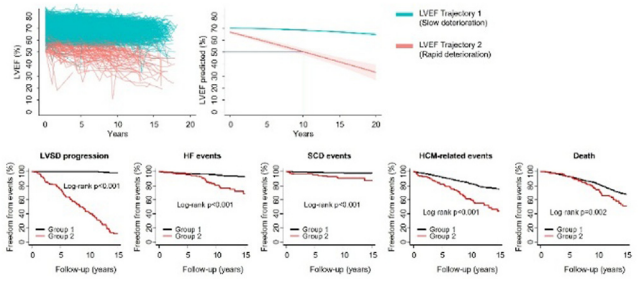
	Total population (n=2,210)	Group 1 (n=2,053)	Group 2 (n=157)	p-value
Age, years	61 [51–69]	61 [51–69]	62 [48–70]	0.970
Male	1437 (65.0%)	1330 (64.8%)	107 (68.2%)	0.443
NYHA class III–IV	137 (6.2%)	125 (6.1%)	12 (7.6%)	0.544
Comorbidities				
Baseline AF	384 (17.4%)	340 (16.6%)	44 (28.0%)	<0.001
Coronary artery disease	449 (20.3%)	398 (19.4%)	51 (32.5%)	<0.001
Previous HF hospitalization	38 (1.7%)	34 (1.7%)	4 (2.5%)	0.610
Prior stroke	187 (8.5%)	163 (7.9%)	24 (15.3%)	0.002
Hypertension	1313 (59.4%)	1233 (60.1%)	80 (51.0%)	0.031
Diabetes	332 (15.0%)	304 (14.8%)	28 (17.8%)	0.364
Chronic kidney disease	287 (13.0%)	256 (12.5%)	31 (19.7%)	0.013
COPD	28 (1.3%)	27 (1.3%)	1 (0.6%)	0.717
Cancer	187 (8.5%)	175 (8.5%)	12 (7.6%)	0.815
Echocardiography				
Obstructive HCM	388 (17.6%)	355 (17.3%)	33 (21.0%)	0.283
Pure apical HCM	363 (16.4%)	353 (17.2%)	10 (6.4%)	0.001
Max LVWT, mm	18 [16–20]	18 [16–20]	20 [16–22]	<0.001
LVEDD, mm	48 [44–51]	48 [44–51]	49 [45–53]	0.004
LVEF, %	70 [65–74]	70 [66–75]	66 [58–72]	<0.001
LVEF ≥60%	2066 (93.5%)	1954 (95.2%)	112 (71.3%)	<0.001
LVEF 50–59%	144 (6.5%)	99 (4.8%)	45 (28.7%)	
LA diameter, mm	42 [37–46]	41 [37–46]	45 [41–50]	<0.001
LAVI, mL/m^2	34.8 [27.4–45.8]	34.3 [27.1–45.2]	44.2 [33.7–57.1]	<0.001
Medial e', cm	4.7 [3.8–5.9]	4.9 [3.9–6.0]	4.0 [3.0–5.0]	<0.001
E/e'	13.4 [10.3–17.9]	13.1 [10.2–17.3]	16.0 [11.8–22.0]	<0.001
RVSP, mmHg	27 [23–33]	27 [23–32]	30 [26–36]	<0.001
Severe MR	25 (1.1%)	20 (1.0%)	5 (3.2%)	0.033
LV-GLS (%)	-15.8 [-18.7–-13.3]	-16.0 [-18.8–-13.4]	-13.8 [-16.4–-11.4]	<0.001
LA reservoir strain (%)	27.4 [20.8–33.7]	27.9 [21.3–33.9]	22.6 [16.4–28.2]	<0.001
LA conduit strain (%)	16.1 [12.1–20.5]	16.4 [12.3–20.8]	12.5 [9.7–16.9]	<0.001
LA contraction strain (%)	11.8 [8.7–15.8]	12.0 [8.8–15.9]	9.8 [6.8–14.2]	<0.001
AHA/ACC risk factors				
Family history of SCD	147 (6.7%)	132 (6.4%)	15 (9.6%)	0.178
History of syncope	121 (5.5%)	110 (5.4%)	11 (7.0%)	0.488
Max. LVWT≥30mm	39 (1.8%)	37 (1.8%)	2 (1.3%)	0.865
LV apical aneurysm	67 (3.0%)	54 (2.6%)	13 (8.3%)	<0.001
NSVT on Holter (n=1,477)	116 (7.9%)	99 (7.2%)	17 (15.5%)	0.004
Positive risk factor	410 (18.6%)	360 (17.5%)	50 (31.8%)	<0.001
Positive major risk factor	335 (15.2%)	293 (14.3%)	42 (26.8%)	<0.001
ESC SCD risk score, %	2.5 [1.8–4.7]	2.5 [1.7–3.5]	2.8 [1.9–6.3]	0.138



PC1-33 - Oral

Left ventricular diastolic function and long-term risk of new-onset atrial fibrillation

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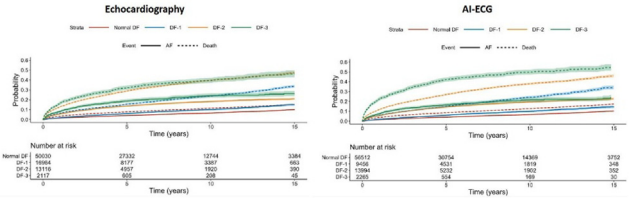
Background: Heart failure (HF) and atrial fibrillation (AF) are closely linked, sharing common risk factors and influencing each other. Left ventricular diastolic dysfunction (LVDD), particularly elevated filling pressures, are key features of HF and may contribute to atrial remodeling. We aimed to determine whether LV diastolic function, as assessed by echocardiography or AI-ECG, is associated with long-term AF risk, independent of other clinical risk factors. **Methods:** A retrospective study on patients with a comprehensive echocardiography and ECG within 14 days between 09/2001-06/2022. Excluded were patients with prior documented AF or those included in the AI-ECG LVDF training and validation datasets. Patients were classified for normal, grade 1 (DF-1), grade 2 (DF-2), or grade 3 (DF-3) LVDF, by echocardiography and AI-ECG. Incident AF was identified using ECGs, electronic health records, and ICD-9/10. AF risk was assessed across LVDF grades using competing risk models. **Results:** Of the 82,236 patients free of AF at baseline, echocardiography classified 60.8% as normal LVDF, 20.6% as DF-1, 16.0% as DF-2, and 2.6% as DF-3. The AI-ECG classified 68.7% as normal LVDF, 11.5% as DF-1, 17.0% as DF-2, and 2.8% as DF-3. Worse LVDF, as assessed by either echocardiography or AI-ECG, was associated with older age, lower LV ejection fraction, and higher rates of cardiovascular and noncardiovascular disease (p-trend < 0.001 for all). During a median follow-up of 5.0 years, AF occurred in 6,491 (7.9%) patients. In multivariable competing-risk survival analysis, adjusted for age, sex, comorbidities and LVEF, worse LVDF was associated with an incremental increase in AF risk [echocardiography: DF-1, adjusted hazard ratio (aHR) 1.22 (95%CI 1.17-1.28); DF-2, aHR 1.93 (95%CI 1.84-2.02); DF-3, aHR 2.40 (95%CI 2.22-2.60); AI-ECG: DF-1, aHR 1.11 (95% CI 1.06-1.17); DF-2 aHR 1.80 (95%CI 1.77-1.93), DF-3 aHR 2.80 (95%CI 2.60-3.02)]. **Conclusion:** LVDF, assessed by either echocardiography or AI-ECG, independently and incrementally predicts AF risk, independent of clinical risk factors and LV systolic function. LVDF assessment holds potential for AF risk stratification in at-risk populations.

Figure: Competing death-risk survival models for new-onset AF across LVDF grades by echocardiography or AI-ECG



PC1-34 - Oral

Interventricular Septal Wall Thickness - Moving Towards Personalized Normal Reference Ranges for Diagnosis of Hypertrophic Cardiomyopathy

Charlotte Manisty[1], Matthew Shun-Shin[2], Tatsuya Miyoshi[3], Hunein Shiwani[1], Colin Gallagher[4], Laurie Soulat Dufour[5], Jeremy Slivnick[6], Hena Patel[6], Victor Mor-Avi[6], Tiffany Ng[7], Constantin-Cristian Topriceanu[1], Karima Addetia[6], Guilherme Almeida[7], James C. Moon[1], Darrel P. Francis[7], Bethany Unsworth[8], Federico Asch[9], Roberto M. Lang[6]. [1]University College London, London, United Kingdom; [2]Imperial College, London, United Kingdom; [3]Kindai University, Osaka, Japan; [4]University of Chicago Medical Center, Chiacgo, IL; [5]Assistance Publique Hopitaux de Paris, Paris, France; [6]University of Chicago Medical Center, Chicago, IL; [7]Imperial College London, London, United Kingdom; [8]MycardiumAI, Liverpool, United Kingdom; [9]MedStar Health Research Institute, Washington, DC

Background: Hypertrophic cardiomyopathy (HCM) diagnosis is currently based on a 'one size fits all' definition of inappropriate left ventricular hypertrophy (LVH) with a maximal wall thickness (MWT) threshold of 15mm. In large healthy echocardiographic datasets, it is clear that a universal threshold fails to account for recognized age, sex and ethnic differences in cardiac structure. We aimed to produce personalized adjustments to the MWT threshold for HCM, based on demographics and anthropometrics. **Methods:** Images from healthy participants in the prospective, international World Alliance Societies of Echocardiography (WASE) Normal Values dataset were analysed manually by experts and with fully-automated AI analysis using EchoConfidence, MycardiumAI. Using Generalized additive mixed models (GAMMs), we generated predicted normal values for MWT based on age, sex, and body surface area (BSA) covariates. We use the upper 95% prediction intervals (PI) to define left ventricular hypertrophy, and 99.7% PI to define HCM diagnosis. 'Personalised' MWT thresholds for given sex, age, and BSA are presented as adjustments from 15mm. **Results:** Across a multi-ethnic, international cohort of healthy

Definite disease (HCM) - Upper 99.7% Predictive Interval
Adjusted Deviation from 15mm

Males

	Age (Years)													
BSA (m^2)	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**	**80**
1.7	-3.6	-3.4	-3.2	-2.9	-2.7	-2.5	-2.3	-2	-1.8	-1.6	-1.4	-1.2	-1
1.8	-3.3	-3.1	-2.8	-2.6	-2.4	-2.2	-1.9	-1.7	-1.5	-1.3	-1.1	-0.9	-0.6
1.9	-3	-2.8	-2.6	-2.3	-2.1	-1.9	-1.6	-1.4	-1.2	-1	-0.8	-0.6	-0.4
2.0	-2.8	-2.5	-2.3	-2.1	-1.8	-1.6	-1.4	-1.1	-0.9	-0.7	-0.6	-0.4	-0.1
2.1	-2.5	-2.3	-2.1	-1.8	-1.6	-1.4	-1.1	-0.9	-0.7	-0.5	-0.3	-0.1	0.1
2.2	-2.3	-2	-1.8	-1.6	-1.4	-1.1	-0.9	-0.7	-0.5	-0.3	-0.1	+0.2	+0.4
2.3	-2	-1.8	-1.6	-1.4	-1.2	-1	-0.7	-0.5	-0.3	-0.1	+0.2	+0.4	+0.6

Females

	Age (Years)													
BSA (m^2)	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**	**65**	**70**	**75**	**80**
1.5	-4.8	-4.6	-4.4	-4.2	-3.9	-3.7	-3.5	-3.3	-3	-2.8	-2.6	-2.5	-2.2
1.6	-4.5	-4.3	-4.1	-3.8	-3.6	-3.4	-3.1	-2.9	-2.7	-2.5	-2.3	-2.1	-1.9
1.7	-4.1	-3.9	-3.7	-3.4	-3.2	-3	-2.8	-2.6	-2.4	-2.1	-1.9	-1.7	-1.5
1.8	-3.8	-3.6	-3.4	-3.2	-2.9	-2.7	-2.5	-2.3	-2.1	-1.8	-1.6	-1.4	-1.2
1.9	-3.6	-3.4	-3.2	-2.9	-2.7	-2.5	-2.2	-2	-1.8	-1.6	-1.4	-1.2	-1
2.0	-3.3	-3.1	-2.9	-2.7	-2.5	-2.2	-2	-1.8	-1.6	-1.3	-1.1	-0.9	-0.7
2.1	-3.1	-2.8	-2.6	-2.4	-2.1	-1.9	-1.7	-1.5	-1.3	-1.1	-0.9	-0.7	-0.4