Atrial Fibrillation Awareness Month: The Impact and Treatment of Atrial Fibrillation

Monique Machado RN, MSN, ANP-BC
Cardiac Arrhythmia Service Nurse Practitioner
Atrial Fibrillation Program Coordinator
Objectives

• Review AF statistics
• Discuss cardiac anatomy, normal heart rhythm and atrial fibrillation
• Risk Factors
• Treatment Goals
• Symptoms of AF
• Discuss treatment options
• Understand why AF poses a stroke risk
• Discuss reducing stroke risk in AF patients
• Review alternatives to anticoagulants
• Learn to take your pulse
Did you know?

- Atrial Fibrillation (AF) is the most common type of arrhythmia
  - Affecting over 3 million people in the US
  - 160,000 new cases each year
  - Eight out of 100 people over the age 65 have AF
  - Incidence of AF increases with age but can also affect younger people.
    - Men: 66 yrs
    - Women: 74 yrs
  - Affects Caucasians at a much higher rate than other races
  - You are more likely to develop AF if your parents had AF (genetic mutation)

www.CDC.gov
www.hrsonline.org
SO WHAT IS ATRIAL FIBRILLATION?
Cardiac Anatomy

- The heart is made up of 4 chambers
  - 2 upper (atria)
  - 2 lower (ventricles)
- The atria and ventricles are separated by valves keeping blood flowing in one direction
- The heart also has tissue (the septum) which separates the right side from the left
- When talking about atrial fibrillation, it is also important to note the left atrial appendage which hangs like a windsock from the left atrium
Normal Heart Rhythm

- In normal rhythm, the electrical impulse telling the heart to beat starts in the sinus node.
- The impulse spreads to both atria and signals for them to contract.
- The impulse also reaches the AV node which sends the signal for the ventricles to contract.
- The heart beats in a coordinated 1:1 ratio and at rest the heart beats at approximately 60-100 beats per minute.
Atrial Fibrillation

- In atrial fibrillation, rapid electrical impulses come from the left atrium.
- These impulses can fire between 400-600 beats per minute causing the atria to quiver instead of contracting strongly.
- The AV node does not allow all of the signals to reach the ventricles and the ventricles then beat irregularly and can also beat quickly (from 110-180 beats per minute).
HOW IS ATRIAL FIBRILLATION DIAGNOSED?
Difference in EKG Strips

Normal Sinus Rhythm

Atrial Fibrillation
Risk Factors

- Age >65
- Hypertension or high blood pressure (blood pressure greater than 140/80)
- Congestive heart failure
- Structural heart disease and/or abnormalities
  - Valvular disease (specifically mitral valve disease)
  - Congenital defects
- Thyroid Disease
- History of heart attack
  - Coronary Artery Disease
- Previous open heart surgery
- Diabetes
- Excessive use of stimulants and/or alcohol
- **Sleep apnea**
- **Obesity**
Two Treatment Goals

Symptom Management

Keeping symptoms of atrial fibrillation from negatively affecting your life

Stroke Prevention

Reducing the risk of stroke
Symptoms of AF

• Symptoms vary widely
  – People may be completely asymptomatic or symptomatic to the point of needing hospitalization

• Symptoms most commonly reported are:
  – Palpitations
  – Fast or irregular heart beat or skipping sensations
  – Fatigue
  – Shortness of Breath
  – Exercise intolerance
  – Dizziness or lightheadedness

• These symptoms can make most people feel very anxious.
Treatment for Symptoms

• Rate Control – helps keep your heart from beating too quickly which can reduce or eliminate symptom
  – Achieved with medications
• Rhythm Control – puts your heart back in normal rhythm
  – Medications
  – Cardioversions – using electricity to shock the heart back into normal rhythm
  – Ablations
HOW IS ATRIAL FIBRILLATION RELATED TO STROKES?
Atrial Fibrillation and Stroke

- When the heart rhythm is atrial fibrillation, the top chambers do not contract well
- The left atrial appendage (LAA) also quivers which causes blood to be sluggish or stagnant
- When this happens blood clots can form in the LAA
- These clots can dislodge and travel from the heart to the brain and cause a stroke
Atrial Fibrillation and Stroke

- Having atrial fibrillation puts one at 5 times greater risk for stroke
- There is no specific duration that it takes for a clot to form
- About 90% of ischemic strokes are from clots formed in the left atrial appendage
- Strokes related to Afib have double the mortality rate than non-Afib related strokes and are more debilitating
What is a Stroke?

• A stroke is a lack of blood flow which results in damage or death of brain cells

• Sometimes strokes are cause by a blood clot that is formed in the heart due to atrial fibrillation

• These can then travel out of the heart to the brain and block a blood vessel

• A transient ischemic attack (TIA or “mini-stroke”) happens when there is a temporary disruption of blood flow but normalizes before injury to the brain cells occurs

• A TIA is a WARNING sign
HOW IS STROKE RISK REDUCED IN ATRIAL FIBRILLATION PATIENTS?
Calculating Stroke Risk in AF

**CHADS2-VASc Risk Criteria**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestive Heart Failure/LV Dysfunction</td>
<td>1</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1</td>
</tr>
<tr>
<td>Age ≥ 75 Years</td>
<td>2</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>1</td>
</tr>
<tr>
<td>Prior Stroke, TIA, thromboembolism</td>
<td>2</td>
</tr>
<tr>
<td>Peripheral Vascular Disease or Coronary Artery Disease</td>
<td>1</td>
</tr>
<tr>
<td>Age 65-74 Years</td>
<td>1</td>
</tr>
<tr>
<td>Sex Category (i.e., Female Sex)</td>
<td>1</td>
</tr>
</tbody>
</table>

**Risk Category**

<table>
<thead>
<tr>
<th>Points</th>
<th>Recommended Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No risk factors</td>
<td>It is reasonable to omit antithrombotic therapy or aspirin</td>
</tr>
<tr>
<td>1 point</td>
<td>No anticoagulant or treatment with an anticoagulant or aspirin may be considered</td>
</tr>
<tr>
<td>2 or more points</td>
<td>Oral anticoagulant*</td>
</tr>
</tbody>
</table>

* If warfarin is the oral anticoagulant used, INR should be 2.0 to 3.0, with a target of 2.5. INR < 2.0 is not effective at preventing strokes. If mechanical valve, target INR > 2.5.

**Score**

<table>
<thead>
<tr>
<th>Score</th>
<th>Adjusted stroke rate (%/year) based on CHADS2-VASc Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>3</td>
<td>2.2</td>
</tr>
<tr>
<td>4</td>
<td>3.2</td>
</tr>
<tr>
<td>5</td>
<td>4.0</td>
</tr>
<tr>
<td>6</td>
<td>6.7</td>
</tr>
<tr>
<td>7</td>
<td>9.8</td>
</tr>
<tr>
<td>8</td>
<td>9.6</td>
</tr>
<tr>
<td>9</td>
<td>8.7</td>
</tr>
<tr>
<td>10</td>
<td>15.2</td>
</tr>
</tbody>
</table>

[http://resources.hrsonline.org/practical-management.html](http://resources.hrsonline.org/practical-management.html)
Anticoagulants are recommended for patients with atrial fibrillation who have CHADS2-VASc scores greater than 1. For those with scores 0-1, health care providers will discuss whether anticoagulation or aspirin is appropriate.

Anticoagulants make blood less prone to clotting and reduce the risk of stroke.

Available Anticoagulants
- Warfarin (Coumadin)
- Dabigatran (Pradaxa)
- Rivaroxaban (Xarelto)
- Apixaban (Eliquis)
- Edoxaban (Savaysa)
What If I Can’t Take an Anticoagulant?

- Some patients cannot take anticoagulation due to some of the following issues:
  - Bleeding in the brain
  - GI bleeding
  - High risk for falls
  - Hazardous job
- These patients may qualify for a Left Atrial Appendage Closure
- MGH has a SEAL group which consists of doctors from EP, neurology cardiac surgery, radiology and echocardiography to discuss difficult cases
- Left atrial appendage closure procedures have the potential to allow patient to stop long term anticoagulation
Left Atrial Appendage Closure

**Watchman**
- The WATCHMAN device is implanted in the Left Atrial Appendage to block blood from pooling in the appendage

**Lariat**
- The LARIAT is a device that ties off the Left Atrial Appendage with a suture
The Watchman is implanted by accessing a vein in the groin.

A catheter travels into the left atrial appendage where Watchman is deployed.

The heart’s own tissue then covers the face of the device.

After the procedure, patients are admitted to be monitored overnight.

Patients are on bed rest for several hours after the procedure to protect the groin site.

Watchman Implant Animation
LARIAT

- To perform LAA closure using the Lariat, access to a vein is gained from the groin.
- There is also a sub-sternal puncture to access the sac around the heart.
- The Lariat device deploys a suture around the LAA.
- The suture is then tightened, stopping blood from flowing from the left atrium into the LAA.

Lariat Procedure Animation
What Can I Do?

• Know how to take your pulse!
• Reduce alcohol intake
• Make sure your blood pressure is under control
• Keep a healthy weight
• Get treatment for sleep apnea
Learn how to check your pulse!

- **Step 1**
  Turn your left hand palm-side up, then place the first two fingers of your right hand along the outer edge of your left wrist just below where your wrist and thumb meet.

- **Step 2**
  Slide your fingers toward the center of your wrist. You should feel the pulse between the wrist bone and the tendon.

- **Step 3**
  Press down with our fingers until you feel your pulse. Do not press too hard, or you will not be able to feel the pulsation. Feel free to move your fingers until the pulse is easiest to feel.

- **Step 4**
  Continue to feel your pulse for a full minute. Concentrate on whether the beats are evenly spaced, or whether they are erratic, with missed beats, extra beats, or beats that are too close together.

http://www.strokeheart.org/CYPA/check.html
Join Us for Atrial Fibrillation Classes

For more information about the Atrial Fibrillation Program and to register for classes please visit www.massgeneral.org/atrialfibrillation. Classes are free and open to the general public.

<table>
<thead>
<tr>
<th>Classes Offered</th>
<th>Dates Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is Atrial Fibrillation? Learn the difference between normal rhythm and atrial fibrillation. Discuss the prevalence and symptoms associated with the condition. Discuss potential complications caused by atrial fibrillation and the need to treat it. Attendees will participate in the activity &quot;Know Your Pulse.&quot;</td>
<td>January 26, 2015 5-6 PM</td>
</tr>
<tr>
<td></td>
<td>May 18, 2015 5-6 PM</td>
</tr>
<tr>
<td></td>
<td>September 28, 2015 5-6 PM</td>
</tr>
<tr>
<td>Stroke Prevention and Blood Thinners 101 Learn about the signs and symptoms of a stroke and the risk of stroke associated with atrial fibrillation. Discuss different methods of anticoagulation and procedures for stroke prevention. Participants will have a better understanding of their personal stroke risk.</td>
<td>February 9, 2015 5-6PM</td>
</tr>
<tr>
<td></td>
<td>June 29, 2015 5-6 PM</td>
</tr>
<tr>
<td></td>
<td>October 26, 2015 5-6 PM</td>
</tr>
<tr>
<td>AF Treatment: When, Why and How Review the common symptoms associated with atrial fibrillation. Discuss different treatment options for atrial fibrillation, with a focus on cardioversion and pharmacological therapies.</td>
<td>March 30, 2015 5-6PM</td>
</tr>
<tr>
<td></td>
<td>July 27, 2015 5-6 PM</td>
</tr>
<tr>
<td></td>
<td>November 30, 2015 5-6PM</td>
</tr>
<tr>
<td>Ablation A-Z  The major focus of this class will be on the atrial fibrillation ablation also known as pulmonary vein isolation (PVI). Discuss details of the procedure including indications, pre- and post-procedure care, outcomes and potential complications.</td>
<td>April 13, 2015 5-6PM</td>
</tr>
<tr>
<td></td>
<td>August 31, 2015 5-6PM</td>
</tr>
<tr>
<td></td>
<td>December 28, 2015 5-6PM</td>
</tr>
</tbody>
</table>

Location

Classes are located in the Haber Conference Room, Main Campus 1st floor Blake building behind the General Store gift shop.
Questions?