### Background

Sudden death occurs at disproportionately higher rates in both men and African-Americans. Risk factors for sudden death are similar to those for cardiovascular disease (CVD) and include atherosclerotic coronary artery disease (CAD), diabetes mellitus (DM), hypertension (HTN), and hyperlipidemia (HLD). Evidence-based medication guidelines for prevention of CVD are often underutilized. Both racial and gender disparities in primary prevention have been identified, with disparities persisting even among high-risk patients who may particularly benefit from preventive pharmacotherapy.

### Project Aim

We estimated Framingham 10-year CVD risk among sudden death victims to understand evidence-based preventive medication use prior to sudden death. We assessed race-sex differences of Framingham 10-year CVD risk and the use of preventive medications, which may guide future strategies to prevent sudden deaths.

### Methods

Out-of-hospital deaths among adults aged 18-64 were reported by emergency medical services in Wake County, North Carolina from 2013-2015 and underwent adjudication using EMS reports, medical records, and medical examiner reports to identify sudden unexpected death cases.

Among the identified cases, 10-year CVD risk was calculated for all subjects that had the requisite components of D'Agostino et al.'s published algorithm irrespective of their CAD status with risk classified as low (<6%), moderate (6-20%), and high (≥20%).

Kruskal-Wallis and Student's t-tests were used to compare continuous variables and Fisher's exact tests for categorical variables. Statistical analyses were performed using STATA software (StataCorp LLC College Station, Texas).

### Results

- Among the 84 sudden death victims with available lipid panels, 47.6% were white men (WM), 15.5% African-American men (AAM), 22.6% white women (WW), and 14.3% African-American women (AAW).
- Average age (55.6 years) and prevalence of CAD (32.1%), HTN (84.5%), DM (48.8%), and HLD (82.1%) did not significantly vary between race-sex groups.
- There was a significant difference in the mean 10-year CVD risk among all race-sex groups (p=0.001) with descending risk scores among WM, AAM, AAW, and WW.

### Table 1. Demographic and clinical characteristics of sudden death victims stratified by race and sex groups

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>WM</th>
<th>AAM</th>
<th>WW</th>
<th>AAW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall frequencies, n (%)</td>
<td>84</td>
<td>40 (47.6)</td>
<td>13 (15.5)</td>
<td>19 (22.6)</td>
<td>12 (14.3)</td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>84</td>
<td>55.6 (6.6)</td>
<td>56.4 (5.9)</td>
<td>55.0 (6.6)</td>
<td>52.8 (8.5)</td>
</tr>
<tr>
<td>Medical conditions, n (%)</td>
<td>84</td>
<td>71 (84.5)</td>
<td>30 (75)</td>
<td>12 (92.3)</td>
<td>17 (89.5)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>84</td>
<td>69 (82.1)</td>
<td>32 (80)</td>
<td>10 (76.9)</td>
<td>16 (84.2)</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>84</td>
<td>27 (32.1)</td>
<td>12 (30)</td>
<td>6 (46.2)</td>
<td>6 (31.6)</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>84</td>
<td>41 (48.8)</td>
<td>20 (50)</td>
<td>7 (53.8)</td>
<td>6 (31.6)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>84</td>
<td>25.3 (19.1)</td>
<td>33.3 (18.4)</td>
<td>25.0 (20.2)</td>
<td>12.9 (15.7)</td>
</tr>
<tr>
<td>ASCVD risk, mean (SD) *</td>
<td>84</td>
<td>25.3 (19.1)</td>
<td>33.3 (18.4)</td>
<td>25.0 (20.2)</td>
<td>12.9 (15.7)</td>
</tr>
</tbody>
</table>

* p-value comparing 10-year CVD risk by race-sex groups < 0.001

### Figure 1. 10-year CVD risk groups among sudden death victims stratified by race and sex groups

- The proportion with "high" 10-year risks was significantly different among race-sex groups (p=0.001) with descending proportions among WM, AAM, AAF, and WF in descending order.

### Patients

- There was low preventive statin use overall (46.6%) and among high risk individuals (51.2%) without significant differences between race-sex groups.

### Limitations

- Patients with known CAD were included, which would be expected to result in conservative estimates in overall risk profiles.
- Guidelines recommendations for aspirin for primary prevention have changed since these deaths occurred.

### Conclusion

The average Framingham 10-year CVD risk among sudden death victims is high among male victims and moderate among female victims. Preventive medications use among victims with high risk is low without significant race-sex differences. Increased use of evidence based preventive medicine has the potential to reduce the incidence of sudden death.

### Disclosures

The authors have no disclosures to report.

### References