

Matthew McGuiness, Class of 2007
Department of Medicine

ICD Under-Utilization in Primary Prevention Patients

John Respass MD, Matthew McGuiness MSIV MEd, Cynthia Ennis DO, Isaac Pourati MD, Richard Gosselin MD, Karen Rofino RN, Kellyann Rofino-Helle RN, Jason Rashkin MD, Dionyssios Robotis MD and Lawrence Rosenthal MD PhD.

Introduction: While primary prevention ICDs have been shown to reduce mortality in high risk populations, the percentage of candidates receiving devices has not been studied. According to industry estimates, only 10-33% of those eligible for prophylactic ICD implant actually receive one.

Objective: We sought to identify those patients who did not receive an indicated device, as well as demographic and clinical variables that influence the implant rate.

Methods: In 2005, 3061 ventriculograms were performed at UMass-Memorial Medical Center. Of these, 296 patients had an ejection fraction of $\leq 35\%$. With IRB approval, patient demographics and history were prospectively tracked over 12 to 24 months. Student T and Chi-X testing was used for statistical analysis.

Results: Of the 296 identified patients with an EF $\leq 35\%$, 165 (56%) ICD candidates were identified; 83 (28%) patients had improvement in their ejection fraction over subsequent months, 10 (4%) patients died acutely, and in 38 (13%) patients adequate follow-up was not available. In the indicated population, 90 (55%) patients received devices. Eleven (7%) patients refused, and 64 (39%) patients who met criteria were not implanted (nor was any ICD discussion documented). In the follow up period, there were a total of four non-cardiac deaths, all in the non-implant population. Among eligible candidates, ICD implants correlate positively with more frequent assessment of ejection fraction, a history of clinical heart failure, prior cardiac bypass surgery, and greater use of ace-inhibitors, statins, diuretics and amiodarone. ICD implants correlate negatively with advanced age and active tobacco abuse.

Conclusions: The rate of primary prevention ICD implants in this study is higher than estimates but remains inadequate. In contrast to national estimates, within the central Massachusetts region of over 600,000 residents, 62% of eligible patients undergoing catheterization at our institution received or were offered an ICD in 2005. Among candidates, ICD implants correlate positively with more frequent assessment of ejection fraction, prior cardiac bypass surgery, and use of cardiac medications, but negatively with advanced age and active tobacco abuse.