Introduction: Recent literature suggests that impaired systolic blood pressure (SBP) recovery after standing predicts mortality1. Orthostatic heart rate (HR) signals have received less attention. We studied the association between beat-to-beat orthostatic hemodynamic variables in TILDA wave 1 (2010) and incident mortality in wave 2 (2012).

Methods: Of the 8175 participants aged 50 and over in the first wave of TILDA, 5037 (62%) had a Health Centre (HC) assessment (active stand testing with Finometer® was only available in HC). Good quality active stand data was available in 4468 participants. Receiver operating characteristic curves explored univariate associations between orthostatic hemodynamic variables (baseline, nadir and recovery until 110 seconds post-stand) and mortality. Multivariate analyses were based on binary logistic regression.

Results: 233 subjects (3%) had died at wave 2. Amongst those who had died, 53 (23%) had had active stand testing with Finometer® in Wave 1. Compared to the 4415 who had not died and had active stand data, the 53 who had died had no statistically significant differences in orthostatic SBP variables or DBP variables. However, those who had died had a higher baseline HR (mean of 69 vs. 65 bpm) and a higher mean orthostatic HR, especially between 30-60 seconds post-stand (mean of 79 vs. 73 bpm). Adjusted for age, sex, baseline HR, cardiovascular comorbidity and antihypertensives (including beta-blockers), the mean HR between 30-60 seconds post-stand was an independent predictor of mortality (OR = 1.05, 95% CI: 1.01–1.10, P = 0.012), together with age (OR = 1.05, 95% CI: 1.02-1.09, P = 0.001) and female sex (OR = 0.55, 95% CI: 0.31-0.97, P = 0.038).

Conclusions: Although the small number of mortality events could have led to underpower for blood pressure variables, higher orthostatic HR was independently associated with mortality and could be a novel (and perhaps more sensitive) risk signal.

Reference