NHS
Purchasing and Supply Agency

Centre for Evidence-based Purchasing

Buyers' guide

Patient-activated ECG event recorders

CEP09007

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Informing procurement - Encouraging innovation

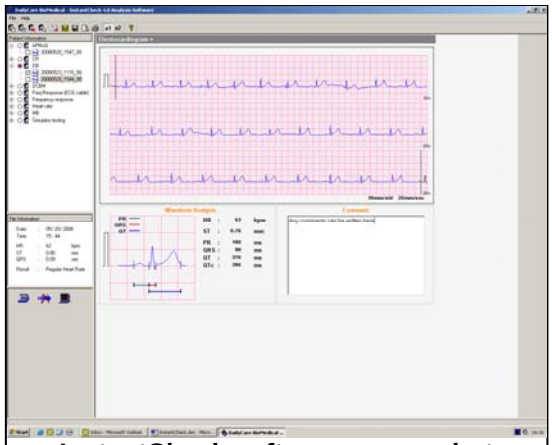
DailyCare Biomedical InstantCheck

Summary

Compact hand-held ECG event recorder using integrated thumb electrodes or adhesive electrodes connected to the wrist.

No significant errors over heart rate range but frequency response was less than specified; simple waveform classification which did not attempt to assign recordings to specific ECG arrhythmias; no statements regarding disposal.

InstantCheck



InstantCheck software screenshot

Description

The InstantCheck is a hand-held patient-activated ECG event recorder with a capacity of 100 ECG strips, each of 30 second duration. The hinged lid houses a monochrome LCD screen which opens to reveal controls, speaker and integrated patient electrodes. Patient connection is via right and left thumb/finger on dry electrodes integrated into the device or by a two-electrode ECG cable attached to conventional ECG pads positioned just above each wrist.

Apart from on/off, the unit is controlled by three buttons '*Start*', *'Menu'* and *'OK'* in conjunction with a screen menu and prompts.

In use, the device is held in both hands. When switched on, a message '*Step 1 Press the Start button to start measuring*' is displayed followed by '*Step 2 Place thumbs gently on the electrodes*'. With the device on a flat surface measurement via fingers is possible.

During recording, the unit displays ECG, heart rate, 1 mV marker, 30 s timer and a '*Stop*' prompt (the OK key). When the recording is complete, average HR, ST and QRS values and a simple classification are displayed, *eg* '*Regular heart rate*'*, including fast (>100 bpm) or slow (<60 bpm), ST value high (>+2 mm) or low (<-2 mm) and QRS value high (>0.12 s). Other descriptions are *'Irregular heart rate*' or '*Impossible to analyze*'.

The device's review ECG mode lists/plays all recordings with associated HR, ST and QRS parameters. During playback, trace size and speed are adjustable.

Data may be transferred to a PC with '*InstantCheck*' software via a supplied USB cable. Transfer is initiated from the screen menu; other menu functions include data deletion and date/time setup.

The device shuts down after 60 seconds of inactivity.

*Note: the '*Regular heart rate*' sub-classification (if present) is not stored and is acknowledged simply by an asterisk in the ECG review mode display.

Results

ECG performance tests	
• frequency response	0.1 Hz to 32 Hz; specified 0.1 to 40 Hz
• heart rate range and accuracy	30–260 bpm; no significant errors
• response to atrial fibrillation (simulation)	classified '*Irregular heart rate*'
General	
• usability	good
Manuals	
• user manual	satisfactory
• service manual	satisfactory
Construction	plastic case; hinged lid incorporating display
• mechanical	good
• electrical	good
o data transfer	USB cable (supplied)
• CE marking	CE_{0197}

Technical discussion

Construction

The device is compact, lightweight and supplied with a good quality padded storage pouch making it easy for the patient to carry throughout waking hours.

The LCD screen is well protected within the hinged lid. The auxiliary ECG and USB connectors are under a sliding cover on the left hand side, ensuring only one at a time can be used. The device is powered by two user-replaceable alkaline AAA batteries housed in a compartment on the base.

The circuit board and its surface mount components appear to be of high quality.

Serviceability and manuals

The user manual contains operating instructions for the device and the *InstantCheck* review software. Users are advised to clean the electrodes regularly without using cleaning solutions or organic solvents, but no advice is given on disinfection.

The service manual provides technical descriptions and an annual '*calibration procedure*' – a limited check against an ECG simulator. A warning on the device states that it should not be dismantled, *ie* it is repairable by the manufacturer only. The expected life cycle for this type of medical device is five to seven years.

Sustainability

Consumable items and costs: 2 x AAA alkaline batteries (measurement capacity not specified) with typical replacement costs of £1.07 per battery.

Supplier servicing costs: no statement regarding calibration/servicing.

Disposal guidance: no statement regarding disposal of product or batteries.

Author and report information

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C A Reay
D R Bousfield
J A Menes
E S Colechin
A J Sims

Regional Medical Physics Department
Freeman Hospital
High Heaton
Newcastle upon Tyne
NE7 7DN

Tel: 0191 2137787
Email:rmpdfhevaluation@nuth.nhs.uk
Web: http://www.rmpd.org.uk

About CEP

The Centre for Evidence-based Purchasing (CEP) is part of the Policy and Innovation Directorate of the NHS Purchasing and Supply Agency. We underpin purchasing decisions by providing objective evidence to support the uptake of useful, safe and innovative products and related procedures in health and social care.

We are here to help you make informed purchasing decisions by gathering evidence globally to support the use of innovative technologies, assess value and cost effectiveness of products, and develop nationally agreed protocols.

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Centre for Evidence-based Purchasing
Room 152C
Skipton House
80 London Road
SE1 6HL

Tel: 020 7972 6080
Fax: 020 7975 5795
Email: cep@pasa.nhs.uk
Web: http://www.pasa.nhs.uk/cep