The role of echocardiography in heart screening for sudden cardiac death

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No disclosures
### TABLE 3 Implications of Screening ECG and/or ECHO on PPV, NPV, Number Needed to Screen, False-Positives, and False-Negatives for Illustrative Points on the HSROC Curve

<table>
<thead>
<tr>
<th>Prevalence per 100 000</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
<th>Number Needed to Screen to Detect 1 Case</th>
<th>Number of False-Positives When Detecting 1 Case</th>
<th>Number of False-Negatives per 100 000 Screened</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustrative point where sensitivity and specificity are equally weighted (maximal accuracy) with prevalence from meta-analysis</td>
<td></td>
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<tr>
<td>HCM &amp; ECG</td>
<td>45</td>
<td>0.847</td>
<td>0.848</td>
<td>0.0025 (1/400)</td>
<td>0.9999</td>
<td>2624</td>
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<td>0.837</td>
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<td>0.861</td>
<td>0.860</td>
<td>0.0004 (1/2324)</td>
<td>0.9999</td>
<td>16 562</td>
<td>2323</td>
</tr>
<tr>
<td>WPW &amp; ECG</td>
<td>136</td>
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<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>735</td>
<td>0</td>
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<td>Illustrative point where specificity is given more weight (maximal specificity) with prevalence from meta-analysis</td>
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<td>0.999</td>
<td>0.0173 (1/58)</td>
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<td>0.999</td>
<td>0.2146 (1/5)</td>
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<tr>
<td>Illustrative point where sensitivity and specificity are equally weighted (maximal accuracy) with oft-cited prevalence</td>
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<td>0.0110 (1/91)</td>
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<td>Illustrative point where specificity is given more weight (maximal specificity) with oft-cited prevalence</td>
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<td>1.000</td>
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<td>500</td>
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</tbody>
</table>

EGC/ECHO, ECG combined with ECHO.

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Electrocardiogram Screening for Disorders That Cause Sudden Cardiac Death in Asymptomatic Children: A Meta-analysis
What are the issues?

- What are we trying to accomplish with echo?
- Who to screen?
- Frequency of individuals screened?
What are the issues?

- Cost
- Variations in equipment
- Variations in execution/protocol
- Variations in interpretation
- Storage/archiving
Beaumont Healthy Heart Check Screen

• Started in 2007
• 5 components
  – detailed health history questionnaire
  – Blood pressure
  – Physical exam by cardiologist
  – Electrocardiogram
  – Possible echocardiogram
Beaumont Healthy Heart Check Screen

• Started in 2007
• 5 components
  – detailed health history questionnaire
  – Blood pressure
  – Physical exam by cardiologist
  – Electrocardiogram
  – “quick-look” echo in everyone (2013)
Beaumont Healthy Heart Check Screen

- “quick-look” echo
- 5 views
  - Parasternal long
  - Parasternal long with color
  - Apical 4 chamber
  - Apical 5 chamber
  - Apical 5 chamber with color
Summary

- 2007-2015
- 11,534 students
  - Age 13-18+
- 1169 follow-up with physician
- 155 stops, follow-up with physician
- 7 HCM, 2 dilated CM, 1 possible LVNC
  - HCM (43/100,000)
- Since 1/2013 when all screened had echo
  - 2464 kids screened
  - No HCM
  - 317 follow-up with physician
  - 61 Stops
Summary

• We need uniformity
• Short term
  – Determine who
  – Establish uniformity
  – Establish feasibility
  – Work on ways to implement
  – $$$
Summary

• Long-term
  – Implement screening
  – Ensure uniformity
  – Accommodate for new technology