Battery Longevity in Cardiac Resynchronization Therapy Implantable Cardioverter Defibrillators:
An independent study comparing contemporary CRT-D longevity

DESCRIPTION
Battery Longevity in Cardiac Resynchronization Therapy Implantable Cardioverter Defibrillators is the first independent, head-to-head retrospective study comparing battery longevity of contemporary cardiac resynchronization therapy defibrillators (CRT-Ds). Medtronic = 416 patients, Boston Scientific = 173 patients, St. Jude = 57 patients.

IMPORTANT OUTCOMES
- During the average 2.7 year follow-up 25% of Medtronic devices reached ERI compared to 4% for BSC and 7% for St. Jude
- Additionally, the four-year battery survival rate of Boston Scientific devices was 94%, compared to Medtronic’s devices at 67% and St. Jude Medical’s devices at 92%
- After accounting for variables such as programming and therapy, Medtronic had 6 times the risk of CRT-Ds reaching ERI over the course of the study


Boston Scientific offers CRT-Ds designed to be the world’s longest lasting – with nearly double the battery capacity of other available CRT-D models.
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INCLUSION CRITERIA
All patients (n=646) implanted with CRT-ICDs from January 1, 2008 to December 31, 2010 at University of Pittsburgh Medical Center hospitals were considered for the study. Ultimately the final study population consisted of the following manufacturers and their respective CRT-D patients:

- Medtronic had 416 patients
- Boston Scientific had 173 patients
- St. Jude had 57 patients

EXCLUSION CRITERIA
- Device companies with too small sample sizes that would preclude meaningful comparison
- Patients lost to follow-up within one month of implant

DESIGN
The analysis controlled for known parameters affecting battery drainage, including lead parameters and burden of pacing and tachyarrhythmia therapy

PRIMARY ENDPOINTS
- Rate of battery depletion (reaching elective replacement indicator, or ERI)
- Time from device implantation to battery depletion

PRINCIPLE INVESTIGATOR
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1. Alam M, Munir B, Rattan R, Elanjan S, Adelstein E, Jan S, Saba S. Battery Longevity in Cardiac Resynchronization Therapy Defibrillators. 2013; Europace (2013) doi: 10.1093/europace/etu301. First published online: October 6, 2013. Kaplan Meier curves depicting survival of CRT devices free from battery depletion by device manufacturer. Battery Longevity in Cardiac Resynchronization Therapy Implantable Cardioverter Defibrillators is an independent, single-center retrospective observational study comparing battery longevity of contemporary cardiac resynchronization therapy defibrillators (CRT-Ds) of all patients implanted with CRT-ICDs from January 1, 2008 to December 31, 2010 at University of Pittsburgh Medical Center hospitals. The initial study population included 746 patients: 94 were excluded at the onset because they were lost to follow-up within a month of implant, 6 others were excluded because they had a Biotronik CRT-D and that number of devices precludes meaningful comparison.

2. Survival rate calculated using device replacements for battery depletion as indicated by ERI.

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