



TITLE: Tools for the Early Identification of Adult Inpatients at Risk for Deterioration: Clinical Evidence and Guidelines

DATE: 22 November 2011

RESEARCH QUESTIONS

1. What is the clinical evidence regarding tools or indicators for early identification of deteriorating or worsening condition among adult hospitalized patients?
2. What are the evidence-based guidelines and best practice regarding tools or indicators for early identification of deteriorating or worsening condition among adult hospitalized patients?

KEY MESSAGE

Evidence suggests that tools or indicators can be used effectively for the early identification of deterioration of adult hospitalized patients which may lead to improved patient outcomes. No evidence-based guidelines or best practices were identified regarding tools or indicators for early identification of deteriorating or worsening condition among adult hospitalized patients.

METHODS

A limited literature search was conducted on key resources including Ovid MEDLINE, PubMed In Process, The Cochrane Library (2011, Issue 10), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and abbreviated list of major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2008 and November 7, 2011. Internet links were provided, where available.

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The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

The literature search identified ten non-randomized studies regarding tools or indicators for early identification of deteriorating or worsening condition among adult hospitalized patients. Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

The ten non-randomized studies¹⁻¹⁰ identified varied in terms of objective, methods, and results. Overall, these studies found that tools were useful in the identification of patient deterioration and/or could be used to predict patient outcomes. A summary of their characteristics and key findings can be found in Table 1.

Author and Date	Objective	Results and Conclusions
Jones et al. 2011 ¹	Determine whether automated clinical alerts increase agreement with EWS protocol and improve PT outcomes	Automated clinical alerts improved clinician attendance to unstable general medical ward PTs
Oglesby et al. 2011 ²	To create and test a tool to analyze the efficiency of intensive care admission processes	Using a 'score to door' tool, time appeared to be independent of illness severity It could act as a benchmarking tool for Rapid Response Systems to alleviate delays in PTs at risk of deterioration
Burkmar et al. 2011 ³	Compare the efficacy of APACHE IV, PPI, and combined APACHE IV with PPI for predicting mortality	The APACHE IV, PPI, and APACHE IV plus PPI predicted overall mortality
Ludikhuizen & Goossens 2011 ⁴	Assess whether nurses trained in the use of MEWS and SBAR tools were more likely to recognize a deteriorating PT	The trained nurses were better able to identify a deteriorating PT compared to untrained nurses; however, the tools learned were rarely used
Cuthbertson et al. 2010 ⁵	To test whether EWSs were able to predict deterioration in PTs	Combined EWS and commonly used physiological parameters (ie. HR, RR, SaO2) are valuable at identifying deteriorating PTs
Mitchell et al. 2010 ⁶	Determine whether a multi-faceted intervention would decrease the rate of predefined AEs in PTs	Significant reductions were seen in unplanned admissions to ICU and unexpected PT deaths

Table 1: Characteristics and key findings of non-randomized controlled studies		
Author and Date	Objective	Results and Conclusions
Keller et al. 2010 ⁷	Evaluate the association of the shock index with unplanned ICU transfers and thus PT deterioration	The shock index is associated with unplanned transfers to the ICU and may be used to predict PT deterioration
Lichtveld et al. 2008 ⁸	Evaluate whether change of the T-RTS between first assessment and arrival at the hospital predicts mortality	Intubation and a deteriorating T-RTS between the time of the accident and PTs arrival at the hospital are predictors of mortality Combined with advanced age, a deteriorating T-RTS should be guiding the preclinical procedures
Gajic et al. 2008 ⁹	To develop and validate the Stability and Workload Index for Transfer to predict ICU readmission.	The Stability and Workload Index for Transfer score predicts ICU readmission more precisely than the day of discharge Acute Physiology and Chronic Health Evaluation III score It was unknown if DC decisions based on this score will decrease the number of ICU readmissions and/or improve outcome
Garcea et al. 2008 ¹⁰	Determine how progression of EWS affected outcome in acute pancreatitis	Deteriorating EWS values within 48 hours from admission are associated with AEs or death in acute pancreatitis

AE=adverse events; DC=discharge; EWS=early warning systems; ICU=intensive care unit; MEWS=Modified Early Warning Score; PPI=Palliative Performance Index; PT=patient; SBAR=Situation Background Assessment Recommendation; T-RTS= Triage Revised Trauma Score

REFERENCES SUMMARIZED

Health Technology Assessments

No literature identified

Systematic Reviews and Meta-analyses

No literature identified

Randomized Controlled Trials

No literature identified

Non-Randomized Studies

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[PubMed: PM18431260](#)
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[PubMed: PM18508985](#)

Guidelines and Recommendations

No literature identified

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APPENDIX – FURTHER INFORMATION:

Additional References

Guidelines and recommendations (methodology not specified)

11. The junior medical officer (JMO) checklist: a Southern Health patient safety initiative [Internet]. Victoria (AU): Southern Health; 2010 Jul. [cited 2011 Nov 7]. Available from: <http://www.vmia.vic.gov.au/~media/Content-Documents/Risk-Management/General-Risk-Services/Risk-Partnership-Program/A-Z-List/Junior-Medical-Officer-Patient-Safety/JMO%20Handbook.ashx>
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