ECG Interpretation – Are we getting it right?

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The importance of identifying and managing cardiac arrhythmias seems to be in the news lately with the publication earlier this year of the updated NICE guidance on the management of atrial fibrillation (NICE, 2014) and calls for the forthcoming Hearth Rhythm Congress in Birmingham, October 2014. There have been a number of articles published on how best to identify cardiac arrhythmias and interpret the 12-lead ECG (Jabbour, 2014; Rowlands and Moore, 2014). Within cardiovascular care, the 12-lead ECG remains the single, most important diagnostic test in the assessment of arrhythmias and other cardiac abnormalities and it is therefore vital that clinicians are appropriately skilled in both recording and interpretation. However, it has been highlighted in a number of studies that medical and nursing staff often have limited knowledge and skills of ECG interpretation due to lack of, or inadequate training (Richley, 2013). Errors in interpretation can lead to mis-diagnosis or delayed intervention.

Rowlands and Moore (2014) identified three possible solutions to inadequate skills of interpretation: Firstly, the use of computer-generated ECG analysis or trusting 'what the ECG machine tells us'. This, as many of us know, can be fraught with errors (Wetherall, 2014). Secondly, rapid access to skilled interpretation - A number of centres now offer this service, although this is still not widely available within the NHS and arguably, not as 'rapid' as skilled interpretation by the individual recording the ECG. Thirdly, and most practically, effective training and assessment of healthcare professionals. NMC pre-registration competencies make limited reference to ECGs and so it might reasonably be assumed that on registration, nurses have had little or no formal assessment of ECG recording and interpretation.

This leads us to an interesting debate about how best to teach these essential skills. This debate is, of course, underpinned by broader educational concepts of how we learn. Pedagogical learning and teaching strategies such as interactive and group-based activities utilising, for example, the presentation of patient case studies, easily lends itself to learning how to interpret the ECG, especially when preceded by more formal 'information giving' sessions. The development of problem-solving skills within a clinical context is also important since the ECG can yield both false-positive and false-negative results and findings should always be considered in the light of a holistic patient assessment - it is just one piece of the puzzle.

There are a number of structured methods available for systematic ECG analysis, each involving a number of steps, for example, the colour-coded CRASH system (Jabbour, 2014). To some extent the choice of method is based on individual tutor or student preference and each may be valuable. It would, however, seem appropriate to evaluate their effectiveness in terms of level of accuracy and speed of use to determine if any one method is superior to another.

Such comprehensive education, arguably, requires a significant amount of time and commitment. One or even half-day courses may make useful updates for the advanced practitioner but are unlikely to develop the skills necessary to reach an acceptable level of competence for most nurses. The rigorous, formal assessment of competence is an essential element of any ECG course and is necessary to avoid a mismatch between confidence and competence as described by Rowlands and

Moore (2014), in which nurses may feel more confident following a course but are no more competent. Assessment frequently takes the form of written or oral examinations although there is no consensus on the most effective form of assessment in determining competence. Like all knowledge, ECG interpretation has a tendency to deteriorate over time, bad habits may start to creep in and new insights become available. This deterioration is likely to be accelerated if skills are not regularly practiced – use it or lose it! As a result, regular updates are necessary. The optimum timing and length of updates will vary depending on the individual, but annually might be considered a minimum.

Courses are often in-house in the form of study days or provided by a University, in which case academic credit at HE level 5, 6 or even 7 is awarded. Whilst personal and professional development may be a significant driver in undertaking ECG courses, the main aim is to develop appropriately skilled professionals so that patients receive timely, clinically effective interventions.

In conclusion, whilst variety may be the spice of life and individuals have their own unique learning styles, there is limited evidence to determine what may be 'best practice' in ECG learning and teaching. Course evaluations are the first step towards determining the effectiveness of individual courses and an overall analysis of available courses in terms of their effectiveness in developing competence would also be useful. What is most important is that nurses are able to determine their own level of knowledge and skills, refer appropriately and work within their level of competence to maintain patient safety.

References:

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