Medtronic News

Late-Breaking Clinical Trial Results Show Medtronic-Exclusive Pacemaker Algorithm Significantly Delays Atrial Fibrillation

MINERVA Trial Presented at Heart Rhythm Meeting Shows Medtronic Advanced Pacing Features Reduce the Progression of Persistent AF by 58 Percent While Reducing AF-Related Hospital Visits That Lead to Increased Healthcare Costs

MINNEAPOLIS and SAN FRANCISCO - May 10, 2014 - New data presented as a late-breaking clinical trial at the Heart Rhythm Society's 2014 Annual Scientific Sessions show that an advanced pacing feature exclusive to Medtronic, Inc. (NYSE: MDT) pacemakers significantly delays the progression of persistent atrial fibrillation (AF) in patients with bradycardia (slow heart beat). Results from the MINERVA (MINimizE Right Ventricular pacing to prevent Atrial fibrillation and heart failure) Study found that the Reactive ATP® algorithm reduced the development of persistent AF by a 58 percent relative reduction compared to standard pacemakers ($p<0.001$).

The Reactive ATP algorithm, which restores the heart back to its normal rhythm by pacing during abnormally fast atrial rhythms, played a key role in slowing the progression of the disease by successfully terminating atrial tachycardia/atrial fibrillation episodes. Patients benefiting from the advanced pacing also showed a 52 percent relative reduction ($p<0.001$) in AF-related hospitalizations and emergency room visits. Reduction of these costly care episodes has an estimated potential to save approximately $1,218 per patient in healthcare costs over a 10-year span.[1]

"Atrial fibrillation is one of the most common and costly diseases, putting patients worldwide at a higher risk of heart failure, stroke and death," said Luigi Padeletti, professor of cardiology at the University of Florence, Florence, Italy, and principal investigator of the MINERVA study. "Surprisingly, many episodes we thought to be AF actually either start or periodically evolve into slower, more regular rhythms. By effectively terminating these rhythms, Reactive ATP appears to be the primary pacing feature significantly delaying AF progression in patients with Medtronic pacemakers."

Recently published online in the *European Heart Journal*, MINERVA is the first study to find that the full suite of Medtronic advanced pacing features delays the progression of permanent AF. Beyond the Reactive ATP algorithm, which was found to have the greatest impact in delaying disease progression, the study also evaluated the effects of the following pacing algorithms:

- MVP ® (managed ventricular pacing) algorithm, which promotes physiologic heart rhythms, thereby reducing the risks associated with unnecessary pacing in the right ventricle.
- Atrial Intervention Pacing, atrial overdrive pacing designed to counteract potential atrial tachyarrhythmia initiating events.

"In addition to significant patient benefits, these findings show there also are real-world cost implications with hospital and ER visits reduced by more than half, which helps control healthcare costs associated with this condition," said Giuseppe Boriani, professor of cardiology at the University of Bologna, Bologna, Italy, and investigator of the MINERVA study.

The randomized and prospective study evaluated 1,166 patients across 63 centers in Europe, the Middle East and Asia. Patients had standard indications for dual-chamber pacing and prior atrial tachyarrhythmias and were without complete heart block or permanent AF. Patients in the control arm were evaluated without the advanced pacing features turned on. The MVP and Reactive ATP algorithms evaluated in the MINERVA study are exclusively available on the Medtronic Advisa® and Revo MRI® SureScan® pacing systems.

"MINERVA is the latest study to showcase the superior capabilities of Medtronic pacemakers, which not only help delay disease progression but positively impact healthcare costs," said Pat Mackin, president of the Cardiac Rhythm Disease Management business and senior vice president at Medtronic. "The sophisticated pacing features exclusive to Medtronic pacemakers help us continue to offer the best possible care for patients with rhythm disorders worldwide."

In collaboration with leading clinicians, researchers and scientists worldwide, Medtronic offers the broadest range of innovative medical technology for the interventional and surgical treatment of cardiovascular disease and cardiac arrhythmias. The company strives to offer products and services that deliver clinical and economic value to healthcare consumers and providers around the world.

ABOUT MEDTRONIC

Medtronic, Inc. (www.medtronic.com), headquartered in Minneapolis, is the global leader in medical technology - alleviating pain, restoring health, and extending life for millions of people around the world.

Any forward-looking statements are subject to risks and uncertainties such as those described in Medtronic's periodic reports on file with the Securities and Exchange Commission. Actual results may differ materially from anticipated results.

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[1] Boriani G, et al. Heart Rhythm 2014. AB08-02.

Contacts:

Joey Lomicky
Public Relations
+1-763-526-2494

Jeff Warren
Investor Relations
+1-763-505-2696

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