

Quality indicators

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Why performance measurement...?

- In many countries, the health care system is demanding ever increasing amounts of public and private resources
- Growing demands for accountability
- Evidence on major 'quality gaps' in health care
- Concerns about access & patient safety

Burden of adverse events in hospitals

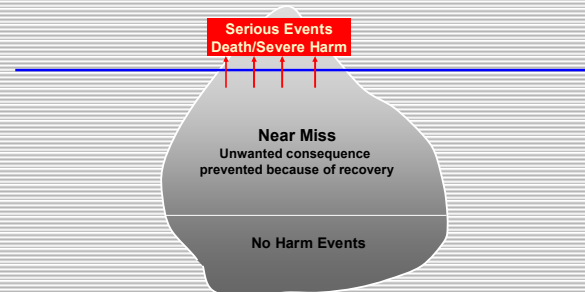
■ More people die in a given year as a result of medical errors than from motor vehicle accidents (~44,000), breast cancer (~43,000) or AIDS (~16,500). Births and Deaths: Preliminary data for 1998. CDC, National Vital Statistics Reports. 47(25):6, 1999.

■ Medication error alone, occurring either in or out of hospitals, are estimated to account for 7000 deaths annually. Phillips DP *et al.* Increase in US medication error deaths between 1983 and 1993. The Lancet, 351:643-44, 1998.

Landmark publications:

- *To Err is Human: Building a Safer Health System*, IOM, 2000
- *Crossing the quality chasm*, IOM, 2001

Iceberg Model of Accidents and Errors



Definitions QIs

Indicators provide a 'quantitative' basis for clinicians, providers, organisations and planners aiming to achieve improvement in care and the processes by which patient care is provided.

(ISQua, Melbourne 1999)

Indicators are 'quantitative' measures that can be used to monitor and evaluate the quality of important governance, management, clinical, and support functions that affect patient outcomes.

(Joint Commission, 1990)

Why quality indicators...?

- To document the quality of care
- To make comparisons
 - Over time
 - Between places (e.g. hospitals)
- To support accountability, regulation, and accreditation
- To support quality improvement
- Transparency for society and patients

Internal improvement vs external accountability

Performance indicators can be used for internal and/or external reasons.

- *Internal reasons:*
- for management information to **monitor, evaluate or improve** hospital functioning (long or short term)
- *External reasons:*
- for **accountability** asked by stakeholders (the financier, patients/consumers and the public at large).

Focus and functions of QIs (1)

Quality of care improvement:

- Used by 'individual specialist' to improve own care 'provided by the specialist'
- Used by 'specialist group' to improve care provided by 'individual specialists'
- Used by 'specialist group' to improve care provided by 'specialist group'
- Used by 'management' to improve care provided by 'group of health care providers' (e.g. department)
- Used by 'management' to improve quality of care provided by specific 'specialist group'
- Used by 'specialist medical association' to improve the quality of care provided by 'specialist groups' in hospitals

Focus and functions of QIs (2)

External accountability (Government / Insurers / Patients):

- Accountability for quality of care provided by 'individual specialist'
- Accountability for quality of care provided by 'specialist group'
- Accountability for quality of care provided by 'group of health care providers' (e.g. department)
- Accountability for quality of care provided by 'hospital'

Indicator categories

| Category | Sub-category |
|--|--|
| Rate-based or sentinel | |
| Related to structure / process / outcome | |
| Generic or disease specific | |
| Type of care | <ul style="list-style-type: none"> ✓ Preventive ✓ Acute ✓ Chronic |
| Function | <ul style="list-style-type: none"> ✓ Screening ✓ Diagnosis ✓ Treatment ✓ Follow-up |
| Modality | <ul style="list-style-type: none"> ✓ History ✓ Physical examination ✓ Laboratory / radiology study ✓ Medication ✓ Other interventions |

Rate-based indicators

- Data about events that occur frequently
- Expressed in proportions or rates, ratios, mean values

e.g. Post-operative wound infection

$$\frac{\text{Number of patients who develop post-operative wound infection after surgery}}{\text{Total no. of patients undergoing surgery}}$$

Sentinel events

- Identifies individual events or undesirable outcomes
- Represent poor performance / used for risk management
- Always trigger further analysis or investigation

e.g. - No. of patients who die during surgery
- No. of patients who die during the perinatal period

Generic and disease-specific indicators

■ Generic indicators: relevant to all patients

- e.g.
- In-patient mortality
 - Unscheduled returns to operating room

■ Disease-specific: relate to aspect of care for specific disease

- e.g.
- proportion of patients with a hip fracture who need a second operation
 - proportion of stroke patients treated with thrombocyte inhibitor < 24hrs.

Structure / Process / Outcome indicators

■ Denotes attributes of health care setting

- material resources (e.g. facilities, equipment, financing)
- human resources (e.g. number and qualification of personnel)
- organizational structure (medical staff, organization, methods of peer review)

- e.g.
- Proportion of specialists to other doctors
 - Access to specific technologies (e.g. MRI scan)
 - Access to specific units (e.g. stroke unit)
 - Availability and regular update of clinical practice guidelines
 - Physiotherapists assigned to specific units

Structure / Process / Outcome indicators

■ Denotes what is actually done in *giving* and *receiving* care and *how well* it is done

- diagnosis
- recommending / implementing treatment
- other interactions with the patient

■ especially useful when:

- quality improvement
- explanation is sought for particular outcome of care

Structure / Process / Outcome indicators

- e.g.
- proportion of patients with DM given regular foot care
 - Proportion of patients with myocardial infarction who received thrombolyses
 - Proportion of patients assessed by a doctor within 24 hours of referral
 - Proportion of patients treated according to clinical guidelines

Structure / Process / Outcome indicators

■ Attempt to describe *effects of care* on health status of patients and populations

■ Expressed as 'Five Ds'

| | |
|-----------------|---|
| Death | A bad outcome if untimely |
| Disease | A set of symptoms, physical signs and laboratory abnormalities |
| Discomfort | Symptoms such as pain, nausea, dyspnoea etc. |
| Disability | Impaired ability connected to usual activities at home, work or in recreation |
| Dissatisfaction | Emotional reactions to disease and its care, such as sadness or anger |

Structure / Process / Outcome indicators

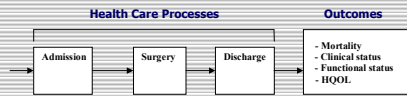
Intermediate outcomes;

- e.g.
- HbA1c results of diabetics
 - Blood pressure results for hypertensive patients

End results;

- e.g.
- Mortality
 - Morbidity
 - Functional status
 - Health measurement status
 - Work status
 - Complications
 - Quality of life
 - Patient satisfaction

Dimensions in quality measurement



- Quality of the technical (e.g. diagnostic and treatment)
- Quality of the interpersonal relationship (communication and information)
- Quality of the organisation of care (continuity and coordination)

Indicator set evaluated against:

- Scientific soundness
 - i.e., reliable, valid, adjusted
- Importance of the quality concern;
- Relevance to various users;
- Potential to foster improvement in health of the patient
- Evidence basis / expert consensus
- Interpretability and actionability
 - the degree to which steps can be taken to address the concern
- Feasibility and ease/ cost-effectiveness of measurement.

Reliability of the indicator

- An indicator is reliable if, when repeatedly applied to the same population, the same result is obtained in a high proportion of the time.

Statistical test: inter-rater reliability

Validity of the indicator

- The extent to which the indicator accurately represents the concept being measured.

- Requires:
- 1) scientific basis for the indicator / consensus
 - 2) distinguishes between poor and good quality
 - 3) construction of the indicator represents concept of measure

Risk Adjustment

| Factors determining the outcome of care | |
|---|---------------------------|
| Patient | Demographic factors |
| | Lifestyle factors |
| | Psychosocial factors |
| Illness | Compliance |
| | Severity, prognosis |
| | Co-morbidity |
| Treatment | Competence |
| | Technical equipment |
| | EB clinical practice |
| Organization | Registration systems |
| | Cooperation |
| | Specific units / services |
| | External environment |

INDICATOR SETS EXAMPLES

Indicators MOH Slovakia, 2004

| Type of indicator | Assured quality area | Indicator |
|---------------------|---------------------------------------|---|
| General health care | Accessibility | - Accessibility of GP - Patients examined within 2 days from GP's contact |
| | HC perceived by patient | - Provider's assessment by patient - Complaints handling - Average time of duration of outpatient examination |
| | Outcome of HC | |
| | Efficient and reasonable HC providing | - Acute care management - Chronical care management - Patients quitting smoking - Screening of cervix uteri cancer - Vaccination of childrens population - Vaccination against influenza |
| | Effective use of resources | - Prescribing of generic drugs |

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Indicators MOH Slovakia, 2004

| Type of indicator | Assured quality area | Indicator |
|------------------------|----------------------------|---|
| Specialist health care | Accessibility | - Patients examined by out-patient specialist within 30 days from first contact with provider |
| | HC perceived by patient | - Provider's assessment by patient - Patients' absence from examination after being ordered - Complaints handling - Average time of duration of outpatient examination |
| | Effective use of resources | - Prescription of generic drugs |

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Indicators MOH Slovakia, 2004

| Type of indicator | Assured quality area | Indicator |
|---------------------------|----------------------------|---|
| Institutional health care | Accessibility | - Patients waiting for admission to the institutional HC < 1month - Patients examined by the out-patient specialist in 14 days from first contact with provider |
| | HC perceived by patients | - Provider's assessment by patient - Patients waiting for urgent admission shorter then 2 hrs - Patients' absence from examination after being ordered - No. Of cancelled elective operations - Complaints handling - Average time of duration of outpatient examination |
| | Outcome of HC | |
| | Effective use of resources | - Daily treatment - Prescription of generic drugs |

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PATH-indicators, WHO

- Absenteeism
- Excessive hours worked
- Work-related injuries: occupational percutaneous exposure (PCE)
- Budget for health promotion activities aimed at staff
- Training expenditures
- Mortality for selected tracer conditions and procedures (e.g. stroke, AMI)
- Admission after day surgery, for selected tracer procedures
- Re-admission, for selected tracer conditions or procedures
- Return to higher level of care within 48 hours
- Ceasarean section
- Antibiotic prophylaxis use, for selected tracer conditions
- Inventory in stock
- Length of stay, for selected tracer conditions and procedures
- Intensity of surgical theatre use
- Day surgery rate, for selected tracer procedures
- Breastfeeding at discharge
- Last minute cancelled surgery
- Patient surveys

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Quality indicator domains, AHRQ

- Prevention Quality Indicators (PQIs)
 - ✓ Ambulatory care sensitive conditions
- Inpatient Quality Indicators (IQIs)
 - ✓ Mortality following procedures
 - ✓ Mortality for medical conditions
 - ✓ Utilization of procedures
 - ✓ Volume of procedures
- Patient Safety Indicators (PSIs)
 - ✓ Post-operative complications
 - ✓ Iatrogenic conditions

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Prevention Quality Indicators, AHRQ

- Bacterial pneumonia
- Dehydration
- Pediatric gastroenteritis
- Urinary tract infection
- Perforated appendix
- Low birth weight
- Angina without procedure
- Congestive heart failure
- Hypertension
- Adult asthma
- Pediatric asthma
- Chronic obstructive pulmonary disease
- Diabetes short-term complication
- Diabetes long-term complication
- Uncontrolled diabetes
- Lower-extremity amputation among patients with diabetes

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Inpatient Quality Indicators, AHRQ

Mortality Rates for Conditions

- Acute myocardial infarction (2 versions)
- Congestive heart failure
- Gastrointestinal hemorrhage
- Hip fracture
- Pneumonia
- Stroke

Mortality Rates for Procedures

- Abdominal aortic aneurysm repair
- Coronary artery bypass graft
- Craniotomy
- Esophageal resection
- Hip replacement
- Pancreatic resection
- Pediatric heart surgery

Hospital-level Procedure Utilization Rates

- Cesarean section delivery (primary and total)
- Incidental appendectomy in the elderly
- Bi-lateral cardiac catheterization
- Vaginal birth after Cesarean section (2 versions)
- Laparoscopic cholecystectomy

Area-level Utilization Rates

- Coronary artery bypass graft
- Hysterectomy
- Laminectomy or spinal fusion
- PTCA

Volume of Procedures

- Abdominal aortic aneurysm repair
- Carotid endarterectomy
- Coronary artery bypass graft
- Esophageal resection
- Pancreatic resection
- Pediatric heart surgery
- PTCA

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Patient Safety Indicators, AHRQ

Provider-level Patient Safety Indicators

- Accidental puncture or laceration during procedure
- Complications of anesthesia
- Death in low mortality DRGs
- Decubitus ulcer
- Failure to rescue
- Foreign body left in during procedure
- Iatrogenic pneumothorax
- Selected infection due to medical care
- Postoperative hemorrhage or hematoma
- Postoperative hip fracture
- Postoperative physiologic and metabolic derangements
- Obstetric trauma – vaginal delivery with instrument
- Obstetric trauma – vaginal delivery without instrument
- Obstetric trauma – cesarean section delivery

- Postoperative pulmonary embolism or deep vein thrombosis
- Postoperative respiratory failure
- Postoperative sepsis
- Transfusion reaction
- Postoperative wound dehiscence in abdominopelvic surgical patients
- Birth trauma – injury to neonate

Area-level Patient Safety Indicators

- Foreign body left in during procedure
- Iatrogenic pneumothorax
- Infection due to medical care
- Technical difficulty with medical care
- Transfusion reaction
- Postoperative wound dehiscence in abdominopelvic surgical patients

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Afternoon session...

Round table discussion

Main topics:

- Discussing results of questionnaire
- Focus and functions of indicators to selected
- Identification / selection of initial set of hospital indicators
- Use of guidelines in hospitals
- ...

Chaired by Prof. dr. Niek Klazinga

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