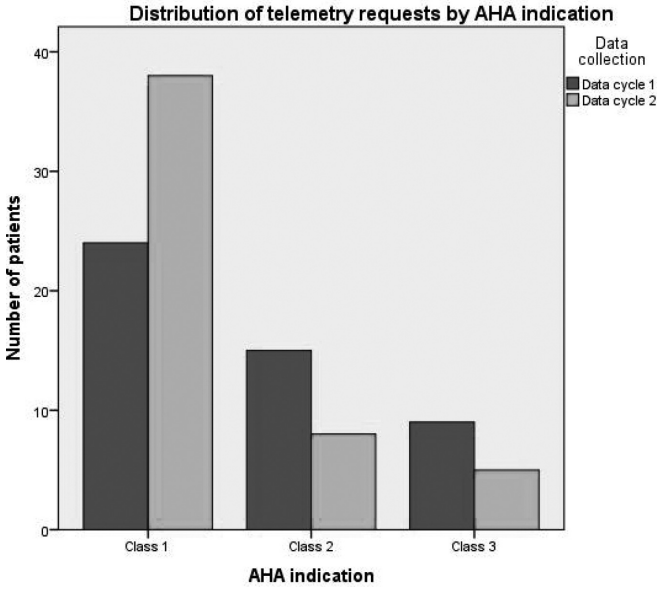
level of appropriate use of telemetry in hospital inpatients in our centre, and hypothesised that a new request card in addition to an educational program for requesting clinicians would help to improve adherence to published AUC.

Methods Prospective single centre quality improvement project in a 625-bed district general hospital, with approval from the local clinical governance committee. Initial data collection was performed over an 8 week period from March to May 2013, and included all patients for whom telemetry was requested for. Data collected included basic demographic and clinical information, the indication for telemetry, and the duration and results of the period of monitoring. The proposed indication was compared with the rating system documented in the American Heart Association 2004 consensus statement for remote electrocardiographic monitoring,[1] and classed as level 1 (definitely indicated), level 2 (possibly indicated), or level 3 (not indicated). Following the initial data collection, the telemetry request form was redesigned to better reflect the AUC, and a series of seminars were held for junior clinicians on the use of telemetry at the same centre. The data collection was then repeated over another 8 week cycle from April to June 2015, and the results compared.

Results There were 48 patients (29 female) in cycle 1 and 51 patients (27 female) in cycle 2. Mean age was 73.6 ± 12.7 years in cycle 1 and 69.9 ± 17.8 years in cycle 2 (p = 0.231), and mean duration of recording was 3.58 ± 2.90 days in cycle 1 and 2.84 ± 1.93 days in cycle 2 (p = 0.439). The commonest indication in both data cycles was the identification of an electrolyte abnormality. Only one patient (in cycle 1) experienced a life threatening arrhythmia whilst on telemetry. In cycle 1 we identified that only 50% of requests were class 1, and this improved to 75% in cycle 2 (p = 0.042; Figure 1). Additionally there were fewer gaps in recording in cycle 2 (mean 7.1 ± 7.9 h versus 11.6 ± 10.2 h, p = 0.030).

Conclusions Whilst this is a single centre study with small numbers, we have shown that adherence to AUC for the use of telemetry in our hospital increased significantly following two simple, easy-to-implement, low cost initiatives. Sustaining such an improvement, and applying similar methods to improve the appropriate use of other investigations, merits further study.



Abstract 57 Figure 1 Distribution of telemetry requests by AHA indication

REFERENCE

1 Drew B, Califf R, Funk M, *et al*. Practice standards for electrocardiographic monitoring in hospital settings. *Circ*. 2004;**110**:2721-–46

58 ECG ELECTRODE POSITIONING -– LUCK OR JUDGMENT?

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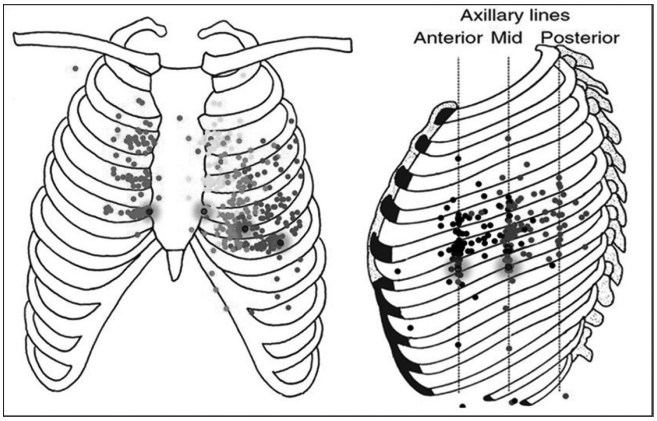
Introduction Electrocardiography is the most common tool used to assist in the evaluation of cardiac disease. A standardised technique is crucial to allow accurate interpretation and comparison of serial tracings. Guidelines are produced by The American Heart Association and the Society for Cardiological Science and Technology. We sought to evaluate knowledge of precordial lead positioning amongst healthcare staff involved in the emergency care of patients with suspected cardiac disease.

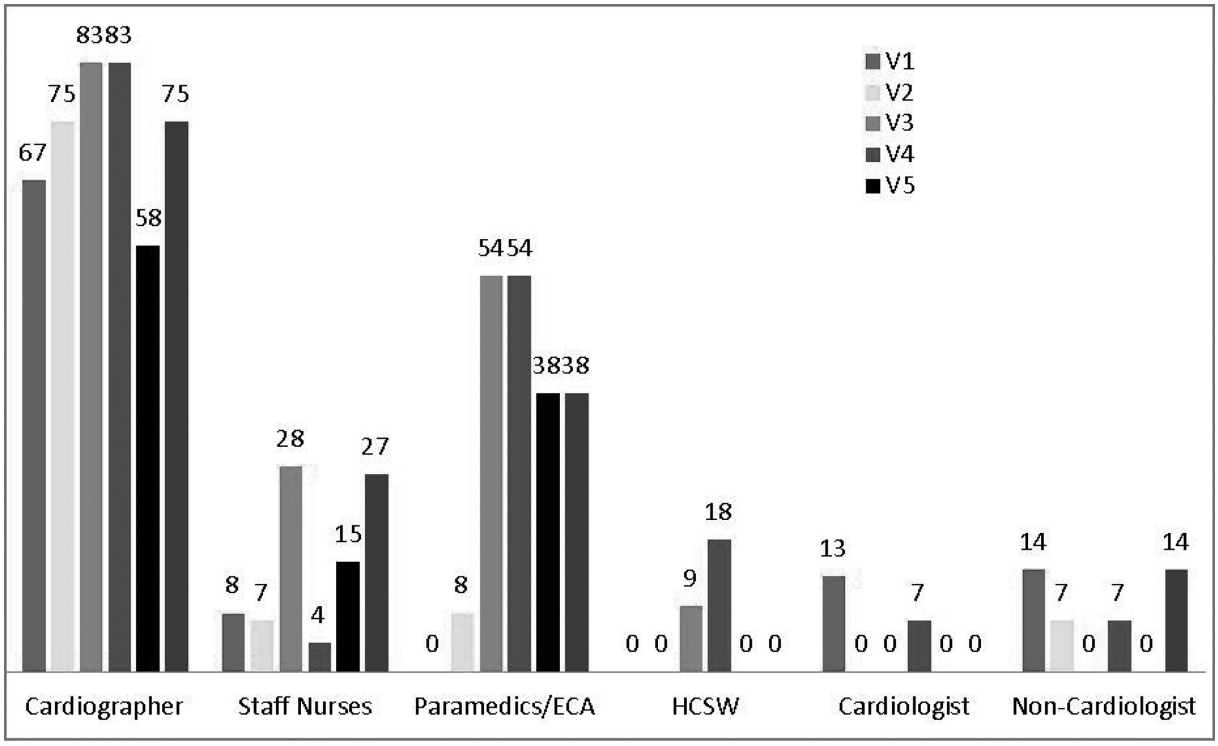
Methods 106 staff of various groups were asked to identify the correct locations for precordial lead position on a schematic of the chest wall. Results were analysed according to distance from the correct position in millimeters (mm) and a mean distance across all leads was calculated. Cardiac physiologists receive the most robust training in ECG acquisition and secondary analysis compared positions identified by other healthcare staff to physiologists. The 95% confidence interval for the physiologists' lead positions was calculated and then used to define the correct position for a comparison against other professional groups.

Results Of the 106 staff members recruited, 9% were cardiac physiologists, 12% cardiographers, 11% cardiology nurses, 11% cardiology consultants or registrars, 18% non-cardiology nurses, 11% healthcare support workers, 13% non-cardiology physicians, and 12% paramedics.

Knowledge of lead position was highly variable with many staff suggesting positions a significant distance from the guideline recommendations. Figure 1 represents the distribution of positions identified for each precordial lead. All of the leads tend be placed higher up the chest wall with V1, V2 and V6 also tending to be more lateral.



Abstract 58 Figure 1 Schematic illustration of electrode positions identified by the study cohort



Abstract 58 Figure 2 Percentage of correctly placed electrodes according to professional group

Cardiac physiologists were the most accurate with a mean distance from the correct position across all leads of 6.7mm. Cardiographers performed similarly well with a mean distance of 6.9mm. Results for cardiology staff nurses, paramedics, non-cardiology physicians and non-cardiology staff nurses were 13.3, 13.9, 12.7 and 17.7mm respectively. Although healthcare support workers were the furthest away at 19.9mm, cardiologists were on average 17.2mm away.

Secondary analysis compared all groups to cardiac physiologists. Figure 2 represents the percentage of correctly placed electrodes by each professional group. Although cardiographers performed well, cardiologists performed very poorly.

Conclusion These results demonstrate a significant lack of knowledge in the correct technique of ECG acquisition amongst healthcare staff outside of physiologists and cardiographers. Most notably, cardiology physicians appeared to be the least knowledgeable. This has the potential to result in artifactual changes in the ECG, particularly in respect of R wave progression, ST, and T wave morphology that could lead to misdiagnosis and administration of potentially harmful treatments. Further training is required and consideration of certification to ensure standardised practice.

59 REMOTE PACEMAKER FOLLOW UP FROM A CONVENIENT COMMUNITY LOCATION -– A PILOT STUDY

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Introduction All patients with a cardiac pacemaker require regular routine follow up. At an interval of no greater than twelve months battery longevity and lead parameters require assessment. This is usually undertaken in secondary care, by a trained cardiac physiologist, in a clinic setting. At University Hospital Southampton 2878 patients undergo routine pacemaker follow up. Pacemaker prevalence increases with patient age. Many patients with pacemakers are frail with multiple co-morbidities and a high percentage are reliant on hospital transport. Hospital attendance for this cohort can be challenging and costly. The pacemaker clinic has a high DNA (did not attend) rate. In 2012, 285 appointment slots were not utilised (around 15% of total appointments).

Two-thirds of our pacemaker patients have a remote compatible Medtronic device. A single Medtronic carelink express monitor, placed in a convenient community location, would allow multiple patients to undergo remote monitoring. We hypothesise that this would increase patient satisfaction with pacemaker follow up, reduce wasted appointment time, minimise expenditure on hospital transport, decrease carbon footprint, and increase availability of on-site clinics and physiologists. We hypothesise that this would be a safe and effective method of conducting pacemaker follow up.

Method A Medtronic carelink express monitor was placed in a community health centre and a pilot group of 90 patients were invited to partake in community follow up. Patients were instructed on how to use the monitoring device and 57 patients were successfully enrolled. Patients were given an indication of when pacemaker follow up was required, but exact attendance time was entirely at their discretion. The carelink monitor was unmanned. Information was sent wirelessly to the hospital and assessed at a virtual follow up clinic.

Results 100% of patients successfully utilised the remote device with a virtual DNA rate of 0%. No patients required extra assistance in using the equipment at the time of download. The average time to assess a download was 6 min, compared to 15 min for an on-site appointment. There were no