Objectives: The aim of this study was to assess the relationship between inferior vena cava (IVC) diameter, clinical variables, and acute decompensated heart failure (ADHF) rehospitalizations.

Methods: Retrospective chart review of 200 patients admitted for ADHF from 2018-2019 with transthoracic echocardiogram during index hospitalization. Charts were assessed for ADHF rehospitalization within one year.

Results: The median age was 64, 30.5% were female, and average left ventricular ejection fraction was 41% ± 20%. IVC diameter correlated to pulmonary arterial (PA) pressure (R=0.347, P<0.0001) and body surface area (BSA) (R=0.424 P<0.0001). IVC diameter corrected for BSA correlated to PA pressure (R=0.287, P<0.0001) and log NT-proBNP (R=0.247, P=0.001). Patients rehospitalized within one year had significantly greater mean IVC diameter compared to those not rehospitalized (P<0.0001) while there was no difference in mean net weight lost during index hospitalization or mean log NT-proBNP. Patients with IVC diameter greater than 2.07 cm had significantly increased ADHF rehospitalization (85.6% vs 49.3%, log rank P<0.0001) with
hazard ratio 2.44 (95% CI 1.85-3.23, P<0.0001). In multivariable cox regression only IVC diameter (P<0.0001), presence of tricuspid regurgitation (P=0.022), and NYHA class III/IV (P<0.0001) independently predicted ADHF rehospitalization within one year.

Conclusions: IVC diameter is predictive of rehospitalization in patients with ADHF and may identify patients in need of greater monitoring and diuresis.