Introduction: Intracardiac echocardiography (ICE) use during catheter ablation for ventricular tachycardia (VT) may improve outcomes and reduce complications. This study compared outcomes including 12-month readmission, repeat ablation, and 30-day complications (cardiac perforation, vascular complications, major bleeding) among elderly ventricular tachycardia (VT) patients with implantable cardioverter defibrillator/cardiac resynchronization therapy (ICD/CRT-D) undergoing catheter ablation with ICE compared to without ICE.

Methods: Using the 2008-2017 Centers for Medicare and Medicaid Services (CMS) Standard Analytical Files database, patients aged ≥65 years with a primary diagnosis of VT undergoing outpatient catheter ablation procedure were identified, with the first such ablation classified as index procedure. Patients were classified into ICE and non-ICE groups based on the presence or absence of the ICE procedure code during index admission. Patients were required to have continuous enrollment and an ICD/CRT-D billing code during the 6-month pre-index period. A 1:1 propensity score matching using greedy match without replacement technique was performed to match patients in the ICE and non-ICE group on study covariates including patient demographic and comorbid characteristics. Time-to-event analysis including Kaplan-Meier log-rank test for bivariate comparison and Cox proportional hazards model for risk estimation were used to compare study outcomes among the matched ICE and non-ICE patients. Sensitivity analysis was performed by restricting the comparison of outcomes between ICE and non-ICE group to patients in whom transseptal puncture was performed during VT ablation.

Result: A total of 2,820 patients were identified based on study criteria (1,143 ICE and 1,677 non-ICE). The mean age was 73 years, with a majority (92%) being male. Based on propensity matching, 1,073 patients in both the ICE and non-ICE group were identified. Patients in the ICE group had 24% lower risk of all-cause (hazard ratio [HR] 0.76; confidence interval [CI] 0.67-0.86), 24% lower risk of cardiovascular (CV)-related (HR 0.74; CI 0.66-0.87) and 20% lower risk of VT-related (HR 0.80; CI 0.67-0.98) readmission compared to non-ICE patients. No significant difference in repeat ablation or complications was observed among the two groups. In VT ablations with transeptal puncture, ICE patients (n=231) had 45% lower risk of all-cause (HR 0.53; CI 0.41-0.68), 57% lower risk of CV-related (HR 0.43; CI 0.32-0.58) and 57% lower risk of VT-related (HR 0.43; CI 0.29-0.66) readmissions.
compared to non-ICE patients (n=231).

**Conclusion**: Elderly VT patients with ICD/CRT-D undergoing catheter ablation with ICE had lower 12-month readmissions compared to non-ICE patients.