



Issues for debate

Developing nursing students' decision making skills: Are early warning scoring systems helpful?

Jacqueline McCallum^{a,*}, Kathleen Duffy^{b,1}, Elizabeth Hastie^{c,2}, Valerie Ness^{d,3}, Lesley Price^{e,4}^a Caledonian University, Room A511, Govan Mbeki Building, Cowcaddens Road, Glasgow G4 0BA, UK^b NHS Lanarkshire, Practice Development Centre, 14 Beckford Street, Hamilton ML3 0TA, UK^c Caledonian University, Room A533, Govan Mbeki Building, Cowcaddens Road, Glasgow G4 0BA, UK^d Caledonian University, Room A417, Govan Mbeki Building, Cowcaddens Road, Glasgow G4 0BA, UK^e Caledonian University, Room A534, Govan Mbeki Building, Cowcaddens Road, Glasgow G4 0BA, UK

ARTICLE INFO

Article history:

Accepted 17 September 2012

Keywords:

Decision-making

Undergraduate nurses

Early warning scoring systems

ABSTRACT

This paper is presented to contribute to the emerging debate on Early Warning Scoring Systems. The Early Warning Scoring System was introduced, and has been implemented internationally, to aid in the identification of the patient whose condition is deteriorating. Early identification of patient deterioration is of vital importance for patient safety. Therefore how we teach this skill to students and how they become competent and confident in its utilisation, interpretation and subsequent clinical decision-making is crucial. The paper initially explores the competence of student nurses in this area. The discussion then focuses on three models of clinical decision making to illustrate why the introduction of Early Warning Scoring Systems has hindered student nurses in the development of the decision-making skills required to identify and manage the patient whose condition is deteriorating.

© 2012 Elsevier Ltd. All rights reserved.

Early identification of clinical deterioration is of vital importance across all acute care settings, however, sometimes the patient's condition worsens before staff recognise and respond to the signs of this. Consequently in the United Kingdom (UK) the National Patient Safety Agency (2007) suggests that all acute care nurses should use Early Warning Scoring (EWS) systems to identify patients at risk of deterioration. Similarly, in America, the Institute Health Improvement (2006) advocated the use of these systems in their campaign to protect patients from incidents of harm.

The first Early Warning Scoring system was developed in Liverpool, Australia (Lee et al., 1995). Since then many more have been developed throughout the world. These systems may be referred to

as 'track and trigger' or rapid response systems, but all have the common goal of assisting practitioners with the early detection of deterioration in the patient's condition by using the physiological parameters from the patient's observations (Goldhill et al., 2005; Cuthbertson et al., 2007; Higgins et al., 2008). For the purpose of this paper all such tools will be referred to as EWS systems.

Educational institutions worldwide teach students to record, document and analyse vital signs of their patients. In the UK the 'Standards for Pre-Registration Nursing Education' set out what nursing students must demonstrate to be fit for practice at the point of registration with the Nursing and Midwifery Council (NMC, 2010). The standards outline the essential skills required of students nurses and state that by their second progression point, they should be able to accurately undertake and record "a baseline assessment of... temperature, pulse, respiration and blood pressure using manual and electronic devices" (NMC, 2010 p.113); whilst at the entry to the register they require to measure, document and interpret vital signs and act "autonomously and appropriately on findings" (NMC, 2010 p.115) to identify and manage the patient whose condition is deteriorating. In both the education and practice setting these skills are often introduced, practiced and refined within the context of using an EWS system tool. Therefore student nurses, within the earlier part of their programme, should be able to assess patients' physiological observations and other documented parameters, making up a EWS score, and report to

* Corresponding author. Home: 9, Birklands Wynd, Kilwinning, Ayrshire KA13 6NP, UK. Tel.: +44 (0) 141 331 3068; fax: +44 (0) 141 331 8312.

E-mail addresses: Jacqueline.mccallum@gcu.ac.uk (J. McCallum), kathleen.duffy@nes.scot.nhs.uk (K. Duffy), e.hastie@gcu.ac.uk (E. Hastie), v.ness@gcu.ac.uk (V. Ness), l.price@gcu.ac.uk (L. Price).

¹ Home: 22 Allendale, Stewartfield, East Kilbride G74 4JD, UK. Tel.: +44 (0) 1698 201424.

² Home: 34 Randolph Drive, Clarkston, Glasgow G76 8AW, UK. Tel.: +44 (0) 141 331 8318; fax: +44 (0) 141 331 8312.

³ Home: Flat 2/1, 140 Raeberry Street, Glasgow G20 6EA, UK. Tel.: +44 (0) 141 331 8813; fax: +44 (0) 141 331 8312.

⁴ Home: 122 Comiston Drive, Edinburgh EH10 5QU, UK. Tel.: +44 (0) 141 331 3431; fax: +44 (0) 141 331 8312.

a qualified member of staff. By qualification, they should be able to interpret the score, as part of a holistic assessment and take appropriate action. This ability to make autonomous decisions based on a range of information is an important skill to master as once qualified students no longer have mentors to verify their clinical decision making.

Given that EWS systems are being used in the development of student nurses' competence in the measurement, documentation and interpretation of patients' vital signs can we demonstrate evidence that their decision making skills are effectively enhanced by the use of these systems? Cooper et al. (2010) studied final year nursing students in a simulated environment to assess their understanding and ability to deal with patients who were deteriorating. They found that when the condition of the patients in the scenarios worsened, the students' skill performance worsened. Results indicated that students were more inclined to identify physiological causes for the deterioration but scored badly on their understanding of what went on around the patient, demonstrating poor situational awareness. The authors concluded that student nurses, at the point of qualification, may be inadequately prepared to identify and manage patients whose condition is deteriorating within the clinical setting. This resonates with our experience when teaching the management of the patient whose health condition is deteriorating to third year student nurses within the simulation laboratory. We recognised that students often found it difficult to describe the decisions they would make if observations were abnormal or EWS scores highlighted concerns. It was also apparent, when reading and marking academic assignments that students' focussed on the use of the tool score rather than on holistic assessment.

The evidence base in relation to student nurses' skills in managing patients whose condition is deteriorating may be limited, however the findings from Cooper et al.'s (2010) study are consistent with research undertaken with qualified nurses. Qualified staff do not always recognise, or indeed, respond appropriately when faced with a patient whose condition is deteriorating (Endacott et al., 2010). In 2011 Rattray et al. set out to determine which professional, situational and patient characteristics predicted nurses' judgements of patients' acute deterioration and the likelihood of referral to medical staff. Their results supported the use of EWS systems, as it was the single most significant predictor of nurses' referral behaviour. Such evidence, alongside the National Patient Safety Agency (2007) and the Institute for Healthcare Improvement (2006) recommendations, supports the inclusion of EWS scoring systems in nurse education and practice. But do we want nurses to be good at referring, or do we want them to be able to make appropriate decisions about their patients care?

Our experience shows that EWS scoring systems are not helpful in developing student nurses' decision making skills and what evidence there is, supports this. One possible reason for this may be the dissonance between early warning scoring systems and decision making theory. There are a number of models that can be utilised to develop students' decision making skills three are considered here, namely; information processing, professional judgement and intuition. Banning (2008) indicates that models of decision making used in nursing differ in the degree of analysis that takes place prior to decision making. In the information processing approach the nurse analyses the situation by collecting information and identifying the patient problem(s). Following this they interpret the information gathered in order to decide what the likely cause of the problem is and what action should be taken. It could be argued that EWS systems apply some aspects of the information processing approach. However, following the collection of the patient's physiological data an aspect of the function of the EWS systems is to indicate the actions to be taken in response to a given

score level. This aspect of the tool may actively discourage analysis and independent decision making therefore hindering the student from concluding the information processing model.

Traynor (2009) applied the theory of professional work to support professional judgement in decision making. This theory proposes that occupational work can be classified by a combination of technically defined activity and, in situations of indeterminacy, professional judgement. Technical aspects can be analysed and reduced to identifiable elements and structures, which can be defined and measured. The recording of a patient's observations can be clearly defined and measured making it possible to pre-determine the level of performance and to standardise this activity. However it could be argued that the interpretation of these observations is where indeterminacy comes in and where professional judgement is required given the uniqueness of each patient's context. The importance of indeterminacy and the need for professional judgement in nursing was illustrated by Garzian et al.'s (2010) study. She described the cues employed by nurses to identify and interrupt a potentially preventable cardiopulmonary arrest and identified the importance of 'getting to know the patient'. A point further emphasised by Gillespie (2010) who stressed the importance of context, foundational knowledge, and thinking processes in decision making. EWS systems do not place importance on knowing individual patients, their condition and treatment nor the background to the observations being recorded. Neither do they place emphasis on the interpretation of signs. Contextual information such as the presence of clammy skin or use of accessory muscles of respiration and the taking of any initial actions that may be appropriate prior to the reporting of the score to a more experienced colleague are not part of the scoring system, thus preventing nursing students from fully developing professional judgement as an aspect of decision making when faced with a deteriorating patient.

Another predominant decision making model suggested by Banning (2008) is the intuitive model. Benner (1982) explains the importance of intuition in nursing suggesting that as nurses develop their skills they progress through five levels from novice, to advanced beginner, to competent, to proficient and finally to expert. Applying Benner's theoretical framework, a EWS system may be useful for the novice nurse who needs to be able to perform tasks without previous experience and who consequentially requires rules to follow. However, as students progress in their course they require to move through the levels towards intuition.

The influence of the clinical practice environment on the development of nurses' decision-making processes has been well established (Chase, 1995; Bowers et al., 2001; Bucknall, 2003; Ness et al., 2010) and the mentor is a powerful role model to the student nurse in practice. As the expert nurse with previous experience, mentors should have a rapid intuitive understanding of a situation and should be able to accurately interpret the patient's score and act appropriately without rules to guide them. However, if the registered nurse views the EWS system as a 'tool', as evidence presented earlier in this paper suggests, then students will do likewise and fail to develop towards intuitive decision making skills. The challenge is how do we (lecturers and mentors) guide students through the novice stage, while simultaneously preparing them to move beyond this level of practice to become proficient in recognising and making appropriate clinical decisions regarding the deteriorating patient?

Summary

Detecting patients, whose condition is deteriorating, is of crucial importance in all areas of practice. Whilst Early Warning Scoring is not a panacea, the recent introduction of the National Early

Warning Score across the National Health Service makes it clear that these tools will remain in use for some time to come. This paper does not question the value of the EWS tool in identifying some patients who are deteriorating. However, the ubiquity of EWS has the potential to deskill a workforce as decision making capabilities are no longer developed or maintained. Expertise could be expected to bring with it an increase in intuition thus facilitating effective decision making, unfortunately this is not always the case. The question therefore that remains is how educational institutions should support students in their journey from following a set of guidelines such as EWS systems, towards making sound clinical decisions based on all contextual information.

In clinical practice, mentors need to appreciate their crucial role in preparing their students for independent practice. Early warning scoring systems will continue to be utilised by mentors as they demonstrate and supervise students' practice. Given that the clinical environment has the potential to be the best of learning environments, how can we ensure that mentors have the skills to guide students towards safer decision-making and do they, in fact, need support in the development of their own skills in this area? Can EWS systems be used as an effective tool enabling students to appreciate them as just that – a tool – which is merely a component of the multi-faceted decision-making process for which they will remain professionally accountable?

References

- Banning, M., 2008. A review of clinical decision making: models and current research. *Journal of Clinical Nursing* 17 (2), 187–195.
- Benner, P., 1982. From novice to expert. *American Journal of Nursing* 82 (3), 402–407.
- Bowers, B.J., Luring, C., Jacobson, N., 2001. How nurses manage time and work in long-term care. *Journal of Advanced Nursing* 33 (4), 484–491.
- Bucknall, T., 2003. The clinical landscape of critical care: nurses' decision-making. *Journal of Advanced Nursing* 43 (3), 310–319.
- Chase, S., 1995. The social context of critical care clinical judgment. *Heart and Lung* 24 (2), 154–162.
- Cooper, S., Kinsman, L., Buykx, P., McConnell-Henry, T., Endacott, R., Scholes, J., 2010. Managing the deteriorating patient in a simulated environment: nursing students' knowledge, skill and situation awareness. *Journal of Clinical Nursing* 19 (15–16), 2309–2318.
- Cuthbertson, B.H., Smith, G.B., 2007. A warning on early-warning scores! *British Journal of Anaesthesia* 98 (6), 704–706.
- Endacott, R., Scholes, J., Buykx, P., Cooper, S., Kinsman, L., McConnell-Henry, T., 2010. Final-year nursing students' ability to assess, detect and act on clinical cues of deterioration in a simulated environment. *Journal of Advanced Nursing* 66 (12), 2722–2731.
- Gazarian, P.K., Henneman, E.A., Chandler, G.E., 2010. Nurse decision making in the Prearrest period. *Clinical Nursing Research* 19 (1), 21–37.
- Gillespie, M., 2010. Using the situated clinical decision-making framework to guide analysis of nurses' clinical decision-making. *Nurse Education in Practice* 10, 333–340.
- Goldhill, D.R., McNarry, A.F., Mandersloot, G., McGinley, A., 2005. A physiologically-based early warning score for ward patients: the association between score and outcome. *Anaesthesia* 60, 547–553.
- Higgins, Y., Maries-Tillott, C., Quinton, S., Richmond, J., 2008. Promoting patient safety using an early warning scoring system. *Nursing Standard* 22 (44), 35–40.
- Institute for Healthcare Improvement, 2006. The 5 Million Lives Campaign. Available at: <http://www.ihl.org/IHI/Programs/Campaign/> (accessed 09.06.11.).
- Lee, A., Bishop, G., Hillman, K.M., Daffurn, K., 1995. The medical emergency team. *Anaesthesia Intensive Care* 23, 183–1986.
- National Patient Safety Agency, 2007. Recognising and Responding Appropriately to Early Signs of Deterioration in Hospitalised Patients. <http://www.nrls.npsa.nhs.uk/resources/?entryid45=59834> (accessed 8.11.10.).
- Ness, V., Duffy, K., McCallum, J., Price, L., 2010. Supporting and mentoring nursing students in practice. *Nursing Standard* 25 (1), 41–46.
- Nursing and Midwifery Council, 2010. Standards for Pre-registration Nursing Education. Nursing and Midwifery Council, London.
- Ratray, J.E., Lauder, W., Ludwick, R., Johnstone, C., Zeller, R., Winchell, J., Myers, E., Smith, A., 2011. Indicators of acute deterioration in adult patients nursed in acute wards: a factorial survey. *Journal of Clinical Nursing* 20 (5–6), 723–732.
- Traynor, M., 2009. Indeterminacy and technicality revisited: how medicine and nursing have responded to the evidence based movement. *Sociology Health Illness* 31 (4), 494–507.