What factors determine the use of an electronic test result acknowledgement system?
- A qualitative study across two EDs

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Outline

1. Why electronic test results acknowledgement?
2. What we did – cross-sectional qualitative study
3. What we found
4. What it all means
5. Conclusion
Why Electronic Test Result Acknowledgement?

• The rate of missed test results
  – 1% to 75% for ambulatory patients
  – 20% to 62% for hospitalised patients (Callen 2011a; Callen 2011b)

• Electronic medical record (eMR)-based test results management interventions hold potential to reduce errors (Dalal 2011; Hysong 2010; Schiff 2010)

• Unintended errors may result when systems cause deviation or reengineering of existing patterns of work and behaviour (Berg 1999)
Aim

To explore the role of contextual factors in influencing senior emergency physicians’ experience and perceived impacts of an electronic results acknowledgement (eRA) system across two demographically discordant Emergency Departments (EDs).
Methods

**DESIGN, SETTING, SAMPLE**

- Cross–sectional qualitative study
- EDs in two demographically discordant Sydney metropolitan teaching hospitals
- 14 interviews with senior emergency physicians

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<td>58,483</td>
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*All statistics reported over 2012-2013*
## Methods

**CERNER MESSAGE CENTRE**

- **Workflow management module**
- **Inbox containing documents & notifications requiring review**
Methods

CERNER MESSAGE CENTRE

- Endorse
- Refuse to endorse
- Handover information
- Follow-up actions
Interview questions regarding the results acknowledgement process before and after the implementation of the electronic results acknowledgement system

Question 1
i. How were microbiology results acknowledged prior to the implementation of the electronic RA system?
ii. How are microbiology results acknowledged now that you have an electronic RA system?

Question 2
i. How were radiology results acknowledged prior to the implementation of the electronic RA system?
ii. How are radiology results acknowledged now you have an electronic RA system?

Question 3
i. Have there been any problems with implementing the new RA system?
ii. Have work processes changed?
iii. Has workload changed? How? For whom?
iv. How have any issues which have arisen been addressed?

Question 4
i. What is your opinion of new system? What impact does it have on patient care and patient outcomes?
ii. Do you think it improves safety? How?
iii. Does the new system have the capacity for the doctor to document follow up procedures? If yes how, if no, where is follow-up documented? Explain further.

Question 5
i. Do you have any other comments regarding RA and the new system?
Results

Test Result Management

Utilisation

Workload and efficiency

Patient Safety Mechanisms

Documentation
# Utilisation

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**ED Interviews**

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<td>Deputy Director of ED¹</td>
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<td>Senior Emergency Physicians</td>
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*All statistics reported over 2012-2013

¹ In Australia, ED Directors (and Deputies) engage in direct patient care during clinical shifts

² The senior medical staff at Site 1 comprised largely of Career Medical Officers employed on a temporary basis. They did not engage in the eRA process.
Increased workload:

“we’ve very limited staff here with office time allocated to doing tasks…it’s a massive increase from what we were doing” Dr 1

Expedited work processes:

“I think the number of results we're looking at is the same. I think it is easier to do it this way than it was on the paper system and I tend to find it is more time efficient” Dr 1

“now it all comes up on the one screen so at least they're readily available. I don't have to scrounge around looking for faxes and filling paper in the machine … Sometimes you'd forget and then all of a sudden at 4 o'clock in the afternoon, all these results would suddenly be spat out … it's just quicker, it is definitely quicker” Dr 5
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| **Receipt of ALL abnormal results:**  
“I wasn’t in control of what was coming to me; I relied on someone else telling me…[now] I’m more certain that I’m getting access to abnormal results”  
Dr 1 | **Earlier detection of abnormal results:**  
“The main thing is that if there is something that we missed or a significant finding, we pick it up earlier… **follow up is happening on the day rather than a couple of days down the line**”  
Dr 12 |  
“I think in the past patients always got found and they always were given advice. It just may not have been so rapid…**it always used to be four or five days versus one or two days [now]**”  
Dr 2 |
Improved accountability and consistency of documentation:

“I think it's more consistent because it's easier to document the action and …everyone documents that in the same way… previously I might have put the faxed form with the faxed letter in the notes and for another person I might have added a progress note. So it wasn't consistent. But this one, there is a certain way to put a note in” Dr 12, Site 2

“It's like you can't just scribble and sign off - it used to be that people wouldn't be able to read someone's signature…You'd be like trying to guess which doctor it was. Whereas now it's there, you can easily catch up with that person and say you didn't do this or you didn't do that; and it's all there” Dr 5, Site 2
Staff mix and nature of existing work processes affect perceived impact of eRA

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<td>• eRA system resulted in the re-engineering of existing manual results acknowledgement process</td>
<td>• Impact of the same system on test acknowledgement workflow less disruptive</td>
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<td>• Labour requirements of the eRA system could not be supported by the existing staff mix of the department</td>
<td>• eRA process mirrored previous manual process</td>
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Implications

- Systems are designed to enable users to make them work, but conditions might not be conducive to do so (Sayer 2010)

- Context-related vulnerabilities could predispose clinicians or organisations to missed test results in highly computerised care settings, and interventions to reduce missed test results should recognise and target organisational factors (Menon 2014)
Conclusion

- Dynamic interaction between systems and the clinical settings in which the health IT systems are intended to be used

- Understanding factors that shape this interaction important in ensuring the systems are used in efficient and effective ways that contribute to quality patient care
Thank You

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References

References


