

Title: Survival in people with heart failure and atrial fibrillation

Topic: D - Heart failure

Category: Bedside

Options: Young Investigator Award option (population sciences) [First author under 40 years old]

Trial registration: The study protocol was approved by the independent scientific advisory committee (ISAC) to the Medicine and Healthcare products Regulatory Authority (protocol number 19_125).

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Abstract

Background: People with chronic heart failure (HF) have a poor prognosis, with survival rates at five year follow-up close to 50%.¹ More than half of patients with HF will develop atrial fibrillation (AF). The presence of AF in people with HF has been associated with a poor prognosis, irrespective of left ventricular ejection fraction.^{2,3} However, the majority of studies to date have analysed prognosis among secondary care cohorts or randomised trial participants, who may not be representative of patients with chronic HF in the community.²

Purpose: To examine the association between survival in patients with HF and AF compared to either condition alone, among a large primary care cohort.

Methods: We extracted data from the Clinical Practice Research Datalink of primary care records from 1st January 2000 to 31st December 2018 and included all patients aged 45 years and over who were registered at an up-to-standard practice for a minimum of 12 months. Records were linked to Hospital Episode Statistics for secondary care data. The primary outcome was all-cause mortality. Exposure groups were defined as HF+AF, HF or AF, with exposure status treated as a time-varying covariate across follow-up. We used Kaplan-Meier curves to compare survival in people with HF and AF, compared to people with either condition alone or neither. We also report a Cox regression model for risk of all-cause mortality among people with HF and AF, adjusting for age, sex, ethnicity, smoking status and comorbid cardiovascular disease.

Results: There were 314,042 deaths during the study follow-up. The average age of participants was 58.0 years (SD 10.6) and 51.4% were women. In an unadjusted Cox regression analysis, people with HF and AF were at the greatest risk of death (HR 5.48, 95% CI 5.37 to 5.59), followed by people with HF alone (HR 5.09, 95%CI 5.01 to 5.17), and AF alone (HR 3.39, 95%CI 3.33 to 3.44) compared to people with neither HF nor AF. However, in the fully adjusted analysis, the risk of death was similar among people with HF and AF (HR 1.30, 95% CI 1.27 to 1.33) compared to people with HF alone (HR 1.36, 95% CI 1.34 to

1.39), though it remained higher than the risk in people with AF alone (HR 1.12, 95% CI 1.10 to 1.14). In a cumulative hazard plot, the risk of death across follow-up was similar among people with HF and AF, compared to those with HF alone.

Conclusion: In our large community cohort, we found HF and AF was associated with a worse prognosis than either condition alone. Further research could aim to identify preventive strategies that might improve prognosis among this high-risk group of patients.