ASSESSMENT OF CHRONIC DISEASE TO DETERMINE APPROPRIATENESS
OF IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR THERAPY

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PROBLEM
Currently, level of risk of mortality considered to be unreasonable to offer an implantable cardioverter-defibrillator (ICD) is unknown.

BACKGROUND
- ICD therapy is considered appropriate when a patient is felt to have a reasonable expectation of one-year survival.
- Chronic diseases have been estimated to be associated with greater than 10% annual mortality and may reduce benefits of ICD therapy.
- Recent literature has demonstrated that conditions such as frailty, metastatic cancer, and dementia have been associated with greater than 20% annual mortality and are felt to be contradictions to ICD therapy.

OBJECTIVE
The purpose of this study is to determine a risk score for short-term mortality that may identify patients in whom ICD therapy may not be appropriate.

METHODS
- Patients who received an ICD for primary or secondary prevention from 2008 to 2013 at the Aurora Health Care network were studied retrospectively.
- Using Cox regression, a scoring system based on hazard ratios was devised to reflect risk associated with comorbidities.
- Survival was evaluated by Kaplan-Meier estimates.

RESULTS
- The study cohort includes 1558 patients (average age 61.3 years, 495 females).
- Parameter estimates were multiplied by a factor of 2 and rounded to the nearest whole number in order to develop a score for each risk factor.

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently on dialysis</td>
<td>3</td>
</tr>
<tr>
<td>MI within the past 3 months</td>
<td>3</td>
</tr>
<tr>
<td>NYHA class 3</td>
<td>2</td>
</tr>
<tr>
<td>Sustained monomorphic VT</td>
<td>2</td>
</tr>
<tr>
<td>Age greater than 70 years</td>
<td>2</td>
</tr>
<tr>
<td>IVC</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1</td>
</tr>
<tr>
<td>Chronic lung disease</td>
<td>1</td>
</tr>
</tbody>
</table>

- 1-year and 3-year mortality comparisons were then made for each score given by the scoring system.

CONCLUSIONS
- Chronic conditions have a cumulative effect on mortality among patients who received an ICD.
- Patients with a score of 6 or greater, as calculated by our proposed scoring system, are likely to have a significantly higher risk of short term mortality.
- Future directions for validation of the scoring system, as a second cohort of patients and determining cost-effectiveness of ICD therapy offered to patients in the highest risk subgroups.

REFERENCES