Quality Indicators: Past and Present

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Quality Indicators: Past and Present

- History
- Quality Indicators and ISO
- Characteristics of Indicators – strong and weak
- Quality Indicator Inventories – USA and BC
- Examples of Quality Indicators
- Summary
A really good, inexpensive reference book.

Mark Graham Brown

KEEPING SCORE

Using the Right Metrics to Drive World-Class Performance

Amazon.com
$30.00
Two excellent (essential) references from CSA
A Short History of Metrics in Quality Management

<table>
<thead>
<tr>
<th>Innovator</th>
<th>Date</th>
<th>Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walter A Shewhart</td>
<td>1920’s</td>
<td>Plan-Do-SEE</td>
</tr>
<tr>
<td>J Edwards Deming</td>
<td>1940’s</td>
<td>Plan-Do-CHECK-Act</td>
</tr>
<tr>
<td>Bob Galvin</td>
<td>1980’s</td>
<td>Define-MEASURE-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Analyze-Improve-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control</td>
</tr>
</tbody>
</table>
The Quality Cycle

Plan

Act

Do

CHECK

Each step is essential to keep the quality cycle cycling.
Quality Indicators
A workable definition

• Established measures used to determine how well an organization meets needs and operational and performance expectations.
  – Objective
  – Measurable
  – Repeatable
5.4.1 • Top management should ensure that quality objectives, including those needed to meet requirements for product, are established at relevant functions and levels within the organization. The quality objectives shall be measurable and consistent with the quality policy.
8.4

The organization shall determine, and collect and analyze appropriate data to demonstrate suitability and effectiveness of the quality management system and evaluate where continual improvement of the effectiveness of the quality management system can be made. This shall include data generated as a result of monitoring and measurement and from other relevant sources.

The analysis of data shall provide information relating to:

– Customer satisfaction
– Conformity to product requirements
– Characteristics and trends of processes and products including opportunities for preventive actions, and
– suppliers
Metrics and ISO 15189:2003

• 4.12.4

Laboratory management shall implement quality indicators for *systematically monitoring and evaluating the laboratory’s contribution to patient care*. When this program identifies opportunities for improvement, laboratory management shall address them regardless of where they occur. Laboratory management shall ensure that the medical laboratory participates in quality improvement activities that deal with relevant areas and outcomes of patient care.
So...

Quality Indicators are measured information that

- Indicates the performance of a process.
- determines quality of services.
- highlights potential quality concerns,
- identifies areas that need further study and investigation, and
- track changes over time.
Measuring Performance
Mark Graham Brown

• Fewer is better.
• Link measures to the factors needed for success.
• Measures should be based around customer and stakeholder needs.
• Measures should start at the top and flow down to all levels of employees.
• Measures should change as the environment and strategy changes
• Measures should have targets or goals established that are based on research rather than arbitrary values.
Many organizations spend thousands of hours collecting and interpreting data. However, many of these hours are nothing more than wasted time because they analyze the wrong measurements, leading to inaccurate decision making.

– Mark Graham Brown.

As true today as it was then!
# Indicators?

You want Indicators?  
We’ve got LOTS of Indicators!

<table>
<thead>
<tr>
<th>AHRQ</th>
<th>RAND</th>
<th>OECD</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQLM</td>
<td>JCAHO</td>
<td>WHO</td>
</tr>
</tbody>
</table>

- American Nurses Association
- American Psychiatric Association

- Leapfrog
- National Quality Forum
- ISQua
Characteristics of Good Metrics

1. Timed
   short and long term

2. Engaging
   all levels

3. Balanced
   full cycle

4. Measurable
   objective

5. Achievable
   contained

6. Interpretable
   specific

7. Actionable
   action oriented

Good Metrics
## Indicators of Good Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurable</td>
<td><em>Can you count it, time it, record it?</em></td>
</tr>
<tr>
<td>Achievable</td>
<td><em>Can you actually capture it?</em></td>
</tr>
<tr>
<td>Interpretable</td>
<td><em>When you’ve got it, what does it mean?</em></td>
</tr>
<tr>
<td>Actionable</td>
<td><em>Can you do something about it?</em></td>
</tr>
<tr>
<td>Timed</td>
<td><em>Does your set cover both the short and long term?</em></td>
</tr>
<tr>
<td>Engaging</td>
<td><em>Does your set involve all laboratory personnel?</em></td>
</tr>
<tr>
<td>Balanced</td>
<td><em>Does your set cover the full cycle of events?</em></td>
</tr>
</tbody>
</table>
Assessing Quality Indicators

- Importance
- Scientific Acceptability
- Feasibility
- Usefulness

Potential for Improvement
Reliability and Validity
Implementation and cost
Comprehensive

Having Quality Quality Indicators
Total Testing Cycle for Medical Laboratories

Menu
Ordering Rules
Patient ID
Collection
Transport
Acceptance Criteria

Pre-Analytic

Analytic
Analysis
Quality Control

Post-Analytic

Report Interpretation
Report Transport
Report Creation
Data Capture
Baldrige Award Criteria

• **Balanced Metrics**
  – Customer satisfaction
  – Employee satisfaction
  – Financial performance
  – Operational performance
  – Product and Service quality
  – Supplier performance
  – Safety and environment and public responsibility

*Most organizations focus 80% of metrics on finance and operations.*
IQLM Indicators

- Diabetes monitoring (system)
- Hyperlipidemia screening (system)
- Test Order Accuracy and Appropriateness
- Patient Identification (pre-analytic)
- Adequacy and Accuracy of Specimen Information (pre-analytic)
- Blood Culture Contamination (pre-analytic / system)

- Accuracy of point-of-care testing (analytic)
- Cervical cytology/biopsy correlation (analytic)

- Critical Values Reporting
- Turnaround time (postanalytic)
- Clinician satisfaction (system/postanalytic)
- Clinician followup (system/postanalytic)
## CMPT Metrics Scorecard

**Balanced Metrics**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer satisfaction</td>
<td>25</td>
</tr>
<tr>
<td>Employee satisfaction</td>
<td>5</td>
</tr>
<tr>
<td>Financial performance</td>
<td>10</td>
</tr>
<tr>
<td>Operational performance</td>
<td>20</td>
</tr>
<tr>
<td>Product and Service quality</td>
<td>30</td>
</tr>
<tr>
<td>Supplier performance</td>
<td>5</td>
</tr>
<tr>
<td>Safety /environment / public responsibility</td>
<td>5</td>
</tr>
</tbody>
</table>
Characteristics of Weak Metrics

• Focus only on measures easy to count
• Focus only on measures easy to achieve.
• Metrics with arbitrary targets.
• Measures that don’t change with experience
Computer Nonsense Metrics

\[ \text{[urine culture]} * \text{[glucose]} * \text{[INR]} \]

\[ \frac{\text{[NUPA}_\text{hr}] * \text{[Telephone minutes]}}{\text{X}100} \]

Just because a computer can calculate a value, doesn’t mean that it should.
Computerese Quality Indicators

- Unit Producing Activity per Paid Hour
- Unit Producing Activity per Worked Hour
- Unit Producing Activity per Total FTE
- Non-Unit Producing Activity per Paid Hour
- Non-Unit Producing Activity per Worked Hour
- Non-Unit Producing Activity per Total FTE
- *Crude Turn-Around-Time*
A Cautionary Note

• Measures that drive the wrong performance.

Measuring professionals is tough because intellectual work is difficult to measure objectively. Looking for factors that can be counted may not be what is really important. Meaningful outputs such as ideas, information, and problems avoided may be difficult but more relevant.

Mark Graham Brown
Caution about patient outcome indicators

Theoretically, outcomes best assess quality, but they are the most difficult to measure

- too many variables and confusers
  - Age, underlying conditions, therapy, circumstance
- require high volumes of detailed data
- Need long collection periods.

David Hsia
Medicare Quality Improvement Bad Apples or Bad Systems?
Are you an Indicator Glutton?

Monitoring more than 10-12 indicators is rarely successful

Mark Graham Brown
1996
Quality Inventory: US Medical Laboratories 2004

- In 2004 the Institute for Quality in Laboratory Medicine (IQLM) and the Clinical Laboratory Managers Association (CLMA) undertook an online quality inventory of laboratories with CLMA members.
- Approximately 400 laboratories responded.
- The study was voluntary, self-reported, with a validated questionnaire.
- Information provided was not verified by a second method.
2. Most Common Indicators Tracked

Over 90% of respondents tracked one or more of these indicators
*Tracked by over 90% of respondents in each stratified laboratory size
In British Columbia…

The Program Office for Laboratory Quality Management and the Provincial Laboratory Coordinating Office have organized to perform a similar, but improved inventory in 2005.
10 Most Common Procedures Monitored
BC Quality Inventory 2005

- QC
- EQA
- PT ID
- Sample Integrity
- Sample ID
- Lab Injuries
- Written Orders
- Collection Timing
- Specimen Storage

Bar chart showing the percentage of each category monitored:
- Pre-Analytic
- System
- Analytic
Post Analytic Procedures Monitored
BC Quality Inventory 2005

Report Accuracy | Report Critical Values | Turn Around Time
Satisfaction Monitoring
BC Quality Inventory 2005

- Patient
- Patient (Plebotomy)
- Physician
- Employee
Other Achievable Indicators

• Blood culture volumes:

Blood culture false negative results occur when bottles contain insufficient (<3 mL) or excessive (>15 mL) blood.

Insufficient or excessive blood collection is a collection non-conformity.
Underfill Blood Collections
(As a percent of collections per site)
Baldrige Award Criteria

• **Balanced Metrics**
  – Customer satisfaction
  – Employee satisfaction
  – Financial performance
  – Operational performance
  – Product and Service quality
  – Supplier performance
  – Safety and environment and public responsibility

*Most organizations focus 80% of metrics on finance and operations.*
Eight Steps to Developing Successful Indicators

1. **Objective**
2. **Methodology**
3. **Limits**
4. **Interpretation**
5. **Limitations**
6. **Presentation**
7. **Action plan**
8. **Exit plan**
# Developing Indicators

<table>
<thead>
<tr>
<th><strong>Objective</strong></th>
<th>What are you trying to measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Methodology</strong></td>
<td>1. How to capture the data  2. Who (or what) to capture the data  3. How often to capture the data</td>
</tr>
<tr>
<td><strong>Limits</strong></td>
<td>Acceptable, Concern, Unacceptable Critical</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Graphic or Text</td>
</tr>
<tr>
<td><strong>Interpretation</strong></td>
<td>What does it mean? Does it reflect on YOUR quality?</td>
</tr>
<tr>
<td><strong>Limitations</strong></td>
<td>Unintended variables</td>
</tr>
<tr>
<td><strong>Action Plan</strong></td>
<td>What will I do if it indicates acceptable performance? What will I do if it does not?</td>
</tr>
<tr>
<td><strong>Exit Plan</strong></td>
<td>When can I stop measuring?</td>
</tr>
</tbody>
</table>
Presenting Quality Indicator Information
Engage the folks who do the work, because they know what they do!
Microbiology Indicators

Collected and Monitored by Vancouver General Hospital Division of Medical Microbiology and Infection Control

Many thanks to:
- Diane Roscoe
- Anita Kwong

Medical Microbiology team
Objective: to ensure that blood culture results reflect sepsis.

Methodology: Count single bottle positives of common skin flora/ total sets

Limits: Below 2%

Interpretation: Meeting accepted limits all the time

Limitations: Definition may include some true infections and may miss others

Presentation: Linear time graph

Action plan: Identify and educate blood collector group.

Exit plan: Reactivate with cause
Underfill Blood Collections
(As a percent of collections per site)
Objective: to ensure that blood culture are properly filled.

Methodology: Count underfilled bottles / total bottles collected

Limits: Below 2% (?)

Interpretation: *Wards with inexperienced collectors have problems*

Limitations Some frail and elder people have very weak veins and may be impossible to collect

Presentation: Linear time graph

Action plan: Identify and educate blood collector group.

Exit: Continue on selective basis
### Certification Performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Measures</th>
<th>MAJOR NC</th>
<th>Minor NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>Pre-Certification (EI)</td>
<td>100</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2002</td>
<td>Certification (E)</td>
<td>100</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2003</td>
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<td>100</td>
<td>0</td>
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<td>100</td>
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<td>1</td>
</tr>
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<td>2005</td>
<td>Re-Certification (E)</td>
<td>100</td>
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</table>
### Objective:
To monitor CMPT quality preparedness

### Methodology:
Monitoring External assessment values

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<tr>
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<td>0</td>
<td>0</td>
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</table>

### Limits:
No Major above 1; Below 2%; No Minor above 3

### Interpretation:
*Meeting accepted limits all the time*

### Limitations
May indicate things are better than they are if inspector is not diligent

### Presentation:
Linear time table

### Action plan:
Maintain program, respond through OFI and Corrective Actions

### Exit plan:
Compile with each inspection
Composite Indicators

• Reflecting a single subject with a number of sub-components

When the finished value is greater than just the sum of the parts
ERROR: stackunderflow

OFFENDING COMMAND: ~

ERROR: stackunderflow