

letters to the editor

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Concerns regarding the design of the bedside monitoring chart for use with the NEWS (National Early Warning System)

Editor – The concept of a standardised national Early Warning Scoring System is very welcome and we strongly support this initiative by the Royal College of Physicians (*Clin Med* December 2012 pp501–3). However, the bedside chart in the NEWS system and the online training package make no allowance for patients at risk of hypercapnic type 2 respiratory failure (T2RF). This may lead to potentially dangerous use of oxygen for these patients. We believe that a substantial number of patients may be placed at risk by the introduction of the NEWS observation chart until the respiratory section is revised.

The British Thoracic Society Emergency Oxygen Guideline (endorsed by the Royal College of Physicians) recommends a target saturation range of 88–92% for patients at risk of T2RF because the use of high concentration oxygen therapy may double the risk of death, mechanical ventilation or hypercapnic respiratory failure.^{1–4} The NEWS observation chart may encourage clinicians to aim for an oxygen saturation of $\geq 96\%$ for patients at risk of T2RF.

We audited 108 general medical patients of whom 31% had risk factors for T2RF.⁵ 56% of at-risk patients had saturations within their target range of 88–92% either on air or oxygen. The NEWS system allocated these patients 2 or 3 EWS points for 'low' oxygen levels which could prompt nursing staff to increase supplemental oxygen, potentially precipitating dangerous hypercapnia. Three patients had a saturation of $>92\%$ on oxygen. The NEWS did not alert nursing staff that supplemental oxygen should be reduced; saturations of 93–95% were actually scored as 'too low' which could prompt nursing staff to

further increase supplemental oxygen and cause worsening T2RF.^{1–4}

The proportion of hospital patients at risk of hypercapnic respiratory failure is not known but estimates may be made as follows:

- UK Hospital Episode statistics for 2011–12 show that in England about 2% of all hospital bed days and 4% of medical bed days had a primary diagnosis of chronic obstructive pulmonary disease (COPD), emphysema or respiratory failure.⁶
- Many other hospital patients have COPD as a secondary diagnosis. A study by Shahab *et al* found that 9% of UK adults aged 65 years or over had severe or very severe COPD, as defined by spirometry.⁷
- The Health Survey for England in 2011 reported that 1.7% of adult males and 2.3% of adult females were morbidly obese.⁹ These patients are especially common on medical wards and they are at risk of hypercapnic respiratory failure.^{1,9}
- An audit at Salford Royal University Hospital in 2012 found that 23% of 347 general medical patients had risk factors for T2RF.¹⁰
- Another hospital audit found that 48% of medical patients who needed blood gas measurements had risk factors for T2RF failure. 22% of inpatient blood gas samples showed hypercapnia (T2RF), but only 10% of samples showed type 1 respiratory failure.¹¹
- The 2011 BTS Emergency Oxygen audit found that 55% of medical patients and 21% of surgical patients who were using oxygen with a target range had a prescribed range of 88–92%, suggesting risk of T2RF (BTS audit data on file).
- Collectively, these data suggest that at least one-fifth of general medical patients have risk factors for type 2

respiratory failure and the proportion of those at risk is higher (between 22% and 55%) among medical patients who actually require oxygen therapy or blood gas measurements.

The use of 'dots' to document the oxygen saturation and respiratory rate provides insufficient information and does not allow accurate titration of oxygen to the target range or accurate audit of compliance with the national guideline.¹

The line that is titled 'inspired O₂%' cannot be completed accurately unless the patient is using a Venturi mask.

There is evidence that intensive care unit (ICU) patients, survivors of cardio-pulmonary resuscitation, patients with mild or moderate strokes and patients with myocardial infarction may be harmed by hyperoxaemia.¹² We recommend that the NEWS system should draw clinical attention to saturation above 98% in patients using supplementary oxygen (as well as flagging hypoxaemia).

A proposed solution to these problems

We have previously discussed the complexities of using Early Warning Scoring Systems for patients with chronic respiratory diseases.¹³ We now recommend that a target oxygen saturation range should be set for all patients on admission to hospital to identify those at risk of T2RF. This should be linked to revision of the NEWS observation chart by:

- basing the SpO₂ score on whether or not the patient is at risk of T2RF
- identifying the oxygen delivery device and flow rate
- using numbers instead of 'dots' to allow accurate documentation of respiratory rate and SpO₂
- allocating EWS points for hyperoxaemia as well as for hypoxaemia.

We believe that these changes will make the NEWS system a safety feature instead of a potential hazard for patients at risk of T2RF. These modifications to the NEWS chart will protect patients at risk of T2RF and will also help to avoid hyperoxaemia and the prolongation of oxygen therapy when it is no longer required, thus encouraging earlier mobilisation of patients who have recovered from hypoxaemia.

B RONAN O'DRISCOLL
Consultant respiratory physician

NAWAR DIAR BAKERLY
Consultant respiratory physician

PETER MURPHY
Divisional director of nursing

SAMANTHA DECALMER
Specialist registrar in medicine

BINITA KANE
Specialist registrar in medicine

AISHA A NASIR
Medical student

FIONA SIMPSON
Foundation year 1 doctor

PETER M TURKINGTON
Consultant respiratory physician
Respiratory Medicine, Salford Royal
University Hospital, Salford, UK

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Respiratory specialty specific examinations in the south west

Editor – We read with interest the clinical and scientific letter from Medford and Jeyabalan regarding south west higher specialist trainee perceptions of the respiratory specialty certificate examination (SCE) (*Clin Med* December 2012 pp 609). They propose a survey to evaluate the perceptions of trainees nationwide.

The British Thoracic Society (BTS) Specialist Trainees Advisory Group (STAG) recently undertook just such a survey, using an anonymised electronic questionnaire sent to all BTS trainee members. The total number of responders was 95, 56 (59%) of whom had undertaken the SCE. Perceptions were measured by the Likert rating scale with an option for free text.

Overall, trainees felt the SCE was appropriate in difficulty, content and duration, and felt the SCE correlated to the JRCPTB curriculum for respiratory medicine. Concern was raised regarding the proportion of questions related to obscure and rare conditions. Furthermore, ambiguity and similarity of some questions within individual examinations was reported. While the radiological content of the SCE

was deemed appropriate in volume and difficulty, concerns were raised regarding image viewing facilities within the examination test centres.

The examination test centres, used for all SCEs, were felt to be acceptable for their purpose, but trainees reported frequent interruptions by candidates sitting concurrent, often shorter, examinations (driving theory tests being the most commonly cited).

Trainees felt there was inadequate guidance regarding when to sit the SCE and reported receiving contradictory advice from regional training programme directors, ARCP panels and the RCP. Trainees deemed ST5 to be the most appropriate stage to take the SCE. The RCP was felt to provide adequate information regarding the SCE content and structure, but trainees felt additional revision guidance and practice questions would be desirable. The cost of the SCE was widely criticised for being too high.

The survey confirmed the popularity of the BTS SCE preparation course and highlighted a role for the BTS STAG in connecting trainees through a central online revision network. Trainees perceived a role for the BTS in guiding SCE content and structure, lobbying to ensure examination centres are of a high standard universally and lobbying to have the cost of the SCE reduced. To this end, the survey results have been communicated to the Respiratory Medicine Specialist Advisory Committee (SAC) for their review and action. The SAC has links to the RCP and JRCPTB and is well placed to respond to trainee feedback.

In summary, this nationwide survey mirrors the perceptions of regional trainees identified by Medford and Jeyabalan, but provides additional information regarding perceptions of the SCE structure and content, the examination test centre network and the roles of the RCP and BTS. Through feedback to those involved in the design and implementation of the SCE, trainees' suggestions and concerns are being raised at the highest level.

CAROLINE PATTERSON
ANDREA COLLINS

On behalf of The British Thoracic Society
Specialist Trainees Advisory Group, London,
UK