Oral Presentation

What makes an Information System more preferable for clinicians?

A qualitative comparison of two systems

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Previous studies:

- Clinicians’ preference is a very important factor in adopting and using IT systems in clinical environments.
- Two interrelated determinant issues are being discussed in the literature as sources of this preference: System Design and Implementation.
Most of the successful implementation and use of decision support systems have been from those institutions that developed their own systems.

- But, what is the relation between clinician preference and system design?
- Can we find a design methodology which is more preferable by clinicians?
STUDY OBJECTIVES

Aim: study two different medication systems (system 1 was not appreciated but system 2 was appreciated and fully used) to understand the characteristics with design which plays important role in system preference by clinicians

Objectives:

• What characteristic with 2\textsuperscript{nd} system design made it more preferable to clinicians?

• What lessons can we learn?
METHODS 1

- **Location:** Adult Hematology /Oncology departments of EMC (1237-bed Tertiary Academic Hospital, Rotterdam, The Netherlands)
EVENTS TIMELINE

Paper-based system

2004 EVS

2005

2006

2007 Kuren

2008

Semi-structured interviews: 2 physicians, 2 nurses, and the project leader
Focus on characteristics that support or do not support clinicians’ work

Semi-structured interviews: 4 physicians, 2 nurses, and the project leader
Focus on characteristics that made Kuren more suitable for clinicians’ work
Our data analysis revealed 13 reasons for Kuren preference that could be traced back to 3 differences in the SDLC of the systems

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<th>System design differences</th>
<th>Specific reasons on Kuren preference</th>
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<tr>
<td>Proximity of development site to implementation site</td>
<td>▪ Quick and easy communication of feedbacks from system users to system developers</td>
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<td>User requirement driven design</td>
<td>▪ Reduced workload of clinicians (they did not have to fill in many forms and there was less double work)</td>
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<td>▪ Easy to use (e.g., navigation through the system was considered easy)</td>
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<td>▪ Flexibility (e.g., it was easy to perform changes to patient’s already planned care)</td>
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<td>▪ Reduced possibility of mistakes in clinicians’ work (the system did exact and accurate dose calculation based on patients biometric indexes)</td>
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<td>▪ Easy to find different pieces of patient information in the system</td>
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<td>▪ Offering general overview of patient care (the general scheme of patient care was represented in one screen)</td>
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<td>▪ Ability to link different pieces of patient information together (in a time related pattern)</td>
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<td>▪ Providing decision support aid (providing information for clinicians on how to fulfill a step in a care process based on standard care protocols)</td>
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<td>Process oriented design</td>
<td>▪ Support applying standard care protocols (physicians could choose a standard care protocol to follow or built their own protocols by combining different standard protocols)</td>
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<td>▪ Support an overview of patient care (by connecting current patient care to past care as well as planned care)</td>
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<td>▪ Support synchronization and coordination of the stakeholders where sequence of actions was important (e.g., through the system nurses knew which patients they should expect and what preparations they needed to do for patients before chemotherapy courses arrive at the day care center.)</td>
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<td>▪ Support communication between the different stakeholders (e.g., the system provided biometric indexes measured by physicians to pharmacists in case they needed to double check the doses.)</td>
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RESULTS 2

1. Proximity of development site to implementation site
   • Onsite development of system shortens SDLC and make it more efficient

2. Requirement driven design
   • More than user involvement in complex and multi-disciplinary process
   • Onsite development: accurate and detail feedbacks

3. Process-oriented design
   • Support using protocols
   • Connect different episodes of patient care and offering a big picture of patient care
   • Improve communication between involved parties
   • Support synchronizing and coordination between stakeholders
DISCUSSION

• Kuren could support the complex chemotherapy process and managed its user requirements better

• Thorough understanding (especially if the process is a multidisciplinary one) will only develop gradually and through a close collaboration between system users and its developers.
Thank you

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BACKGROUND 2

• In Theory:
  • Well designed system + Problematic implementation → Failure
  • Problematic design + Good implementation → Failure

• In Practice: In a sociotechnical environment of healthcare
  • Well designed system + problematic implementation → Success with cost of system under use
  • Problematic design + Good implementation → Success with cost of workaround propagation