What are the benefits?

Andrew Webb looks at 24 hour ECG event recorders.

There are two main types of ECG recorders worn by patients in an ambulatory setting away from the surgery. They are known as Holter ECG recorders or Event Capture ECG recorders, but may also be known generically by some as CardioMemos.

They are small portable devices worn or carried by the patient and used to record the electrical activity of the heart for periods of 24 hours or more.

They are generally used to investigate suspected symptoms of arrhythmia including palpitations, light-headedness or syncope (partial or complete loss of consciousness), which has not been detected during a shorter 12 lead, surgery based ECG.

Event ECG recorders are designed for patients who experience symptoms very infrequently.

Holter or event recorder

Continuous full disclosure Holter ECG monitors were first used in the 1970s and typically operate for 24-48 hours recording every single heartbeat during this period.

This can mean that upwards of 100,000 beats are recorded over a 24 hour period.

They are especially useful if the wearer does not feel or is not aware of the ECG abnormality, and are typically more expensive than event recorders.

Thankfully the days of storing data onto magnetic tape, with the inherent noise and poor quality data this resulted in, have long gone. In most cases data is now stored digitally either on internal flash memory or on removable SD data cards.

Data is uploaded to a computer where software automatically analyses the recording classifying it by beat type, identifying and labelling specific arrhythmias and in some cases, providing a textual summary for the clinician.

Reports should be customisable and have the ability to be attached to the patient's clinical notes electronically.

Most Holter analysis software can run on a desktop PC and a separate dedicated PC is not required. This makes the analysis of the recording much quicker.

Event ECG recorders are different and are designed for patients who experience symptoms very infrequently and require monitoring over several days or even weeks.

This type of recorder is usually patient activated by pushing a button, but some can be programmed to record automatically at preset intervals or will trigger automatically at the onset of certain arrhythmias.

Some event recorders record post event data only. Others operate in a 'loop' memory mode so the device records 30 seconds of pre event and 30 seconds post event data. This is useful should the patient lose consciousness and allows the clinician to view the ECG immediately leading up to the event.

Integrated electrode event recorders

Traditionally, post event recorders would have had an external lead with electrodes fitted to the patient's chest or be held against the chest to record. Recent advances in technology have seen the development of new recorders, which have built in finger or wrist watch type electrodes, which permit long term monitoring without the discomfort or irritation of a patient lead.

These types of devices can also be used to reassure the 'worried well'.

What to look for when buying:

- Does the device have built electrodes or a separate lead?
- What is the recording capacity of the device?
- What is the battery capacity of the device?
- Is staff training and software support available?
- Is an after sales and repair service available?
- Can reports be attached to clinical management systems?

National guidance

The NICE clinical guideline 36 (2006) gives guidance for the management of atrial fibrillation and recommends an ECG should be performed on all patients where atrial fibrillation is suspected if an irregular pulse has been detected, whether symptomatic or not.

It recommends using ambulatory ECG recording in patients with suspected paroxysmal AF as follows:

- A 24-hour Holter ECG monitor should be used in those with suspected asymptomatic episodes or symptomatic episodes less than 24 hours apart.
- An event recorder ECG should be used in those with symptomatic episodes more than 24 hours apart.

The National Service Framework for Coronary Heart Disease chapter on cardiac arrhythmias lists three quality requirements relating to patient support, diagnosis and treatment and sudden cardiac death.

Each requirement includes markers of good practice for treatment of patients and their families who are diagnosed with, or suspected of having an arrhythmia. ■

For more information contact PMS (Instruments) on 01628 773233 or visit **www.pmsinstruments.co.uk**

Andrew Webb
is managing director of PMS Instruments.