Can information technology improve test result follow-up?

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Background

• Failure to follow-up abnormal test results has the potential to compromise patient care (Murff et al. Int J Med Inf. 2003; Roy et al. Ann Intern Med, 2005)

• Management of test results is not systematic (Poon et al. Arch Intern Med 2004; Callen et al. J Am Med Inf Ass 2006)
Background

• Research has focused on the primary care setting \textit{(Marcus et al. Med Care 1998; Haas et al. J Gen Intern Med 2000)}

• Few studies in hospital settings – particularly Emergency Departments
ED studies follow-up of test results

• No documentation of follow-up for:
  – Serum lead levels 33%
  – Chlamydia cultures 74%
  – Urine pregnancy tests 59%
  
  (Greenes et al. Paed Emerg Care 2000)

• Proportion of ED biochemistry accessed:
  – 45% never accessed
  
  (Kilpatrick et al. BMJ 2001)
Aim of the study

• Explore the extent of the problem of non-endorsement of test results in the ED of a large metropolitan hospital
Research questions

• What is the average time between microbiology and radiology test ordering and clinician endorsement?
• What proportions of microbiology and radiology test results were not endorsed?
Methods

• Research setting
  - Emergency Department of 370 bed metropolitan public teaching hospital
  - 25,000 attendances per annum (68% discharged)
Clinical information context

- Computerised physician order entry system used to order and view all laboratory and radiology tests
Study design

• Prospective cohort design

• Endorsement of microbiology and radiology test results ordered for ED patients over a 5 day period in August 2007
Data collection

- Number and type of tests ordered
- Evidence of endorsement
- Review of medical records of all patients where discrepancy between test order list and test result
Results: Demographics

Microbiology results n=126
- Urine: 12%
- Blood: 22%
- Wound: 25%
- Other: 41%

Radiology test results n=240
- X-rays: 87%
- CT scans: 3%
- Ultrasounds: 10%
Time factor for microbiology

- Specimen collected
  average time = 11 hours
- Culture commenced
  average time = 2 days
- Report printed to ED

Average time between specimen collected & report printed = 2.5 days
(range: 1 hour – 8.5 days)
Time factor for radiology results

- Radiology examination
  average time = 1.5 days
- Report printed to ED
Endorsement of results

- Microbiology results
  - 2/126 (1.6%) not endorsed by a clinician (pre or post discharge)

- Radiology results
  - 2/240 (0.8%) not endorsed by a clinician (pre or post discharge)
  - 5/240 (2.1%) were endorsed post discharge (1-3 days)
Discussion

• Not all results are endorsed for ED patients who are discharged from the ED

• There is the potential for clinical implications of this failure to endorse
Conclusion

• An automated test management system provides an opportunity to improve the follow up of test results for ED clinicians

• On-line endorsement could close the patient safety gaps
Acknowledgement

• This research was undertaken with the support of an Australian Government Department of Health and Ageing, Quality Use of Pathology Program grant (2008-09)