



CADTH Reference List

# National Early Warning Score for Recognition of Patient Deterioration

August 2023

## Key Messages

- We found 3 nonrandomized studies about the clinical effectiveness of the National Early Warning Score tool for early identification of deteriorating or worsening condition among adult hospitalized patients.
- We found 1 evidence-based guideline about the use of the National Early Warning Score tool for early identification of deteriorating or worsening condition among adult hospitalized patients.

## Research Questions

1. What is the clinical effectiveness of the National Early Warning Score tool for early identification of deteriorating or worsening condition among adult hospitalized patients?
2. What are the evidence-based guidelines regarding the use of the National Early Warning Score tool for early identification of deteriorating or worsening condition among adult hospitalized patients?

## Methods

### Literature Search Methods

An information specialist conducted a literature search on key resources including MEDLINE, the Cochrane Database of Systematic Reviews, the International HTA Database, and the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search approach was customized to retrieve a limited set of results, balancing comprehensiveness with relevancy. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. Search concepts were developed based on the elements of the research questions and selection criteria. The main search concept was National Early Warning Score. The search was completed on July 25, 2023, and limited to English-language documents published since January 1, 2018. Internet links were provided, where available.

### Selection Criteria

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in [Table 1](#). Full texts of study publications were not reviewed. Open access full-text versions of evidence-based guidelines were reviewed when available.

**Table 1: Selection Criteria**

Criteria	Description
<b>Population</b>	Adult patients in hospital settings
<b>Intervention</b>	National Early Warning Score tool
<b>Comparator</b>	Q1: Alternative tools for early recognition of patient deterioration, usual care, or no intervention Q2: Not applicable
<b>Outcomes</b>	Q1: Clinical effectiveness (e.g., time to treatment, hospital length of stay, health-related quality of life, patient morbidity outcomes, mortality outcomes, adverse events) Q2: Recommendations regarding the best use of the National Early Warning Score tool for early recognition of patient deterioration (e.g., appropriate use, patient population, virtual use, electronic health record use)
<b>Study designs</b>	Health technology assessments, systematic reviews, randomized controlled trials, nonrandomized studies, evidence-based guidelines

## Results

Three nonrandomized studies were identified regarding the clinical effectiveness of the National Early Warning Score (NEWS) tool for early identification of deteriorating or worsening condition among adult hospitalized patients.<sup>1-3</sup> One evidence-based guideline was identified regarding the use of the NEWS tool for early identification of deteriorating or worsening condition among adult hospitalized patients.<sup>4</sup> No relevant health technology assessments, systematic reviews, or randomized controlled trials were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in [Appendix 1](#).

## References

### Health Technology Assessments

No literature identified.

### Systematic Reviews

No literature identified.

### Randomized Controlled Trials

No literature identified.

### Nonrandomized Studies

1. Forster S, McKeever TM, Shaw D. Effect of implementing the NEWS2 escalation protocol in a large acute NHS trust: a retrospective cohort analysis of mortality, workload and ability of early warning score to predict death within 24 hours. *BMJ Open*. 2022 11 24;12(11):e064579. [PubMed](#)
2. Badr MN, Khalil NS, Mukhtar AM. Effect of National Early Warning Scoring system implementation on cardiopulmonary arrest, unplanned ICU admission, emergency surgery, and acute kidney injury in an emergency hospital, Egypt. *J Multidiscip Healthc*. 2021;14:1431-1442. [PubMed](#)
3. Creutzburg A, Isbye D, Rasmussen LS. Incidence of in-hospital cardiac arrest at general wards before and after implementation of an early warning score. *BMC Emer Med*. 2021 07 07;21(1):79. [PubMed](#)

### Guidelines and Recommendations

4. Care of deteriorating patients. Edinburgh (UK): Scottish Intercollegiate Guidelines Network (SIGN); 2023: <https://www.sign.ac.uk/our-guidelines/care-of-deteriorating-patients/>. Accessed 2023 Jul 26.  
Refer to: Early Warning Scores (p. 8); 5.1 Secondary Healthcare Settings (p. 9).

## Appendix 1: References of Potential Interest

### Systematic Reviews

#### *Unclear Comparator*

Credland N, Dyson J, Johnson MJ. Do early warning track and trigger tools improve patient outcomes? A systematic synthesis without meta-analysis. *J Adv Nurs*. 2021 Feb;77(2):622-634. [PubMed](#)

#### *Not Specific to NEWS*

McGaughey J, Fergusson DA, Van Bogaert P, Rose L. Early warning systems and rapid response systems for the prevention of patient deterioration on acute adult hospital wards. *Cochrane Database Syst Rev*. 2021;11(11):CD005529. <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD005529.pub3/full>. Accessed 2023 Jul 26. [PubMed](#)

### Randomized Controlled Trials

#### *Mixed Intervention – NEWS With a Pragmatic Medical Response Strategy*

Haegdorens F, Monsieurs KG, De Meester K, Van Bogaert P. An intervention including the national early warning score improves patient monitoring practice and reduces mortality: a cluster randomized controlled trial. *J Adv Nurs*. 2019 Sep;75(9):1996-2005. [PubMed](#)

#### *Alternative Comparator – NEWS With Continuous Remote Monitoring*

Downey CL, Croft J, Ainsworth G, et al. Trial of remote continuous versus intermittent NEWS monitoring after major surgery (TRaCINg): a feasibility randomised controlled trial. *Pilot Feasibility Stud*. 2020 Nov 23;6(1):183. [PubMed](#)

### Nonrandomized Studies

#### *Unclear Population – Adults Not Specified*

Reardon PM, Seely AJE, Fernando SM, et al. Can early warning systems enhance detection of high risk patients by rapid response teams? *J Intensive Care Med*. 2021 May;36(5):542-549. [PubMed](#)

Hogan H, Hutchings A, Wulff J, et al. Type of Track and Trigger system and incidence of in-hospital cardiac arrest: an observational registry-based study. *BMC Health Serv Res*. 2020 Sep 18;20(1):885. [PubMed](#)

Echevarria C, Steer J, Bourke SC. Comparison of early warning scores in patients with COPD exacerbation: DECAF and NEWS score. *Thorax*. 2019 10;74(10):941-946. [PubMed](#)

#### *Alternative Intervention – Modified NEWS*

Morgan CK, Amspoker AB, Howard C, et al. Continuous cloud-based early warning score surveillance to improve the safety of acutely ill hospitalized patients. *J Healthc Qual*. 2021 Jan-Feb 01;43(1):59-66. [PubMed](#)

### Guidelines and Recommendations

#### *Unclear Methodology*

Recognising and responding to acute deterioration. Deakin (AU): St John Ambulance Western Australia; 2023: <https://clinical.stjohnwa.com.au/clinical-practice-guidelines/general/recognising-and-responding-to-acute-deterioration>. Accessed 2023 Jul 26.

Management of the deteriorating patient policy. Portsmouth (UK): Portsmouth Hospitals NHS Trust; 2020: <https://www.porthosp.nhs.uk/about-us/policies-and-guidelines/policies/Clinical/Deteriorating%20Patient%20Policy%20-%20Management.pdf> Accessed 2023 Jul 26.

Refer to: 6.1 (p. 8); 6.2.1 (p. 9); 6.6 (p. 11); 6.9 (p. 12); 6.10 (p. 13); Appendix 1 and 2 (p. 17).

Procedure for using the National Early Warning Score (NEWS) 2 for the early detection and management of the deteriorating patient in adults (aged 16 and above). Darlington (UK): NHS Foundation Trust; 2019: <https://www.tewv.nhs.uk/content/uploads/2021/12/NEWS-National-Early-Warning-Score-and-the-Early-Detection-and-Management-of-the-Deteriorating-Patient-age-16-and-above.pdf> Accessed 2023 Jul 26.

Refer to: 4.4 to 4.6 (p. 7 to p. 10); Appendix 1 (p. 16).



## Review Articles

Williams B. The National Early Warning Score: from concept to NHS implementation. *Clin Med.* 2022 11;22(6):499-505. [PubMed](#)

## Additional References

### *Scientific Briefing*

National Early Warning Score systems that alert to deteriorating adult patients in hospital. *Medtech innovation briefing [MIB205]*. London (UK): National Institute for Health and Care Excellence; 2020: <https://www.nice.org.uk/advice/mib205/chapter/The-technology> Accessed 2023 Jul 26.

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