Maximizing Outcomes in CRT Patients

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Disclosures: Consultant to Boston Scientific, Medtronic, Sorin, and St. Jude Medical
Risk Factors for Infection


2891 patients
Risk Factors for Lead Damage

Nichols CI, Vose JG, Mittal S. JAHA 2016; 5: e002813
## Risk Factors for Lead Damage

<table>
<thead>
<tr>
<th></th>
<th>PM (n=22,557)</th>
<th>ICD (n=20,632)</th>
<th>CRT-D (n=2063)</th>
<th>P Value*</th>
<th>Overall (n=45,252)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patients requiring lead revision or repair, n (%)</strong></td>
<td>104 (0.46%)</td>
<td>262 (1.27%)</td>
<td>40 (1.94%)</td>
<td></td>
<td>406 (0.90%)</td>
</tr>
<tr>
<td><strong>Length of stay (days)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean±SD</td>
<td>4.2±3.0</td>
<td>4.3±3.8</td>
<td>5.7±8.2</td>
<td>0.563</td>
<td>4.4±4.3</td>
</tr>
<tr>
<td>Median</td>
<td>4.0</td>
<td>3.0</td>
<td>3.0</td>
<td></td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Total visit cost</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>$19,959</td>
<td>$24,885</td>
<td>$46,229</td>
<td>0.048</td>
<td>$25,797</td>
</tr>
<tr>
<td>SD</td>
<td>$15,365</td>
<td>$21,384</td>
<td>$85,260</td>
<td></td>
<td>$33,415</td>
</tr>
<tr>
<td>25th percentile</td>
<td>$8,736</td>
<td>$12,329</td>
<td>$17,084</td>
<td></td>
<td>$11,872</td>
</tr>
<tr>
<td>Median</td>
<td>$15,491</td>
<td>$18,844</td>
<td>$19,166</td>
<td></td>
<td>$18,644</td>
</tr>
<tr>
<td>75th percentile</td>
<td>$30,506</td>
<td>$28,141</td>
<td>$41,409</td>
<td></td>
<td>$28,285</td>
</tr>
</tbody>
</table>

Nichols CI, Vose JG, Mittal S. JAHA 2016; 5: e002813
Importance of Lead Location

Importance of Lead Location

Impact on Survival

Saxon LA et al. *Circulation* 2010 122: 2359-2367
# Impact on Survival

## Survival, CRT-D

<table>
<thead>
<tr>
<th>RM Adherence</th>
<th>Number at Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>14,217</td>
</tr>
<tr>
<td>Low</td>
<td>13,602</td>
</tr>
<tr>
<td>None</td>
<td>31,704</td>
</tr>
</tbody>
</table>

- **High vs. None**: HR: 2.4 [2.2–2.6], p<0.001
- **High vs. Low**: HR: 1.5 [1.4–1.6], p<0.001
- **Low vs. None**: HR: 1.6 [1.5–1.7], p<0.001

New Considerations

- Hardware selection
  - Battery longevity
  - Lead reliability

- Lead consideration
  - Site of pacing

- Follow-up considerations
  - Diagnostics
  - Remote monitoring

Reverse Remodeling

VT/VF

CHF
Agenda

Pre-implant considerations
- Joshua M. Cooper, MD
  - Professor of Medicine
  - Director, Cardiac Electrophysiology Laboratory
  - Temple University Hospital

Intra-operative considerations
- Devi G. Nair, MD
  - Arrhythmia Associates of Northeast Arkansas

Post-implant considerations
- Jagmeet P. Singh, MD Dphil
  - Professor of Medicine
  - Associate Chief of Cardiology, Massachusetts General Hospital
  - Harvard Medical College