A Qualitative Analysis of Prescription Activity and Alert Usage in a Computerized Physician Order Entry System

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Introduction

- Usability of Computerized Physician Order Entry Systems (CPOE)
- Impact of medical alerts on prescription behaviour
- Medical alerts: drug interaction, double prescription, dosage, etc.
- Low compliance rate to alerts (49 – 96 % of alerts are overridden) [van der Sijs et al., 2006]
Study’s aim

• Place of research:
  • University Hospitals of Geneva with in-house developed HIS with CPOE
  • Non interrupting medical alerts

• Need for qualitative data
  • Study in real work context
  • How they are integrated in the physician’s work process?
  • Why they are ignored?
Method

Semi-directed interviews
deputy heads of division
N = 5

Work analysis
contextual inquiry
2 divisions: cardiology and paediatric surgery

Interviews
critical incident
2 divisions
N = 6

Transcription and task analysis (MAD)

Development and test of alert system prototype
Results: Preliminary study and work analysis

- Preliminary study with deputy head of divisions:
  - Positive view on alerts (good means to provide decision support)
  - How to display the growing number of alerts on a small screen?
  - Quality control of alerts (alerts can expire)
  - Apprehension: negative effect on novice physicians’ education

- Work analysis
  - Decision making is made in group (during day shifts)
  - Prescription entry is delegated and done after medical decision making. What impact do alert systems have?
Results: Interviews with actual users

- Only 1 out of 6 interviewed participants could recall a situation where a medical alert changed their prescription behaviour
- Routine prescriptions: medical alerts are ignored (not perceived)
- Medical alerts are regarded as “insurance” for rarely prescribed drugs
- Limited mental representation what the system is testing “You have to ask the programmers of the system.”
Displayed Alerts = Interpreted Alerts =Handled Alerts
Discussion (cont.)

Perceived Alert

Do I need additional information?

Interpreted Alert

Information useful for context?

Handled Alert

I act accordingly
Discussion and future directions

• Discussion
  • Physicians actively search for information (useful alerts)
  • Support physicians in this process on an interface level

• Approach
  • Display all alerts in a unified and centralized way
  • Show them in shortest form possible
  • Provide further details when required (based on Rasmussen’s decision ladder)

• Future directions
  • Currently: development of an alert system prototype
  • Testing of prototype with usability tests and eye tracker

• Limitation
  • 1 hospital, 2 departments
Questions?
Task analysis