

From measurement to change

HOPE/AGORA

Ljubljana, June 3th 2019

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Amsterdam University Medical Centre - AMC



Evidence-informed Decision-making in Healthcare Management

- Decisions on “business” leadership
- Decisions on clinical leadership
- Decisions related to population health
- Decisions related to individual patient care



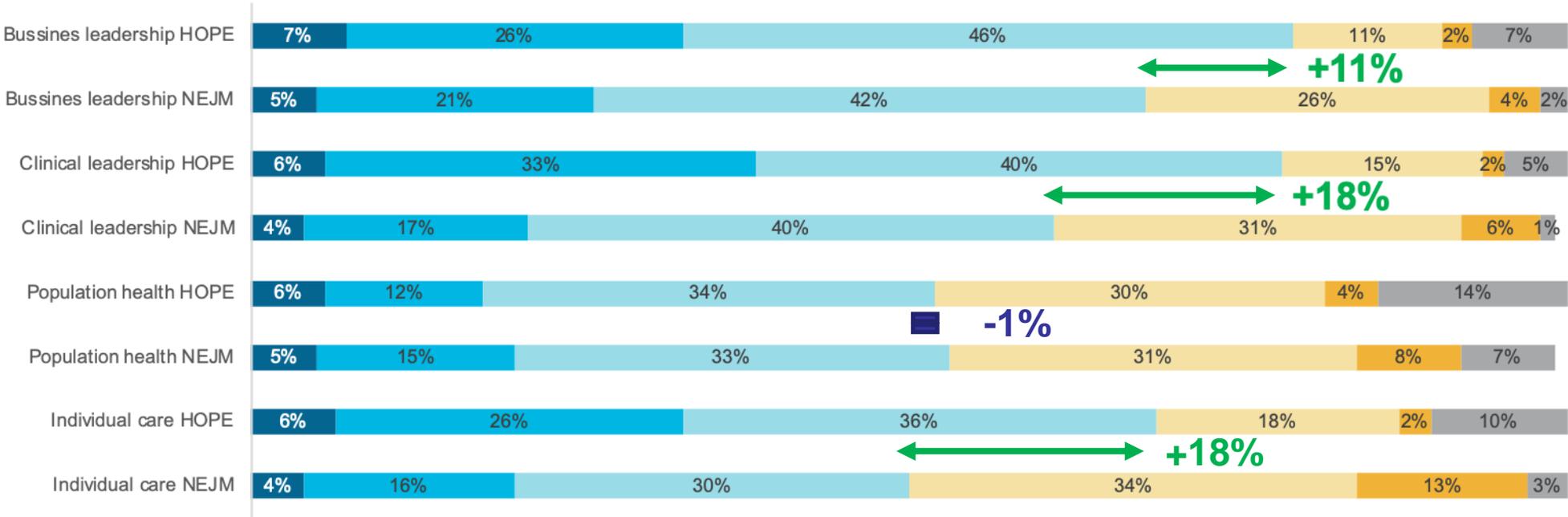
How/ Results

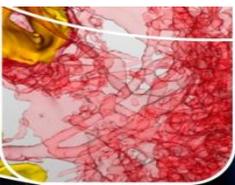
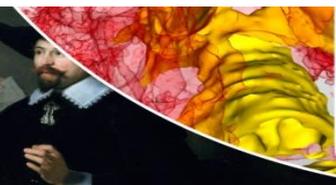
Europe vs US

HOPE NEJM
 N=125 N=566

Health Care Organizations Are Moderately Effective in Using Data
 How effective do you consider your organization's use of data for each of the following?

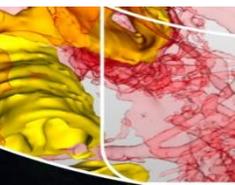
Extremely effective Very effective Effective Not very effective Not at all effective Not applicable





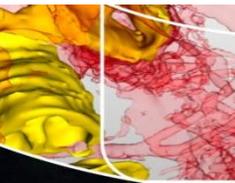
Ernest Codman

- He was an advocate of [hospital](#) reform and is the acknowledged founder of what today is known as outcomes management in [patient](#) care. Codman was the first American doctor to follow the progress of patients through their recoveries in a systematic manner.^[3] He kept track of his patients via "End Result Cards" which contained basic demographic data on every patient treated, along with the diagnosis, the treatment he rendered, and the outcome of each case. Each patient was followed up on for at least one year to observe long-term outcomes. It was his lifelong pursuit to establish an "end results system" to track the outcomes of patient treatments as an opportunity to identify clinical misadventures that serve as the foundation for improving the care of future patients. He also believed that all of this information should be made public so that patients could be guided in their choices of physicians and hospitals.



Ernest Codman 1918

- *So I am called eccentric for saying in public:*
- *That Hospitals, if they wish to be sure of improvement,*
- *Must find out what their results are.*
- *Must analyze their results, to find their strong and weak points.*
- *Must compare their results with those of other hospitals.*
- *Must care for what cases they can care for well, and avoid attempting to care for cases which they are not qualified to care for well.*
- *Must not pretend that work which they do as a competitive business is Charity.*
- *Must assign the cases to members of the Staff (for treatment) for better reasons than seniority, the calendar, or temporary convenience.*
- *Must teach medical students ethics by example instead of by precept.*
- *Must welcome publicity not only for their successes, but for their errors, so that the Public may give them their help when it is needed.*
- *Must promote members of the Staff on a basis which gives due consideration to what they can and do accomplish for their patients.*
- *Such opinions will not be eccentric a few years hence.*



Standardized Outcome Measurement for Patients With Coronary Artery Disease: Consensus From the International Consortium for Health Outcomes Measurement (ICHOM)

Robert L. McNamara, MD, MHS,* Erica S. Spatz, MD, MHS,* Thomas A. Kelley, MD, MHS, Paul Heidenreich, MD, MS; Ricard Tresserras, MD, PhD, MPH; Tomas Jernberg, MD, Bishnu Panigrahi, MD; Alba Rosas Ruiz, PhD, MPharm; John S. Rumsfeld, MD, PhD; David Shahian, MD; Clive Weston, MD; Robert Yeh, MD, MBA; Jack Lewin, MD

Background—Coronary artery disease (CAD) outcomes consistently improve with the help of physicians and hospitals. However, few centers around the world systematically track outcomes. Furthermore, patient-centered outcomes and longitudinal outcomes are under-represented in current CAD outcome measurement.

Methods and Results—The nonprofit International Consortium for Health Outcomes Measurement (ICHOM) international Working Group to define a consensus standard set of outcome measures for CAD care. Members were drawn from 4 continents and 15 countries. The ICHOM Working Group defined who should be tracked, what should be measured, and how it should be measured. The ICHOM CAD consensus measures were designed to be relevant to patients, clinicians, and payers. The ICHOM CAD consensus measures include: acute myocardial infarction, angina, and asymptomatic CAD. Thirteen complications occurring within 30 days of acute myocardial infarction, coronary artery intervention; and longitudinal outcomes for up to 5 years for patient-reported health status (SAQ-7), elements of Rose Dyspnea Score, and Patient Health Questionnaire cardiovascular procedures, renal failure, and mortality. Baseline demographic, clinical, and administrative data are included to improve the interpretability of comparisons.

Conclusions—ICHOM recommends that this set of outcomes and other patient-centered outcomes be used to measure CAD care. (*J Am Heart Assoc.* 2015;4:e001767 doi: 10.1161/JAHA.115.001767)

Key Words: coronary artery disease • outcomes • patient-centered

Cardiovascular disease represents the single greatest global disease burden, both in mortality and morbidity.¹ Recent alarming increases in incidence noted in low-income and middle-income countries raise concern for future generations.² However, increasing cardiovascular disease burden is not inevitable. High-income nations have invested heavily in addressing this problem. Mortality from cardiovascular dis-

ease, especially in low-income and middle-income countries, has declined significantly since the health initiatives were initiated in the 1970s. However, with some exceptions, the burden of cardiovascular disease with CAD has increased. Despite this, high-income nations have invested heavily in addressing this problem. Mortality from cardiovascular dis-

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*Dr McNamara and Dr Spatz contributed equally to this work.

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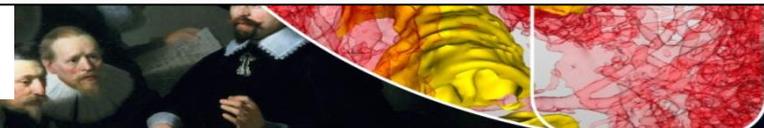
This article is a U.S. Government work and, as such, is in the public domain in the United States of America. All rights reserved. No part of this article may be reproduced, stored, transmitted, or disseminated, in any form, or by any means, without prior written permission from the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75223. This article is intended solely for the personal use of the individual user and is not to be disseminated broadly.

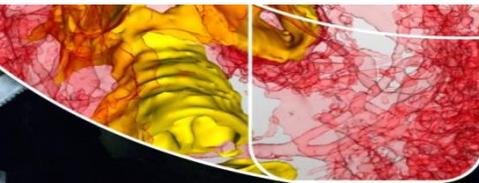
Category (Cohort)	Measure	Details	Timing	Data Source
Longitudinal outcomes (All)	All-cause mortality	Date of death	Tracked for 5 years after index event—reported at 1 and 5 years	Administrative
	Admissions for AMI	Date of each admission & discharge		
	Procedural interventions	Date of PCI and/or CABG		
	Acute renal failure	New requirement for dialysis		
Patient-reported health status (All)	SAQ-7, Rose Dyspnea Score, and Patient Health Questionnaire cardiovascular		30 days after procedure to 5 years	Patient-reported
Acute complications of treatment (PCI & CABG)	Mortality post procedure	Date of death	Within index hospitalization+within 30 days of procedure	Clinical or administrative
	Place of death	Options: Home; acute care hospital or rehab; nursing home or hospice		
	Post-procedure length of stay	Date of intervention and discharge		
	Major surgery complications (CABG only)	Prolonged ventilation	Mechanical ventilation >24 h post-surgery	Within index hospitalization
Interventional cardiology complications (PCI only)	Deep sternal wound infection	Requires operative intervention, positive culture & antibiotics	Within index hospitalization+within 30 days of procedure	Clinical
	Reoperation required	Return to operating theatre (for other than wound)		
	Significant dissection	Type C to F dissections		
	Perforation	Angiographic or clinical evidence of perforation	Within index hospitalization	Clinical
	Emergent CABG for failed PCI	Emergency cardiothoracic surgery		
	Vascular complications requiring intervention	At percutaneous entry site	Within index hospitalization+within 30 days of procedure	
Bleeding event within 72 h	Within 72 h of PCI	Within index hospitalization+within 72 h of procedure		

MORTALITY

PROMS

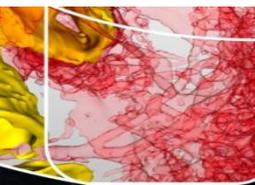
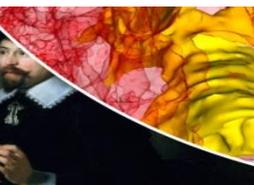
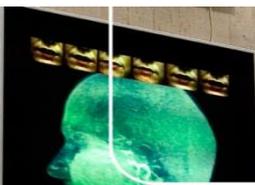
COMPLICATIONS





Florence Nightingale

- Nightingale is described as "a true pioneer in the graphical representation of statistics", and is credited with developing a form of the pie chart now known as the [polar area diagram](#),^[56] or occasionally the **Nightingale rose diagram**, equivalent to a modern circular [histogram](#), to illustrate seasonal sources of patient mortality in the military field hospital she managed. Nightingale called a compilation of such diagrams a "coxcomb", but later that term would frequently be used for the individual diagrams.^[57] She made extensive use of coxcombs to present reports on the nature and magnitude of the conditions of medical care in the Crimean War to [Members of Parliament](#) and civil servants who would have been unlikely to read or understand traditional statistical reports. In 1859, Nightingale was elected the first female member of the [Royal Statistical Society](#).^[58] In 1874 she became an honorary member of the [American Statistical Association](#).^[59]



Reporting Results



Health at a Glance
OECD INDICATORS

8. QUALITY

Mortality following acute myocardial infarction

8.10. Thirty-day mortality after admission to hospital for AMI based on admission data, 2003 to 2013 (or earlier)

Note: 95% confidence intervals represented by H. Three-year average for Iceland and Luxembourg. Admissions resulting in a transfer are included.
Source: OECD Health Statistics 2015, <http://dx.doi.org/10.1787/health-data-en>

StatLink <http://dx.doi.org/10.1787/888932011235>

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

OECD.Stat

Health Care Quality Indicators - Acute Care

Indicator	Thirty-day mortality
Australia	10.6
Austria	...
Belgium	14.2
Canada	...
Chile	...
Czech Republic	15.7
Denmark	...
Estonia	...
Finland	12.5
France	...
Germany	...
Hungary	...
Iceland	...
Ireland	15.9
Israel	11.1
Italy	9.1

8.11. Thirty-day mortality after admission to hospital for AMI based on patient data, 2003 to 2013 (or earlier)

Note: 95% confidence intervals represented by H. Three-year average for Luxembourg.
Source: OECD Health Statistics 2015, <http://dx.doi.org/10.1787/health-data-en>

StatLink <http://dx.doi.org/10.1787/888932011235>

CANADA, CHILE, KOREA, ITALY, DENMARK, FINLAND, ISRAEL, LATVIA, MEXICO, MALTA, NORWAY, SWEDEN 1,167 ACUTE HOSPITALS (N>=50) | 2012-2014

AMI 30-Day Case Fatality Rates

Source: Pilot Hospital Performance Data Collection 2016

Indicator: Admission-based/With transfers
Model: Age/Sex, co-morbidity

- Within 99.7% CI
- CAN outliers
- DEN outliers
- KOR outliers
- ITA outliers
- FIN outliers
- ISR outliers
- LTV outliers
- MLT outliers
- NOR outliers
- SWE outliers
- Standard Population Rate
- 95% Lower control limit
- 95% Upper control limit
- 99.7% Lower control limit
- 99.7% Upper control limit



Reporting on Hospital Performance (England)

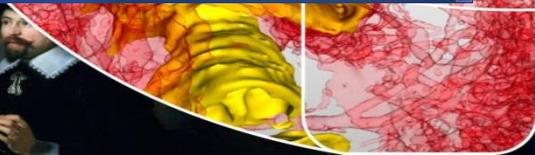
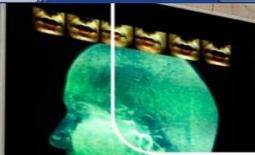
The screenshot shows a web browser window displaying search results for hospital performance on the NHS.uk website. The browser's address bar shows the URL <http://www.nhs.uk/Service-Search/Perforr>. The search results are for 'Royal Surrey County Hospital'.

Showing 1-10 of 69 results | Results per page 10 | Update | Show shortlist (0)

Sort by distance	Care Quality Commission inspection ratings	A&E performance	Mortality rate	Recommended by staff	Infection control and cleanliness	Number of patients waiting more than 52 weeks	Friends and Family Test score: Inpatient
		96.6%	OK	OK	OK		93%
	Good Rated on 18 December 2013. Visit CQC profile	Patients seen within 4 hours	As expected in hospital and up to 30 days after discharge (0.9401)	Within expected range with a value of 75.00%	As expected	1 patients waiting more than 52 weeks	Patients who would recommend this hospital as a place to be treated. 1198 responses.

Royal Surrey County Hospital
Royal Surrey County Hospital, Egerton Road, Guildford, Surrey, GU2 7XX
Tel: 01483 571122
1.61 miles away
 Add to shortlist

17:09 20/09/2014





Your Health System

Results by theme and indicator for Toronto East General Hospital.

Type of Hospital	Number of Acute Care Hospital Stays	Number of Acute Care Beds	Average Length of a Hospital Stay (Days)	Number of Emergency Department Visits
Community—Large Hospitals (2014–2016)	18,335 (2014–2016)	252 (2014–2016)	4.5 (2014–2016)	72,824 (2014–2016)

[More](#)

Select a theme below to see the most recent year of indicator results within it. Explore the overall results for this hospital, long-term care organization or health region by selecting the Overall Results icon, where available. Or select the indicator results in the circles to explore indicator details.

Difference from average is based on a statistical assessment and the desirable direction of the indicator. If a higher result is more desirable (e.g., Life Expectancy) and the result is significantly higher than the Canadian or peer group average, the result is above average and colour-coded as green. If a higher result is less desirable (e.g., Returning to Hospital) and the result is significantly higher than the Canadian or peer group average, the result is below average and colour-coded as pink. For indicators in the efficiency theme that are non-directional, the difference from average, higher than or lower than, is based on the numerical difference in relation to the overall national average. For more information, see [Help](#).

Access



Getting needed care at the right time, without financial, organizational or geographical barriers.

Safety



Receiving the safest possible care every time a person uses the health system.

Appropriateness and Effectiveness

Providing care to only those who could benefit; this reduces the incidence, duration, intensity and consequences of health problems.



Efficiency



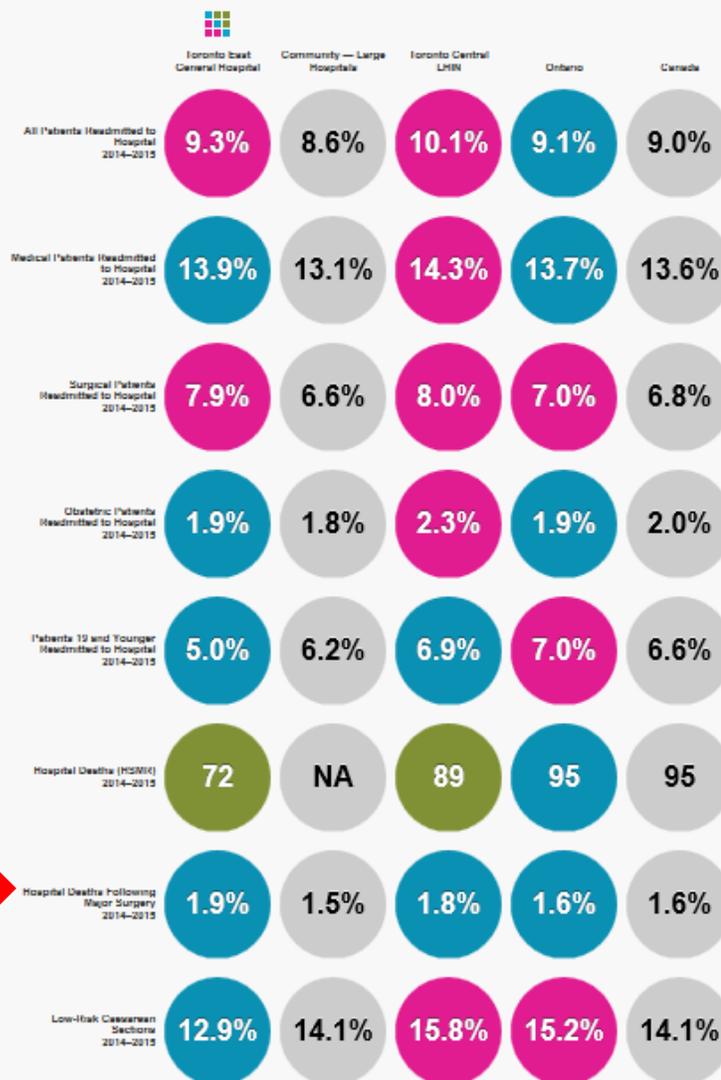
A health system that avoids waste of equipment, supplies, ideas and energy; more services can be delivered with fewer resources.

Appropriateness and Effectiveness

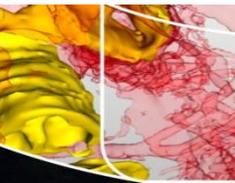
Providing care to only those who could benefit; this reduces the incidence, duration, intensity and consequences of health problems.



● Above average ● Same as average ● Below average ● No assessment



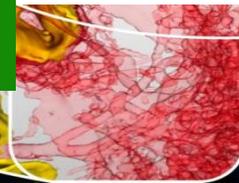
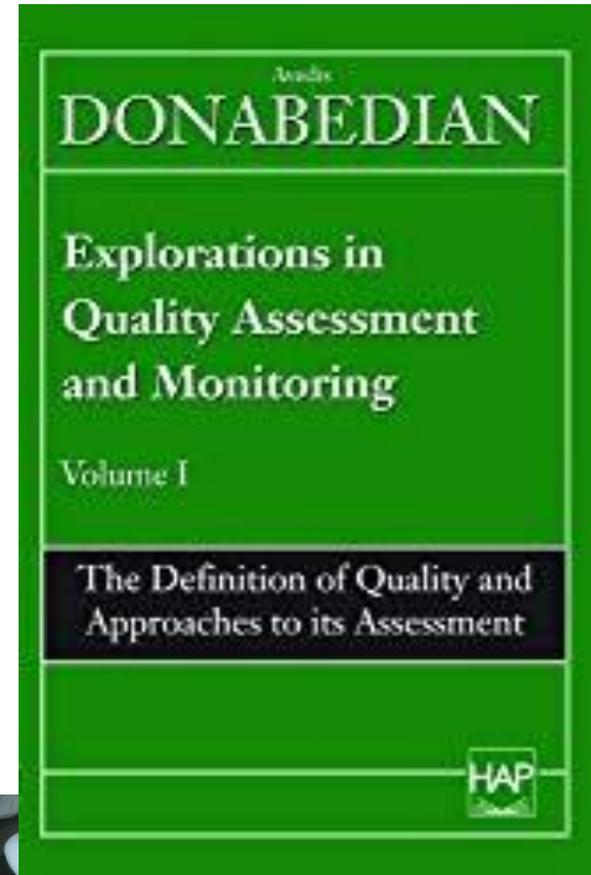
- PDCA
- Plan
- Do
- Check
- Act



Quality Concepts

- Domains (safety, effectiveness, patient centeredness)
- Look at health care
- Structure
- Process
- Outcome

- Quality as an
- Integrating
- notion



AMI Pathway of Care



Mortality

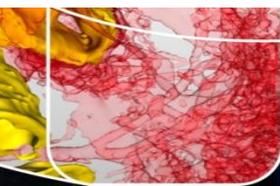
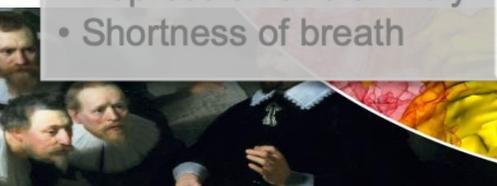
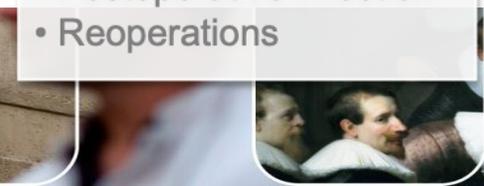
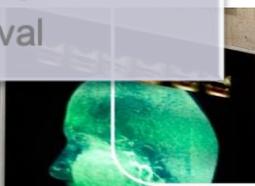
- 30-day case fatality
- 1 year survival
- 5 year survival

Complications

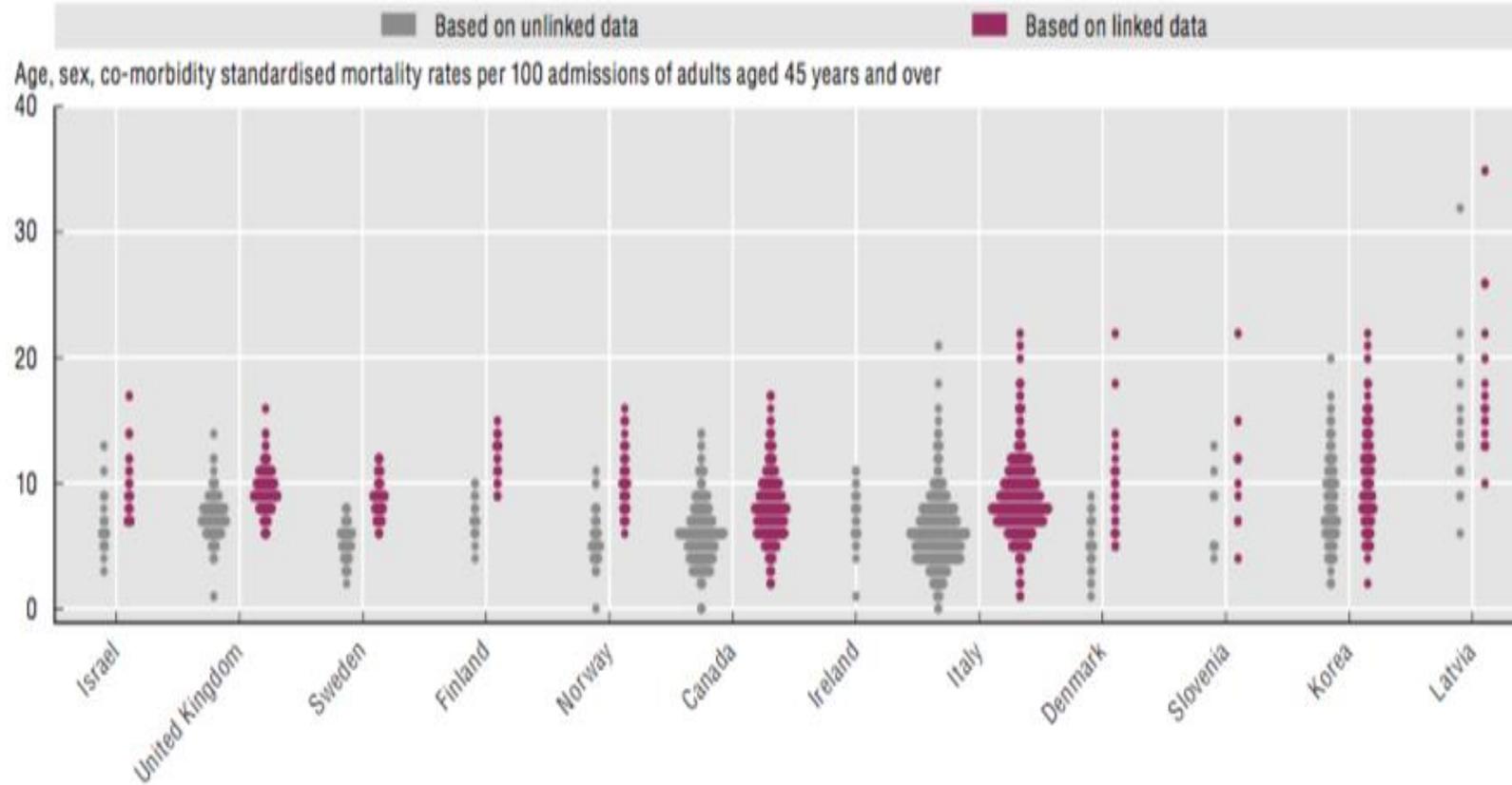
- Acute renal failure
- Postoperative infection
- Reoperations

PROMS

- Fatigue and tiredness
- Depression and anxiety
- Shortness of breath



6.21. Thirty-day mortality after admission to hospital for AMI based on linked and unlinked data, 2013-2015 (or nearest years)



Note: The width of each line in the figure represents the number of hospitals (frequency) with the corresponding rate. Data for Canada not linked to death statistics. UK data are limited to England and presented at trust level (i.e. multiple hospitals). Ordered by inter quartile range of admission-based data. Rates based on linked data are also standardised for previous AMI.

Source: OECD Hospital Performance Data Collection 2017.

From measurement to change through audit and feedback
based on control theory and behavioral change/learning theory

Comparing of your own performance over time

Comparing with peers/benchmarking

Comparing with pre-set standards set by
yourself

Comparing with pre-set standards set by others

Visualization of measures

Focus and scope of measures

Contextualization of measures



EU funded studies on quality of care in hospitals (DUQuE is the latest www.duque.eu theme issue international journal for quality in health care IJQHC volume 26, April 2014)

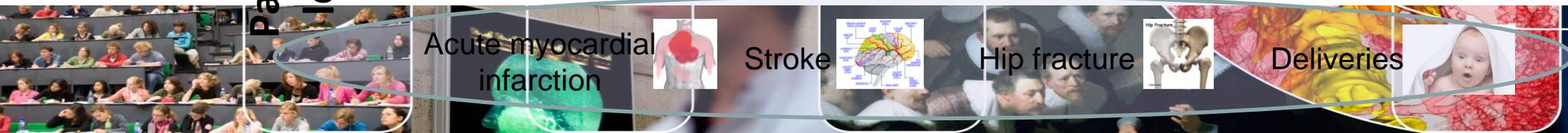
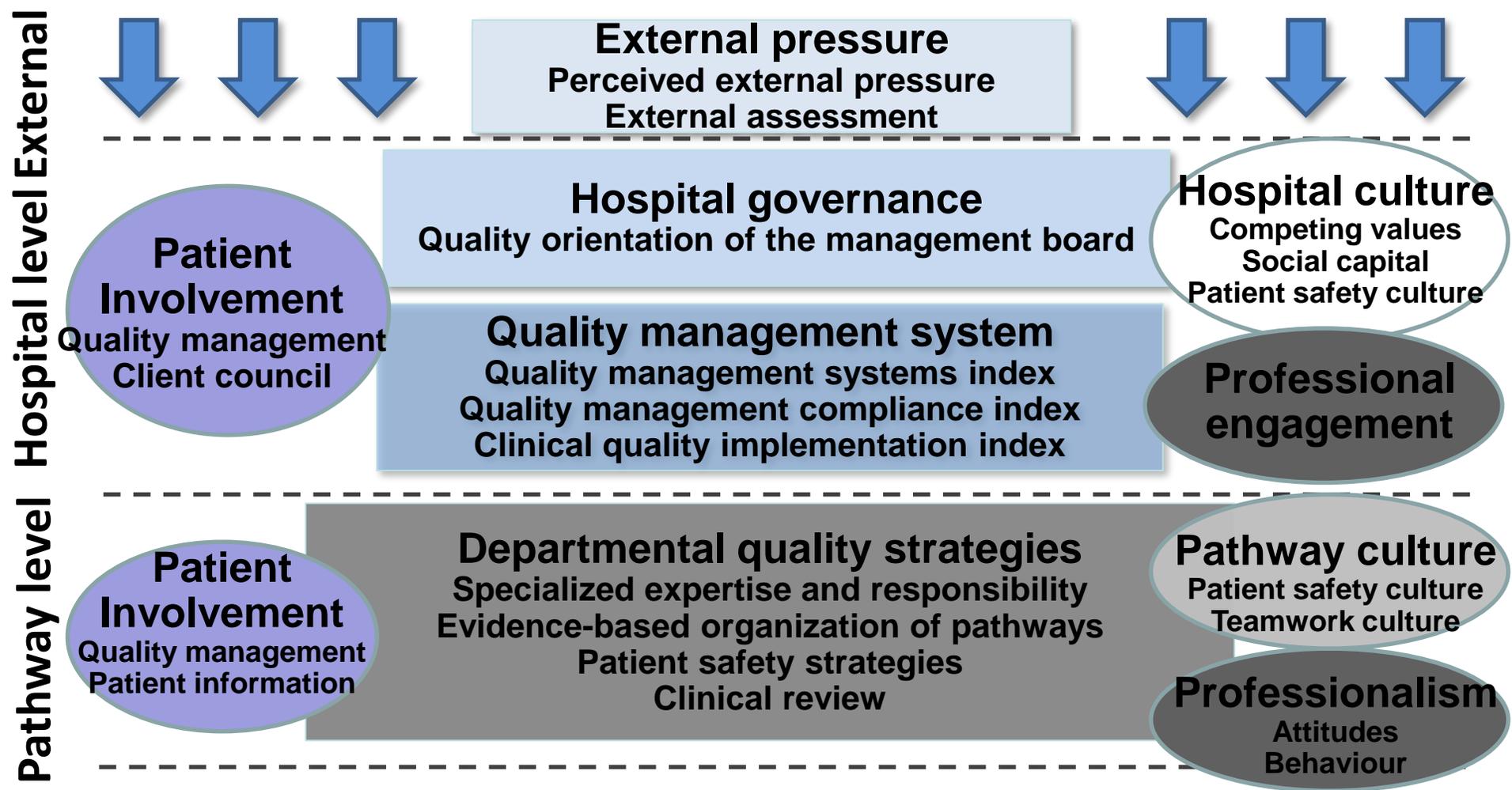
- Relation external accountability and internal improvement in Hospitals
- Relation between Professionals and Management
- Relation between hospital wide and department/pathway specific activities
- Balancing effectiveness, safety and patient centeredness



Response rates DUQuE:
Deepening our Understanding on Quality improvement in European hospitals

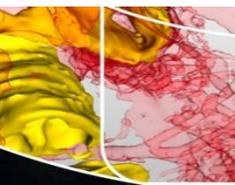
Country	Hospitals participating	%
Czech Republic	30	100
Portugal	30	100
Poland	30	100
Turkey	30	100
Germany	13	43
England	4	13
Spain	30	100
France	25	83
TOTAL	192	80

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



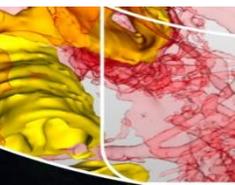
Seven ways to improve quality and safety in your hospital

- **1.** Align organisational processes with external pressure
- 2.** Put quality high on the agenda
- 3.** Implement supportive organisation-wide systems for quality improvement
- 4.** Assure responsibilities and team expertise at departmental level
- 5.** Organise care pathways based on evidence of quality and safety interventions
- **6.** Implement pathway-oriented information systems
- 7.** Conduct regular assessment and provide feedback



Evidence-informed Decision-making in Healthcare Management: challenges in 2019

- Decisions on “**business**” leadership: Performance based payment- and accountability systems with increased focus on outcomes
- Decisions on **clinical leadership**: Competences to lead change in complex adaptive systems populated with professionals, patients and various other stakeholders
- Decisions related to **population health**: Broadening the use of specialized knowledge and technologies to pathways in integrated health care delivery systems
- Decisions related to **individual patient care**: patient values. PROM's, PREM's
- Assuring the **information infrastructure** (EHR) and use of tools to synthesize and visualize real time performance information



10:00–11:30 tomorrow workshop on the use of performance data for management in healthcare organisations

Damir Ivankovic

Mircha Poldrugovac

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