Clinical Simulation & Workflow by Use of Two Clinical Information Systems

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Paper Session: Modeling and Simulation

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Agenda

- Background & thesis
- Purpose with clinical simulation
- Context
  - From analogue to digital dictation
  - Unintended clinical consequences
  - Integration from digital dictation to the EHR
- Simulation
  - Preparations & set-up
  - Results and lessons learned
- Next step - status right now
Background – project and test

- Test of CIS in the IT Experimentarium before implementation in the Capital Region
- Does the new clinical information system (CIS) support clinician workflows? Are there divergence between clinical needs and the available solution?
- Conducting the simulations might enable us to improve the new solution before implementation
- Increasing number of unintended clinical incidents by use of digital dictation due to implementation of new CIS?
The purposes of performing clinical simulations in the IT Experimentarium are:

• to evaluate workflow and functionality of the solution in realistic, clinical environment
• and uncover any necessary needs for further development of the integration

Incorporated in our project model - mandatory
Targets of the simulations

• Does the solution with integration support the clinical workflow?
• Is the functionality in the solution sufficient?
• Do the users obtain improved effectiveness or better quality, e.g. improved patient safety
• Use of the integration as input to education materials provided for future implementation of this solution
Context

From analogue to digital dictation

Unintended clinical consequences

Simulation of the integration from digital dictation to the EHR
Analogue dictation

- poor sound quality
- lost tapes
- no visible identification of the patient on the tape
- only spoken identification
- the records on the tapes are not saved after transcription (tapes are re-used)
- one tape is used for one patient, but re-use of the same tape to another patient might result in parts of the former record persisting on the tape
Digital dictation

- improved sound quality
- both spoken identification
- ‘label’ with the patient’s unique identity number and file number
- the dictate (audio file) is available from a server
- it is now possible to trace errors like wrong identification of the patient
Unintended clinical consequences

Nevertheless still a lot of unintended clinical consequences has occurred, e.g.:

• incorrect relation between the patient’s unique identity number, and the patient
• some journal entries (dictations) were written in another patient’s record

Might the increasing numbers of reported unintended clinical consequences be related to this matter? - or to (new) registration praxis of unintended clinical incidents?
Digital dictation – stand-alone

Stand-alone is used for a number of years

Double registration – in contrary to integration with the EHR:

• separate log-in to the dictation application and the EHR
• some data has to be entered manually into both systems
• Time-consuming tasks
Integration digital dictation - EHR

Automatic log-in to the digital dictation from a button in the EHR
Integration digital dictation - EHR

Use of the new solution links the specific record to the correct patient in the correct ward.

*We expect a reduction of unintended clinical consequences.*

Due to new workflow dictations might be placed on a department other than where the patient is registered.

*We might also register some new unintended clinical consequences by introducing a new solution.*
Simulation in the ITX - preparations

- Installation and test of the new application on the laptops and network at ITX
- Detailed scenarios are planned, containing purposes and instructions for each role
- Relevant clinicians to participate are invited
  - Accurate preparations are crucial to prevent unnecessary waste of valuable time for the clinicians
- Rehearsal with the technical setup is therefore performed in advance to the simulations
The IT Experimentarium (ITX)

- **Ward room**
- **Observation room**
- **Control room**
- **Bed**
- **Table**
Roles at simulation in the ITX

- **Test director** – placed in the control room
- **Test coordinator** – in the simulation/ward room (with intercom to test director)
- **Test participants “clinicians”** – in the ward room
- **Observers** – in the ward room and the observation room
- **Figurant “patient”** – in the bed (with intercom to test director)
- **Patient safety specialist** – in the ward room
Two scenarios conducted

1. In the first scenario, a doctor records a dictation during his hospital round, and is followed by transcription of the dictation to a journal entry in the EHR by a medical secretary.

2. In the second scenario, the doctor summarizes a post-operative course, and becomes aware of an error in the journal entry from the previous day, which he will correct, when he starts the dictation of the note and the epicrisis. Afterwards, a medical secretary corrects the journal entry, and transcribes the epicrisis.

Planned interruptions from the “patients” are used to pursue similar, everyday situations in the clinic.
Results of the simulations

1. The EHR locks during use of the integration of digital dictation, thus making it impossible to use the EHR or connected applications during digital dictation. Potentially, it will not only constrain the workflow for the doctor, but even jeopardize patient safety.

2. The simulations showed that the solution does not support the clinical workflow for the doctors.

3. The workflow is easier and time-saving.

4. The integration: easy to learn, easy use.
Lessons learned

- **Discrepancy between the needs of the clinicians and the solution description,**
  - Some reasons are that the project has been delayed
  - Replacement of project managers with loss of information, and not sufficient attention to the specification requirement and solution description.

- **Functional tests on the delivered application prior to the simulations, has not visualized the critical issue in the application**

- **Conducting the simulations enabled us to improve the solution before implementation.**
Status right now

• The necessary changes are developed
• The new version has been implemented in two departments
• The integration does support the workflow, and the doctors can easily change between the applications in the EHR and between the digital dictation and the EHR during dictation
• The solution is now ready to be implemented in the hospitals in the Capital Region of Denmark (almost 6500 doctors)
Thank you

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Visit the website for the IT Experimentarium:

http://www.regionh.dk/topmenu/omRegionH/denAdministrativeRegion/Koncern+IT/ITX.htm