Conclusion Telemedicine had been shown to be a safe and effective method in the care of stable cardiology patients. The social, economic and environmental benefit of tele-consultation raised exciting opportunity for future service designs. Collaboration between hospital specialist, management team, community health providers and communication service suppliers are vital to ensure the sustainable implementation of telemedicine in cardiology.

Conflict of Interest none

Cardiac rhythm management

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AUTONOMIC AND VASCULAR FUNCTION CHARACTERISTICS IN PATIENTS WITH ATRIAL HIGH RATE EPISODES

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Introduction Patients who experience frequent atrial high rate episodes (AHREs), recorded on implantable cardiac devices, are at an increased risk of stroke and systemic embolism. Increased duration of AHRE is related to higher risk of thromboembolic event. The underlying pathophysiology is unclear; however, autonomic and/or endothelial dysfunction may contribute. We tested the hypothesis that patients with high AHRE burden have worse autonomic and

vascular function compared to patients with low AHRE burden.

Methods We studied 44 patients split in two groups: high AHRE burden (longest AHRE ≥ 24 hours; $n = 22$) and low AHRE burden (longest AHRE < 24 hours; $n = 22$). Resting time- and frequency-domain measures of HRV were determined to index cardiac autonomic function. High-resolution ultrasound was used to measure brachial artery diameter at rest and during reactive hyperaemia (endothelium-dependent flow mediated dilation (FMD)).

Results FMD was higher in the low AHRE burden group compared to high AHRE group (5.5% [95% confidence interval (CI):3.4–7.6] vs 3.1% [95% CI:1.9–6.2]; $p=0.04$) (table 1). Mean heart rate ($p<0.001$) and AHRE burden ($p=0.02$) were independent predictors of FMD on multivariate analysis. Time-domain, frequency-domain and non-linear indices of HRV were not significantly different between the groups. BMI was an independent predictor of HRV on stepwise multivariate analysis ($p=0.002$).

Conclusion Endothelium-dependent FMD is impaired in patients with high AHRE burden, while HRV derived indices of autonomic function were not affected by AHRE burden. Endothelial dysfunction may play an important role in the adverse outcomes seen in patients who experience frequent AHRE.

Conflict of Interest None

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IMPACT OF THE INTRODUCTION OF AN INTEGRATED MULTI-PROFESSIONAL PATHWAY FOR ATRIAL FIBRILLATION ON LONG-TERM OUTCOMES

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Background An integrated structured approach to atrial fibrillation (AF) management is recommended by ESC.¹ However, limited data is available on its 'real-world' impact on anticoagulation uptake and subsequent AF-related hospitalisation and stroke rates.

Purpose To evaluate the long-term impact of the introduction of a community-wide integrated AF service based in a secondary care hospital.

Methods In September 2017 we implemented a new integrated pathway for patients with newly diagnosed 'symptomatic' atrial arrhythmias across two regions (population 450,000) in England in collaboration with primary care. All patients were seen in a one-stop multi-professional clinic (Arrhythmia nurse and Electrophysiologist with ECG and echocardiogram) within 2 weeks. They underwent standardised screening for modifiable risk factors, counselling regarding diagnosis/ anticoagulation and received an individualised AF management plan as well as access to a nurse-led telephone helpline. We followed up the first 126 consecutive patients for a period of 12 months.

Results Baseline characteristics are shown in table 1, showing a high incidence of modifiable risk factors (previously unidentified in the majority). After review in clinic, 30-day AF-related readmission rates to hospital were low (1.6%, $n=2$) as compared to historical local data (5.8%). This was sustained at 3 months (4.7%, $n=6$) and at 12 months (7.9%, $n=10$). 99% of 83 of eligible patients (CHA2DS2-VASc score of >2

Abstract 83 Table 1 Differences in autonomic and vascular function in patients with AHREs

	Low AHRE group (n = 22)	High AHRE group (n = 22)	P
Age, years	74.5 [67.5 – 81]	72 [60.8 – 82.8]	0.56
Sex (males/females)	15/7	19/3	0.15
CHA2DS2-VASc score	3 $\pm$ 2	3 $\pm$ 2	0.93
BMI (kg/m ²)	29.6 [26.9 – 32.9]	27.7 [24.8 – 36.7]	0.70
Heart rate (bpm)	69 [61 – 75]	68 [60 – 80]	0.97
Systolic BP (mm/Hg)	152 $\pm$ 18	135 $\pm$ 17	0.003
Ejection fraction (%)	59 [55 – 62]	55 [40 – 58]	0.009
Baseline diameter (mm)	4.6 [4.3 – 5.0] ^a	4.8 [4.5 – 5.2] ^a	0.36
Absolute FMD change (mm)	0.2 [0.2 – 0.4] ^b	0.1 [0.1 – 0.3] ^b	0.07
FMD (%)	5.5 [3.4 – 7.6] ^b	3.1 [1.9 – 6.2] ^b	0.04
Shear rate stimulus [sec.-1]	5592 [4174 – 9815] ^b	4173 [2458 – 10547] ^b	0.41
SDNN (ms)	41 [28 – 55] ^a	60 [39 – 80] ^a	0.12
rMSSD (ms)	40 [27 – 54] ^a	58 [39 – 77] ^a	0.10
pNN50 (%)	5 [2 – 23] ^b	17 [2 – 60] ^b	0.12
LF (ms ²)	575 [137 – 1013] ^a	665 [264 – 1593] ^a	0.83
HF (ms ²)	160 [66 – 687] ^b	112 [42 – 1839] ^b	0.98
LF normalised/HF normalised	0.8 [0.5 – 1.0] ^b	0.9 [0.5 – 1.4] ^b	0.84
SD1 (ms)	29 [19 – 38] ^a	41 [28 – 54] ^a	0.11
SD2 (ms)	49 [31 – 67] ^a	67 [47 – 87] ^a	0.15

Descriptive data are presented as numbers (with percentages). Normally distributed data are expressed as mean [95% confidence intervals (CI)]. Identified by superscript a. Non-normally distributed data are displayed as median [95%CI]. Identified by superscript b. Statistical differences were tested using independent t-test (for parametric data) or Mann-Whitney U test (for non-parametric data). Significance $p \leq 0.05$

Abstract 84 Table 1

Table 1: Characteristics of the patients			
Age - years	69 ± 12	CHA ₂ DS ₂ -VASC score	number of patients
Male gender - no (%)	78 (62%)	0	23 (18%)
Hypertension	82 (65%)	1	20 (16%)
Diabetes Mellitus	15 (12%)	2	32 (25%)
Coronary disease	12 (10%)	3	24 (19%)
Heart failure	2 (2%)	4	16 (13%)
BMI > 30	54 (43%)	5	7 (6%)
Excess alcohol	46 (37%)	6	3 (2%)
OSA	28 (22%)	7	1 (1%)

BMI: Body Mass Index, OSA: Obstructive Sleep Apnoea

Abstract 84 Figure 1

with no major contra-indications) received oral anticoagulation. Over 12 months follow-up, rates of TIA/stroke was low ($n=3$, 2.4%). All-cause mortality was also low ($n=1$, 0.8%). NHS England region-wide data showed a marked reduction in percentage of total stroke admissions with history of AF not taking anticoagulation at stroke presentation in 2018/19 as compared to 2017/18 across our two regions; this was lower than the national average and the lowest within West Yorkshire (figure 1).²

Conclusions An integrated service for AF management implemented community-wide was associated with high uptake of oral anticoagulation among eligible patients and low rates of AF-related hospitalisations and all-cause mortality. Across the community, among stroke admissions with AF at presentation, a lower percentage of patients without anticoagulation was observed in comparison with previous years and neighbouring regions.

Conflict of Interest none

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PROGNOSTIC VALUE OF PREMATURE VENTRICULAR COMPLEXES DURING EXERCISE STRESS TESTING IN 56,000 INDIVIDUALS WITHOUT KNOWN STRUCTURAL HEART DISEASE FROM UK BIOBANK: IS A SINGLE ECTOPIC PROGNOSTIC?

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Introduction Premature ventricular complexes (PVCs) are frequently detected on routine electrocardiogram monitoring during exercise. The prognostic implications of frequent or repetitive PVCs during exercise are well recognised in individuals with known heart disease, but conflicting results have been reported in individuals without known structural or ischaemic substrates. The aim of this study was to evaluate the relationship between PVC frequency during exercise and the risk of major adverse cardiovascular events (MACE) in a large cohort of ~56,000 individuals without known cardiovascular disease with long-term follow-up.

Methods Approximately 77,000 individuals from the UK Biobank study participated in an exercise test using a stationary bicycle in conjunction with a 4-lead electrocardiograph device. We excluded individuals with a known cardiovascular disease or a corrupt/incomplete ECG registration. The number of PVCs in the ECG registration were counted for the remaining individuals ($N=56,176$) using an in-house developed deep learning algorithm. All registrations with a PVC frequency of $\geq 5\%$ were reviewed manually and corrected if needed. The study endpoint was MACE, defined as either hospitalization or death due to myocardial infarction, heart failure, or ventricular arrhythmia. The association with MACE was evaluated for a range of PVC counts (up to 30 PVCs during exercise) using uni- and multivariate Cox regression analysis. In the multivariate model we adjusted for established cardiovascular risk factors, including age, sex, body mass index, smoking, diabetes, and heart rate recovery.

Results The mean age of all individuals was $56.7 (\pm 8.2)$ years and men and women were relatively even numbered (47% men). The median follow-up was 10 years during which $N=1,871$ (3.3%) individuals reached the study endpoint. The prevalence of PVCs observed during the stress test ranged from $N=16,330$ (29%) individuals having ≤ 1 PVC, to $N=1758$ (x%) and $N=856$ (1.5%) for $>10\%$ and $\geq 25\%$ PVCs, respectively. Interestingly, having at least 1 PVC was already significantly associated with adverse outcome: hazard ratio (HR) [95% CI]: 1.6 [1.4 – 1.7], $p < 0.001$, (unadjusted), and 1.3 [1.2 – 1.4], $p < 0.001$ (adjusted) with respect to individuals showing no PVCs. We observed a clear dose response relationship between the PVC count and associated risk as shown in Figure 1, with the highest measured risk for the highest tested PVC count of ≥ 30 : HR [95% CI]: 3.1 [2.4 – 4.0], $p < 0.001$, (unadjusted), 1.9 [1.5 – 2.5], $p < 0.001$ (adjusted).

Conclusion Historically, occasional occurrence of PVCs during exercise has been considered benign. However, the results of this study may suggest that also low PVC frequencies may carry relevant prognostic information for cardiovascular disease independent of other cardiovascular risk factors. The mechanisms remain to be investigated, but may include subclinical changes in myocardial functioning.

Conflict of Interest None