Independent Study Examines Battery Life in CRT-D Devices

PR Newswire

An independent and first-of-its-kind study from the University of Pittsburgh Medical Center, published online this week in *EP EuroPace,* shows there are significant differences in battery longevity between contemporary cardiac resynchronization therapy defibrillator (CRT-D) devices, and that the Boston Scientific Corporation (NYSE: BSX [1]) device has the longest battery life compared to competitive brands.

The study noted that battery life can have direct implications on patient outcomes and may therefore impact clinical practice in CRT-D therapy. *EP EuroPace* is the official journal of the European Society of Cardiology European Heart Rhythm Association.

This retrospective, observational study focused on a cohort of 646 patients who were implanted with current models of CRT-D defibrillators between January 1, 2008 and December 31, 2010. The primary endpoints were the rate of battery depletion (reaching elective replacement indicator or ERI), as well as the time from device implantation to battery depletion as specified by device manufacturer. Overall, study data demonstrated the shortest battery longevity in contemporary Medtronic CRT-D models compared with comparable devices from other manufacturers.

During 2.7+/-1.5 years follow-up, only four percent of Boston Scientific device batteries had depleted, compared to seven percent from St. Jude and 25 percent from Medtronic ($p<0.001$). Moreover, the four-year battery survival rate of the Boston Scientific device was 94 percent, compared to 92 percent from St. Jude and 67 percent from Medtronic ($p<0.001$).

"This study offers critically important information for patients and physicians alike," said Kenneth Stein, M.D., chief medical officer, Cardiac Rhythm Management, Boston Scientific. "With improved therapies, the majority of today's heart failure patients will outlive their implantable device.[i],[ii] A recent study showed that nine percent of patients who have a device replacement experienced a complication or device infection.[iii] As patients live longer, the benefit from longer-lasting devices and fewer replacement surgeries becomes increasingly significant."

Cardiac resynchronization therapy (CRT) implantable cardioverter defibrillators (ICDs) are indicated for the management of heart failure patients with severe left ventricular (LV) systolic dysfunction and a wide QRS complex. [iv],[v],[vi] The benefit of CRT-ICDs depends upon achieving a high burden of ventricular pacing in both the right and left ventricles, with greater benefit seen at or near 100 percent biventricular pacing. The need for nearly 100 percent biventricular pacing can cause a significant battery drain and is usually the major determinant of battery longevity.

"The results of this study aren't surprising to us. In fact, performance reviews of our CRT-Ds have validated their industry-leading five-year survival probability,[vii]" said Joe Fitzgerald, president, Cardiac Rhythm Management, Boston Scientific. "We offer CRT-Ds and ICDs designed to be the world's longest lasting, with nearly double the battery capacity of some other available models, and we are proud of the independent recognition our innovative products continue to receive in the medical community."

The study, *Battery Longevity in Cardiac Resynchronization Therapy Implantable Cardioverter Defibrillators,* was sponsored exclusively by University of Pittsburgh Medical Center. The study was conducted under the leadership of principal investigator Samir Saba, M.D., chief, cardiovascular electrophysiology, University of Pittsburgh Medical Center. The complete study is available here [2].

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