Using NEWS2: an essential component of reliable clinical assessment

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The National Early Warning Score 2 (NEWS2) is the established track and trigger system to assess illness severity and risk of deterioration for patients in acute episodes of care in the UK. It is also increasingly used internationally. In this article, we outline established and recommended practice for initial and ongoing assessment. We also highlight where practice may not meet these standards, how the full context and assessment of the patient is paramount, and opportunities for more accurate assessment in the future.

KEYWORDS: NEWS2, deterioration, monitoring, clinical assessment

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Introduction

Physiological observations are a core component of clinical assessment and monitoring. These can be standardised and systematised in track and trigger early warning systems. Such systems combine commonly used vital sign measurements in a score that indicates and allows tracking of the acuity of illness and the risk of subsequent deterioration. They also recommend the clinical response required at specified trigger levels. The National Early Warning Score 2 (NEWS2) is the standard track and trigger early warning system used in the UK and increasingly internationally, both because of its usability (using easily obtainable measures) and its well-evidenced validity. It serves as a ‘common language’ of acuity and deterioration that enables consistency of practice, training and communication. NEWS2 is now also used by ambulance services, in general practice and in other community assessments.

While the application of NEWS2 is associated with reductions in both mortality and late escalations of care, its use has sometimes resulted in an inappropriate focus on the score rather than wider clinical assessment and context. We highlight good practice and areas for improvement, illustrated by case examples.

How NEWS2 is used in practice in the UK

NEWS2 uses respiratory rate, oxygen saturation, need for oxygen therapy, heart rate, blood pressure, level of consciousness/confusion and temperature in an ‘airway, breathing, circulation, disability and exposure’ framework. It can be used in all adults over 16 years of age, though more specific scoring systems should be used in pregnancy. It is a general assessment for all clinical scenarios. Changes or stability of measures and scores over time are particularly helpful to understand the patient’s condition, risk, recovery, stabilisation or deterioration.

It is essential that NEWS2 informs and is part of the clinical judgement of a patient’s condition, risk and illness course. Many other factors will be involved in that clinical assessment. A high combined NEWS2 or individual parameter red scores should trigger escalation (patients are sometimes said to be ‘NEWS-ing’). Condition-specific observations should be used alongside NEWS2 that might also trigger escalation. Escalation trigger points are for more detailed clinical assessments because of illness severity, risk of deterioration or change in condition. Patients should be informed and involved in assessments and decisions.

NEWS was initially validated for use on general medical and surgical wards before it spread to emergency departments and then pre-hospital services as evidence and experience in these areas developed. The National Institute for Health and Care Excellence (NICE) recommends that these parameters are recorded at the time of hospital admission or initial assessment; a recent audit of 156 hospitals showed that this was achieved within 30 minutes in 77% of patients. NICE NEWS2 values guide frequency of ongoing observations, and the need for escalation (Table 1).

Standardised charts should be used, with associated training, as these will ensure consistency and familiarity of use across care settings and organisations. The response to escalation requires a structured review that includes time of escalation, time and grade of clinical response, clinical assessment, and plan (including a treatment plan and an individualised trigger score (threshold) for further escalation). Modifications to escalation thresholds are needed with particular diagnoses, prognosis, comorbidities, patient’s wishes and treatment limitation plans (including do not attempt cardiopulmonary resuscitation and end-of-life pathways). These situations, therefore, require an appropriately competent clinical decision maker, and clear documentation and communication with the care team and patient.

In practice, use of NEWS2 is variable. One ethnographic study found that 42% of behaviours were not as expected when...
<table>
<thead>
<tr>
<th>National Early Warning Score 2</th>
<th>Frequency of monitoring</th>
<th>Clinical response</th>
<th>Additional implementation guidance states</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total score = 0</td>
<td>Minimum 12-hourly</td>
<td>Continue routine NEWS monitoring</td>
<td></td>
</tr>
<tr>
<td>Total score = 1–4</td>
<td>Minimum 4–6-hourly</td>
<td>Inform a registered nurse, who must assess the patient</td>
<td>Registered nurse decides whether increased frequency of monitoring and/or escalation of care is required</td>
</tr>
</tbody>
</table>
| Score of 3 in a single parameter | Minimum 1-hourly       | Registered nurse to inform medical team caring for the patient, who will review and decide whether escalation of care is necessary | A NEWS2 score of 5 or 6 that is new for the patient, unless an alternative escalation threshold has been previously determined:
> assessment is expected within 60 minutes
> moving the patient to an environment with monitoring facilities should be considered |
| Total score = 5 or more: Urgent response threshold | Minimum 1-hourly       | Registered nurse to immediately inform the medical team caring for the patient | Registered nurse to request urgent assessment by a clinician or team with core competencies in the care of acutely ill patients
> Provide clinical care in an environment with monitoring facilities |
| Total score = 7 or more: Emergency response threshold | Continuous monitoring of vital signs | Registered nurse to immediately inform the medical team caring for the patient; this should be at least at specialist registrar level | A NEWS2 score of 7 or above that is new for the patient, unless an alternative escalation threshold has been previously determined:
> assessment is expected within 30 minutes
> the patient should be monitored every 30 minutes initially
> a clinician competent in the assessment of acutely ill patients will be decided locally and could be the emergency response team
> if there is no improvement, senior clinician review is expected within 60 minutes
> moving the patient to an environment with monitoring facilities should be considered |

Adapted with permission from Royal College of Physicians. National Early Warning Score (NEWS) 2: Standardising the assessment of acute-illness severity in the NHS. RCP, 2017. ICU = intensive care unit; NEWS = National Early Warning Score.

High patient acuity, dependency or throughput (or reduced staffing levels) make effective monitoring, recognition of deterioration, appropriate escalation and timely response less likely. Poor team-working and hierarchical structures also contribute to suboptimal processes. Clinicians and managers should work to understand the barriers and enablers that affect best use of the NEWS2 system and ensure that local structures and processes demonstrably protect patients at risk of deterioration. Critically, any early warning score only has value if there is a reliable, timely and effective response: a dependable whole rapid response system is required. Most acute hospitals now have medical emergency, rapid response or...
Scenario 1
Debbie is a 47-year-old woman with type 1 diabetes. She had dysuria for 3 days and subsequently needed support from her husband to mobilise. The district nurse assessed Debbie at home, with a vital-signs scoring National Early Warning Score 2 (NEWS2) of 5. This prompted the nurse to arrange an emergency ambulance transfer to the emergency department (ED).

At triage in ED, the NEWS2 score was 8. Debbie was then transferred to the ‘resus’ bay where she received emergency treatment for sepsis.

On day 3 of admission, Debbie was well enough to be discharged home (with a NEWS2 of 0).

Take home message
NEWS2 scoring supports clinical decision making and communication across primary and acute care, including ambulance services.

In Debbie’s case, an initial NEWS2 of 5 supported timely escalation of treatment and prevention of septic shock.

Scenario 2
Albert is a 78-year-old man who had been on the cardiology ward for 3 weeks for treatment of heart failure. Albert has chronic kidney disease stage 3 and had a previous stroke. His left ventricular ejection fraction 4 months previously was 25%. When last stable 3 months ago, he did not get out of his house and has carers four times a day. Albert’s National Early Warning Score 2 (NEWS2) was 5–6 for 10 days, despite intensive treatment for his heart failure, and his renal function worsened considerably. His NEWS2 score increased to 12, with raised respiratory and heart rates, and a drop in blood pressure, and he became unresponsive.

Assessment of Albert’s deterioration resulted in recognition that he was in the last few hours or days of life. An end-of-life care plan was commenced, with cessation of physiological monitoring, and a focus on symptom relief and comfort.

Take home message
A high NEWS2 reflects significantly altered physiology and is indicative of high risk of death. When considered in conjunction with trajectory of scores, comorbidities and recent health status, conversations and plans around palliative care may be appropriate.

Scenario 3
Ahmed is a 37-year-old man and was diagnosed with testicular cancer 2 months previously. He was transferred to the oncology ward having vomited excessively in the day-care chemotherapy unit as his second dose of chemotherapy started. He had been vomiting for 3 days prior to this.

After antiemetics, he was sleeping intermittently over the next few hours. His National Early Warning Score 2 (NEWS2) was 2 on admission and the same 4 hours later. He was found collapsed by his bed just before midnight, and received emergency treatment for severe metabolic acidosis and hyperkalaemia secondary to acute kidney injury.

Take home message
A low NEWS2 does not mean no risk. Some patients (often, but not always, younger patients) may compensate for longer with deteriorating clinical status. It is important to assess and monitor the whole patient, including fluid balance and investigations.
Scenario 4

Kay is 57-year-old woman, runs at least three times a week, swims, sails, cycles and climbs. She fell off her bicycle 5 days previously, with resulting fractures, and underwent left ankle arthrodesis 3 days previously.

The ward nurse escalated at midday as he was worried that, over the course of 4 hours, Kay’s oxygen requirement had gone from room air, then 2 L by nasal cannulae to now 60% by Venturi, although the National Early Warning Score 2 (NEWS2) has remained 3–4.

The ward doctor reviewed Kay and sent her for computed tomography angiography. Kay was subsequently diagnosed with a pulmonary embolism.

**Take home message**

Any oxygen requirement above room air only ever adds a score of 2 on NEWS2. Always ascertain the amount of oxygen being delivered to any patient.

Future opportunities

A NEWS2 value is simply calculated from just seven easily obtained measures. Early warning scoring systems that use NEWS2 parameters but also many more variables including combinations of vital signs, laboratory datasets, patient age, comorbidities and frailty have been shown to have greater predictive accuracy than NEWS2, although they require that data to be available and significant processing power to compute.18,19

On a less sophisticated level, more detailed analysis of NEWS2 at particular time points, and its trends and changes over time may yield greater predictive power too.20

Other technological advances include wireless wearable patient monitors that provide continuous or semi-continuous vital-sign data that can enable much more frequent calculation of the NEWS2. One recent before–after study with medical and surgical patients suggested that use of such a system reduced the number of escalations required and unplanned admissions to critical care.21 Wireless wearable systems to monitor patients at home that will allow earlier discharge from hospital and reduction of preventable admissions are under investigation.

On a more human level, NHS England is supporting a national programme to develop, test and evaluate reliable methods for patients (or their families/carers) to routinely input their views (especially regarding their wellness/illness and trajectory) as well as their worries and concerns into the health record, with evidence that those views and concerns are considered and acted on by the healthcare team. It is hypothesised that these approaches will supplement NEWS2 monitoring and enhance more reliable, earlier detection of deterioration.22

Summary and conclusion

NEWS2 is a well-established, validated, easy to use track and trigger system for illness severity and the risk of deterioration. While used throughout the NHS, research suggests that it is not always used accurately, and there are risks that less experienced clinicians might place an over reliance on its measures without considering its limitations or the wider clinical context.
Digitisation of measurement and the use of AI give opportunities for more accurate measurement and triggering of response, and also the addition of other measurements that can assess illness severity, deterioration, risk and recovery. Emphasis should be given to the consistent and accurate use of NEWS2 within and across pathways of care and care settings as part of clinical assessment. Clinical judgement remains paramount. Patient, clinician and family concerns can add significantly to assessment. Other measures that are disease specific should be used alongside NEWS2. The response to a trigger must be a detailed clinical assessment that can determine intervention, ongoing monitoring and escalation requirements for the individual patient, and sometimes palliation with cessation of measuring NEWS2.

References

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