A KPI Framework for Process-Based Benchmarking of Hospital Information Systems

Oral presentation at MIE 2011

Franziska Jahn, Alfred Winter
Oslo, 2011-08-31
Background: HIS Benchmarking

- HIS-Benchmarking: continuous process of measuring HIS performance, HIS-related services and processes against the toughest hospitals or those recognized as leaders in order to find best practices

 based on [Camp 1994])

Hospital CIO

Is our HIS too expensive?

How standardized are our IT service processes?

Does our EPR provide as many functionalities as others?

Do we support processes adequately?
Problems and Aim

- Problem with current HIS benchmarking approaches
  - based on financial and structural key performance indicators (KPI) (e.g. „IT cost per bed“ or „number of PCs“?)
    - no link to hospital’s strategic goals or core processes
  - Based on surveys among CIOs → bias

- Aim:
  - Method to answer the question:
    How well does the HIS support hospital processes?
    → involvement of users needed
Framework Part 1: A general documentation process model

- Based on process models of typical documentation processes in hospitals (order management, writing discharge letters)
Framework Part 2: KPI for processes

<table>
<thead>
<tr>
<th>Process Outcome</th>
<th>Process Flow</th>
<th>Underlying structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 8 criteria, e.g.:</td>
<td>• subcriteria, e.g.:</td>
<td>• subcriteria, e.g.:</td>
</tr>
<tr>
<td>– Time needed for process per day</td>
<td>– Time for process steps</td>
<td>– application systems used</td>
</tr>
<tr>
<td>– User satisfaction</td>
<td>– User satisfaction with process steps</td>
<td>– Functionality of application systems</td>
</tr>
<tr>
<td>– Timeliness</td>
<td></td>
<td>– organizational unit</td>
</tr>
</tbody>
</table>

e.g. (Hübner-Bloder et al. 2009), (Dugas et al. 2008)
Applying the process model and the KPI to „discharge letter writing“

- **Time needed for process** (by doctors/d)
- **User satisfaction** during process steps
  - use of different application systems
  - reasons for dissatisfaction
- **Timeliness**: Time between discharge of a patient and the discharge letter leaving the hospital?

$\Delta t_a$  $\Delta t_b$  $\Delta t_c$  $\Delta t_d$

$t_{\text{start}}$  $t_{\text{end}}$

- Online User Survey
- Routine data

**Online User Survey**

- Information demand arises
- Collecting information
- Dictating/composing the document
- Completing/correcting the document
- Signing the document
- Transmitting the document
- Document received

**Routine data**

**Online User Survey**

**Routine data**
Case Study at 2 hospitals: 
Results of the user survey

- N=103, physicians of different disciplines
- spend about 3 h/d with discharge letter writing (approx. 1/3 regular working day)
- more than 60% at both hospitals are dissatisfied with IT support for writing discharge letters
  - No significant difference between 2 hospitals, but between users of 3 different application systems within 1 hospital
  - strong criticism: ways of inserting findings

<table>
<thead>
<tr>
<th>Inserting findings</th>
<th>Hospital 1</th>
<th>Hospital 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>„Copy and Paste“</td>
<td>31%</td>
<td>44%</td>
</tr>
<tr>
<td>„automated insertion“</td>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>„Typewriting“</td>
<td>38%</td>
<td>23%</td>
</tr>
</tbody>
</table>
Discussion & Conclusion

• General process model can serve as reference model for comparing a process at two different hospitals

• Initial effort for establishing a HIS benchmarking as well as “maintenance effort” quite high
  → routine data from application systems often not available
  → Project initiated after board decision to benchmark processes; remaining challenge: integrating benchmarking into a continuous strategic IT management process
Thank you for listening!

Acknowledgements:
Thanks to mwmKIS working group of GMDS, D. May, R. Schulz, P. Lippolt, R. Waschipky…

Some Literature:

