to determine whether presence of MF on visual assessment (MFVA) and gray zone fibrosis (GZF) mass predicts SCD and ventricular fibrillation/sustained ventricular tachycardia after cardiac implantable electronic device (CIED) implantation.

Materials and Methods In this prospective study, total fibrosis and GZF mass, quantified using cardiovascular magnetic resonance, was assessed in relation to the primary endpoint of sudden cardiac death (SCD) and the secondary, arrhythmic endpoint of SCD or ventricular arrhythmias after CIED implantation.

Results Among 700 patients (age 68.0 ± 12.0yrs [mean ± SD]), 27 (3.85%) experienced a SCD and 121 (17.3%) met the arrhythmic endpoint over 6.93 yrs (median; interquartile range 5.82–9.32). MFVA predicted SCD (hazard ratio [HR]: HR: 26.3 [95% confidence interval [CI] 3.70–3337]; negative predictive value: 100%). In competing risks analyses, MFVA also predicted the arrhythmic endpoint (subdistribution [sHR]: 19.9 [95% CI 6.40–61.9]; negative predictive value: 98.6%). Compared with no MFVA, a GZF mass measured with the 5SD method (GZFSSD) > 17 g was associated with highest risk of SCD (HR: 44.6;95% CI 6.12–5685) and the arrhythmic endpoint (sHR: 30.3 [95% CI 9.60–95.8]). Adding GZFSSD mass to MFVA led to reclassification of 39% for SCD and 50.2% for the arrhythmic endpoint. In contrast, LVEF did not predict either endpoint.

Discussion This is the largest CMR study of MF in relation to long-term clinical outcomes in patients undergoing CIED implantation. Several findings have emerged. First, all patients experiencing SCD had MFVA on preimplantation CMR. Second, absence of MFVA virtually excluded the composite, arrhythmic endpoint. Third, both TFVAH mass and GZFSSD mass had an additional predictive value over and above MFVA, with respect to both SCD and the arrhythmic endpoint. Last, LVEF did not predict either endpoint.

Conclusion In CIED recipients, MFVA excluded patients at risk of SCD and virtually excluded ventricular arrhythmias. Quantified GZFSSD mass added predictive value in relation to SCD and the arrhythmic endpoint.

Acknowledgements We are grateful to Medtronic, Abbott and Boston Scientific for their support in funding this study, in the form of unrestricted educational grants.

Introduction Cardiac MRI (CMR) is the gold standard technique to assess bi-ventricular volumes and function and is increasingly being considered as an end-point in clinical studies. Currently, with the exception of right ventricle (RV) stroke volume, there are no minimally important differences (MIDs) reported for CMR metrics in pulmonary arterial hypertension (PAH). Our study aimed to identify MIDs for CMR metrics that reflect how a patient feels and functions.

Materials and Methods Consecutive treatment-naive patients with PAH between 2010 and 2021 who had two CMR scans (at baseline and at 12 months following treatment) were identified from the ASPIRE registry. The MID in CMR metrics was determined using an anchor-based method combining how a patient “feels” (emPHasis-10 questionnaire) and “functions” (incremental shuttle walking test). RV ejection fraction (RVEF) and RV and left ventricle (LV) end-diastolic volume, RV end-systolic volume and LV stroke volume were measured at baseline and follow-up. Improvement was defined as an increase of at least 47.5m in walking distance and/or decrease of at least 6 points in emPHasis-10 score.

Results 114 patients were included. The MIDs (P<0.05), for metrics how for a patient “feels and functions” for improvement, were an absolute increase in RVEF of 3%, a 10 ml reduction in RVESV or RVEDV and a 5 ml increase in LVSV or LVEDV.

Conclusion This study establishes clinically relevant CMR MIDs for how a patient feels and functions in response to PAH treatment. These findings provide further support for the use of CMR as a clinically relevant surrogate end-point and will aid trial-size calculations for studies using CMR.

Introduction Aortic valve replacement (AVR) in patients with severe aortic stenosis (AS) leads to reverse remodelling, with reduction in left ventricle (LV) mass and volumes. However, the effect of AVR on LV and left atrial (LA) myocardial deformation using feature tracking cardiovascular magnetic resonance (FT-CMR) has not been extensively studied.

Materials and Methods Patients with severe AS scheduled for AVR were recruited. CMR and echocardiography scans were performed pre- and post-AVR using a standard protocol. In addition to volumetric assessment using area-length method for LA and short-axis cine stack for LV, myocardial deformation was assessed using FT-CMR by a blinded single observer using QStrain v2.0 (Medis v3.1, medical imaging system). LA strain (LAS) corresponding to reservoir, conduit and booster pump function were assessed on 4- and 2-chamber long-axis standard steady-state free precession cine images, and average values calculated. For the LV, the three long-axis cines were utilised for global longitudinal strain (GLS), and global circumferential strain (GCS) was derived by averaging values from the basal, mid and apical short axis cine slices. Longitudinal and circumferential peak early diastolic strain rate (PEDSR) were also derived.