

Rehospitalization as a predictor of mortality in Polish population of heart failure patients-national registry

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Background: High mortality risk in heart failure (HF) is related to repeat HF hospitalizations but also individual patient characteristics.

Purpose: To evaluate the impact of HF re-/hospitalizations and patient-related factors (sex, HF etiology, age, comorbidity) on all-cause mortality.

Methods: Our study represents one of the most extensive retrospective cohort analyses consisting of 1,686,861 adult Polish HF patients who presented into public health system in years 2013–2018. It is a part of a nationwide National Health Fund registry covering out- and in-patient data for the entire Polish population (38,495,659 in 2013) since 2009. HF hospitalizations were extracted using ICD-10 coding, whereas the comorbidity was evaluated by means of Charlson Comorbidity Index (CCI).

Results: In years 2013–2018 the absolute number of HF hospitalizations in Poland grew by 33% to 264,808 in 2018, whereas the number of rehospitalizations increased 1.5-fold to reach 137,708 in 2018.

In fact, nearly half of HF patients ($n=817,432$; 48.5%) experienced at least one hospitalization, while 15.4% ($n=259,868$) were rehospitalized during the study period. After initial hospitalization the readmission rate due to HF/all circulatory diseases at 30, 60, 180, 360, and 720 days was

10.4%/15.1%, 21.2%/28.3%, 43.9%/52.8%, 62%/70.4%, and 81%/87%, respectively.

As compared to patients who were hospitalized just once, those who underwent at least one rehospitalization were more often female ($p<0.001$), slightly older ($p<0.001$), and with higher burden of comorbidities based on CCI ($p<0.001$).

Patient survival was highly dependent on hospitalization frequency (Fig. 1). Mean survival rate at day 720 was 66.4%, 59.8%, 54.9%, 51%, and 43.9% for 1st, 2nd, 3rd, 4th, and ≥ 5 th hospitalization, respectively.

After adjusting for age, sex, etiology (ischemic/non-ischemic) and CCI using a multivariate stratified Cox regression model, the estimated hazard ratios (HR) for all-cause mortality amounted to 1.22 (95% CI: 1.21–1.23, $p<0.001$) for 2nd, 1.4 (95% CI: 1.39–1.42, $p<0.001$) for 3rd, 1.58 (95% CI: 1.56–1.6, $p<0.001$) for 4th, and 1.97 (95% CI: 1.95–1.98 $p<0.001$) for 5th and subsequent hospitalizations, as compared to the first hospitalization.

Conclusions: Hospitalization rate in Poland is alarmingly high. Repeat HF hospitalizations strongly predict mortality rate for HF patients even after adjustment for age, sex, etiology, and comorbidity burden.

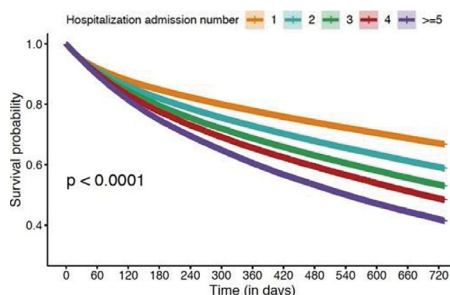


Figure 1. Kaplan-Meier for survival post hosp.