Impact of a standardised patient observation and multi-tiered escalation response chart and new calling criteria on adverse patient outcomes

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Background

• Vital sign measurement and documentation core component of patient care
• Abnormal vital signs common prior to adverse events
• Thought possible to change outcome by timely recognition and response to the deteriorating patient
• Observation chart development around these concepts
• Chart introduction has occurred in the absence of strong evidence of clinical efficacy
Background – chart development

• Observation charts were examined and found to have many usability problems
• Charts redesigned with the sole aim of supporting the detection of deterioration
• Track, trigger and response systems have been incorporated into new charts
  • Tracking - graphing and monitoring of observations
  • Triggers - thresholds that ‘trigger’ a response
  • Responses - increased observations, nursing review, home team review or MET call
• Evidence of benefit
Intervention

- New chart
- 2 new tiers of escalation
- Altered calling criteria for MET calls
- Policy for monitoring frequency
Aim

• To examine the impact of this new standardised observation chart on:
  • Medical Emergency Team calls
  • Intensive Care Unit admissions from the wards
  • Cardiac arrests
  • Hospital deaths
Methods

• Data linkage between MET, ICU and administrative databases
• Cardiac arrests determined from coding and MET database
• Study period August 2007 to December 2014
• Chart introduction July 2013
Interrupted time series analysis

• RCT not always practical or possible when assessing health system changes
• ITSA is an accepted alternative
• Advantages over before and after study design
Interrupted time series analysis

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MET calls

Pre existing trend
• Increasing by 1.7 calls per 10 000 admissions per month (p<0.01)

Immediately following intervention
• Increase of 228 calls per 10 000 admissions per month (p<0.01)

Trend following intervention
• Changed significantly (p<0.01)
• No longer an increasing trend
ICU admissions from the ward

Pre existing trend
- Decreasing by .35 per 10,000 admissions per month (p<0.01)

Immediately following intervention
- Increase of 15.6 per 10,000 admissions per month (p<0.01)

Trend following intervention
- Changed significantly (p=0.03)
- The trend post intervention is no longer decreasing
Total hospital cardiac arrests

Pre existing trend
• Decreasing by .07 per 10 000 admissions per month (p=0.01)

Immediately following intervention
• No significant change

Trend following intervention
• No significant change
Deaths

Pre existing trend
• Decreasing by .25 per 10,000 admissions per month (<0.01)

Immediately following intervention
• No significant change

Trend following intervention
• No significant change
Conclusion

The introduction of a standardised observation and response chart with new calling criteria has increased

- MET calls
- ICU admissions

With no change in

- Cardiac arrests
- Hospital mortality
Implications

• Increase in MET and ICU resource utilisation with no change in accepted performance measures

• Is there a better outcome measure?
• Is chart use counteracting chart benefit?
  • Afferent limb failure
  • Modifications
    • Observation frequency
• Alternate chart style?
• Too soon to see a change? (lag time for change in culture, behaviours and attitudes)
Future work

• Has there been a change in afferent limb failure with the introduction of the new chart?
• Do patients deteriorate in a stepwise fashion that can be detected by the triggers currently in use?
• What is the discriminatory power of the triggers for detection of patients that are going to deteriorate?
Acknowledgements

• Associate Professor Arthas Flavouris and Professor Campbell Thompson
• Dr Susan Kim, Mr Chris Horwood and Mr Paul Hakendorf
• Dr Rosanna Rockliff, Dr Doris Tang, Dr Stephen Koh, Dr Katie Lavrencic, Dr Emma Brook
• Medical records staff
• Hospital administrative staff, Andy Krewniuch