



# ***Monitoring the impact of CPOE on healthcare delivery – a benefits realisation approach***

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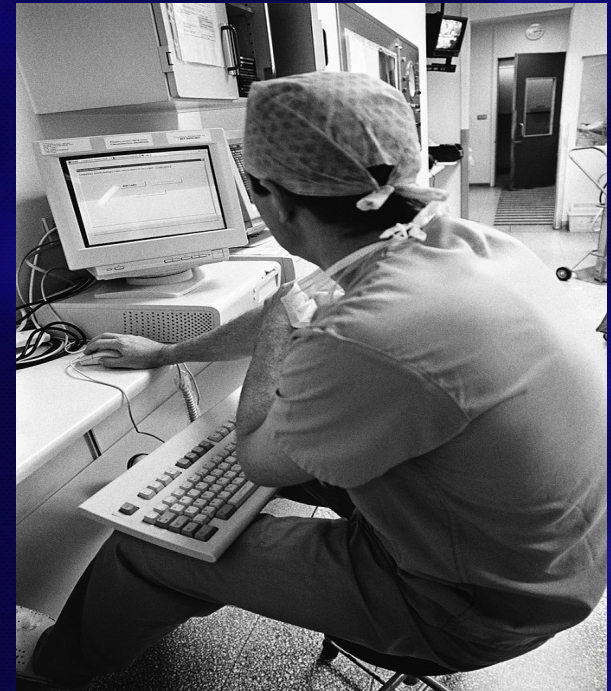
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& Evaluation Unit  
Faculty of Health Sciences**



# The promise?

- Rapid information retrieval, efficient data management
- Incorporate decision support mechanisms
- Potential to improve quality of care





# Systematic review\* of the impact of ICT in health

- 257 studies (24% from 4 US centres, all home grown systems)
- Only 4% (n=9) studies examined the impact of commercial systems
- Very few Australian studies
- Challenges for health care organisations

*\*Chaudhry et al (2006) Annals of Internal Medicine 144, E12-22.*



# Aim

To outline a suite of key indicators of Computerised Pathology Order Entry (CPOE) performance, assess their value as measurements of care delivery and their relevance to health professionals and patients.



# Performance indicator

A statistic, or other unit of information which reflects, directly or indirectly, the performance of a system\*

*\*Boyce (2002) Medical Journal of Australia 177(5)*



# Template

Definition of the indicator

Aim

Rationale

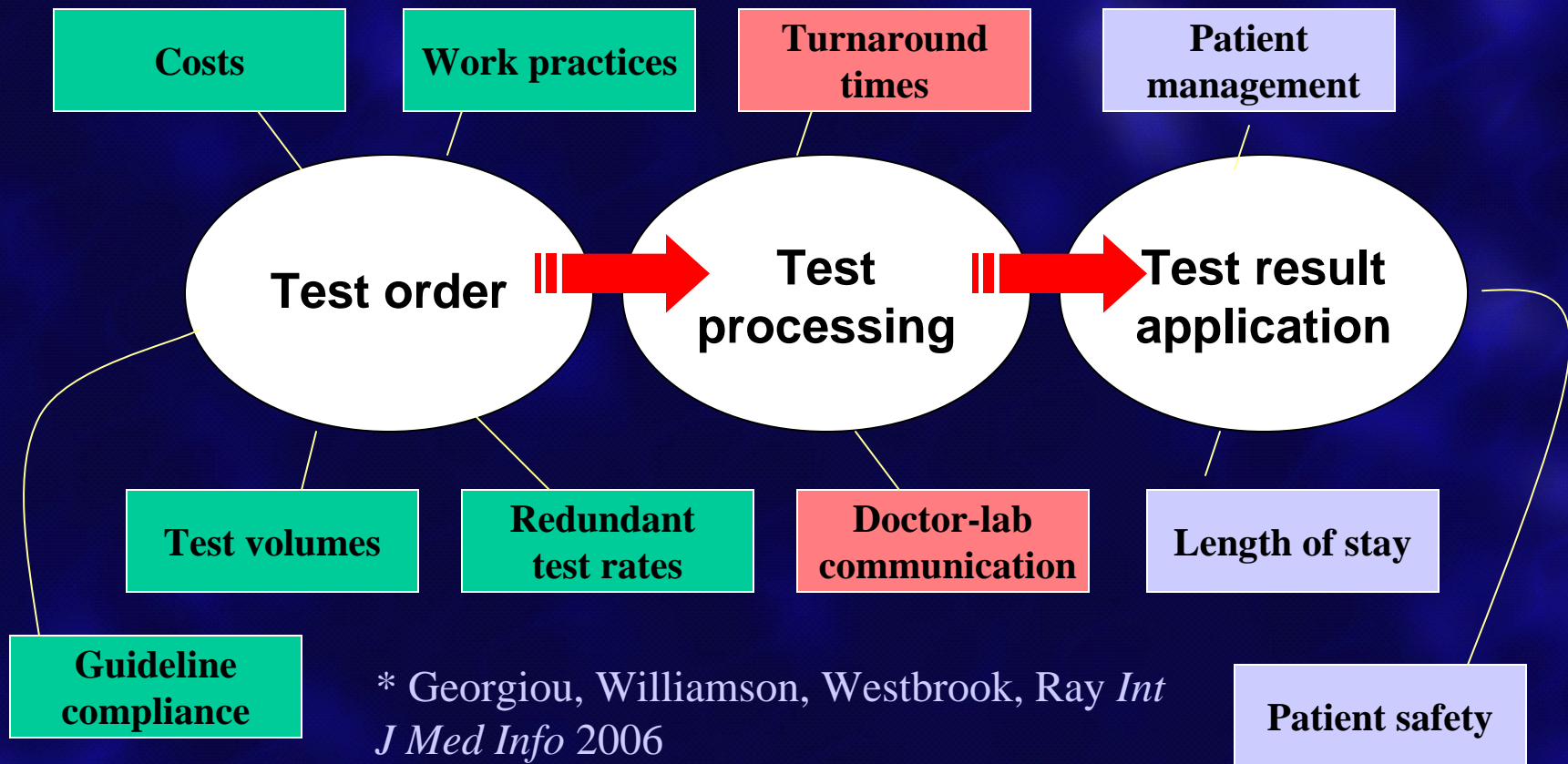
Potential uses

Confounders

Data sources

Evidence

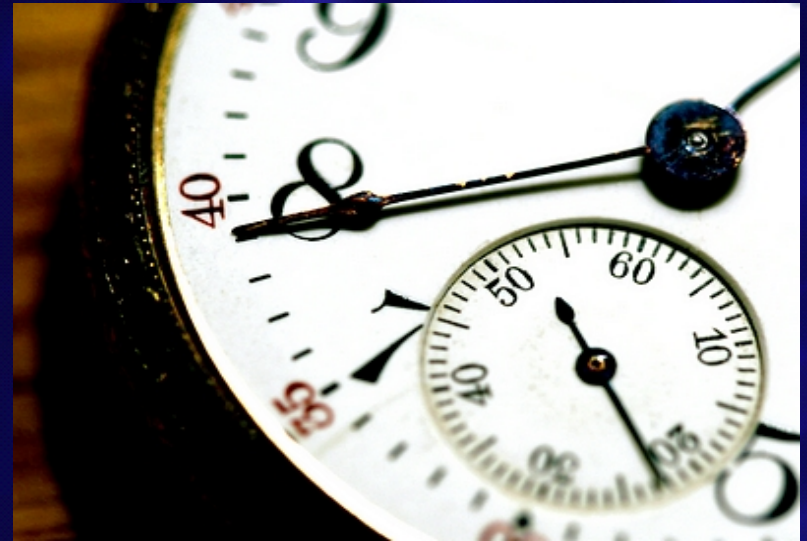
# The pathology test order process\*





# Turnaround time (TAT)

Time from  
receipt of  
specimen to  
availability of a  
result





## Average turnaround time in minutes

	Before implementation (95% CI)	After implementation (95% CI)	t test results*
All test assays	<b>73.8</b> (72.2-95.4)	<b>58.3</b> (57.1-59.4)	t=15.6 (df 184257) p=0.000
Prioritised tests	<b>44.6</b> (42.4-46.8)	<b>40.1</b> (38.7-41.6)	t=3.3 (df 37830) p=0.001
Non-prioritised tests	<b>81.5</b> (79.6-83.5)	<b>65.9</b> (64.4-67.4)	t=12.6 (df 148493) p=0.000
Tests in business hours	<b>81.8</b> (80.1-83.5)	<b>69.0</b> (67.4-70.6)	t=10.7 (df 141219) p=0.000
Tests outside business hours	<b>54.0</b> (50.6-57.4)	<b>39.2</b> (37.8-40.5)	t=7.9 (df 37524) p=0.000
Tests in control ward	<b>68.7</b> (63.9-73.5)	<b>64.7</b> (60.4-69.0)	t=1.2 (df 12993) p=0.218





# Volume of tests and specimens\*

- Average number of test assays per patient did not change

92.5 assays/patient versus 103.2 (P=0.23)

- Average number of specimens per patient did not change

10.8/patient versus 11.7 (P=0.32)



# Redundant tests

Tests reordered  
within an  
inappropriate time  
frame which provide  
no additional  
information





# Research evidence

- Bates et al. (1999; *Am J Med*) RCT all inpatients at Brigham & Women's Hospital US
- Computerised reminders about redundant tests vs. no reminders
- Reminders performed 27% of redundant tests vs. 51% for no reminders ( $p < 0.001$ )
- Authors reported that only 50% of tests were monitored – room for greater improvement



# Length of stay

- Efficiency and effectiveness of care
- Most CPOE studies in this area show no change in LOS
- ED settings (Lee-Lewandrowski [2003] *Arch Path Lab Med*)





# Caveats

- Indicators only indicate
- They do not provide the whole picture
- Potential for “gaming”







# Conclusions

- Indicators encourage explicitness
- Measure to understand and improve (eg Statistical Process Control)
- Benefit realisation (what works for whom and in what circumstances?)



# Health Informatics Research & Evaluation Unit



<http://www.fhs.usyd.edu.au/hireu/>

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