National Early Warning Score (NEWS) 2

Standardising the assessment of acute-illness severity in the NHS

Updated report of a working party
Executive summary and recommendations
December 2017

1518
2018

The Royal College of Physicians

The Royal College of Physicians (RCP) plays a leading role in the delivery of high-quality patient care by setting standards of medical practice and promoting clinical excellence. The RCP provides physicians in over 30 medical specialties with education, training and support throughout their careers. As an independent charity representing over 34,000 fellows and members worldwide, the RCP advises and works with government, patients, allied healthcare professionals and the public to improve health and healthcare.

Citation for this document

Royal College of Physicians. *National Early Warning Score (NEWS) 2: Standardising the assessment of acute-illness severity in the NHS*. Updated report of a working party. London: RCP, 2017.

Executive summary

Background

This document summarises the update to the National Early Warning Score (NEWS2). The NEWS was developed to improve the detection of and response to clinical deterioration in patients with acute illness. The original NEWS was released in 2012[1] and has been widely implemented across the NHS and in other healthcare settings across the world (see Appendix A for details of the NEWS Development and Implementation Group). The NEWS was created to standardise the process of recording, scoring and responding to changes in routinely measured physiological parameters in acutely ill patients. The NEWS was founded on the premise that (i) early detection, (ii) timeliness and (iii) competency of the clinical response comprise a triad of determinants of clinical outcome in people with acute illness.

At the time that the NEWS was developed, numerous publications and national reports on acute clinical care had advocated the use of so-called 'early warning scores' (EWSs), ie 'track-and-trigger' systems to efficiently identify and respond to patients who present with or develop acute illness.[2–11] A number of EWS systems were already in use across the NHS; however, the approach was not standardised.[12] This variation resulted in a lack of familiarity with local systems when staff moved between clinical areas/hospitals and impeded attempts to embed training in the detection and response to acute illness in a standardised way, across the NHS workforce. Put simply, when assessing acutely ill patients using these various scores, we were not speaking the same language, which led to a lack of consistency in the detection of and response to acute illness.

Building upon recommendations in its 2007 Acute Medicine Task Force report *Acute medical care: the right person, in the right setting – first time*,[11] the Royal College of Physicians (RCP) commissioned a multidisciplinary group to develop a National Early Warning Score (NEWS). At this time a review of the NEWS was scheduled for 2015, which has been conducted by the NEWS Review Group. This current report presents the conclusions of that review, culminating in this update to the NEWS: the NEWS2. This report includes a comprehensive review of the original justification for the NEWS and a discussion of the rationale for the updated sections of the NEWS. Updated sections of the document are indicated as 'NEW' and shaded.

New ## Remit

Following its launch in 2012, the NEWS has been widely adopted across the NHS, and over 122,000 NHS staff have completed online competency training in the use of the NEWS. After launching the NEWS, the RCP encouraged feedback on user experience of the NEWS in routine clinical practice, and suggestions for improvement in any of the NEWS-related processes. The remit of the NEWS Review Group was to review these suggestions and decide whether any changes to the NEWS process and charts were necessary. This review was enhanced by inclusion of numerous peer-reviewed research publications, evaluating and validating the NEWS in various clinical settings in the NHS and beyond.

For this NEWS update and based on feedback from users, particular attention was paid to four important themes.

⇒ Determining how the NEWS could be used to better identify patients likely to have sepsis who were at immediate risk of serious clinical deterioration and required urgent clinical intervention

⇒ Highlighting that that a NEWS score of 5 or more is a key threshold for an urgent clinical alert and response

⇒ Improving the recording of the use of oxygen and the NEWS scoring of recommended oxygen saturations in patients with hypercapnic respiratory failure (most often due to COPD)

⇒ Recognising the importance of new-onset confusion, disorientation, delirium or any acute reduction in the Glasgow Coma Scale (GCS) score as a sign of potentially serious clinical deterioration, by including new confusion as part of the AVPU scoring scale (which becomes ACVPU).

Various additional refinements to the NEWS chart were also considered and implemented. ◤

The National Early Warning Score

The NEWS is based on a simple aggregate scoring system in which a score is allocated to physiological measurements, already recorded in routine practice, when patients present to, or are being monitored in hospital.[1] Six simple physiological parameters form the basis of the scoring system:

1 respiration rate

2 oxygen saturation

3 systolic blood pressure

4 pulse rate

5 level of consciousness or new confusion*

6 temperature.

*The patient has new-onset confusion, disorientation and/or agitation, where previously their mental state was normal – this may be subtle. The patient may respond to questions coherently, but there is some confusion, disorientation and/or agitation. This would score 3 or 4 on the GCS (rather than the normal 5 for verbal response), and scores 3 on the NEWS system.

A score is allocated to each parameter as they are measured, with the magnitude of the score reflecting how extremely the parameter varies from the norm. The score is then aggregated. The score is uplifted by 2 points for people requiring supplemental oxygen to maintain their recommended oxygen saturation. This is a pragmatic approach, with a key emphasis on system-wide standardisation and the use of physiological parameters that are already routinely measured in NHS hospitals and in prehospital care, recorded on a standardised clinical chart – the NEWS2 chart.

New NHS England and the NEWS

NHS England and NHS Improvement have approved and endorsed use of the NEWS as the recommended early warning scoring system for use in adults across the NHS in England, to standardise the approach to detecting and grading the severity of acute illness. The NEWS has also been endorsed as the recommended early warning system to detect acute clinical illness/deterioration due to sepsis in patients with an infection or at risk of infection.

Evaluation of NEWS

During its original development, the NEWS was evaluated against a variety of other EWSs in use at the time. The NEWS was shown to be as good at discriminating risk of serious clinical deterioration and

acute mortality as the best existing systems and better than most.[13] Furthermore, at the recommended trigger level for an urgent clinical response (NEW score of 5 or more), the NEWS was more sensitive and specific than most existing systems.[13] Thus, the NEWS provided an enhanced level of surveillance of patients, with greater specificity in identifying those at risk of serious clinical deterioration. Subsequent experience in the use of NEWS in clinical practice and formal research-based evaluations have reaffirmed that the NEWS performs very well. Also, unlike other EWSs, the NEWS has now been validated in many settings within the NHS and internationally, including emergency departments and in the prehospital setting, ie by ambulance services.[14–34] In these studies, the NEWS has been shown to be a strong indicator of increased risk of serious clinical deterioration and mortality in patients with sepsis and a variety of acute medical illnesses, surgical patients and patients with acute trauma. There are two important caveats to this conclusion: (i) concern about the potential impact of the NEWS to inadvertently promote the overuse of oxygen therapy in patients with hypercapnic respiratory failure,[35,36] which is dealt with by this update, and (ii) the potential unreliability of the NEWS in patients with spinal cord injury, especially tetraplegia or high paraplegia, owing to disruption of the autonomic nervous system and resulting fluctuations in pulse rate, temperature or blood pressure that can lead to both increased and reduced sensitivity of the NEWS.[37] ◤

Using the NEWS

This report recommends that the NEWS be used to standardise the assessment of acute-illness severity when patients present acutely to hospital and in prehospital assessment, ie by the ambulance services. NEWS should also be used in emergency departments and as a surveillance system for all patients in hospitals, to track their clinical condition, alert the clinical team to any clinical deterioration and trigger a timely clinical response. This report also recommends that the NEWS should be evaluated with a view to extending its use to primary care, to aid triage and communication of acute-illness severity to ambulance and hospital services.

The NEWS clinical observations chart

To facilitate a standardised and nationally unified approach to recording vital signs data, a colour-coded clinical chart (the NEWS chart) was developed for use across the NHS to record routine clinical data and track a patient's clinical condition. This has been widely deployed. The purpose of this tracking system is to alert the clinical team to any untoward clinical deterioration and to monitor clinical recovery. The NEWS should determine the urgency and scale of the clinical response.

New   The NEWS2 chart update

The NEWS chart has been updated. In the NEWS2 chart:

i   the recording of physiological parameters has been reordered to align with the Resuscitation Council (UK) ABCDE sequence

ii   the ranges for the boundaries of each parameter score are now shown on the chart

iii the chart has a dedicated section (SpO_2 Scale 2) for use in patients with hypercapnic respiratory failure (usually due to COPD) who have clinically recommended oxygen saturation of 88–92%

iv   the section of the chart for recording the rate of (L/min) and method/device for supplemental oxygen delivery has been improved

v   the importance of considering serious sepsis in patients with known or suspected infection, or at risk of infection, is emphasised. A NEW score of 5 or more is the key trigger threshold for urgent clinical review and action

vi   the addition of 'new confusion' (which includes disorientation, delirium or any new alteration to mentation) to the AVPU score, which becomes ACVPU (where C represents confusion)

viii the chart has a new colour scheme, reflecting the fact that the original red–amber–green colours were not ideal for staff with red/green colour blindness. ◣

Clinical response to NEWS

Depending on the NEW score, the report provides recommendations for the frequency of clinical monitoring, the urgency of clinical review, and the competency requirements of the clinical team needed to undertake that review and respond. The report emphasises the importance of ensuring that acute care response teams, with the appropriate competencies in acute clinical care, are available 24/7 in acute hospitals and free of other clinical responsibilities. This is especially important for patients with a NEW sore of 5 or more. Likewise, for primary care, prehospital or community care, clinical care pathways that ensure urgent access to an appropriate level of care should be defined for such patients. For patients with the highest NEW scores, ie the most seriously ill, the report provides recommendations regarding the most appropriate clinical environment for ongoing critical care.

The NEWS provides the basis for a unified and systematic approach to the first assessment and triage of acutely ill patients, and a simple track-and-trigger system for monitoring clinical progress for all patients in hospitals. This is allied to recommendations on the urgency and competency of the clinical response, as well as the most appropriate environment for ongoing care of the most acutely ill patients. In so doing, the NEWS provides a template for the staff and infrastructure requirements for modern acute clinical care.

NEWS and training and education

The NEWS provides the basis for standardising the training and credentialling of all staff engaged in the care of patients in hospitals and the prehospital assessment of patients. We recommend that this should be extended to undergraduate education for all medical, nursing and allied healthcare professionals. The NEWS is supported by an online training module and certification of completion of training (http://tfinews.ocbmedia.com). We also recommend that the NEWS becomes part of mandatory training for NHS clinical staff.

New The NEWS in a digital healthcare system

The NEWS can be readily transported into electronic health record and app-based systems. This has already happened in some NHS hospitals with mature electronic health record systems. There are potential advantages of automated calculation of the NEW score and automated alert systems. Wherever this occurs, it is important that the standardised scoring systems and alert thresholds that underpin the NEWS remain unaltered.

An app is being developed to facilitate the use of the NEWS in hospitals and in primary care. ◣

The NEWS and research and innovation

The NEWS provides standardised data on regional variations in illness severity and resource requirements, as well as objective measurements of illness severity and clinical outcomes – the latter providing an invaluable research resource to evaluate the efficacy of new systems of care and novel diagnostics and interventions.

Conclusions

The NEWS has driven a step-change improvement in safety and clinical outcomes for acutely ill patients in our hospitals by standardising the assessment and scoring of simple physiological parameters and the adoption of this approach across the NHS. This update refines and improves the NEWS without changing its core principles.

Recommendations

1   We recommend that the routine clinical assessment of all adult patients (aged 16 years or more) should be standardised across the NHS, with the routine recording of a minimum clinical dataset of physiological parameters resulting in the National Early Warning Score (NEWS).

2   The NEWS should not be used in children (ie aged <16 years) or in women who are pregnant, because the physiological response to acute illness can be modified in children and by pregnancy.

3   The NEWS may be unreliable in patients with spinal cord injury (especially tetraplegia or high-level paraplegia), owing to functional disturbances of the autonomic nervous system. Use with caution.

4   The NEWS should be used as an aid to clinical assessment – it is not a substitute for competent clinical judgement. Any concern about a patient's clinical condition should prompt an urgent clinical review, irrespective of the NEWS.

5   We recommend that the NEWS is used to improve the following:

   i   the assessment of acute-illness severity

   ii   the detection of clinical deterioration

   iii   the initiation of a timely and competent clinical response.

6   In hospitals, the NEWS should be used for initial assessment of acute illness and for continuous monitoring of a patient's wellbeing throughout their stay in hospital. By recording a patient's NEW score on a regular basis, the trends in their clinical responses can be tracked to provide early warning of potential clinical deterioration and provide a trigger for escalation of clinical care. Likewise, the recording of the NEWS trends will provide guidance about the patient's recovery and return to stability, thereby facilitating a reduction in the frequency and intensity of clinical monitoring towards patient discharge.

7   The NEWS should be used in the prehospital assessment of acutely ill patients by 'first responders', eg ambulance services, primary care and community hospitals, to identify and improve the assessment of acute illness, triage and the communication of acute-illness severity to receiving hospitals.

8   The NEWS should be used in emergency departments to aid the initial assessment of patients, ongoing monitoring and patient triage decisions.

The NEWS physiological parameters and scoring system

9   We recommend that the NEW score should be determined from seven parameters (six physiological, plus a weighting score for supplemental oxygen):

   Six physiological parameters routinely recorded:

   i   respiration rate

   ii   oxygen saturation

   iii   systolic blood pressure

iv   pulse rate

v   level of consciousness and new confusion ('C'), thus AVPU becomes ACVPU, where C represents new confusion

vi   temperature.

In addition, a weighting score of 2 should be added for any patient requiring supplemental oxygen (oxygen delivery by mask or nasal cannula) to maintain their prescribed oxygen saturation range.

10   Each of the six physiological NEWS parameters are allocated a score according to the magnitude of disturbance to each parameter. The individual parameter scores should then be added up, along with a score of 2 for use of supplemental oxygen, to derive the aggregate NEW score for the patient.

11   We recommend four trigger levels for a clinical alert requiring clinician assessment based on the NEWS:

- **LOW score:** an aggregate NEW score of 1–4

- **A single red score:** an extreme variation in an individual physiological parameter (a score of 3 in any one parameter, which is colour-coded red on the NEWS2 chart)

- **MEDIUM score:** an aggregate NEW score of 5 or 6. **A NEW score of 5 or more is a key threshold** and is indicative of potential serious acute clinical deterioration and the need for an urgent clinical response

- **HIGH score:** an aggregate NEW score of 7 or more.

12   We recommend that these triggers should determine the urgency of the clinical response and the clinical competency of the responder(s).

- **A low NEW score** (1–4) should prompt assessment by a competent registered nurse or equivalent, who should decide whether a change to frequency of clinical monitoring or an escalation of clinical care is required.

- **A single red score** (3 in a single parameter) is unusual, but should prompt an urgent review by a clinician with competencies in the assessment of acute illness (usually a ward-based doctor) to determine the cause, and decide on the frequency of subsequent monitoring and whether an escalation of care is required.

- **A medium NEW score (5–6) is a key trigger threshold** and should prompt an urgent review by a clinician with competencies in the assessment of acute illness – usually a ward-based doctor or acute team nurse, who should urgently decide whether escalation of care to a team with critical care skills is required (ie critical care outreach team).

- **A high NEW score** (7 or more) **is a key trigger threshold** and should prompt emergency assessment by a clinical team / critical care outreach team with critical care competencies and usually transfer of the patient to a higher-dependency care area.

The NEWS observations chart

13   We recommend the use of the standardised NEWS2 observation chart for the routine recording of clinical observations, across the NHS. This should eventually replace the existing NEWS chart.

14   The NEWS2 chart should replace the wide variety of temperature, pulse and respiration rate (TPR)

charts currently in use, to provide a standardised system for recording routine clinical data for all patients in hospital. A consistent format will provide easier recognition of a patient's clinical status, and facilitate national training in the measurement and recording of such data for all NHS staff (http://tfinews.ocbmedia.com).

15   The NEWS2 chart is colour-coded to provide both visual and numeric prompts to aid identification of abnormal clinical parameters.

16   The core of the NEWS2 chart for recording and scoring the NEWS physiological parameters should be consistent nationally. It is recognised that the rest of the chart area will be customised to reflect other key parameters not incorporated in the NEWS, eg urine output and pain scores, according to the clinical environment.

17   The NEWS can and should be used alongside validated scoring systems such as the Glasgow Coma Scale (GCS) or disease-specific systems as dictated by patient need.

Using NEWS in clinical practice

18   We recommend that the NEWS is used to determine the urgency of clinical response and the clinical competency of the responder(s) according to acute-illness severity for patients in hospitals, or in prehospital assessment.

19   Concern about a patient's clinical condition should always override the NEWS if the attending healthcare professional considers it necessary to escalate care.

20   Clinical response to the NEWS should be recorded on the NEWS chart. This will provide a continuous record of actions taken in response to variations in the NEWS and act as a prompt for escalating care if necessary.

21   When clinical teams decide that the routine recording of data for the NEWS is not appropriate, eg for patients on an end-of-life care pathway, such decisions should be discussed with the patient (or their family/carer as appropriate) and recorded in the clinical notes.

The NEWS and sepsis

22   We recommend that **sepsis** should be considered in any patient with a known infection, signs or symptoms of infection, or in patients at high risk of infection, and a **NEW score of 5 or more – 'think sepsis'.**

23   We recommend that patients with suspected infection and a NEW score of 5 or more require urgent assessment and intervention by a clinical team competent in the management of sepsis and urgent transfer to hospital or transfer to a higher-dependency clinical area within hospitals, for ongoing clinical care.

The NEWS, supplemental oxygen and hypercapnic respiratory failure

24   We recommend that when supplemental oxygen is being used to maintain the desired oxygen saturation, the rate of oxygen delivery (L/min) and the delivery system/device should be documented on the NEWS chart using the British Thoracic Society oxygen delivery device codes.

25   For patients confirmed to have hypercapnic respiratory failure on blood gas analysis on either a prior or their current hospital admission, and requiring supplemental oxygen, we recommend (i) a prescribed oxygen saturation target range of 88–92%, and (ii) that the dedicated SpO_2 scoring scale (Scale 2) on the NEWS2 chart should be used to record and score the oxygen saturation for the NEWS.

26   The decision to use SpO_2 scale 2 should be made by a competent clinical decision maker and should be recorded in the patient's clinical notes.

27   In all other circumstances, the regular NEWS SpO_2 scale 1 should be used.

28   For the avoidance of doubt, the SpO_2 scoring scale not being used should be clearly crossed out across the chart.

The NEWS and new confusion or delirium

29   We recommend the inclusion of 'new confusion' (including disorientation, delirium or any acute reduction in GCS score) as part of the assessment of consciousness on the NEWS chart. The AVPU term has been amended to ACVPU, where 'C' represents new confusion.

30   We recommend that new confusion scores 3 on the NEWS chart, ie a red score for a single score of 3, indicating that the patient requires urgent assessment.

31   We recommend that, if it is unclear whether a patient's confusion is 'new' or their usual state, the altered mental state/confusion should be assumed to be new until confirmed to be otherwise.

Clinical response to the NEWS

32   The organisation of the clinical response to acute illness should be reviewed and agreed locally to ensure that the speed of response and clinical competency of the responder(s) match that recommended for each of the grades of acute-illness severity as defined by the NEWS.

33   We recommend that, in acute hospitals, local arrangements should ensure an appropriate response to each NEWS trigger level and should define:

- the speed/urgency of response to acute illness, including a clear escalation policy to ensure that an appropriate response always occurs and is guaranteed 24/7

- who responds, ie the seniority and clinical competencies of the responder(s)

- the frequency of subsequent clinical monitoring

- the appropriate settings for ongoing acute care, including availability of facilities, trained staff and timely access to higher-dependency care, if required.

Clinical competencies of the responders to the NEWS

34   All healthcare staff recording data for, or responding to, the NEWS should be trained in its use and should understand the significance of the scores with regard to local policies for responding to the NEWS triggers and the clinical response required.

35   The clinical responders to critical NEWS triggers (score of 5 or more) should have the appropriate skills and competencies in the assessment and clinical management of acute illness.[38] In hospitals, team members should be clearly identified and provide coverage 24/7.

36   There should be locally agreed mechanisms for timely alert of the critical care teams responding to a critical NEW score (score of 5 or more). Members of these teams should have overriding responsibility to this role with regard to other duties, 24/7.

The NEWS and frequency of clinical monitoring

37   The NEWS should be used to inform the frequency of clinical monitoring, which should be recorded on the NEWS chart.

38   We recommend that for patients scoring 0, the minimum frequency of monitoring should be 12 hourly, increasing to 4–6 hourly for scores of 1–4, unless more or less frequent monitoring is considered appropriate by a competent clinical decision maker.

39   We recommend that the frequency of monitoring should be increased to a minimum of hourly for those patients with a NEW score of 5–6, or a red score (ie a score of 3 in any single parameter) until the patient is reviewed and a plan of care documented.

40   We recommend continuous monitoring and recording of vital signs for those with an aggregate NEW score of 7 or more.

The NEWS and clinical settings for acute clinical care

41   The NEWS should be used to aid decision making with regard to the most appropriate clinical setting for ongoing care. Local policies should define pathways for efficient and seamless escalation and transfer of care, including:

- access to clinical monitoring in hospitals, ie monitored beds, with staff trained to interpret and respond appropriately

- timely access to staff trained in critical care, ie airway management and resuscitation and, when required, access to higher-dependency / critical care beds

- timely access to specialist acute care, ie acute cardiac, respiratory, neurological, liver or renal support.

The NEWS – education and training

42   Education, training and demonstrable competency in the use of NEWS should be a mandatory requirement and form part of mandatory training for all healthcare staff engaged in the assessment and monitoring of acutely ill patients across the NHS.

43   We recommend that education regarding NEWS should form part of undergraduate nursing, paramedical and medical training.

44   We recommend that the clinical responders to NEW scores of 5 or more must have competency in the assessment of acutely ill patients. Responders to a NEW score of 7 or more must also have competency in critical care skills and airway management.

The NEWS and research and development

45 We recommend that future research be directed towards evaluating the efficiency of the NEWS in improving clinical response times and clinical outcomes in patients with acute illness – including in the primary care setting.

46 We recommend that the NEWS be used to catalyse an expansion of research into the effectiveness of novel interventions, diagnostics and care pathways in acute care in the NHS.

References

1 Royal College of Physicians. *National Early Warning Score (NEWS): standardising the assessment of acute-illness severity in the NHS*. Report of a working party. London: RCP, 2012.

2 Morgan RJM, Williams F, Wright MM. An early warning scoring system for detecting developing critical illness. *Clin Intens Care* 1997;8:100.

3 Subbe CP, Kruger M, Rutherford P, Gemmel L. Validation of a modified early warning score in medical admissions. *QJM* 2001;94:521–6. https://doi.org/10.1093/qjmed/94.10.521

4 Smith GB, Prytherch DR, Schmidt P *et al*. Hospital-wide physiological surveillance – a new approach to the early identification and management of the sick patient. *Resuscitation* 2006;71:19–28. https://doi.org/10.1016/j.resuscitation.2006.03.008

5 Gao H, McDonnell A, Harrison DA *et al*. Systematic review and evaluation of physiological track and trigger warning systems for identifying at-risk patients on the ward. *Intensive Care Med* 2007;33:667–79. https://doi.org/10.1007/s00134-007-0532-3

6 Groarke JD, Gallagher J, Stack J *et al*. Use of an admission early warning score to predict patient morbidity and mortality and treatment success. *Emerg Med J* 2008;5:803–6. https://doi.org/10.1136/emj.2007.051425

7 Australian Commission on Safety and Quality in Healthcare. *Recognising and responding to clinical deterioration: use of observation charts to identify clinical deterioration*. Sydney: Australian Commission on Safety and Quality in Healthcare, 2009. www.safetyandquality.gov.au/publications/recognising-and-responding-to-clinical-deterioration-use-of-observation-charts-to-identify-clinical-deterioration-march-2009/ [Accessed 9 August 2017].

8 Jansen JO, Cuthbertson BH. Detecting critical illness outside the ICU: the role of track and trigger systems. *Curr Opin Crit Care* 2010;16:184–90. https://doi.org/10.1097/MCC.0b013e328338844e

9 National Institute for Health and Clinical Excellence. *Acutely ill adults in hospital: recognising and responding to deterioration*. Clinical guideline 50. London: NICE, 2007. www.nice.org.uk/guidance/cg50 [Accessed 9 August 2017].

10 National Confidential Enquiry into Patient Outcome and Death. *Emergency admissions: A journey in the right direction?* London: NCEPOD, 2007. www.ncepod.org.uk/2007ea.html [Accessed 9 August 2017].

11 Royal College of Physicians. *Acute medical care: the right person, in the right setting – first time*. London: RCP, 2007. https://shop.rcplondon.ac.uk/products/acute-medical-care-the-right-person-in-the-right-setting-first-time?variant=6297968773 [Accessed 9 August 2017].

12 Patterson C, Maclean F, Bell C *et al*. Early warning systems in the UK: variation in content and implementation strategy has implications for a NHS early warning system. *Clin Med (Lond)* 2011;11:424–7. https://doi.org/10.7861/clinmedicine.11-5-424

13 Smith GB, Prytherch DR, Meredith P, Schmidt PE, Featherstone PI. The ability of the National Early Warning Score (NEWS) to discriminate patients at risk of early cardiac arrest, unanticipated intensive care unit admission, and death. *Resuscitation* 2013;84:465–70. https://doi.org/10.1016/j.resuscitation.2012.12.016

14 Corfield AR, Lees F, Zealley I *et al*. Utility of a single early warning score in patients with sepsis in the emergency department. *Emerg Med J* 2014;31:482–7. https://doi.org/10.1136/emermed-2012-202186

15 Farenden S, Gamble D, Welch J. Impact of implementation of the National Early Warning Score on patients and staff. *Br J Hosp Med (Lond)* 2017;78:2–7. https://doi.org/10.12968/hmed.2017.78.3.132

16 Jarvis S, Kovacs C, Briggs J *et al*. Aggregate National Early Warning Score (NEWS) values are more important than high scores for a single vital signs parameter for discriminating the risk of adverse outcomes. *Resuscitation* 2015;87:75–80. https://doi.org/10.1016/j.resuscitation.2014.11.014

17 Smith GB, Prytherch DR, Jarvis S *et al*. A comparison of the ability of the physiologic components of Medical Emergency Team criteria and the U.K. National Early Warning Score to discriminate patients at risk of a range of adverse clinical outcomes. *Crit Care Med* 2016;44:2171–81. https://doi.org/10.1097/CCM.0000000000002000

18 Keep JW, Messmer AS, Sladden R *et al*. National early warning score at Emergency Department triage may allow earlier identification of patients with severe sepsis and septic shock: a retrospective observational study. *Emerg Med J* 2016;33:37–41. https://doi.org/10.1136/emermed-2014-204465

19 Silcock DJ, Corfield AR, Gowens PA, Rooney KD. Validation of the National Early Warning Score in the prehospital setting. *Resuscitation* 2015;89:31–5. https://doi.org/10.1016/j.resuscitation.2014.12.029

20 Shaw J, Fothergill RT, Clark S, Moore F. Can the prehospital National Early Warning Score identify patients most at risk from subsequent deterioration? *Emerg Med J* 2017;34:533–7. https://doi.org/10.1136/emermed-2016-206115

21 Bilben B, Grandal L, Søvik S. National Early Warning Score (NEWS) as an emergency department predictor of disease severity and 90-day survival in the acutely dyspneic patient – a prospective observational study. *Scand J Trauma Resusc Emerg Med* 2016;24:80. https://doi.org/10.1186/s13049-016-0273-9

22 Roberts D, Djärv T. Preceding national early warnings scores among in-hospital cardiac arrests and their impact on survival. *Am J Emerg Med* 2017; https://doi.org/10.1016/j.ajem.2017.04.072 (Epub ahead of print)

23 Farenden S, Gamble D, Welch J. Impact of implementation of the National Early Warning Score on patients and staff. *Br J Hosp Med (Lond)* 2017;78:132–6. https://doi.org/10.12968/hmed.2017.78.3.132

24 Spagnolli W, Rigoni M, Torri E *et al*. Application of the National Early Warning Score (NEWS) as a stratification tool on admission in an Italian acute medical ward: A perspective study. *Int J Clin Pract* 2017;71:3–4. https://doi.org/10.1111/ijcp.12934

25 Hodgson LE, Dimitrov BD, Congleton J *et al*. A validation of the National Early Warning Score to predict outcome in patients with COPD exacerbation. *Thorax* 2017;72:23–30. https://doi.org/10.1136/thoraxjnl-2016-208436

26 Kovacs C, Jarvis SW, Prytherch DR *et al*. Comparison of the National Early Warning Score in non-elective medical and surgical patients. *Br J Surg* 2016;103:1385–93. https://doi.org/10.1002/bjs.10267

27 Spångfors M, Arvidsson L, Karlsson V, Samuelson K. The National Early Warning Score: Translation, testing and prediction in a Swedish setting. *Intensive Crit Care Nurs* 2016;37:62–7. https://doi.org/10.1016/j.iccn.2016.05.007

28 Abbott TE, Torrance HD, Cron N, Vaid N, Emmanuel J. A single-centre cohort study of National Early Warning Score (NEWS) and near patient testing in acute medical admissions. *Eur J Intern Med* 2016;35:78–82. https://doi.org/10.1016/j.ejim.2016.06.014

29 Albur M, Hamilton F, MacGowan AP. Early warning score: a dynamic marker of severity and prognosis in patients with Gram-negative bacteraemia and sepsis. *Ann Clin Microbiol Antimicrob* 2016;15:23. https://doi.org/10.1186/s12941-016-0139-z

30 Jarvis S, Kovacs C, Briggs J *et al*. Can binary early warning scores perform as well as standard early warning scores for discriminating a patient's risk of cardiac arrest, death or unanticipated intensive care unit admission? *Resuscitation* 2015;93:46–52. https://doi.org/10.1016/j.resuscitation.2015.05.025

31 Alam N, Vegting IL, Houben E *et al*. Exploring the performance of the National Early Warning Score (NEWS) in a European emergency department. *Resuscitation* 2015;90:111–5. https://doi.org/10.1016/j.resuscitation.2015.02.011

32 Kolic I, Crane S, McCartney S, Perkins Z, Taylor A. Factors affecting response to national early warning score (NEWS). *Resuscitation* 2015;90:85–90. https://doi.org/10.1016/j.resuscitation.2015.02.009

33 Hancock C. A national quality improvement initiative for reducing harm and death from sepsis in Wales. *Intensive Crit Care Nurs* 2015;31:100–5. https://doi.org/10.1016/j.iccn.2014.11.004

34 Badriyah T, Briggs JS, Meredith P *et al*. Decision-tree early warning score (DTEWS) validates the design of the National Early Warning Score (NEWS). *Resuscitation* 2014;85:418–23. https://doi.org/10.1016/j.resuscitation.2013.12.011

35 Kane B, Decalmer S, Murphy P, Turkington P, O'Driscoll BR. S29 The proposed National Early Warning System (NEWS) could be hazardous for patients who are at risk of hypercapnic respiratory failure. *Thorax* 2012;67 (Suppl 2): A16–A17. https://doi.org/10.1136/thoraxjnl-2012-202678.035

36 O'Driscoll BR, Grant K, Green D *et al*. The national early warning score gives misleading scores for oxygen saturation in patients at risk of hypercapnia. *Clin Med (Lond)* 2014;14:695–6. https://doi.org/10.7861/clinmedicine.14-6-695

37 Asafu-Adjaye K, Gall A. Letter to the Royal College of Physicians regarding the suitability of the National Early Warning Score in the assessment of the unwell spinal cord injury patient. *Clin Med (Lond)* 2015;15:406–7. https://doi.org/10.7861/clinmedicine.15-4-406

38 Department of Health. *Competencies for recognising and responding to acutely ill patients in hospital*. London: DH, 2009. http://webarchive.nationalarchives.gov.uk/20130123195821/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_096989 [Accessed 10 August 2017].

NEWS key		FULL NAME																			
0 1 2 3		**DATE OF BIRTH**									**DATE OF ADMISSION**										

		DATE																		DATE	
		TIME																		TIME	

A+B Respirations Breaths/min		≥25							3											≥25	
		21–24							2											21–24	
		18–20																		18–20	
		15–17																		15–17	
		12–14																		12–14	
		9–11							1											9–11	
		≤8							3											≤8	

A+B SpO₂ Scale 1 Oxygen saturation (%)		≥96																		≥96	
		94–95							1											94–95	
		92–93							2											92–93	
		≤91							3											≤91	

SpO₂ Scale 2† Oxygen saturation (%) Use Scale 2 if target range is 88–92%, eg in hypercapnic respiratory failure †ONLY use Scale 2 under the direction of a qualified clinician		≥97 on O₂							3											≥97 on O₂	
		95–96 on O₂							2											95–96 on O₂	
		93–94 on O₂							1											93–94 on O₂	
		≥93 on air																		≥93 on air	
		88–92																		88–92	
		86–87							1											86–87	
		84–85							2											84–85	
		≤83%							3											≤83%	

Air or oxygen?		A=Air																		A=Air	
		O₂ L/min							2											O₂ L/min	
		Device																		Device	

C Blood pressure mmHg Score uses systolic BP only		≥220							3											≥220	
		201–219																		201–219	
		181–200																		181–200	
		161–180																		161–180	
		141–160																		141–160	
		121–140																		121–140	
		111–120																		111–120	
		101–110							1											101–110	
		91–100							2											91–100	
		81–90							3											81–90	
		71–80																		71–80	
		61–70																		61–70	
		51–60																		51–60	
		≤50																		≤50	

C Pulse Beats/min		≥131							3											≥131	
		121–130							2											121–130	
		111–120																		111–120	
		101–110							1											101–110	
		91–100																		91–100	
		81–90																		81–90	
		71–80																		71–80	
		61–70																		61–70	
		51–60																		51–60	
		41–50							1											41–50	
		31–40							3											31–40	
		≤30																		≤30	

D Consciousness Score for NEW onset of confusion (no score if chronic)		Alert																		Alert	
		Confusion							3											Confusion	
		V																		V	
		P																		P	
		U																		U	

E Temperature °c		≥39.1°							2											≥39.1°	
		38.1–39.0°							1											38.1–39.0°	
		37.1–38.0°																		37.1–38.0°	
		36.1–37.0°																		36.1–37.0°	
		35.1–36.0°							1											35.1–36.0°	
		≤35.0°							3											≤35.0°	

| **NEWS TOTAL** | | | | | | | | | | | | | | | | | | | | **TOTAL** | |

Monitoring frequency																				Monitoring	
Escalation of care Y/N																				Escalation	
Initials																				Initials	

National Early Warning Score 2 (NEWS2) © Royal College of Physicians 2017

1518
2018

500 years of medicine

**Royal College
of Physicians**

500 years of medicine