Evaluating Inter-Professional Work Support by a Computerized Physician Order Entry (CPOE) System

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MIE2008; Göteborg, Sweden
May 26, 2008
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1. Background & objective
2. Study context & methods
3. Results
4. Discussion & conclusion
Background

- Potential of CPOE to prevent medical errors
  (Bates et al.; JAMIA. 1999)

- Difficult Implementation
  (Aarts et al.; Methods Inf Med. 2006)

- Linear, sequential, and unidirectional model of care processes
  (Goorman & Berg; Nurs Inq, 2000)
  (Gorman et al.; Methods Inf Med, 2003)
Objectives

- To analyze the workflow model underlying a CPOE system vs. real life workflow in the medication process
- To examine the role of the system in integrating the work of one professional group with that of others
- To identify supported areas & problematic areas in inter-professional workflow
Study Context (1/2)

Erasmus University Medical Center

- A 1237-bed, academic hospital, Rotterdam, The Netherlands
- A CPOE system (*Medicatie/EVS®*), implemented in 2001
The medication ordering and administration process after the CPOE implementation; MO-label (Medication Order-label); NS (Non Stock)
Methods (1/2) (Data Collection)

- Semi-structured interviews with key informant users (n=23);
  - >20 months
    - Physicians (n=8)
    - Nurses (n=12)
      - Pharmacists (n=2) and one pharmacy technician
- Observation (informal)
- Documents used in the medication process
  - Handwritten records (e.g., Medication administration records)
  - Computerized printouts (e.g., MO-labels & current medication overviews)
Methods (2/2) (Data analysis)

- 3 professional groups
- 3 conceptual themes

A conceptual model for workflow
Results (1/3)

- Division of labour
  - Strict levels of authorization
    - No more questioning nurses for medication changes
    - Reallocating areas of expertise, e.g., physicians decided on the details of orders
Results (2/3)

- Flow of Information
  - **Improved** flow of information
e.g., physicians to nurses and to the pharmacy
  - **Extra effort** to ensure an accurate information flow
  - **Inadequate** flow of information
e.g., from nurses to physicians
  - **Fragmentation** of information
e.g., in the paper-based and the electronic records
Results (3/3)

- **Task Coordination**
  - **Positive effects** (e.g., remarks on the MO-labels):
    - To nurses (e.g., to check drug allergy first)
    - To pharmacists (e.g., why a medication is chosen)
  - **Not enough; additional methods of communication**:
    - Face-to-face communication
    - Phone calls
Discussion

- CPOE as double-edged sword

- Overlooking the overlaps between professional domains; with physician dominancy

- Linear, stepwise and unidirectional ‘flow of information’ and ‘task performance’
Conclusion

CPOE systems should properly integrate all professional groups’ tasks, information, and areas of expertise into those of physicians.
Thanks for your attention!