Barriers to Diagnosis & Care in Women
CRYPTOGENIC STROKE PUBLIC HEALTH CONFERENCE:
DEFINING A COORDINATED APPROACH TO PATIENT DIAGNOSIS & MANAGEMENT

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AHA Cardiovascular Disease & Stroke in Women & Special Populations Committee
Lecture Outline

• What are the statistics?
• Barriers to diagnosis and care
• Women and Atrial Fibrillation
Cardiovascular disease (CVD) and other major causes of death in females: total, <85 years of age, and ≥85 years of age.

Most people are more afraid of having a stroke than a heart attack!

Dariush Mozaffarian et al. Circulation. 2015;131:e29-e322
• Each year stroke kills twice as many women as breast cancer.
• However, this fact is widely unknown among the general public. Women are also less knowledgeable about the risk factors and don’t perceive themselves at risk for stroke.

*Incidence counts cover about 99% of the U.S. population; death counts cover about 100% of the U.S. population. Use caution when comparing incidence and death counts.
<table>
<thead>
<tr>
<th>Risk factors specific to women</th>
<th>Risk factors that are stronger or more prevalent in women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in hormonal status</td>
<td>Atrial fibrillation</td>
</tr>
<tr>
<td>Gestational diabetes</td>
<td>Depression</td>
</tr>
<tr>
<td>Oral contraceptive use</td>
<td>Diabetes mellitus</td>
</tr>
<tr>
<td>Postmenopausal hormone use</td>
<td>Hypertension</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>Migraine with aura</td>
</tr>
<tr>
<td>Pregnancy</td>
<td>Psychosocial stress</td>
</tr>
</tbody>
</table>

Dariush Mozaffarian et al. Circulation. 2015;131:e29-e322
Proportion of patients dead 1 year after first stroke.

Dariush Mozaffarian et al. Circulation. 2015;131:e29-e322
Proportion of patients with recurrent stroke in 5 years after first stroke.

Dariush Mozaffarian et al. Circulation. 2015;131:e29-e322
<table>
<thead>
<tr>
<th>Year</th>
<th>Men 35-54 (%)</th>
<th>Women 35-54 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988-94</td>
<td>1.0%</td>
<td>0.5%</td>
</tr>
<tr>
<td>1994-04</td>
<td>1.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>2005-06</td>
<td>1.1%</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

Strokes in Middle Age

National Health and Nutrition Study
American Stroke Association Conference Feb 20 2008
International Stroke Conference Feb 2010
Lecture Outline

• What are the statistics?
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Warning Signs of Stroke

- A feeling of numbness or weakness in your face, arm, or leg
- Vision problems in one or both eyes
- Dizziness or loss of balance; difficulty walking
- Confusion
- Problems speaking or understanding what other people are saying
- Severe headaches without warning or explanation

Women may report symptoms that are different from common symptoms, creating a problem, as they are often not recognized as a stroke symptom, and treatment is often delayed.

- Feeling weak all over
- Chest pain
- Shortness of breath
- Rapid heart beat
Lecture Outline

• What are the statistics?
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<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Score</th>
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<tbody>
<tr>
<td>CHF</td>
<td>1</td>
</tr>
<tr>
<td>HTN</td>
<td>1</td>
</tr>
<tr>
<td>Age ≥ 75 years</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1</td>
</tr>
<tr>
<td>Stroke/TIA/TE</td>
<td>2</td>
</tr>
<tr>
<td><strong>MAX</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
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<td>2</td>
</tr>
<tr>
<td>DM</td>
<td>1</td>
</tr>
<tr>
<td>Stroke/TIA/TE</td>
<td>2</td>
</tr>
<tr>
<td>Prior MI, PAD or aortic plaque</td>
<td>1</td>
</tr>
<tr>
<td>Age 65-74 years</td>
<td>1</td>
</tr>
<tr>
<td>Sex: Female</td>
<td>1</td>
</tr>
<tr>
<td><strong>MAX</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>
Prediction of stroke or TIA in patients without atrial fibrillation using CHADS₂ and CHA₂DS₂-VASc scores

L Brent Mitchell,¹ Danielle A Southern,² Diane Galbraith,¹ William A Ghali,³ Merrill Knudtson,¹ Stephen B Wilton,¹ for the APPROACH investigators

ABSTRACT
Objectives To determine the accuracy of CHADS₂ and CHA₂DS₂-VASc tools for predicting ischaemic stroke or transient ischaemic attack (TIA) and death in patients without a history of atrial fibrillation or flutter (AF).
Methods The study included 20,970 patients without known AF enrolled in the Alberta Provincial Project for Outcomes Assessment in Coronary Heart disease (APPROACH) prospective registry who were discharged after an acute coronary syndrome (ACS) between 2005 and 2011. The outcome measures were incident ischaemic stroke, TIA or death from any cause.
Results Over a median follow-up of 4.1 years, 453 patients (2.2%) had a stroke (n=297) or TIA (n=156) and 1903 (9.0%) died. The incidence of stroke or TIA increased with increases in each risk score (p<0.001), with an absolute annual incidence ≥1% with CHADS₂ ≥3 or CHA₂DS₂-VASc ≥4. Both CHADS₂ and CHA₂DS₂-VASc scores had acceptable discrimination performance (C-statistic=0.68 and 0.71, respectively). The mortality rate was also greater in patients with higher CHADS₂ and CHA₂DS₂-VASc scores (p<0.0001).
Conclusions In patients with ACS but no AF, the CHADS₂ and CHA₂DS₂-VASc scores predict ischaemic stroke/TIA events with similar accuracy to that observed in historical populations with non-valvular AF, but with lower absolute event rates. Further study of the utility of the CHADS₂ and CHA₂DS₂-VASc scores for the assessment of thromboembolic risk and selection of antithrombotic therapy in patients without AF is warranted. The predictive values of CHADS₂ and CHA₂DS₂-VASc scores for ischaemic stroke were modest (c-statistics 0.66 and 0.67, respectively), there was a clear increase in annual risk with increasing scores using either predictive tool. Recently, CHADS₂ and CHA₂DS₂-VASc clinical tools have been reported to have predictive capacity for outcomes in patients without known AF, including the risk of death after stroke, the risk of new onset AF, the risks of stroke or death after coronary artery bypass grafting, the risk of stroke in unselected patients, the risk of stroke in patients with stable coronary artery disease and the risk of stroke after an acute coronary syndrome (ACS).

METHODS
Study population and data sources
In the province of Alberta, Canada, all cardiac care is coordinated by a single organisation (Alberta Health Services), divided into five regional zones. Using its administrative Discharge Abstract Database, we identified all patients discharged alive from acute care hospitals in the Southern and Calgary zones (2011...
Conclusions of Meta-Analysis

• Women with atrial fibrillation have a residual CVA/SE when treated with warfarin compared to men
• Clinical disadvantage of women disappeared when women were treated with NOACs
• Equivalent efficacy of stroke prevention in men and women
• Less incidence of major bleeding in women with NOACs

Measures to decrease strokes in women

Ongoing improvements:
- Go Red for Women campaign – FAST acronym
- WomenHeart – Afib awareness campaign
- WiseWoman by CDC – screening women for risk factors
- Pharmaceutical companies – novel anticoagulants may improve strokes in women with atrial fibrillation

Future needs:
- Improve identification of risks of strokes in different age groups such as OCP use, obesity, hypertension and lipid profiles in young women
- Improve screening and detection of atrial fibrillation in women, especially those over 75 years of age
What We Want to Look Like in our 90s