Red blood cell distribution width (RDW) has been found to be an independent predictor for adverse outcome in patients with heart failure (HF), but there are no data on the association of longitudinal RDW with all-cause mortality and occurrence of anemia. 1,702 patients discharged from a previous admission for acute HF (AHF) were included. RDW was measured during the available longitudinal history of the patient. Joint modeling and Multistate Markov were used for the analysis. The median RDW at baseline was 15.0% (IQR: 14.0-16.5), and 45.6% of patients had anemia. At a median follow-up of 1.5 years (IQR: 0.45-3.25), 713 patients died. The last RDW-trajectory value and cumulative RDW-trajectory mean were predictive of mortality (HR, 1.18; 95% CI: 1.12-1.24; and HR, 1.12; 95% CI: 1.08-1.16, respectively; P<0.001 for both). This effect, however, varied according the anemia status (P for interaction<0.001), being more pronounced in absence of anemia [HR=1.31 (95% CI: 1.22-1.42) and HR=1.48 (95% CI: 1.33-1.64)] compared to those with anemia [HR=1.08 (95% CI: 1.04-1.13), 1.12 (95% CI: 1.06-1.18)]. Longitudinal RDW (per 1% increasing) was also independently associated with incident anemia [HR=1.10 (95% CI: 1.03-1.18) P=0.002]. Following an admission for AHF, higher longitudinal RDW values
over time were associated to an increased risk for both developing anemia and dying. The effect on mortality was more pronounced among non-anemic patients.