How to ensure patient observations lead to effective management of tachycardia

Tachycardia could indicate serious illness. It is essential that nurses promptly identify and act on this significant sign of patient deterioration.

AUTHOR Phil Jevon, PGCE, BSc, RN, is resuscitation officer/clinical skills lead, Manor Hospital, Walsall.


Tachycardia is a normal physiological response to exercise but in the healthcare setting it is considered to be an adverse sign, indicating possible serious illness such as shock. The condition can also be associated with a life threatening cardiac arrhythmia. This article aims to help nurses understand how to manage it.

Tachycardia is defined as a heart rate >100 beats per minute (Resuscitation Council UK, 2006). It is often one of the first signs that a patient is beginning to deteriorate (Jevon, 2009a).

The clinical signs of critical illness are associated with compromised respiratory, cardiovascular and neurological functions (Nolan et al, 2005). Adverse signs are:

- Tachypnoea;
- Tachycardia;
- Hypotension;
- Altered consciousness level (Resuscitation Council UK, 2006).

RELATED PHYSIOLOGY

The heart rate is controlled by the cardiovascular centre in the medulla oblongata through the autonomic nervous system (the parasympathetic and sympathetic nervous systems) (Waugh and Grant, 2006; Green, 1991):

- Vagus nerve (parasympathetic nerve): acts as a brake on the heart. The greater the vagal activity, the slower the heart rate: if vagal activity diminishes, the heart rate increases (Jevon, 2009b). If the vagal tone is completely blocked, the heart rate increases to around 150 beats per minute (Green, 1991);
- Sympathetic nerve: sympathetic nerve activity (“fight or flight”) has a positive chronotropic action by increasing heart rate. It is particularly active in periods of emotional excitement, exercise and stress.

SINUS TACHYCARDIA

Sinus tachycardia can be defined as a sinus rhythm >100bpm; the ECG has the same characteristics as sinus rhythm except that the QRS rate is >100bpm (Jevon, 2009b). Sinus rhythm and sinus tachycardia are illustrated in Figs 1 and 2.

Sinus tachycardia can be a normal response to a physiological stimulus such as exercise. However, if it persists, it is usually an indication of pathophysiology (Jevon, 2009b). It is common in critically ill patients.

There are many causes of sinus tachycardia including: anxiety; emotional distress; pain; fever; drugs such as salbutamol, and stimulants such as caffeine and nicotine.

Tachycardia is also a common finding in many acute illnesses including:

- Heart failure;
- Pulmonary embolism;
- Pneumonia;
- Acute respiratory distress syndrome;
- Anaphylaxis;
- Heart failure;
- Shock;
- Thyrotoxicosis (Jevon, 2009b).

Nurses are expected to be able to measure and interpret heart rate accurately (Department of Health, 2008). Early warning scores (EWS) should identify patients at risk (unless proven otherwise) when they have or develop tachycardia (NICE, 2007).

Measurement of heart rate (pulse) should be undertaken following local protocols and EWS guidelines. It is a fundamental part of

PRACTICE POINTS

Competencies required

- When measuring heart rate, nursing staff (including healthcare assistants) should be able to identify an abnormal pulse rate, record the result and assign a trigger score.
- Registered nurses should be able to interpret the heart rate measurement and respond appropriately following local early warning score (EWS) escalation protocols. They should alter the frequency of EWS observations if required and be able to intervene with basic treatment measures.
- Nurses should be able to use a cardiac monitor and start ECG monitoring if necessary.

Source: Department of Health (2008)

INDICATIONS FOR MEASURING HEART RATE

Nurses should be able to measure and interpret heart rate accurately (Department of Health, 2008). Early warning scores (EWS) should identify patients at risk (unless proven otherwise) when they have or develop tachycardia (NICE, 2007).

Measurement of heart rate (pulse) should be undertaken following local protocols and EWS guidelines. It is a fundamental part of...
patient assessment and a main component of the Resuscitation Council (UK)’s (2006) systematic airway, breathing, circulation, disability, exposure (ABCDE) approach to the assessment of critically ill patients. The assessment of pulse is described in Box 1.

Indications for measuring heart rate include:
- Critical illness;
- Recording a baseline rate for comparison;
- Evaluating response to treatment, for example, following a fluid challenge in suspected circulatory shock;
- Monitoring for adverse reactions to a blood transfusion;
- Monitoring the effect of certain medicines such as beta-antagonistic therapy.

MANAGING TACHYCARDIA
Assess patients using the ABCDE approach to identify signs of critical illness. Ensure appropriate senior help is called if necessary, following EWS escalation protocols:
- Ensure patients have a clear airway and are breathing adequately;
- For those who are critically ill, administer oxygen as prescribed – see part 2 of this series (Jevon, 2010);
- Monitor vital signs and complete the EWS chart following local protocols. It is important to adjust the frequency of EWS observations following local protocols;
- Try to identify the cause of the tachycardia. For example, observe for signs of pain, anxiety and pyrexia. Check if medication that might cause tachycardia has recently been administered;
- If necessary, take steps to relieve pain and monitor the effects of interventions such as analgesia and repositioning as appropriate;
- Lie patients flat if they are hypotensive or feeling lightheaded. Intravenous fluids may be prescribed to increase circulating volume of fluid;
- Start ECG monitoring if appropriate and record a single lead ECG strip. If indicated, record a 12 lead ECG; this will help to establish the correct interpretation of the ECG rhythm (Nolan et al, 2005). The Resuscitation Council (UK) (2006) provides guidance for the effective and safe management of patients with a tachyarrhythmia (fast atrial fibrillation, narrow complex tachycardia and broad complex tachycardia). The algorithm is available at tinyurl.com/tachycardia-RCUK.

CONCLUSION
Tachycardia could indicate critical illness. Nurses should always assess patients using the ABCDE approach and administer oxygen if needed. They should complete the EWS charts following local systems, ensuring escalation protocols are followed if required.

REFERENCES

NURSING Learning
Nursing Times Learning is a new way for you to update your knowledge and skills. Our online learning units are written by experts using case scenarios to discuss healthcare related topics so information is linked directly to everyday situations and clinical practice. They are an ideal way to demonstrate your professional updating or to show your commitment to new areas of practice.

For an online learning unit on Arterial Blood Gas Interpretation go to: www.nursingtimes.net/learning-bloodgas