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 *(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?
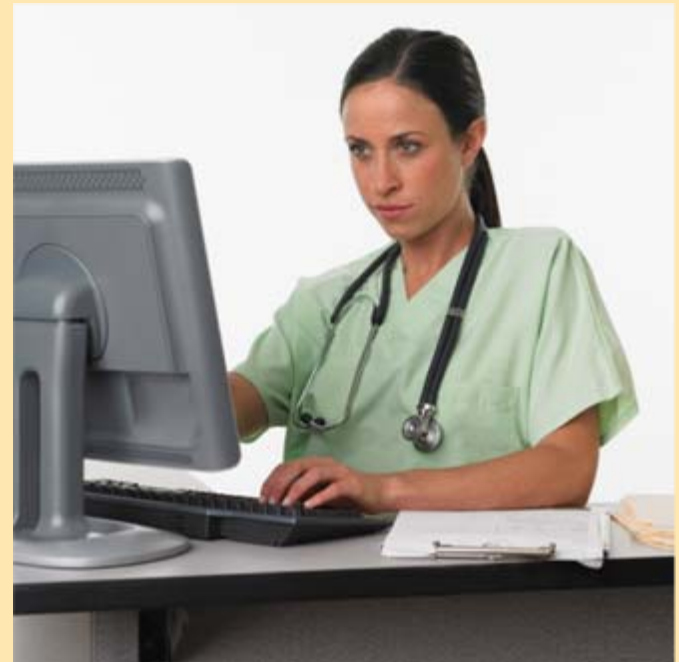
Methods

- **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
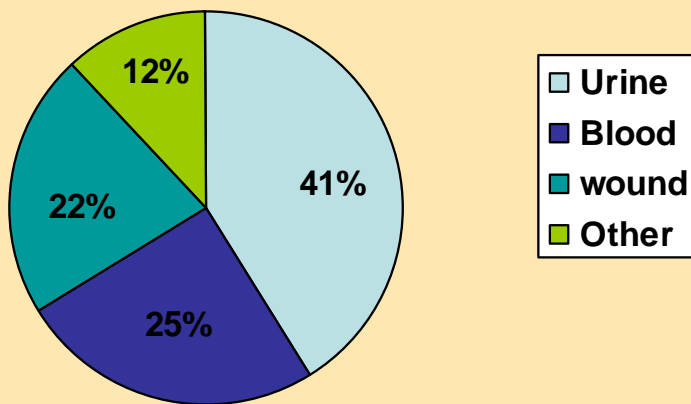
Data collection

- 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
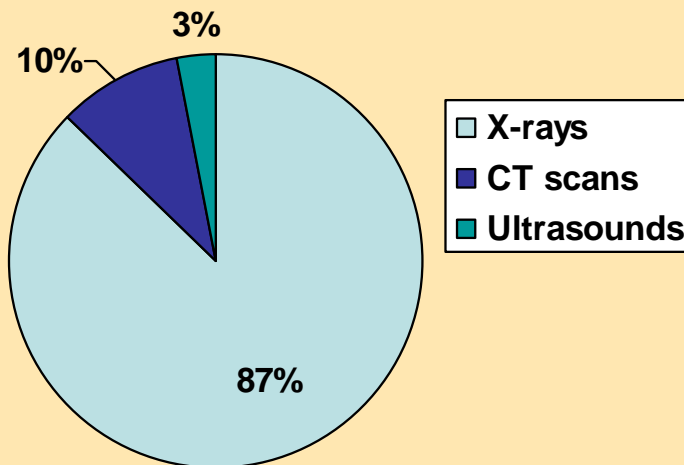
Results: Demographics

Microbiology results n=126

- Urine — 41%
- Blood — 25%
- wound — 22%
- Other — 12%

Radiology test results n=240

- X-rays — 87%
- CT scans — 10%
- Ultrasounds — 3%

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

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