VALIDITY AND RELIABILITY OF SHORT-TERM HEART-RATE VARIABILITY FROM DISPOSABLE ELECTROCARDIOGRAPHY LEADS

Nduka Charles Okwoze*, 1Sophie Lauren Russell, 1Mushidur Rahman, 1Charles James Stewart, 1Amy Elizabeth Hanwood, 2Gordon McGregor, 2Srđjan Ninković, 1Helen Maddock, 3Prithwish Banerjee, 3Djordje G Jakovljević, 3Cardiovascular and Lifestyle Medicine Research Theme, Faculty of Health and Wellbeing, Centre for the Future of Health and Care, University of Coventry, CV1 2DS, UK; 2Department of Surgery, Faculty of Medical Sciences, University of Kragujevac, Clinical Centre, Kragujevac, Serbia; 3Department of Cardiology, University Hospitals Coventry and Warwickshire NHS Trust, Coventry, UK

RESULTS
Repeatability measures showed excellent agreement between disposable and reusable leads for time (<2.5±1.4%) and frequency (<5±1%) domain measures were acceptable. Repeated measures using disposable leads demonstrated excellent reproducibility (ICC 95% CI) for R-R interval (ms); 0.99 (0.91, 1.00), root mean square of successive normal R-R interval differences (RMSSD) (ms); 0.91 (0.76, 0.96), SD of normal-to-normal R-R intervals (SDNN) (ms); 0.91 (0.68, 0.97) and frequency domain (Low Frequency (LF) normalised units (nu); 0.90 (0.79, 0.95), High Frequency (HF) nu; 0.91 (0.80, 0.96), LF power (ms²); 0.89 (0.62, 0.96), HF power (ms²); 0.90 (0.72, 0.96) variables. The mean difference and upper and lower limits of agreement between disposable and reusable leads was time (<2.5±1.4%) and frequency (<5±1%) domain measures were acceptable. Repeated measures using disposable leads demonstrated excellent reproducibility (ICC 95% CI) for R-R interval (ms); 0.93 (0.85, 0.97), RMSSD (ms); 0.93 (0.85, 0.97), SDNN (ms); 0.88 (0.75, 0.95), LF power (ms²); 0.87 (0.72, 0.94), and HF power (ms²); 0.88 (0.73, 0.94) with coefficient of variation ranging from 2.29%–5%

Conclusion Single-use Kendall DL™ ECG leads demonstrate a valid and reproducible tool for assessment of HRV. Disposable leads may also play an important role in infection control in clinical and rehabilitation settings.

IMPLEMENTING A HOME-BASED CARDIAC REHABILITATION PROGRAMME FOR PEOPLE WITH HEART FAILURE AND THEIR CAREGIVERS: FINDINGS FROM THE SCOT: REACH-HF STUDY

Rod Taylor, 1Carrie Purcell*, 2Anthony Punvis, 1John Cleland, 2Apsley Cowie, 4Hasnain Dalal, 1Tracey Llubet, 2Annie Murphy, 1Cardiovascular and Lifestyle Medicine Research Theme, Faculty of Health and Wellbeing, University of Glasgow, 2Robertson Centre for Biostatistics, University of Glasgow, 3NHS Ayrshire and Arran, 4Ayrshire and Arran Health and Social Care Partnership, Glasgow, UK

Background Despite robust evidence and national guidance recommending cardiac rehabilitation (CR) for heart failure (HF), access remains poor, a situation magnified by COVID-19. The Rehabilitation EnAbled in CHronic Heart Failure (REACH-HF) randomised controlled trial demonstrated the clinical and cost-effectiveness of a novel home-based CR self-management programme. The SCOT:REACH-HF study was conducted to assess the feasibility and acceptability of producing a version of the programme for people with heart failure and their care-givers.

Methods A mixed-methods non-comparative evaluation study was undertaken, involving people with heart failure and their care-givers. A process evaluation approach was used with mixed-methods study design (quantitative and qualitative). A pragmatic approach to the design of this evaluation was adopted.

Results A total of 212 people with heart failure (70%) and 69 care-givers (66%) participated in the study. Results from the quantitative part of the study will be presented at the conference. The qualitative findings (n=2) cited positive attitudes towards the HM from patient representatives, general user-friendliness and useful content. An audit on HM patient feedback reported high engagement with health behaviour change(s), positive gains from psychosocial support, and improved understanding and awareness of condition. A grey-paper on patient reported outcomes (n=2) reported feeling reassured by the HM.

Conclusion The HM continues to be the most widely studied HBCRP, and has played a key role in demonstrating the effectiveness of HBCRP over the last 30 years. Recent surveys have shown reported benefits in managing other health conditions, including diabetes, blood pressure, and mental health, through using the HM. Patients also reported feeling reassured by the HM.

A NARRATIVE REVIEW OF KEY STUDIES ON THE HEART MANUAL – LOOKING BACK ON 30 YEARS OF EVIDENCE ON HOME-BASED CARDIAC REHABILITATION

Roseanne Morris*, 1Carolyn Deighan, Sharon Cameron, Louise Taylor. The Heart Manual, NHS Lothian, Astley Ainslie Hospital, 133 Grange Loan, Edinburgh EH9 2HL

Background The Heart Manual (HM) Programme is the UK’s leading home-based self-managed cardiac rehabilitation programme (HBCRP) for individuals recovering from acute myocardial infarction and/or revascularisation. This year marks 30 years of HM implementation in the NHS and overseas.

Aim The aim of this study is to conduct a narrative review of the HM over the last 30 years, considering its outcomes as a HBCRP.

Methods Databases AHMED, Embase, APA PsychInfo, Ovid Medline were used to source studies where the HM outcomes were a key focus. Grey literature was searched by the HM department. Narrative synthesis was used to capture the qualitative element of extracted papers dated after the Heart Manual 2011 Systematic Review.

Results The search revealed 48 papers; 7 studies were already included in the 2011 systematic review (SR), with 4 new papers remaining and 1 grey-paper, others were duplicates.

Of the studies and those included in SR, 9 reported on efficacy, 4 on programme adherence, and 2 on qualitative outcomes (1 digital-HM, 1 HM patient reported outcomes). Outcomes on efficacy and adherence were all positive. Qualitative findings (n=2) cited positive attitudes towards the HM from patient representatives, general user-friendliness and useful content. An audit on HM patient feedback reported high engagement with health behaviour change(s), positive gains from psychosocial support, and improved understanding and awareness of condition. A grey-paper on patient reported outcomes during COVID-19 reported improvements in managing other health conditions, including diabetes, blood pressure, and mental health, through using the HM. Patients also reported feeling reassured by the HM.

Conclusion The HM continues to be the most widely studied HBCRP, and has played a key role in demonstrating the effectiveness of HBCRP over the last 30 years. Recent surveys have shown reported benefits in managing other health conditions, accessibility, and providing psychological support.