



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

Never Stand Still

Medicine

Centre for Health Systems and Safety Research

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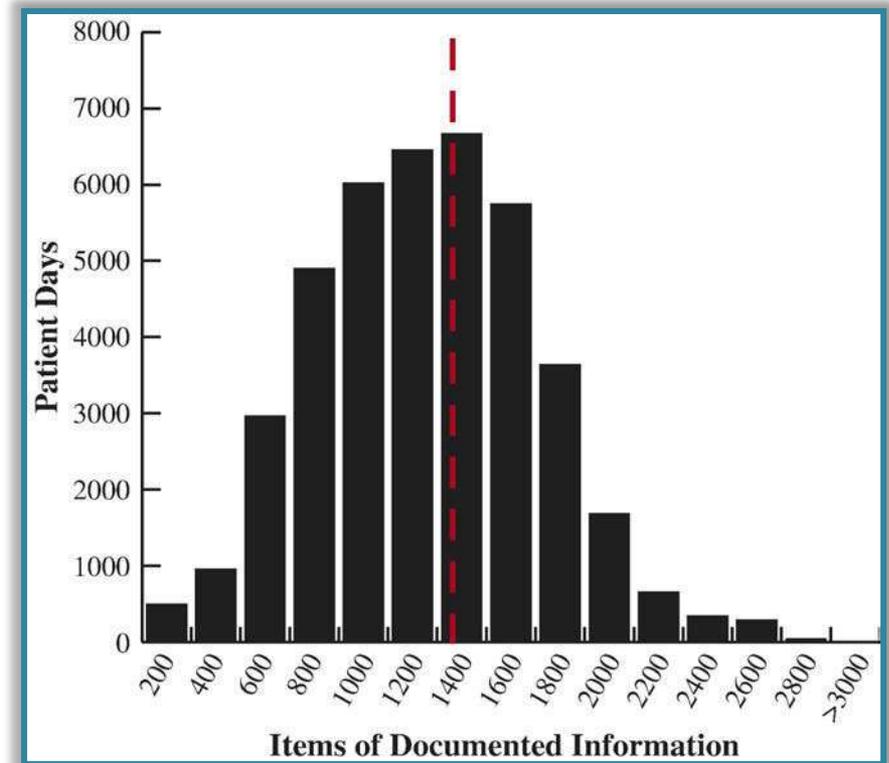
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The Intensive Care Unit (ICU)

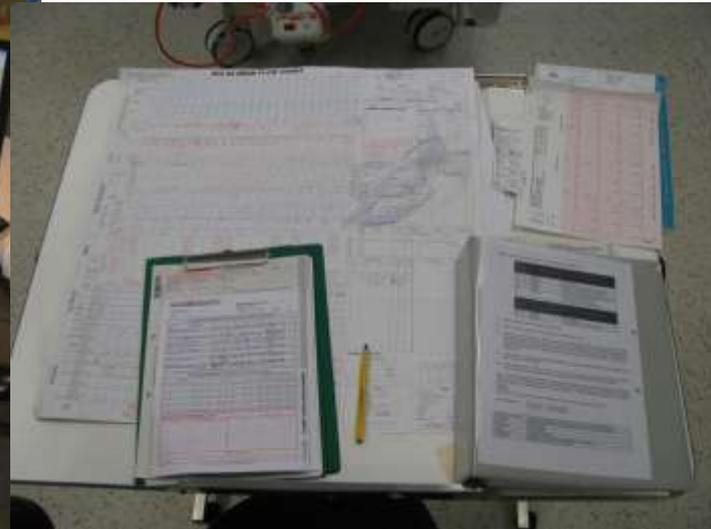
- ◆ Most critically ill patients in the hospital
- ◆ Critical decisions made daily
- ◆ Information intensive environment
 - ◆ Hourly observations
 - ◆ Daily blood tests
 - ◆ Daily imaging examinations



Manor-Shulman O, Beyene J, Frndova H, et al. *J Crit Care* 2008;23:245-250



Current state of play in NSW



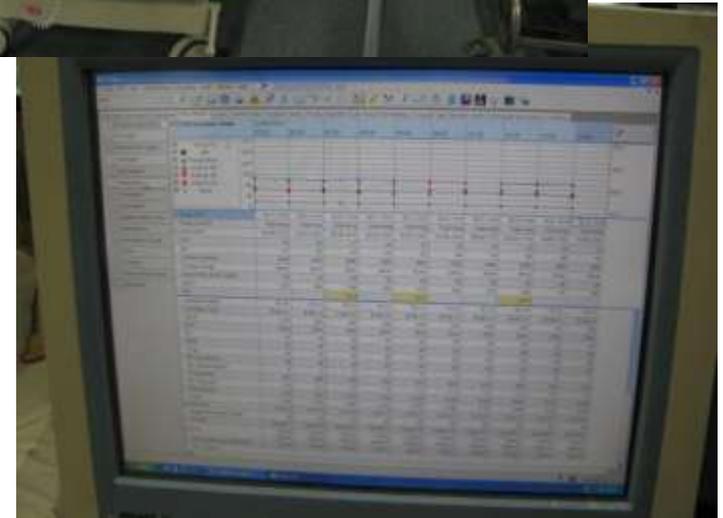
“The paper chart is a relic of the Bronze Age and must be replaced by an integrated CIS and EMR”

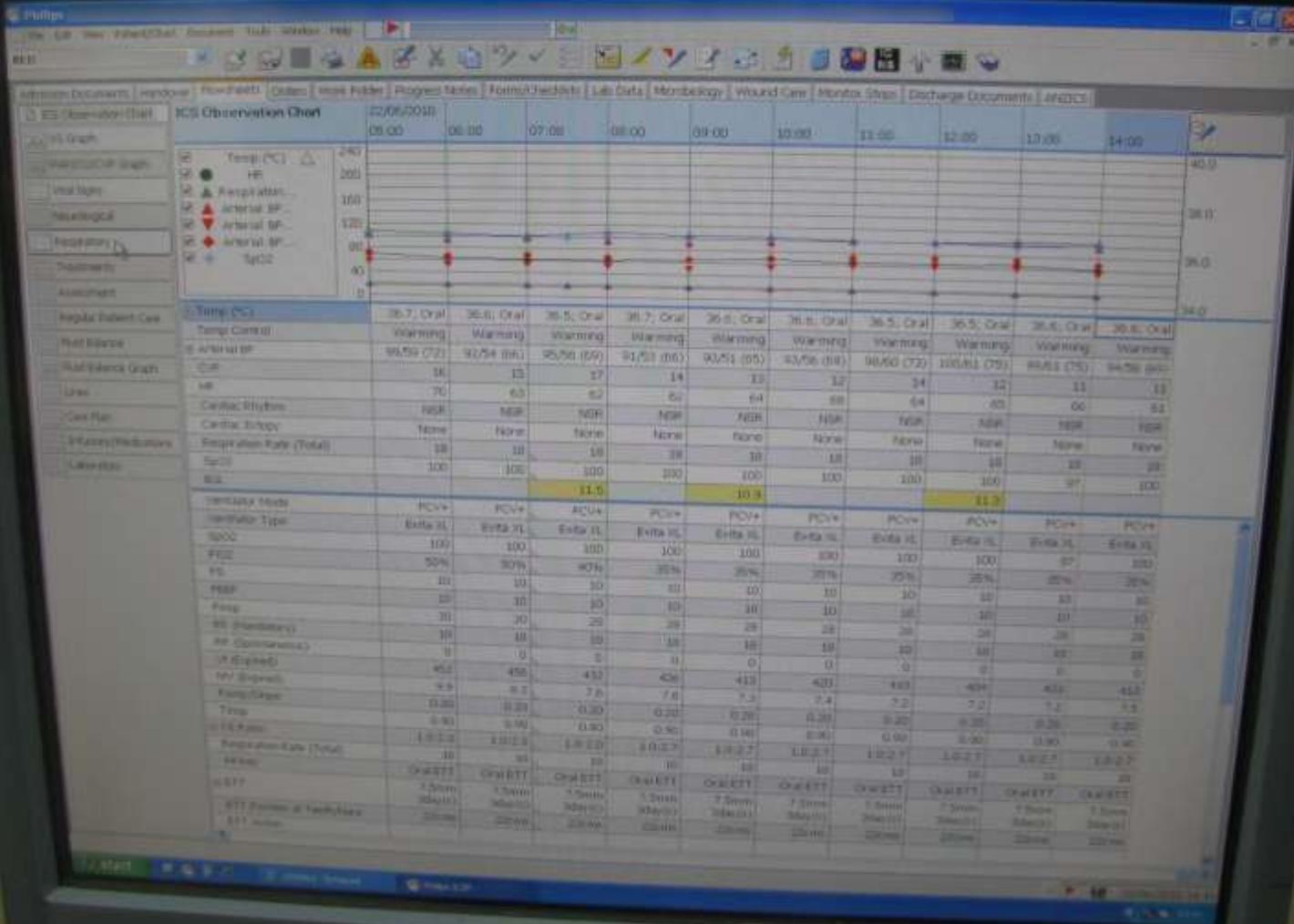
Varon & Marik 2002, Current Opinion in Critical Care



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.





The Australian

NSW Health gets \$115m IT funding

- by: Karen Deane
- From: Australian IT
- September 06, 2011 5:25PM



NSW has allocated millions of dollars for health IT upgrades.

Source: Supplied

THE NSW government has committed \$115 million to health IT spending this year, with \$37m earmarked for the start of five new projects.

The headline figure is \$171m for the introduction of a statewide electronic medication management system, but the project will run over nine years to 2020 and \$11m has been allocated in the first year.

More than \$85m has been set aside to roll out an electronic medical record system to clinical specialists by 2018, with only \$5m on the table this year.

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.

Meanwhile, \$12m will pay for critical ICT infrastructure upgrades this year out of \$47m budgeted until 2015.

Around \$3m will be spent on new corporate systems out of \$49m allocated until 2014.

A further \$73m will be spent this year on existing projects running for varying periods until 2016.

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.

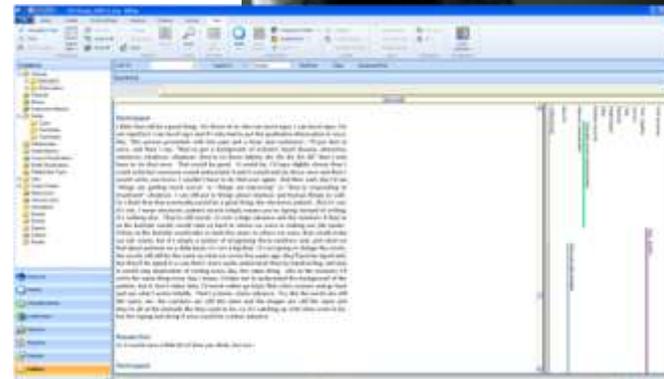


Study aims

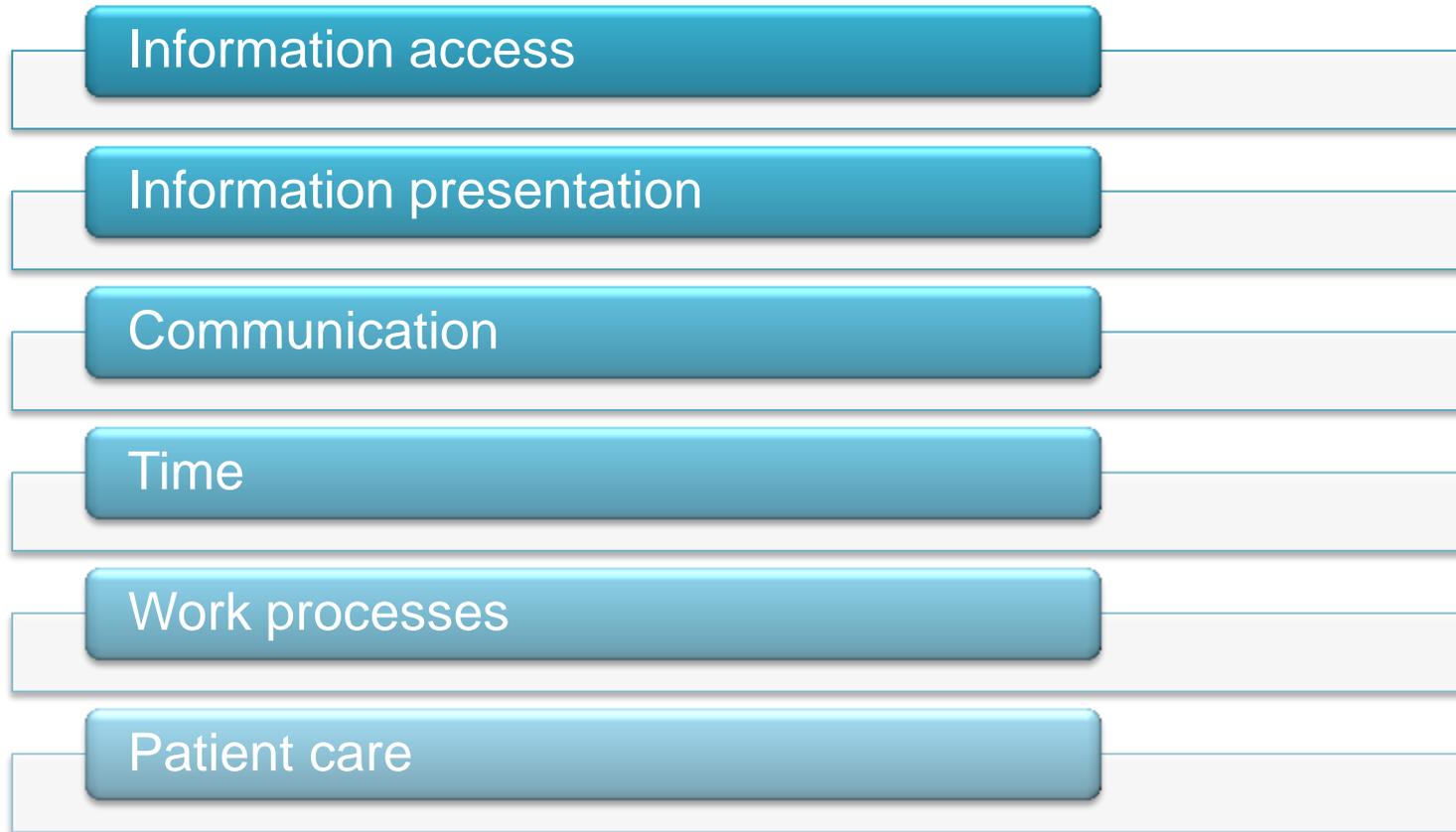
- ◆ To investigate clinicians' perceptions on how a new Clinical Information System (CIS) will impact work practices in Australian ICUs and understand how such views correlate with anticipated benefits and existing evidence.
- ◆ To establish baseline descriptive data against which future CIS implementations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

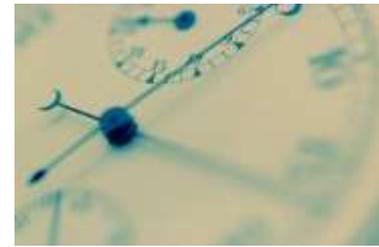


Information Access, Presentation and Communication

- ◆ 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?

Theme	Evidence	Reference
Information access	✓ Improved info access as legibility & familiarity increase	Popernack 2006
Communication	✓ Improved awareness of clinicians' activities and collaboration	Reddy 2008
	✗ Negative change to inter-disciplinary communication	Popernack 2006
Time	➤ Time changes spent documenting inconsistent	Mador et al 2009
	✓ Improved efficiencies in some areas	Popernack 2006
	✓ Multiple access from different locations helpful	
Work processes	➤ Positive and negative changes to work processes	Lapointe 2006
		Cheng 2003
		Reddy 2008
Patient care	✓ Electronic prescribing shown to reduce medication errors in the ICU	Warrick 2011
		van Rosse 2009
	➤ Time in direct patient care with CIS has shown inconsistent results	Mador et al 2009

“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!

- ◆ All the ICU clinicians who participated in the study
- ◆ Funding - ARC linkage grant in partnership with a local Area Health Service (LP0989144)



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