

**#welearnwednesday**

**October 2022**

## **Search question: How to recognise deteriorating patients**

### **How to recognise a deteriorating patient**

The NICE guideline on “acutely ill adults in hospital: recognising and responding to deterioration” (1) recommends that adult patients in acute hospitals should have physiological observations recorded at initial assessment or admission. Physiological observations should then be monitored at least every 12 hours unless a decision has been made at a senior level to increase or decrease the frequency of monitoring for an individual patient. (2)

As a minimum, NICE recommends the following physiological observations to be recorded at the initial assessment and as part of routine monitoring:

- heart rate
- respiratory rate
- systolic blood pressure
- level of consciousness
- oxygen saturation
- temperature

In addition to the above list, SIGN recommends monitoring state of hydration in patients (4)

In some organisations, rapid response teams assess patients in whom respiratory, cardiac, or neurologic deterioration is developing (eg, vital sign changes or altered mental status). (3)

In one large prospective study, the presence of any one of the following was associated with a 6.8-fold increase in mortality (95% CI 2.7-17.1) (7):

- Bradycardia <30 beats/minute
- Systolic blood pressure <90 mmHg
- Oxygen saturation <90 percent
- Respiratory rate <6 breaths/minute
- A decrease in Glasgow Coma Scale by 2 points
- Onset of coma

Staff caring for patients in acute hospital settings should have competencies in monitoring, measurement, interpretation, and prompt response to the acutely ill patient appropriate to the level of care they are providing. Education and training should be provided to ensure staff have these competencies, and they should be assessed to ensure they can demonstrate them.

SIGN recommends the implementation of National Early Warning Score (NEWS) to monitor all adult patients in acute hospital settings. Maternity specific EWS should be used for pregnant women. (4) However, NICE recommends that 'physiological track and trigger systems' should be used to monitor all adult patients in acute hospitals, with multiple-parameter or aggregated weighted scoring systems used to set trigger thresholds locally. NEWS2 is recommended in the NICE guideline's section on choice of physiological track and trigger system as the system endorsed by NHS England. The additional parameter included in NEWS2 is the new-onset confusion measured along with the level of consciousness.

A score of 0, 1, 2 or 3 is allocated to each parameter. A higher score means the parameter is further from the normal range. Appropriate clinical responses are given for threshold National Early Warning Score systems that alert to deteriorating adult patients in hospital (trigger) levels, with a recommendation to review and agree these locally:

- **Low risk** (aggregate score 1 to 4) – prompt assessment by ward nurse to decide on change to frequency of monitoring or escalation of clinical care.
- **Low to medium risk** (score of 3 in any single parameter) – urgent review by ward-based doctor to determine cause and to decide on change to frequency of monitoring or escalation of clinical care.
- **Medium risk** (aggregate score 5 to 6) – urgent review by ward-based doctor or acute team nurse to decide on escalation to critical care team.
- **High risk** (aggregate score of 7 or over) – emergency assessment by critical care team, usually leading to patient transfer to higher-dependency care area.

The recommendation for a NEWS2 aggregate score of 0 (that is, no change to any parameter) is a minimum 12-hourly review and to continue routine monitoring. (2)

There is a slight hesitation on the part of NICE to fully endorse NEWS2 as they have identified the 4 NEWS2 comparative studies that were mixed in terms of the populations, settings, and tested comparisons, limiting the conclusions that could be made. They concluded that further evidence was required to demonstrate superior performance of NEWS2 compared with other available tools. (1) However, they acknowledge the value of providing a consistent message to healthcare professionals. Considering this, they are following 2 studies (5, 6) that have the potential to change current guidelines. They plan to regularly check whether these studies have published results and evaluate the impact of the results on current recommendations.

NICE further assessed the comments received from stakeholders around 12-hour frequency of observing the patients and felt that the evidence was not strong enough to consider changing this recommendation. However, SIGN recommends 4 hourly monitoring after admission to hospital. (4)

### **Plan of action for the deteriorating patient**

NICE (1) recommends a graded response strategy for patients identified as being at risk of clinical deterioration should be agreed and delivered locally.

It should consist of the following 3 levels:

- **Low-score group:** ◇ Increased frequency of observations and the nurse in charge alerted. This is further
- **Medium-score group:** ◇ Urgent call to team with primary medical responsibility for the patient. ◇ Simultaneous call to personnel with core competencies for acute illness.

These competencies can be delivered by a variety of models at a local level, such as a critical care outreach team, a hospital-at-night team or a specialist trainee in an acute medical or surgical specialty.

- **High-score group:** ◇ Emergency call to team with critical care competencies and diagnostic skills.

The team should include a medical practitioner skilled in the assessment of the critically ill patient, who possesses advanced airway management and resuscitation skills. There should be an immediate response.

Patients identified as 'clinical emergency' should bypass the graded response system. With the exception of those with a cardiac arrest, they should be treated in the same way as the high-score group.

For patients in the high- and medium-score groups, healthcare professionals should:

- initiate appropriate interventions
- assess response formulate a management plan,
- including location and level of care.

If the team caring for the patient considers that admission to a critical care area is clinically indicated, then the decision to admit should involve both the consultant caring for the patient on the ward and the consultant in critical care.

NICE clearly highlights a formal structured handover of care of deteriorating patients to include:

- a summary of critical care stay, including diagnosis and treatment
- a monitoring and investigation plan
- a plan for ongoing treatment, including drugs and therapies, nutrition plan, infection status and any agreed limitations of treatment
- physical and rehabilitation needs
- psychological and emotional needs
- specific communication or language needs.

Staff working with acutely ill patients on general wards should be provided with education and training to recognise and understand the physical, psychological, and emotional needs of patients who have been transferred from critical care areas. The following e-learning video developed by Health Education England in partnership with AHSN Network supports this aim:

**E-learning for healthcare.** Recognising and Managing Deterioration <https://portal.e-lfh.org.uk/Component/Details/579290> [Registration required]

Another interactive resources that staff will find useful is:

[Signs of life](#) is a simulated training resource, where healthcare professionals can practice the care of the deteriorating patient. The game is played out in a hospital ward or nursing home setting. In real time scenarios, players record a patient's vital signs in a simulated work situation, decide what interventions are required and are given critical feedback on the best clinical decisions to take.

## References/Further reading:

1. National Institute for Health and Care Excellence (2007). *Acutely ill adults in hospital: recognising and responding to deterioration* [Clinical guideline 50]. [Online]. London: NICE. Available at: <https://www.nice.org.uk/guidance/cg50> [Accessed 13 October 2022].
2. National Institute for Health and Care Excellence (2020). *National Early Warning Score systems that alert to deteriorating adult patients in hospital* [Medtech innovation briefing MIB205]. [Online]. London: NICE. Available at: <https://www.nice.org.uk/advice/mib205/resources/national-early-warning-score-systems-that-alert-to-deteriorating-adult-patients-in-hospital-pdf-2285965392761797> [Accessed 13 October 2022].
3. UpToDate (2022). *Rapid response systems*. [Online] Waltham, MA: UpToDate. Available at: <https://www.uptodate.com/contents/rapid-response-systems> [Accessed 13 October 2022].
4. Health Improvement Scotland (2014). *Care of deteriorating patients* (SIGN 139). [Online]. Edinburgh: Health Improvement Scotland. Available at: <https://www.sign.ac.uk/assets/sign139.pdf> [Accessed 13 October 2022].
5. [ISRCTN - ISRCTN17676798: Use of early warning scales in the prehospital scope as a diagnostic and prognostic tool](#)
6. [ISRCTN - ISRCTN10863045: Safer and more efficient vital signs monitoring: an observational study](#)
7. Buist M., Bernard S., Nguyen T.V., Moore G. & Anderson J. (2004). 'Association between clinically abnormal observations and subsequent in-hospital mortality: a prospective study', *Resuscitation*, 62(2), pp.137-41 <https://doi.org/10.1016/j.resuscitation.2004.03.005>

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