Key Performance Indicators – What does it mean for Hospital Authority?

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HA Head Office, Cluster Service Division
Healthcare Expenditure in Hong Kong and Around the World

Source: (1) World Bank (2010 data)
(2) Census and Statistic Dept (HK)
Hong Kong Healthcare System – Dual System

Public
Highly subsidized by govt

3.0% GDP
88% inpatients
28% outpatients
Public Health

Private
Self-financed by patients

2.3% GDP
12% inpatients
72% outpatients

Source:
(1) GDP: 2010 (Census and Statistics Dept)
(2) Inpatient (secondary & tertiary care): “Public-private share by in-patient bed day occupied in 2010” from HA and Dept of Health
Healthcare Structure in Hong Kong

Primary Care (distribution of consultations)

- Private Doctors: 56.1%
- Public Doctors: 27.7%
- Chinese Medicine Practitioners: 15.2%
- Others: 1%

Secondary and Tertiary Care

- Hospital Authority: 88%
- Private Hospitals/Doctors: 12%

(2) Public/private share by in-patient bed day in occupied in 2010 (HA & Dept of Health)
Establishment of Hospital Authority (HA)

- Established in 1990 under the HA Ordinance
- A statutory body tasked to manage all public hospitals and institutions
Funding 2011/12

**Funding**
- Govt subvention (92%)
- Fee income
- Other income

**Input**
- Manpower: > 60,000 staff
- Other recurrent expenditure: e.g. drugs, medical supplies, maintenance, etc
- Recurrent expenditure: About US$ 5 Bn

**Size of Operation**
- 41 public hospitals and institutions (~ 27,000 beds)
- 48 Specialist Out-Patient Clinics
- 74 General Out-patient Clinics

**Annual Service Output**
- Inpatient and day patient discharges: 1.4M
- Accident and emergency visits: 2.3M
- Specialist out-patient attendances: 8.7M
- General out-patient attendances: 5.2M

Source: The 2011/12 Budget of HKSAR Government – Head 140
Services delivered by 7 Clusters

- New Territories East
- New Territories West
- Kowloon West
- Kowloon Central
- Kowloon East
- Hong Kong West
- Hong Kong East

Hong Kong

New Territories

Kowloon

Central

East

West
Distribution of population, budget allocation and service output by clusters

New Territories West Cluster
- Geographical population: 14.9%
- Acute Inpatient – WEs: 12.1%
- Extended care: 5.0%
- Ambulatory and Community care: 13.4%
- Budget: 13.0%

New Territories East Cluster
- Geographical population: 18.2%
- Acute Inpatient – WEs: 16.1%
- Extended care: 23.5%
- Ambulatory and Community care: 16.3%
- Budget: 16.6%

Kowloon West Cluster
- Geographical population: 26.7%
- Acute Inpatient – WEs: 24.9%
- Extended care: 17.2%
- Ambulatory and Community care: 25.6%
- Budget: 23.3%

Kowloon Central Cluster
- Geographical population: 7.0%
- Acute Inpatient – WEs: 13.1%
- Extended care: 28.8%
- Ambulatory and Community care: 11.9%
- Budget: 13.9%

Kowloon East Cluster
- Geographical population: 13.7%
- Acute Inpatient – WEs: 11.0%
- Extended care: 9.5%
- Ambulatory and Community care: 12.9%
- Budget: 10.1%

Hong Kong West Cluster
- Geographical population: 7.7%
- Acute Inpatient – WEs: 12.0%
- Extended care: 7.3%
- Ambulatory and Community care: 8.2%
- Budget: 11.9%

Hong Kong East Cluster
- Geographical population: 11.8%
- Acute Inpatient – WEs: 10.8%
- Extended care: 8.8%
- Ambulatory and Community care: 11.7%
- Budget: 11.3%

Previous years
Performance Monitoring Framework

HA Board
(Administrative & Operation Meeting)

Government
(Permanent Secretary of Food and Health)

HA Head Office

Cluster Chief Executives
## Performance Monitoring Framework

<table>
<thead>
<tr>
<th>Accountability to Government</th>
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<tbody>
<tr>
<td>Permanent Secretary of Food &amp; Health</td>
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<tr>
<td>Controlling Officer’s Report (COR) – Hong Kong Government Budget</td>
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<tr>
<td>Quarterly Progress Report to FHB</td>
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<table>
<thead>
<tr>
<th>Accountability to Hospital Authority Board of Governance</th>
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<tbody>
<tr>
<td>Chief Executive’s Monthly Progress Report on Key Performance Indicators</td>
</tr>
<tr>
<td>A set of Key Performance Indicators (KPI) since 2008</td>
</tr>
<tr>
<td>Including some COR items, clinical service indicators, human resources &amp; finance</td>
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<thead>
<tr>
<th>Accountability to Hospital Authority Head Office</th>
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<tbody>
<tr>
<td>Clusters’ Key Performance Indicators Report since 2008</td>
</tr>
<tr>
<td>Progress report on Annual Plan Targets and Funded Programmes</td>
</tr>
<tr>
<td>Cluster Management Meeting &amp; Directors’ Meeting KPI reports</td>
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</tbody>
</table>
Manpower 
Resignation / Turnover Rate 
Sick Leave 
Injury on Duty 

Service 
Growth 
Quality Improvement 
Efficiency 

Clinical Services

KPI 

Finance 
Budget Performance 
Operations 

HR 
Manpower 
Resignation / Turnover Rate 
Sick Leave 
Injury on Duty
### Service growth in response to population change & ageing effect
- Hospital beds, community nurses & day places
- Day/ inpatient discharges & patient days
- Ambulatory (clinics & allied health) attendances
- Community & outreach visits

<table>
<thead>
<tr>
<th>No. of KPIs</th>
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<tbody>
<tr>
<td>Clinical</td>
</tr>
<tr>
<td>HR</td>
</tr>
<tr>
<td>Finance</td>
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<tr>
<td><strong>Total</strong></td>
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### Improvement as a result of technology advancement or new service quality & access initiatives
- Waiting times:
  - Accident & emergency
  - Specialist OP new case
  - Elective surgeries (Cataract/TURP)
  - Diagnostic radiology
  - Radiotherapy
  - Breast/Colon/Nasopharyngeal cancers
- A&E standardized admission rate
- Unplanned readmission rate
- MRSA infection rate
- Stroke: % CT/MRI in 12 hrs/ %in Stroke units
- Hip fracture: % surgery in 2 days
- DM: % HBA1c < 7%
- HT: BP % <140/90
- Cardiac: post MI % statin
- Mental: ALOS acute inpatient

### Efficiency in use of resources
- Bed occupancy rate
- Average length of stay
- Day/ same day surgery
- No. of inpatient episodes per bed
- Productivity in DRG weighted episodes
- Net asset value

### Human resources
- Manpower position
- Resignation / turnover rate
- Sick leave / injury on duties
- Annual leave balance

### Finance
- Income & expenditure statement
- Medical fee income, waiver, write-off
- Drug consumption and stock holder period
- Capital expenditure
- Debtor analysis
No. of inpatient discharge episodes

No. of day patient discharge episodes

Bed occupancy rate (%)

No. of SOP attendances
What is Hospital Authority’s Performance?

- Areas with improvement
  - Waiting time for cataract surgery, Cancer radiotherapy, MRI scans
  - Stroke: CT/MRI in 12 hrs, reduce unplanned readmissions
  - Increase % of ESRD receiving haemodialysis
  - Injury on duty, sick leave

- Areas with significant deterioration
  - Specialist clinic (SOP) new case waiting time, except Surgery & Ophthalmology

- Significant variation between clusters
  - SOP waiting time: Gyn 16 – 136 weeks; Surg 25 – 121 weeks
  - Radio-diagnostics: MRI 146 – 501 days; CT 41 – 133 days
  - Hip fracture: 67 – 94% surgery in 2 days
  - Injury on duty absence 42 – 160 days per 100 full time equivalent
Performance Indicators!

WHY?
WHO - Goals of Health Care System

• Achieving good health for the population

• Ensuring health services are responsive to the public

• Ensuring fair payment system
Health Care System Reforms

- Increasing accountability
- Cost effectiveness
- Sustainability
- Quality improvement
- Enhance hospital performance based on scientific evidence or best practice model

⇒ Performance monitoring system esp. hospitals as they consume more than half of most health budget

Veillard J et al 2005
# NHS Performance Assessment Framework

<table>
<thead>
<tr>
<th>Measure</th>
<th>Aspects of performance</th>
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<tbody>
<tr>
<td>I</td>
<td>Health improvement</td>
</tr>
<tr>
<td></td>
<td>The overall health of populations, reflecting social and environmental factors and individual behaviour as well as care provided by the NHS and other agencies</td>
</tr>
<tr>
<td>II</td>
<td>Fair access</td>
</tr>
<tr>
<td></td>
<td>The fairness of the provision of services in relation to need on various dimensions: geographic, socio-economic, demographic (age, education), etc. care groups (eg people with learning difficulties)</td>
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<tr>
<td>III</td>
<td>Effective delivery of appropriate health care</td>
</tr>
<tr>
<td></td>
<td>The extent to which services are: clinically effective (interventions or care packages are evidence-based), appropriate to need, timely, in line with agreed standards, provided according to best practice service organisation, delivered by appropriately named and educated staff</td>
</tr>
<tr>
<td>IV</td>
<td>Efficiency</td>
</tr>
<tr>
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<td>The extent to which the NHS provides efficient services, including: cost per unit of care/outcome, productivity of clinical teams, labour productivity</td>
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<tr>
<td>V</td>
<td>Patient/carer experience</td>
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<tr>
<td></td>
<td>The patient/carer perceptions on the delivery of services including: responsiveness to individual needs and preferences, the skill and courtesy of service provider, promptness and availability, patient involvement, good information and choice, waiting times and accessibility, the physical environment, the organisation and courtesy of administrative arrangements</td>
</tr>
<tr>
<td>VI</td>
<td>Health outcomes of NHS care</td>
</tr>
<tr>
<td></td>
<td>NHS success in using its resources to: reduce death from focus areas, reduce death from disease, improve and complications of treatment, improve quality of life for patients and carers, reduce premature deaths</td>
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**Performance Ratings determines resources allocation**

Health Improvement to reflect the over-arching aim of improving the general health of the population and reducing health inequalities, which are influenced by many factors, reaching well beyond the NHS.

Fair Access to recognise that the NHS's contribution must begin by offering fair access to health services in relation to people's needs, irrespective of geography, socioeconomic group, ethnicity, age or sex.

Patient/Carer Experience to assess the way in which patients and their carers experience and view the quality of the care they receive, to ensure that the NHS is sensitive to individual needs.

Effective Delivery of Appropriate Healthcare to recognise that fair access must be to care that is effective, appropriate and timely, and comply with agreed standards.

Efficiency to ensure that the effective care is delivered with the minimum of waste, and that the NHS uses its resources to achieve value for money.
WHO Performance Assessment Tool for Quality Improvement in Hospitals (PATH)

- Clinical effectiveness
- Efficiency
- Staff orientation
- Responsive governance

Safety

Patient centeredness
Others projects on hospital performance assessment

- Australian Council on Healthcare Standards
- Joint Commission Accreditation of Health Care Organizations
- International Quality Indicator Project
- Organization for Economic Co-operation and Development
- Ontario Hospitals Association
- …etc
Performance indicators

• ‘If we can’t measure, we can’t manage’
• Main attraction : promise visible and concrete proof of performance
• Objectivity : agreed rules of assessment across all organization, deriving knowledge independent of its creators
• ‘Religious and missionary’
• Performance indicators ➔ quality improvements ?
• Is it evidence-based ?
Aims of performance indicators systems

- External Assurance / Accountability
- Internal Quality Improvement

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<tr>
<th>Source of Control</th>
<th>Nature of expected actions</th>
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<tr>
<td></td>
<td>Formative</td>
</tr>
<tr>
<td></td>
<td>Supportive</td>
</tr>
<tr>
<td>Internal</td>
<td>Continuous quality</td>
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<tr>
<td></td>
<td>improvement</td>
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<tr>
<td>External</td>
<td>Accreditation</td>
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Boland & Fowler 2000
External summative indicator systems

- External verification of quality improvement and central control
- May be political, commercial
- Renewal of legitimacy
- Information may be useful for political debate
- Organizational structure inscribed with auditable system
- Policy imposed by assuming the selection and structure of indicators related to goals, values and purposes
Formative quality improvement indicators

- Links to Total Quality Management (TQM) approach and Continuous Quality Improvement (CQI) paradigm
- Used as a focus for feedback and learning, leading to improvement
- Vehicle to align objectives of staff and the organization
- Stakeholders discuss and agree which indicators to include
Conceptual problems with performance indicators systems

- Performance indicators framework may displace existing informal, unrecorded modes of quality assurance
- May become a ritualistic system that hides genuine information
- Not capable of showing why particular results are obtained
- Difficult to inform policy and programme modifications
Technical problems with Indicators selection

• Key performance indicators
  – Indicators only capture a fragment of health care
  – Too few indicators will miss important aspects
  – Too many indicators will be impractical and too costly to maintain

• Variation in definitions
  – Failure to compare like with like
  – Difficult to operationalizing indicators
  – Conflicting objectives, over-riding political importance and short political time-horizons
Performance indicators selection

• Data availability and reliability
  – Tendency to measure what is already there instead of correlate with system goals and objectives
  – Data accuracy: difference in results reflect quality of data rather than quality of care?
  – Flawed data likely increase confrontation and reduce co-operation
  – Data collection by goodwill vs manipulation, e.g. summative purpose
Performance indicators selection

• Data validity and confounding
  – Validity means reflecting the right attribute, in this case of the healthcare system, rather than attributes of patients, or of other non-healthcare characteristics
  – Only need to relate to factors that are under scrutiny
  – Potential confounding factors: socio-economic variation, case mix, co-morbidity, severity
  – Difficult and costly to collect data attributable to confounding factors

• Adjustment for confounding
  – Standardization
  – Group analysis
  – Predicted vs actual
  – Multiple regression
Example: Re-admission Rate

• Unplanned emergency re-admission
  – defined as an admission via Accident & Emergency (A&E) department to the same specialty in any HA hospital within 28 days of discharge from the index episode (IE).
  – This is an improvement over the previous definition which, in principle, only counted readmissions via AED to the same hospital within 28 days of discharge; without taking into consideration of any inter hospital transfers, discharge specialty and the subsequent admission specialty of the readmission
Illustration

Patient 1

MED(Acute) → Hospital A → MED(subacute) → Index episode (Single hospital)

Patient 2

MED(Acute) → Transfer → Hospital B → Rehab(subacute) → Transfer → Hospital A → Discharge → Index episode (Linked) → MED(Acute)
Illustration

The unplanned readmission is counted against the hospital where the initial admission of the IE occurred.
Question: Has the IEs entailed URs in 28 days?

\[
\text{URR} = \frac{\text{Yes}}{\text{Yes} + \text{No}}
\]
Specialty-based unplanned readmission rate

![Bar chart showing specialty-based unplanned readmission rates across different clusters. The overall average is indicated by a red line.](Image)
Example: Standardized Accident & Emergency Admission Rate

- Standardized for age, sex, triage category, ambulance in
- A good measurement of appropriateness?

Clusters

Overall average
Performance indicators selection

• Robustness, sensitivity and specificity
  – Small numbers
  – Random variations
  – Year-to-year variations in league tables may lead to unnecessary praise or sanction
  – Different levels of sensitivity and specificity are needed for different purposes
  – Summative accountability decisions requiring higher accuracy
  – Prescriptive indicators are often used descriptively in starting of performance evaluation programmes
Perverse incentives and un-intended consequences

• Tunnel vision
  – focus on phenomena quantified

• Myopia
  – pursuit of short term targets

• Measure-focused
  – Focus on enhancing the measurement rather than the objectives

• Misrepresentation

• Misinterpretation

• Gaming

• Organizational paralysis due to rigid performance evaluation

Freeman T 2002
Performance indicators system

- Dimension of hospital performance assessed
- Number of individual/ groups of indicators
- Development methodology
  - Scientific tools: reliability, validity, sensitivity, specificity
  - Involvement of stakeholders
- Participation: voluntary vs involuntary
- Number of participants
- Data collection
- Public disclosure
- Feedback mechanism & time
- Budget of performance monitoring system
HA internal resources allocation system and influence on performance measurement

Early days
• Hospital-based management
• Historical and bed-based funding

Activity-based funding
• Specialty-costing information
• Reward ‘efficient’ hospitals

Population-based funding
• No explicit correlation with performance measurement

Pay-for-performance
• Case-mix adjusted funding formula
• Separate systems of Key Performance Indicators
• Pilot of “Quality Incentive Programme” – linking financial incentives with KPI
Conclusion

• Two principle uses of performance indicators: external accountability and internal quality improvement
• Indicators can be prescriptive, descriptive or proscriptive
• Performance indicators are seductive as being objective
• May be inaccurate, misleading and cause negative unintended consequences, perverse incentives and gaming
• Those using indicators should caution with interpretation
• Audit or data system cannot replace the informal quality control system in day to day practice of medicine