Achieving quality and patients safety in nutritional care

Quality indicators in enteral nutrition therapy

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Educational session - Achieving quality and patients’ safety in nutritional care

Quality indicators in parenteral nutrition therapy.

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• 9 important dimensions in quality of care

• How to measure quality of care?

• Validation of quality indicators

• Literature on quality indicators

• Practical tips to develop quality indicators
9 Important dimensions to measure quality of care

November 1999
Safety in healthcare

- 44,000 to 98,000 deaths annually in hospitals due to medical errors.

- The Institute of Medicine report made it painfully clear, the health care system itself was between the fifth and ninth leading cause of death in the United States.

→ 6 aims for the core need for health care
6 dimensions of Quality from IOM ¹

• Safe
  Prevent complications

• Effective
  Provide care based on scientific knowledge that benefit patient.

• Patient-centered
  Focus on specific patient needs

• Timely
  Reducing waits and sometimes harmful delays

• Efficient
  Avoiding waste (including waste of equipment, supplies, …)

• Equitable
  Everyone receives the same care, no distinction in gender, ethnicity, geographic location, …

3 extra dimensions (to avoid)

Try to avoid 3 dimensions:

(1) Misuse

(2) Overuse

(3) Underuse
(1) Misuse

Quality evaluation of total parenteral nutrition in an acute care setting.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtaining the parameters</td>
<td></td>
</tr>
<tr>
<td>Indication for TPN</td>
<td></td>
</tr>
<tr>
<td>Time of fasting</td>
<td></td>
</tr>
<tr>
<td>Duration</td>
<td></td>
</tr>
<tr>
<td>Concordance</td>
<td></td>
</tr>
<tr>
<td>Latency of initiation</td>
<td></td>
</tr>
<tr>
<td>Type of diet</td>
<td></td>
</tr>
<tr>
<td>Composition of the diet</td>
<td></td>
</tr>
</tbody>
</table>

In only 17% of the cases, all criteria were met.

In these four criteria, results were significantly below standard.
(2) Overuse

Assessing appropriate parenteral nutrition ordering practices in tertiary care medical centers.

- Over 3-month period, trained registered dietitians determined PN appropriateness at 4 tertiary Care South Carolina Hospitals at acute care facilities.

- PN therapy was **inappropriately prescribed** (based on ASPEN guidelines) in **32%** of the cases, resulting in approximately **552 days and 138,000 dollar preventable hospital costs**.
(3) Underuse

Failings in the care of patients receiving parenteral nutrition.
John Tingle. British Journal of Nursing, 20 issue 3; February 2012, p 186-187. UK

• Only 19% of adult patients receiving PN represent good practice.

• Problems:
  – inappropriate indication
  – inadequate monitoring or record-keeping
  – no evidence of nutritional requirements documented.

• For 16% (128/798) of patients there was an unreasonable delay in the recognition of need of PN.
9 important dimensions in quality of care

How to measure quality of care?

Validation of quality indicators

Literature on quality indicators

Practical tips to develop quality indicators
How to measure quality of care?

• **Quality of care**
  = the degree to which health services for individuals and populations increases the probability of desired health outcomes and is consistent with current professional knowledge\(^1,2\)

• **Indicators** to measure/evaluate quality of care
  = a measurable element of practice performance for which there is evidence or consensus that it can be used to assess the quality of care, and hence change the quality of care provided.\(^2\)

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How to measure quality of care?

- Different indicators based on Donabedian’s classic division \(^1\,^2\,^3\): SPO structure

**Structures of Care**

- Availability of multidisciplinary team
- Access to specific technologies (RX thorax for catheter insertion)

**Processes of Care**

- Proportion of HPN patients guided by a multidisciplinary team
- Proportion of patients from who the catheter is located with chest X ray

**Outcomes**

- Number of catheter related infections
- Number of readmission to hospital due to improper catheter placement

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3. Vanhaecht K et al. Intl J Care Pathw 2007; 11:54—1161
Example: Hand hygiene

Example: SPO indicators for Hand hygiene

**Structure**  Availability of disinfectant in each room in the hospital

**Process**  Proportion of healthcare professionals who follow hand hygiene guidelines

**Outcome**  Number of infections according to improper hand hygiene (effect: a decrease in infections)
# Examples for Parenteral Nutrition

## Examples of process measures

<table>
<thead>
<tr>
<th>Process Measure</th>
<th>Outcome Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensuring the training program of HPN patients includes pump use and care,</td>
<td>Absence of septic complications&lt;sup&gt;1,2&lt;/sup&gt;</td>
</tr>
<tr>
<td>catheter care and recognizing common problems. &lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Monitor periodically liver function tests&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Absence of hepatic complications&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Perform bone densitmetry upon initiation of Home parenteral nutrition and</td>
<td>Absence of metabolic complications&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>periodically thereafter. &lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Monitor patients’ quality of life &lt;sup&gt;2&lt;/sup&gt;</td>
<td>Quality of life of patient&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Composing the diet (carbohydrates, lipids, proteins) &lt;sup&gt;1&lt;/sup&gt;</td>
<td>Weight gain or loss&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Defining an indicator: example for PN

For example: Number of catheter-related infections

<table>
<thead>
<tr>
<th>Relationship to quality</th>
<th>Better processes of care (handhygiene, care of catheter) reduce number of catheter related sepsis, which represents better quality/less mortality.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition</td>
<td>Number of catheter-related infections in patients receiving parenteral nutrition with central venous catheter in hospital (during certain study period). <em>Definition of catheter-related infections to be defined.</em></td>
</tr>
<tr>
<td>Numerator</td>
<td>Number of patients with central venous catheter receiving parenteral nutrition in hospital and experiencing catheter-related infection</td>
</tr>
<tr>
<td>Denominator</td>
<td>Number of all patients with central venous catheter receiving parenteral nutrition in hospital</td>
</tr>
<tr>
<td>Type of indicator</td>
<td>Outcome indicator</td>
</tr>
</tbody>
</table>

From Agency for healthcare research and quality (USA).
<table>
<thead>
<tr>
<th><strong>Indicator Number</strong></th>
<th>Number assigned to each indicator</th>
</tr>
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<tbody>
<tr>
<td><strong>Indicator name</strong></td>
<td>A brief title that uniquely identifies the measure</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>A brief explanation of the measure’s focus, such as the activity or the area on which the measure centers attention.</td>
</tr>
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</table>
| **Rationale/ relation to quality** | Rationale for measuring the process or outcome indicator:  
  - Variability in outcomes- performance or key indicators as indicated by literature  
  - Relation between indicator and quality of care  
  Rationale for measuring baseline variable: risk analysis concerning baseline variables. |
| **Type of indicator/variable** | - Process indicator: a measure that indicates the performance of (compliance with) a key intervention  
  - Outcome indicator: a measure that indicates the result of a performance (or non-performance) of a key-intervention  
  - Baseline variable /covariable used for risk analysis |
| **Numerator**        | Represents the portion for the denominator that satisfies the condition of the indicator |
| **Denominator**      | Represents the population evaluated by the indicator:  
  - Inclusion criteria: specific information describing the population  
  - Exclusion criteria: specific information describing the population that should not be included. |
### State-of-the-art description

| Data Collection method | - *In which way are the data collected?*  
|                        | - *At what time point are the data collected?*  
|                        | - *Which data have to be collected?*  
| Data elements for indicator | *Indicates which data are necessary to measure indicator*  
|                           | *Italic: data necessary to built up other data (ie 6 items for Katz-score*  
| Data reported as | - *Aggregate rate generated from count data reported as a proportion*  
|                   | - *Aggregate rate generated from count data reported as a ratio*  
|                   | - *Aggregate measures of central tendency (ie lenght of stay)*  
| Expected outcome | - *Reference values in literature*  
| Improvement expected as (outcome) | - *Indicates which improvement is expected*  
| Criteria to meet (process) | - *Indicates the optimal goal that is targeted*  
| References | - *Specific literature references that are used to support the importance of the indicator measure*  
|            | - *References concerning measuring tools*  

1. From European Pathways Society  
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Validation of indicators

- Incidence of good hand hygiene

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- Tempting to measure
- Far removed from outcome
Validation of indicators

• When is an indicator valid?
  – Process (or structure): proven relationship to an outcome we care about
  – Outcome: proven relationship to processes we can modify to change the outcome

• Structure:
  – Can pass the validity test but are far removed from outcomes
  – Tempting to use because of availability (volume of services, board certification, accreditation status, staffing measures)

Mark Chassin, 2008
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Use of the AIRE instrument

• AIRE = Appraisal of Indicators through Research and Evaluation

• AIRE is questionnaire with 20 statements

• Rating statements with 4-point Likert scale using 4 quality domains:
  – Purpose, relevance, organizational context
  – Stakeholder involvement
  – Scientific evidence
  – Additional evidence/formulation/usage

Use of the AIRE instrument: example

• Indicator:
  “Proportion of HPN patients who receive HPN in a cyclic period (at night), not continuously.”

  – First statement of the AIRE instrument

1) The purpose of the indicator is described clearly

Purpose: why is the indicator developed (quality improvement or external accountability?) → methods of manuscript

Strongly agree 4 3 2 1  Strongly disagree
Review: Indicators in hospital care

Using quality indicators to improve hospital care: a review of the literature.
Maartje de Vos, Wilco Graafmans, Mieneke Kooistra, Bert Meijboom, Peter Van der voort, Gert Westert P. International journal for quality in healthcare 2009; 21 (2); 119-129; Netherlands.

• Review of literature (Medline, Cochrane library) concerning strategies for implementing quality indicators in hospital care.

• 21 studies included with focus on care processes (20/21), not on outcomes.

• Concluded that effective strategies to implement quality indicators do exist but a considerable variation in methods used and level of change achieved.
Cochrane: audit and feedback

Audit and feedback: effects on professional practice and health care outcomes. (Review)

- Review of Cochrane collaboration
  7 databases with inclusion of 140 studies

- Aim
  What are effects of implementation strategy “audit and feedback” in practice? Why can effects vary?

- Conclusion
  Audit and feedback can be effective and effects vary widely across the included studies.
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In practice

• Own research on Home Parenteral Nutrition:
  – **Quality indicator development**
    (1) **Literature review** on HPN guidelines to identify important interventions in process of care\(^1\)
    (2) **Expert opinion** on guidelines found in literature in collaboration with ESPEN-HAN and CIF working group. \(^2\)
  – **Field test:** are the developed interventions followed up in practice? (multicenter study with 13 hospitals in Belgium)
  – **Opportunity for improvement?**

Practical tips to start

• Take into account:
  – 6 dimensions of health care: Safe, effective, patient-centered, timely, efficient, equitable
  – 3 extra dimensions to avoid: misuse, overuse, underuse

• Use quality indicators with SPO structure

• Ensure the quality indicator is valid

• Do not re-create quality indicators. If they are available, use them.
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