An ICU Clinical Information System – clinicians’ expectations and perceptions of its impact

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The Intensive Care Unit (ICU)

- Most critically ill patients in the hospital
- Critical decisions made daily
- Information intensive environment
  - Hourly observations
  - Daily blood tests
  - Daily imaging examinations

Current state of play in NSW
“The paper chart is a relic of the Bronze Age and must be replaced by an integrated CIS and EMR”

Varon & Marik 2002, Current Opinion in Critical Care
The ICU and ICT

- Information and Communication Technologies (ICT) can assist in information management and organisation.
- Clinical Information Systems (CISs) can have a significant impact:
  - Workload of ICU clinicians
  - Efficiency
  - Error reduction
  - Quality of care.
And $6.3m will be spent in the current financial year on clinical information systems for state hospital intensive care units, with a total $43m available to complete the task by 2014.
Study aims

- To investigate clinicians’ perceptions on how a new Clinical Information System (CIS) will impact work practices in Australian ICUs and understand how such views correlate with anticipated benefits and existing evidence.
- To establish baseline descriptive data against which future CIS implementations could be measured.
Research Methods

- Study design: one-on-one semi-structured interviews
- Study sites: 3 metropolitan ICUs
- Participants: purposive sampling
  - ICU doctors (n=33)
  - ICU nurses (n=33)
- Data analysis: thematic analysis
Potential impacts of a CIS on the ICU

- Information access
- Information presentation
- Communication
- Time
- Work processes
- Patient care
Information Access, Presentation and Communication

- Improved information access
  - Legibility
  - Less lost information
  - 24h data access
  - Bedside information
- Presentation of information
  - Concerns
  - Diagrams and pictures
- Improved communication
Time

- Typing vs writing
- Improved efficiencies
  - Bedside information
  - Reduced duplication
  - Less information searching
- Simultaneous access by multiple clinicians

“I don’t have to spend time running around…searching for all this whereas, you know, I’ve got everything I want on a computer and I can do it faster.” Junior doctor
Work Processes

- Computer-based handover vs bedside handover
- Positive impact on ward rounds
  - Less disrupted
  - Focussed
- “when you actually leave the patient, you’ve done your job”
## Patient Care

### Negative perceptions
- Distract from patient care
- Tendency to look at “numbers” before the patient
  - “there may be a tendency that people actually just look at the numbers on the computer and make decisions rather than go and examine patients”
- Infection control issues

### Positive perceptions
- Improved safety
- Potentials with decision support
- Information accurate and easily traceable
  - “there’s accountability, there’s a paper trail for every drug dose”
- Real-time decision making
- Infection control issues
Challenges

- System implementation will be challenging

- “there’s always going to be a transition phase and any system with its implementation is going to have people who support it and people who like the good old days when those things weren’t around.”

- Importance of training

- Computer literacy
## What about the evidence?

<table>
<thead>
<tr>
<th>Theme</th>
<th>Evidence</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information access</td>
<td>✓ Improved info access as legibility &amp; familiarity increase</td>
<td>Popernack 2006</td>
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<tr>
<td>Communication</td>
<td>✓ Improved awareness of clinicians’ activities and collaboration</td>
<td>Reddy 2008</td>
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<tr>
<td></td>
<td>✗ Negative change to inter-disciplinary communication</td>
<td>Popernack 2006</td>
</tr>
<tr>
<td>Time</td>
<td>➢ Time changes spent documenting inconsistent</td>
<td>Mador et al 2009</td>
</tr>
<tr>
<td></td>
<td>✓ Improved efficiencies in some areas</td>
<td>Popernack 2006</td>
</tr>
<tr>
<td></td>
<td>✓ Multiple access from different locations helpful</td>
<td></td>
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<tr>
<td>Work processes</td>
<td>➢ Positive and negative changes to work processes</td>
<td>Lapointe 2006</td>
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<td></td>
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<td>Cheng 2003</td>
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<td>Reddy 2008</td>
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<tr>
<td>Patient care</td>
<td>✓ Electronic prescribing shown to reduce medication errors in the ICU</td>
<td>Warrick 2011</td>
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<td>➢ Time in direct patient care with CIS has shown inconsistent results</td>
<td>van Rosse 2009</td>
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<td>Mador et al 2009</td>
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“it [CIS] does improve the quality, accuracy, timely capture, and recall of clinical information” Varon 2002
In conclusion

- Identification of work practice changes required following implementation
- Australian baseline data on clinicians’ perceptions
- Data can inform CIS implementers
- Requirement for robust quantitative studies
  - Patient care
  - Clinician’s time
  - Work processes
Thank you!

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