



The challenges of using technology in a busy Emergency Department: a case study of a next generation ED management information system

Julie Li; Dr. Joanne Callen; Dr. Andrew Georgiou; Prof.
Johanna Westbrook
Health Informatics Research and Evaluation Unit, Faculty of

Health Sciences, the University of Sydney



Background

- Potential of ICT to improve delivery of care
- Uptake of information systems low despite purported benefits
- Staff resistance cited as key barrier to organisational adoption of new technology



Cerner Millennium

- Commercially-available package of healthcare information solutions developed in the US
- To be rolled out state-wide in NSW
- No studies of system impact in the context within which care is being delivered



Aim

To explore the general functionalities of an ED management information system and the impacts of its recent implementation as perceived by ED doctors and nurses at one hospital



The Study

- Case study approach
- 650-bed Australian metropolitan public teaching hospital
- 20 interviews
- 11 doctors
- 7 nurses
- 2 non-participant observations
- FirstNet in place for less than three months prior to the date of study
- Replaced the Emergency Department Information System (EDIS)



Results - FirstNet

- ED information system designed for management of department
- Provides view of patient status and location within the ED.
- Tracking of patient movement
- Audit trail of all activities undertaken within the electronic patient record



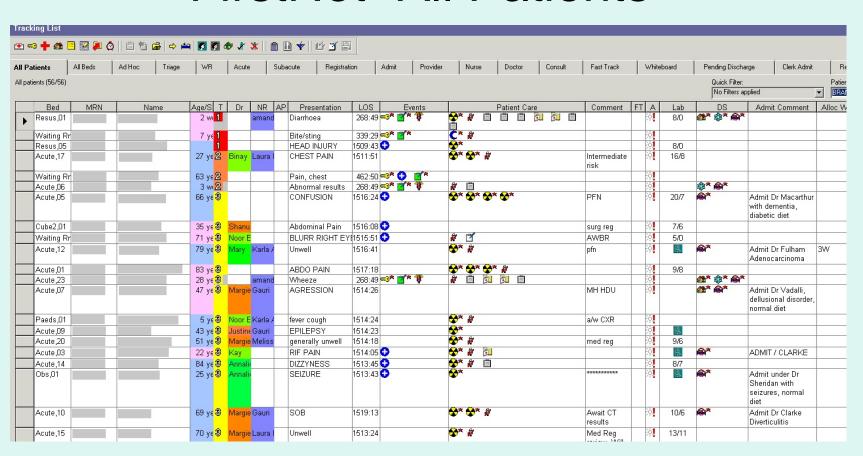
Results - FirstNet

- Triage
- Waiting Room
- Admit
- All Beds
- Provider
- Nurse

- Doctor
- Consult
- All Patients
- Subacute
- Acute
- Whiteboard



FirstNet "All Patients"





Clinician perceptions

 Complexity of system decreased workflow efficiency by increasing administrative workload of clinicians ...to allocate [a] patient to me I need to go into the Nurse button on the screen. I need to do "Protocol Commenced", I need to cancel the doctor examination and cancel the nursing examination before I can take the patient from the doctor waiting list & allocate them to myself...I actually have to go through four steps before I can allocate a patient to myself before I can go and see them... it's not, particularly user friendly - it's made a process much more complicated than it's meant to be...[ED transitional nurse practitioner]



Perceptions Cont'd

 Integration of clerical and clinical features advantageous for clerical staff but redundant for clinicians ...the concept's good but it just needs to be done better...we just need something simple... [there are] a lot of features that people don't use and that makes the system very complicated like all these columns I don't even know what they are (refers to view of FirstNet on laptop)...there's about ...20 columns on the screen and no one knows what they are, no one uses them...[ED Physician]



Perceptions Cont'd

 Security and activity tracking features for increased provider accountability and patient safety resulted in process duplication and redundancy ...it's very
cumbersome...you have
to fill in multiple different
fields and sign your
signature multiple times
and there's doubling up...
[ED physician]



Perceptions Cont'd

- "Turning doctors into typists"
- Less time spent with patient due to increased time spent interacting with computer
- Sharing of patient information between systems negated need to access multiple systems for a complete patient profile
- Improved patient tracking



Implications

- Context of care delivery not reflected in system design
- Need for sociotechnical approach to systems design and implementation
 - Focus on the interrelation between technology and its social environment (Berg et al., 2003)
- Increased focus tracking of service utilisation and quality of care indicators, provider accountability and security



Conclusions

- Sociotechnical approach to system design calls for clinician participation in system customisation
- Balance between security and accountability features with usability



Questions?