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## Patients Are Living Longer With ICDs, but Pacing Impacts Survival Rates

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The adverse effect of right ventricular pacing on implantable cardioverter-defibrillator (ICD) patient survival is sustained long-term; however, the impact appears to be mitigated by cardiac resynchronisation therapy (CRT), based on a scientific poster being presented at the European society of Cardiology (ESC) Congress Aug 28 in Paris.

"We were pleased to discover that the average patient, despite having severe left ventricular dysfunction, lived nine years after ICD implantation, which are the best results that we are aware of," according to lead author Robert G. Hauser, MD, cardiac electrophysiologist at the Minneapolis Heart Institute® at Abbott Northwestern Hospital in Minneapolis.

The researchers followed all 1,395 ICD patients at Minneapolis Heart Institute® who were 18 years or older with ejection fraction 35 percent or greater between 2000 and 2009. Of these patients, 673 had ICD-CRT and were paced in both lower chambers of the heart; 468 patients had single or dual chamber ICDs and most were paced in the right ventricle less than 10 percent of the time; and 59 had single or dual chamber ICDs and were paced in the right ventricle continuously.

The study had two objectives: the predictors of survival in this population and the effect of right ventricular pacing on survival.

Importantly, the researchers found that survival of CRT patients was similar to single and dual chamber ICD patients paced less than 10 percent of the time. Patients who were paced continuously in the right ventricle did not live as long as either the CRT patients or the patients who were infrequently paced in the right ventricle. "Thus, pacing had an adverse effect on survival," Hauser said. "We also found that if the right and the left side of the heart were paced in synchrony, the patients fared better."

Other factors associated with improved survival were treatment with an ACE inhibitor or an ARB; the age of the patient, meaning those who were younger lived longer; and if the patients did not have certain underlying diseases, including heart failure, chronic kidney disease, and peripheral arterial disease.

Based on their findings, Hauser made these recommendations: "If a patient has to be paced because of a slow heart rate, their outcomes will be better if both chambers of the heart are paced, rather than just the right side. Further, every effort should be made to treat these patients with an ACE inhibitor or an ARB."

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