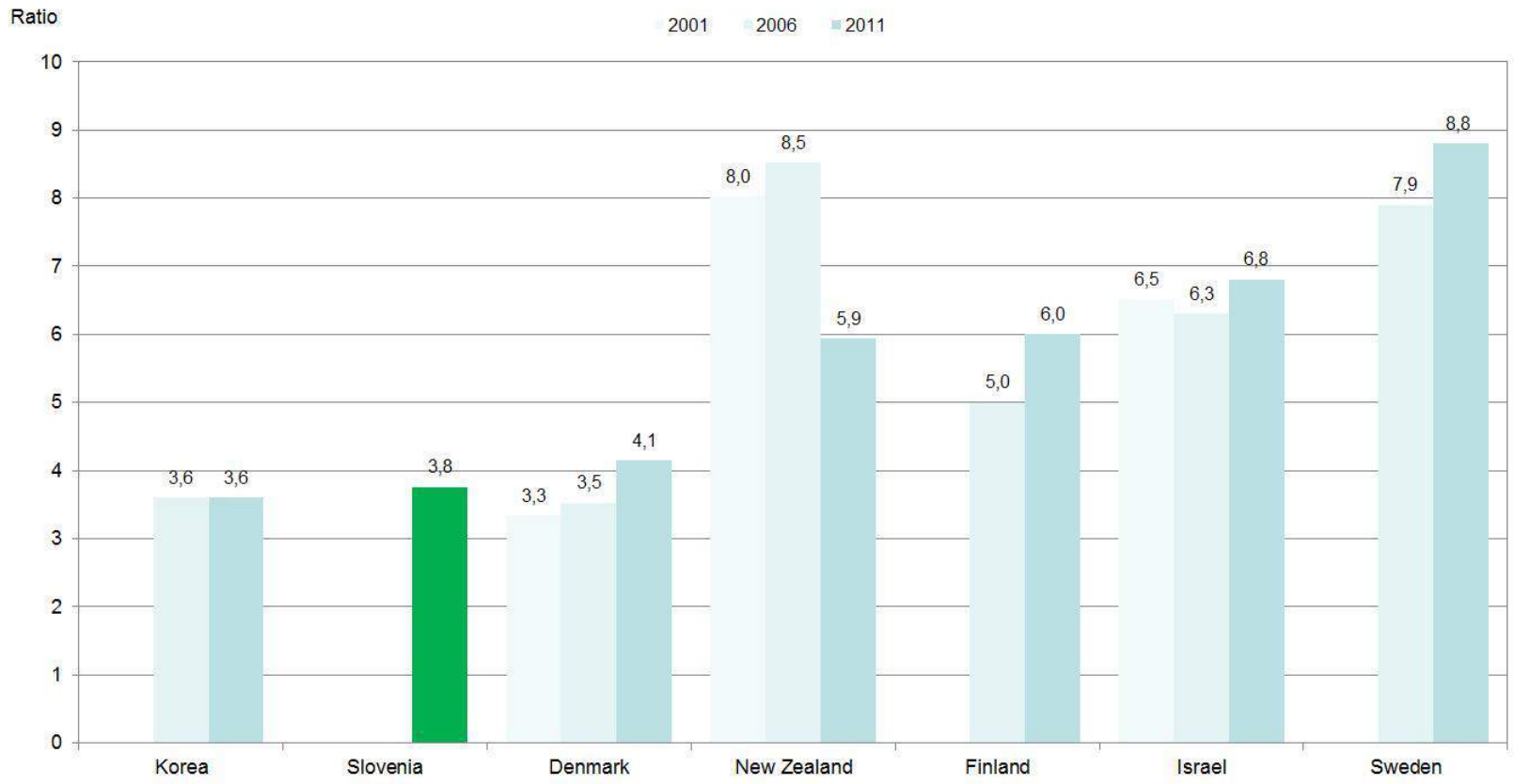
Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

Colorectal cancer, five year relative survival, by gender, 2006-2011



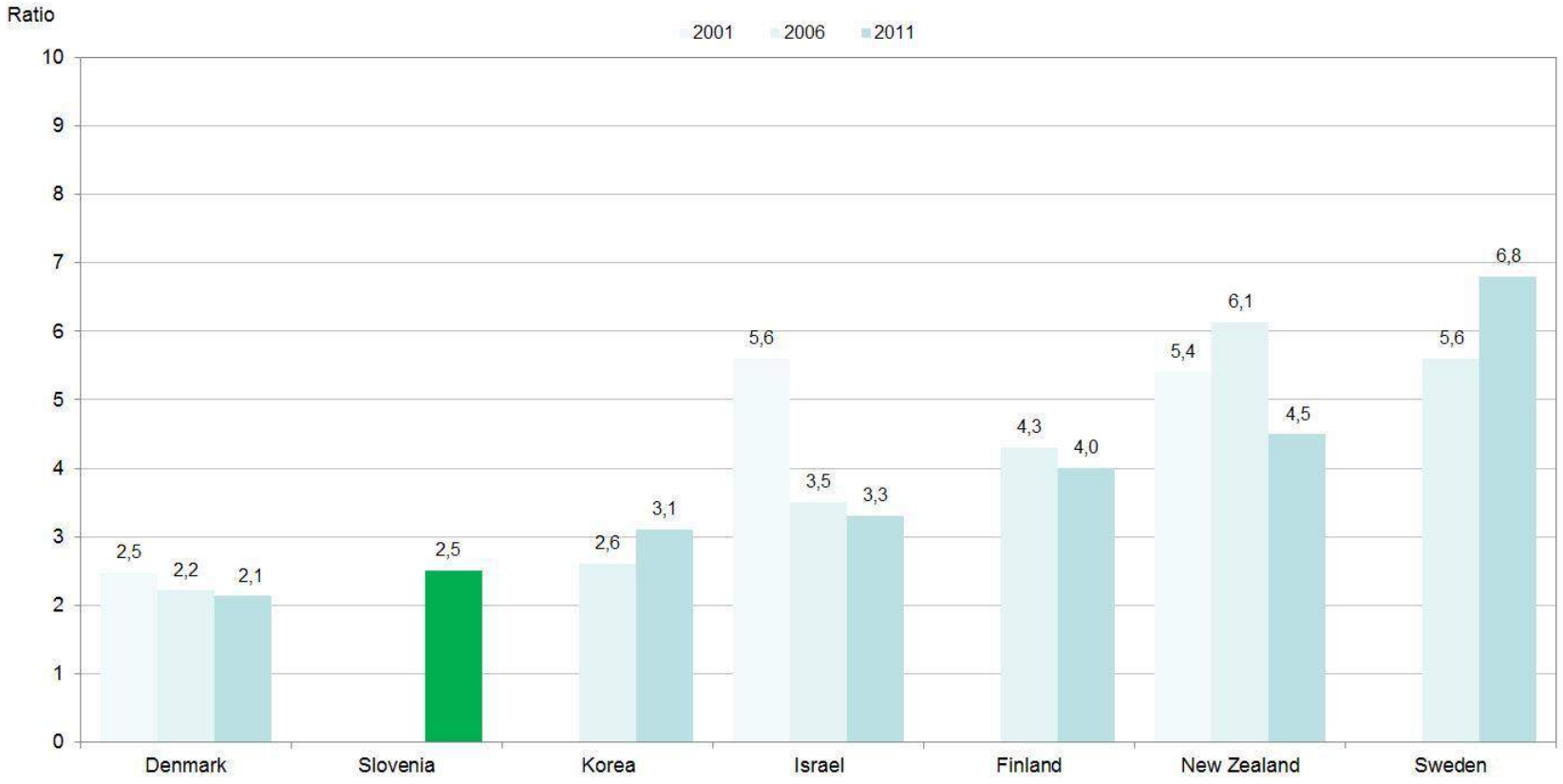
Note: 95% confidence intervals represented by |—|.
1. Period analysis.
2. Cohort analysis.
* Three-period average.
Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

Excess mortality from schizophrenia, 2006 and 2011 (or nearest year)



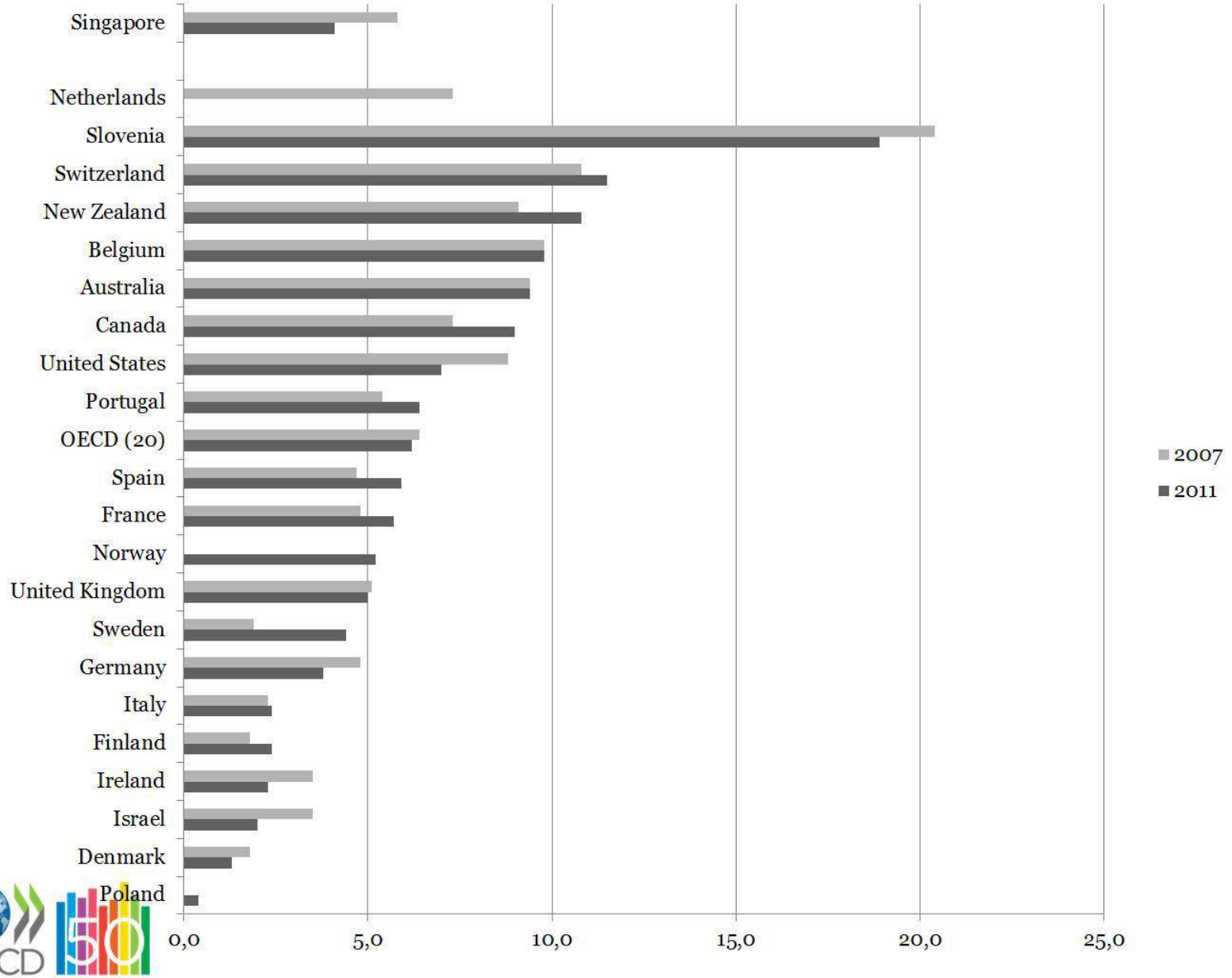
Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

Excess mortality from bipolar disorder, 2006 and 2011 (or nearest year)

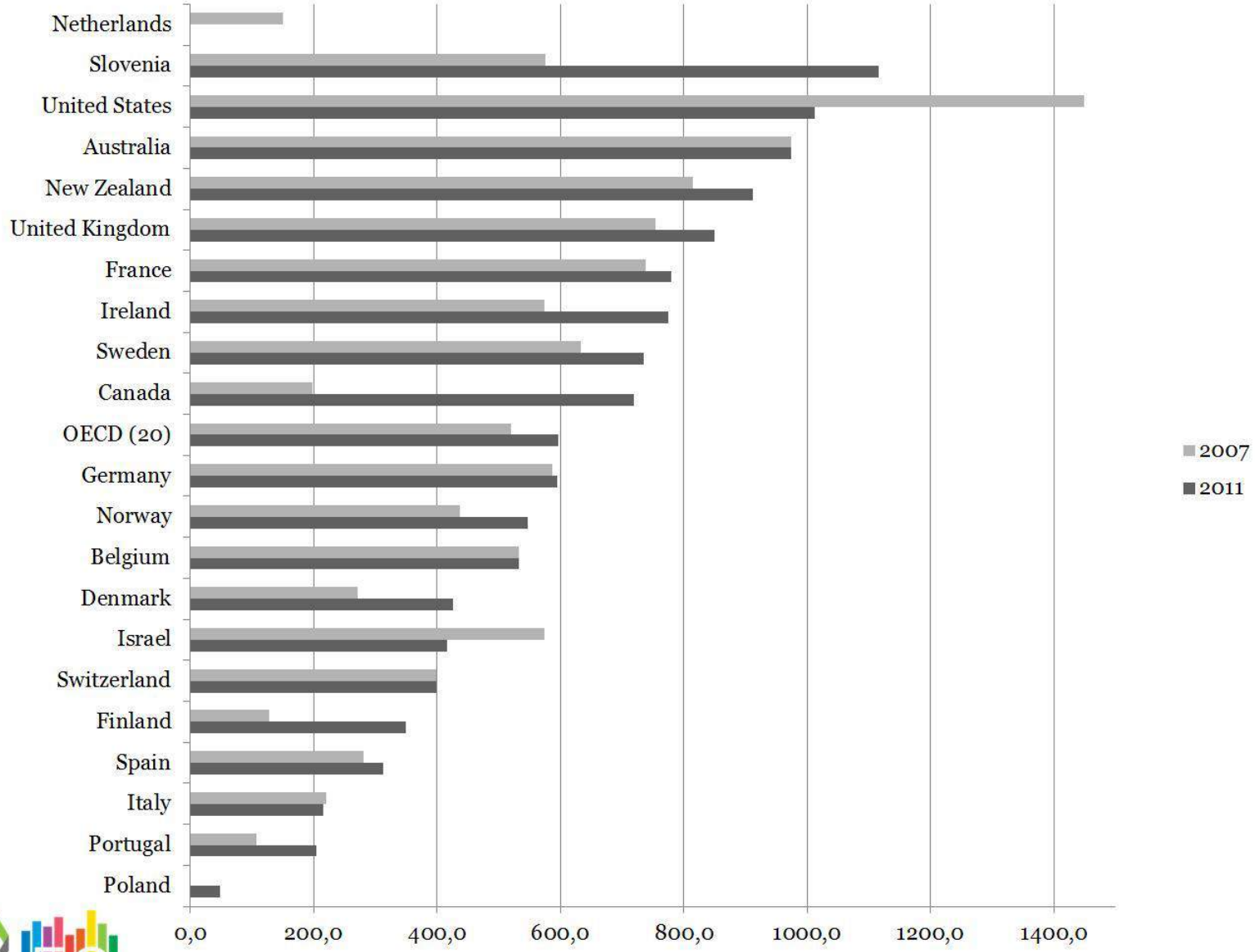


Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

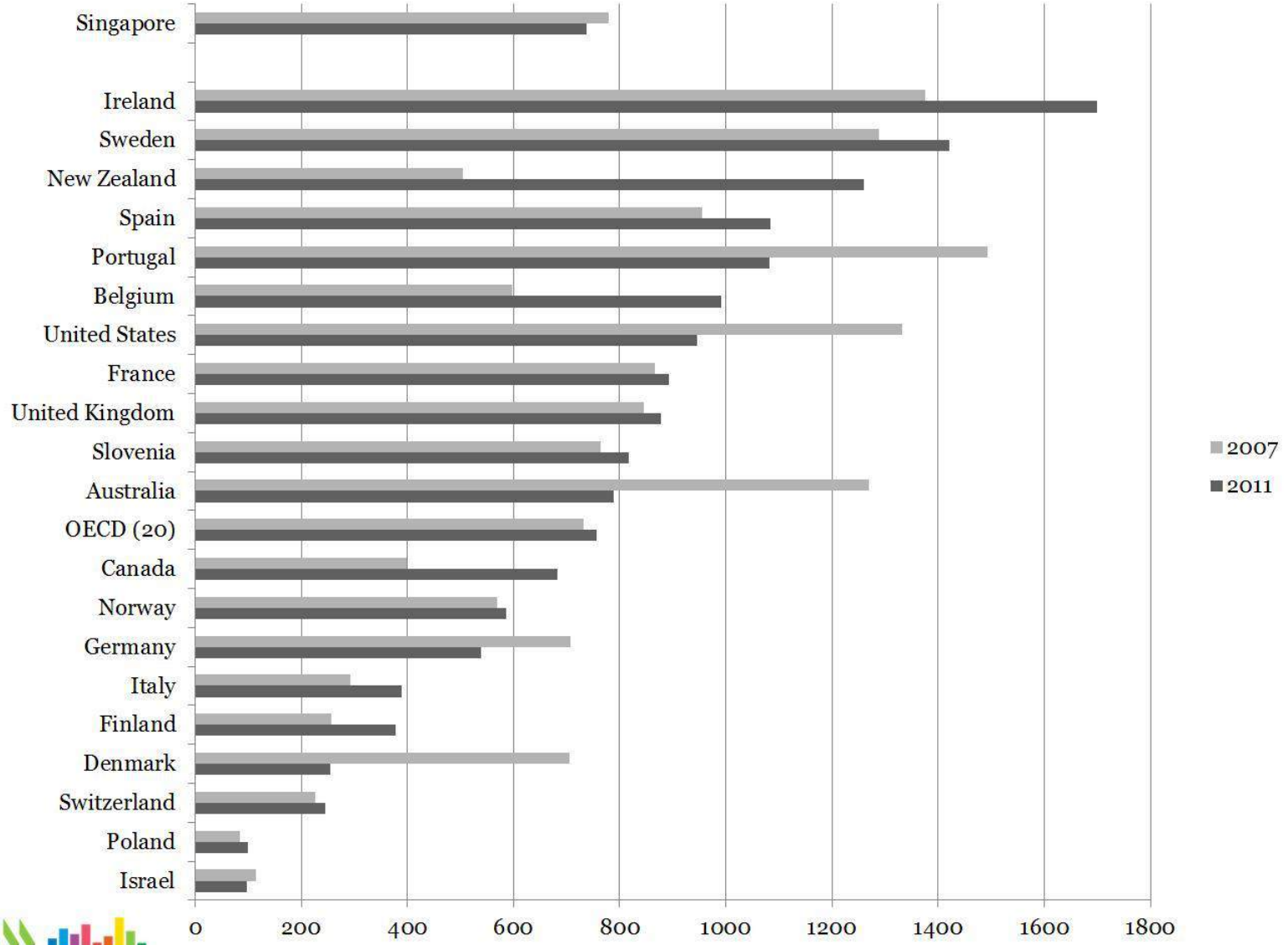
Foreign body left in during procedure



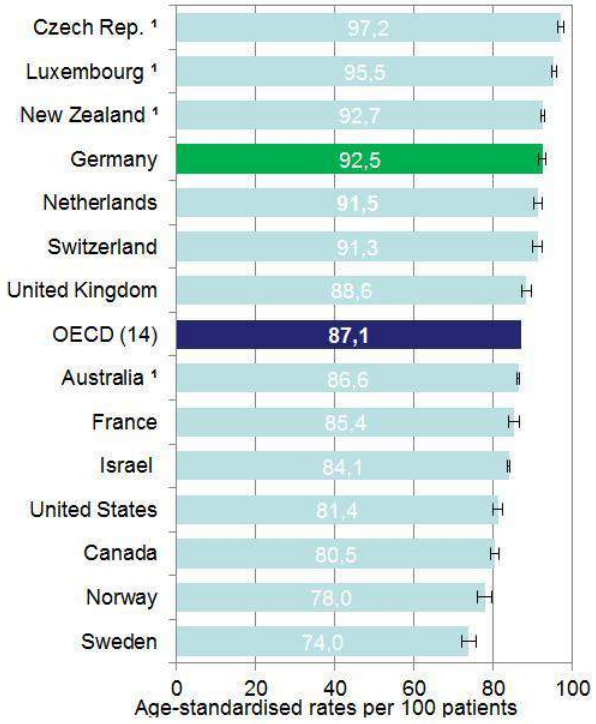
Post-operative pulmonary embolism or deep vein thrombosis



Post-operative sepsis

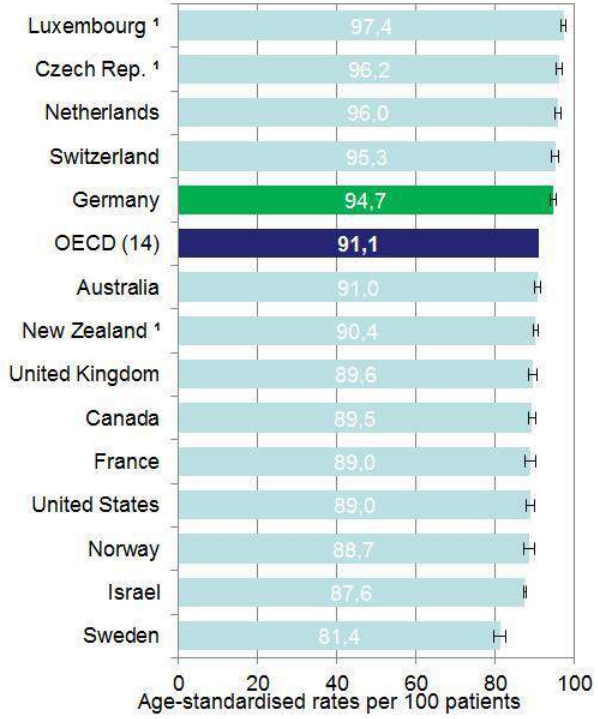


Regular doctor spending enough time with patient in consultation, 2010 (or nearest year)



Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

Regular doctor providing easy-to-understand explanations, 2010 (or nearest year)



Source: OECD Health Statistics 2013, http://dx.doi.org/10.1787/health-data-en.

Information Infrastructure

- Mortality statistics
- Registries
- Administrative data bases
- Electronic Health Records
- (patient) surveys

- Policies on data linkage and secondary data use EHR's (OECD report 2013)

From data to evidence for health care improvement

- Evidence about the outcomes of care for performance-based governance
- Two key prerequisites
  - Collection and storage of data at the level of individual patients/persons
    - E.g. registries, administrative data, surveys
  - Capacity to follow patients through the cycle of care to relate care to outcomes
- Often requires data linkage because few databases have all of the information needed
- Could be based on electronic health records

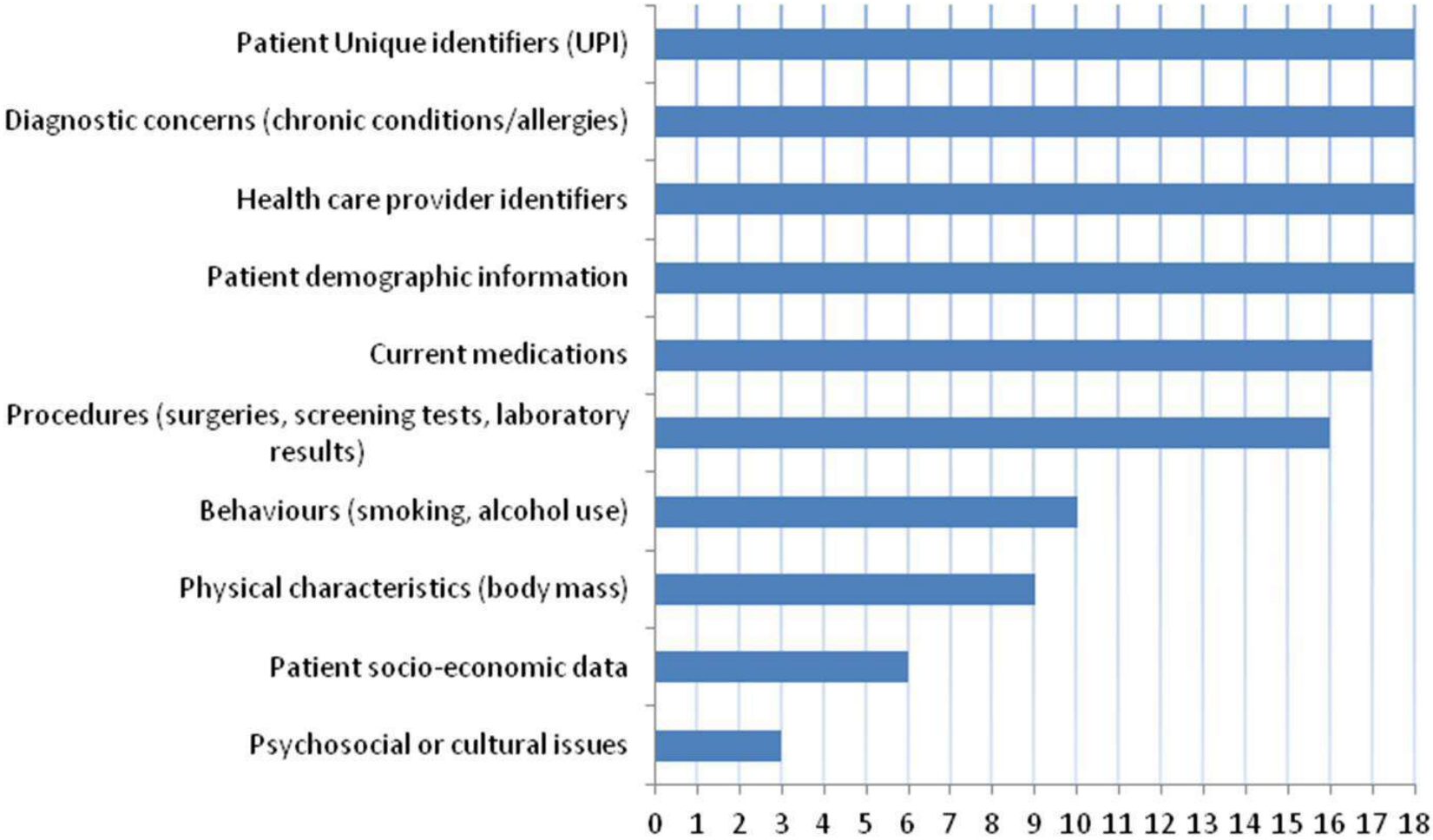
25 countries participated in an HCQI survey that found…

Progress	Europe (15)	Other (10)	Total (25)
70%+ of Doctors using EMRs	11	2	13
70%+ of Hospitals using EPRs	11	4	15
National plan to implement EHRs	12	10	22
Implementation started	12	8	20
Exchange among doctors and hospitals including medications, lab tests and images	8	6	14

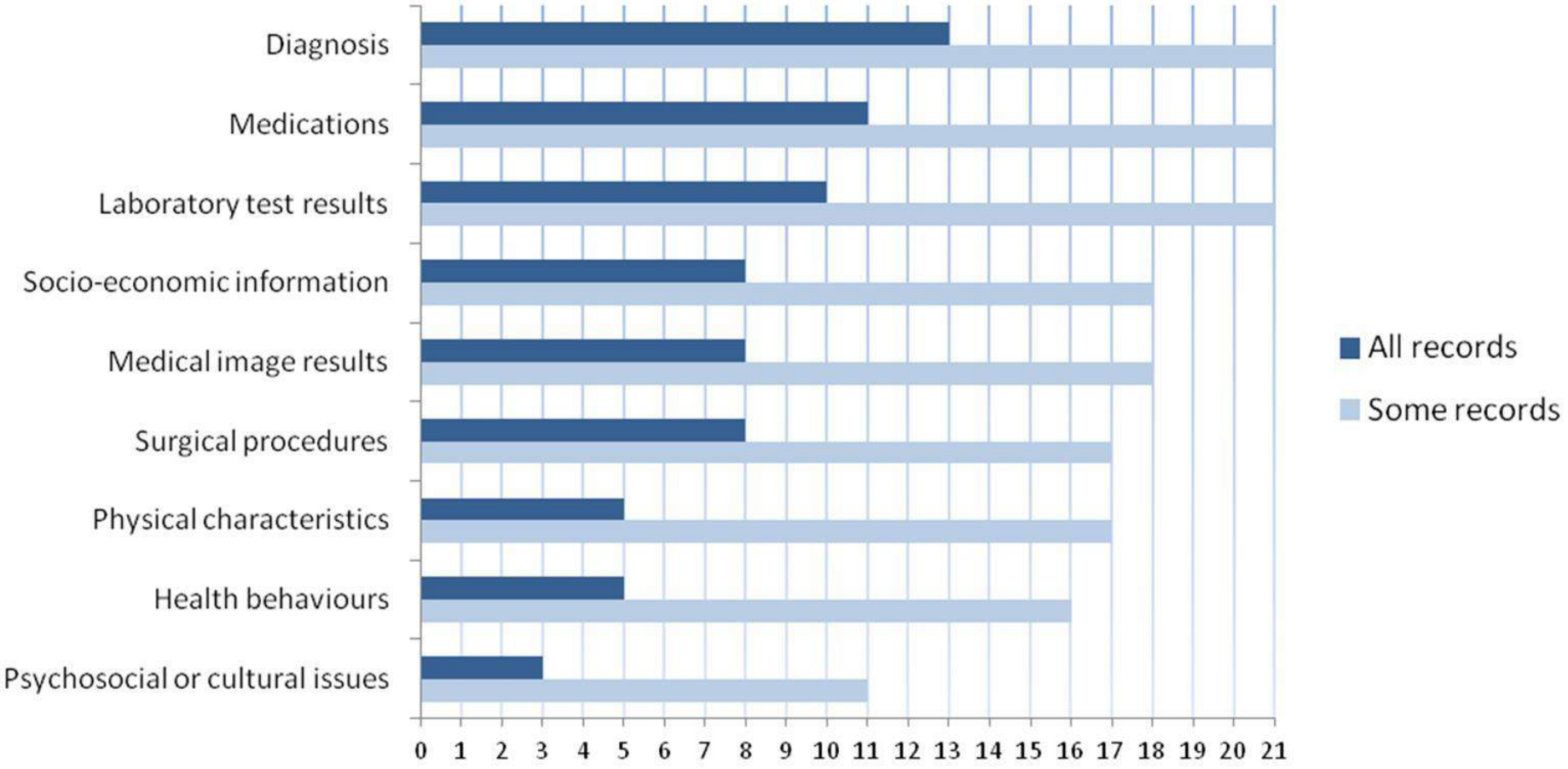
Not aiming for a national EHR system are: Germany, Iceland, Netherlands, Slovenia, United States

Source: OECD HCQI Country Survey, 2012

Countries reporting minimum data set elements



21 countries use clinical terminology standards for some elements



Some have adopted international terminology standards

International standard	Elements	Number of countries
ICD-10	Diagnosis	19
SNOMED	Diagnosis	5
ICPC	Diagnosis	4
ICD9-CM	Diagnosis	4
DIACOM	*Medical images*	*13*
LOINC	Lab tests	13
WHO ATC	Medications	12
ICD-9 (CM)	Surgical procedures	6
SNOMED	Surgical procedures	4

Data quality concerns

» Concerns reported by 16 countries. They include:

Under coverage	Up-coding for payments
Clinician fatigue	Unusable elements
Invalid data	Records are unchecked
Missing data	Records not kept up-to-date
Variable quality across institutions	Quality depends on the users ability/interest

» Only six countries reported auditing clinical content for quality: Belgium, Estonia, Iceland, Spain, Portugal, and the United Kingdom (England)

Views about the next 5 years

Over the next 5 years:

How likely is it your country will use any data from EHRs for national health care quality monitoring?

Finland Indonesia Israel Singapore Sweden United Kingdom	Very Likely
Belgium Canada Estonia France Iceland Japan Korea Poland Portugal Slovakia	Likely
Denmark Slovenia Spain United States	Unsure
Mexico	Unlikely
Austria Germany Netherlands Switzerland	Very Unlikely

Link with national quality strategies

And performance of hospitals (DuQue project)

Link with national quality strategies

- National quality reports and national programs
- Link with health system governance
- Link with financing
- Link with performance reporting
- Link with accreditation
- Link with (national) guidelines
- Link with (national) audits

External

External pressure
Perceived external pressure
External assessment

Hospital level

Patient Involvement
Quality management
Client council

Hospital governance
Quality orientation of the management board

Hospital culture
Competing values
Social capital
Patient safety culture

Quality management system
Quality management systems index
Quality management compliance index
Clinical quality implementation index

Professional engagement

Pathway level

Patient Involvement
Quality management
Patient information

Departmental quality strategies
Specialized expertise and responsibility
Evidence-based organization of pathways
Patient safety strategies
Clinical review

Pathway culture
Patient safety culture
Teamwork culture

Professionalism
Attitudes
Behaviour

Patient level

Patient experience

Perceived patient safety

Clinical effectiveness

Acute myocardial infarction 

Stroke 

Hip fracture 

Deliveries 

Response rates

Country	Hospitals participating	%
Czech Republic	30	100
Portugal	30	100
Poland	30	100
Turkey	30	100
Germany	13	43
England	4	13
Spain	30	100
France	25	83
TOTAL	**192**	**80**

Measure/respondent	Total	%
Professionals	9,857	90
Patient survey	6,536	75
Chart reviews	9,082	90
External visits	74	100
Routine Data	182	95

Impact of having a management Board more involved in quality

In our study Mangement Boards that have quality on their agenda in most or every meeting have significant more developed quality systems in their hospitals (b = 2.53; (SE 1.16)

Patient Safety Procedures at pathway level

Source: audit

PATIENT SAFETY PROCEDURES: examples	AMI (N=72)	STROKE (N=74)	HIP (N=74)	DELIVERIES (N=72)
% and country % range of hospitals rated 3 or 4 (high or Extensive compliance)	**Overall %** Country Range	**Overall %** Country Range	**Overall %** Country Range	**Overall %** Country Range
Promotional hand hygiene reminders are on display in the workplace	**79%** 55% - 100%	**70%** 50% - 92%	**80%** 58% - 92%	**81%** 55% - 100%
All defibrillators are subject to a documented program of maintenance and calibration by an electrical engineer.	**93%** 82% - 100%	**86%** 55% - 100%	**80,0%** 60% - 100%	**88%** 78% - 100%
There is a system to report adverse events to patients.	**39%** 8% - 82%	**32%** 0% - 82%	**33,8%** 0% - 81,8%	**36%** 20% - 75%
Ward staff receive formal feedback on the analysis of reported adverse patient events.	**36,1%** 8% - 82%	**31%** 0% - 75%	**23,0%** 0% - 75%	**36%** 9% - 75%

Patient Safety Procedures (patients identified with bracelet)

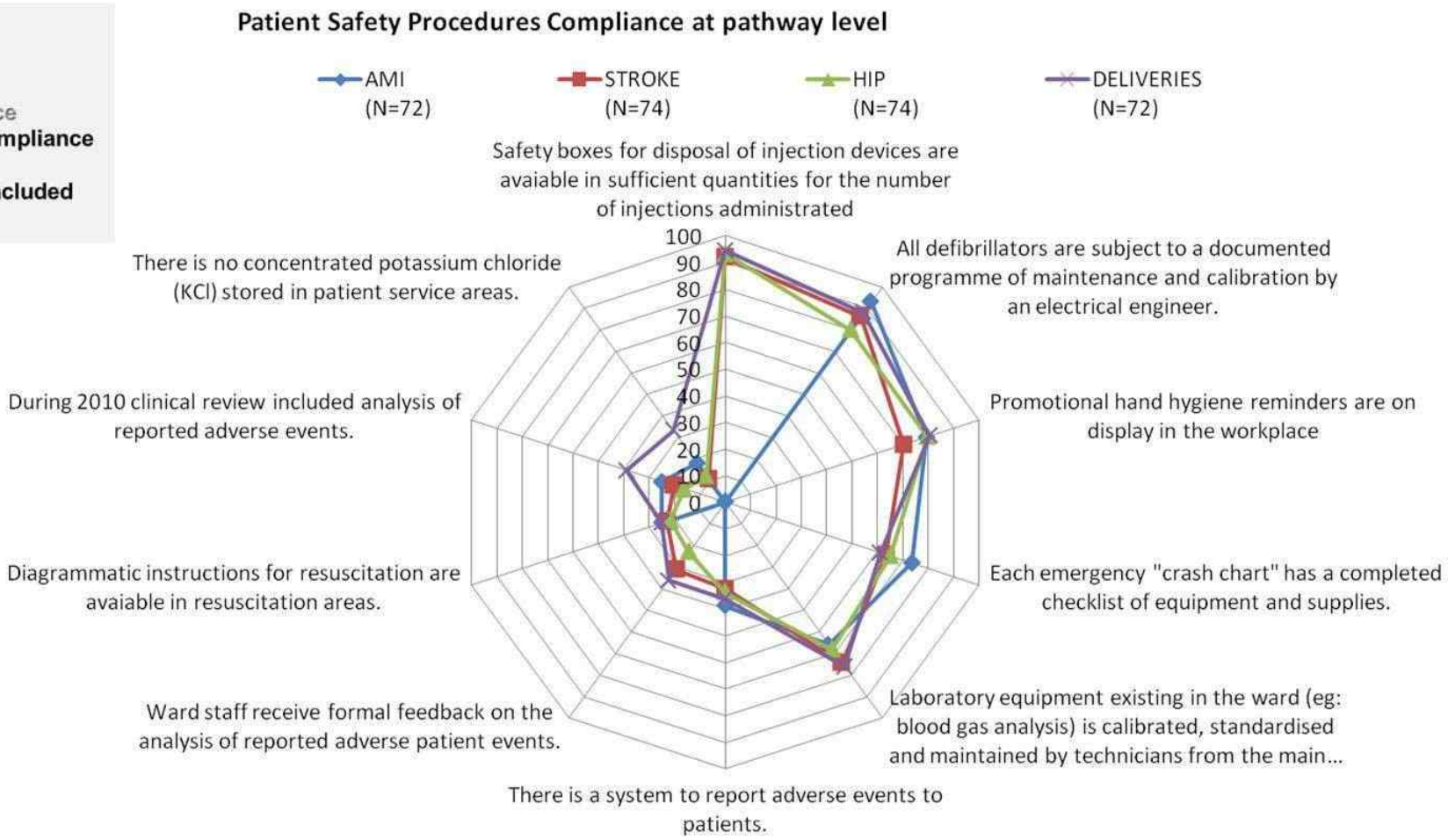
External visit

10 randomly selected patients

	AMI N of wards (%)	STROKE N of wards (%)	HIP N of wards (%)	DELIVERIES (mother) N of wards (%)	DELIVERIES (babies) N of wards (%)	All adults excluding deliveries and babies
	All (61)	All (62)	All (62)	All (60)	All (60)	All (185)
0 Patients identified	17 (28%)	7 (11%)	11 (18%)	16 (27%)	1 (2%)	35 (19%)
From 1-8 identified	12 (20%)	15 (24%)	14 (23%)	4 (7%)	3 (5%)	41 (22%)
9 and 10 Pat.identified	32 (52%)	40 (65%)	37 (60%)	40 (67%)	5 (93%)	109 (59%)

Implementation of patient safety strategies

Answer categories :
0: No or negligible compliance
1: Low Compliance
2: Medium Compliance
3: High, extensive compliance (included)
4. Full compliance (included
9. Not applicable



Relationship between quality systems at ***departmental*** level and clinical outcomes (AMI)

Independent Variable (Scored 0 -4)	**Dependent variable**	**OR (95% CI)**
Specialized expertise and responsibility	Beta blocker at discharge	**1.9** (1.3-2.9)
Evidence-based organization of pathway	Therapy given on time Beta blocker pad ACE inhibitor at discharge	**1.8** (1.2-2.5) **2.1** (1.3-3.2) **1.6** (1.1-2.2)
Patient safety strategies	Therapy given on time ACE inhibitor at discharge	**1.9** (1.3-2.7) **1.8** (1.1-2.8)
Clinical review	Beta blocker at discharge Statin at discharge ACE inhibitor at discharge	**1.4** (1.1-1.8) **1.7** (1.2-2.3) **1.7** (1.4-2.0)

From measurement to improvement

Take home messages

- Quality and Patient Safety are presently in European hospitals far from optimal
- Quality can be measured across hospitals/countries
- Strategies to improve quality and safety can work
- Primarely through efforts at departmental level
- But management can make a difference
- When external accountability is linked to internal improvement
- And a lot of knowledge obtained through research and projects in European hospitals is available to help you in your work

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