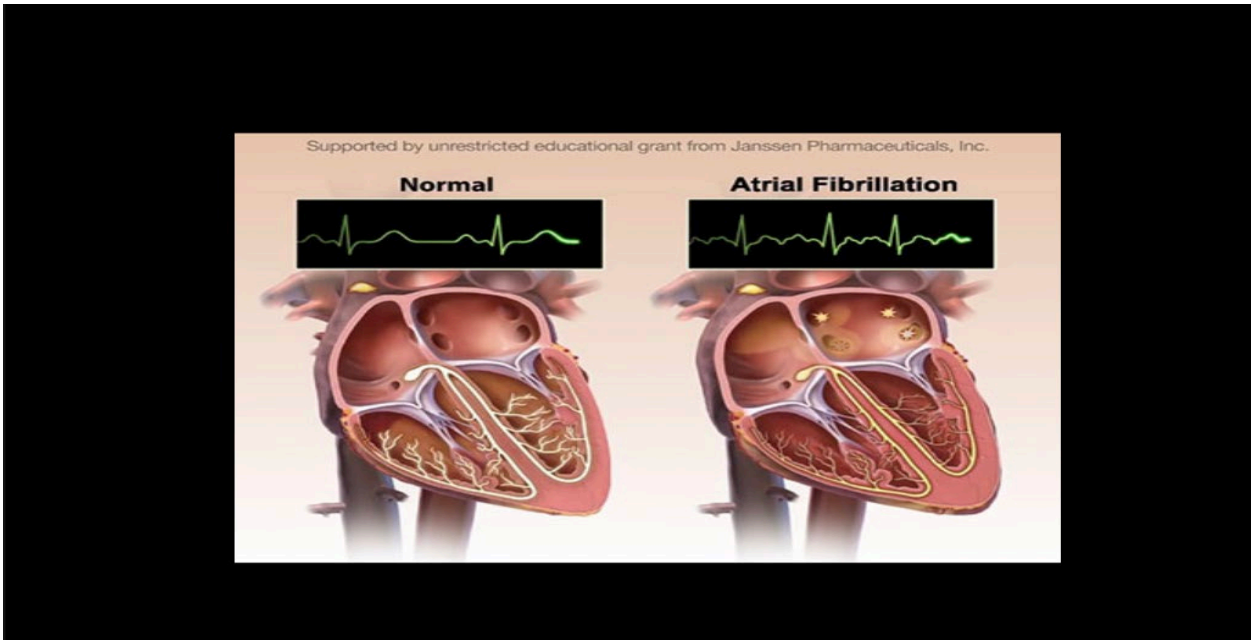
What is Afib?

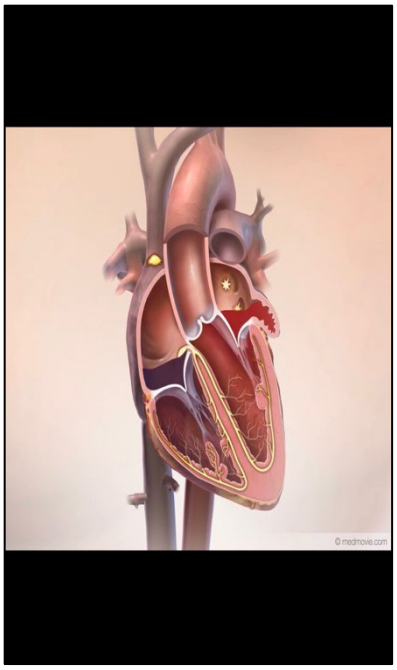
Let's first look at the normal conduction system of the heart. Your heart has four chambers, the two at the top are called the atria and the two at the bottom are called the ventricles. We have a natural pacemaker that we are born with called the sinus node which generally sets the pace of the heart between 60 and 100 bpm. It produces an electrical signal which first activates the atria to squeeze and then the electrical signal travels down to the AV node, the AV node is located here, and it's basically like the junction box between the top and bottom chambers of the heart, it receives electrical signals from the top and allows them to pass through the AV node, down these two high-speed electrical cables called bundle branches and when they are activated, they make your ventricles come together and squeeze. Through the natural conduction system of the heart, you then have one squeeze or contraction from the top, followed by one squeeze or contraction from the bottom, all driven by your sinus node.
Now let's look at what your heart looks like in a fib. You'll notice here that your sinus node is no longer firing. Instead, electrical signals have gotten turned on generally from inside these four areas here called pulmonary veins. Pulmonary veins are just blood vessels that return blood and oxygen from lungs to the heart. Electrical signals get turned on and start firing rapidly between 300 and 600 times per minute causing you to lose good effective contraction from those top chambers of the heart and instead it results in fibrillation or quivering of the atria. All of these electrical signals, just like when you're in sinus rhythm, still need to travel through your AV node to reach the ventricles which is where your pulse is generated. Your AV node will slow these impulses down but you still have an irregular and usually rapid conduction in the ventricles which is what gives you an irregular pulse.

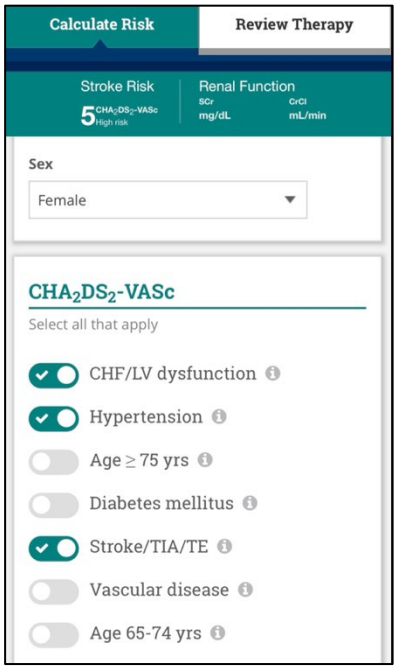
**with these first images im using the app to show the moving pictures but possibly a sketch could do something similar*



Stroke Risk

One of the biggest concerns for patients with atrial fibrillation is addressing your risk for stroke. Atrial fibrillation increases your risk from stroke because, as we previously demonstrated, you lose good effective contraction of the top chambers called your atria. This area here is called the left atrial appendage and when you lose a good, effective contraction in the atria blood can back up into this area and become stagnant. Stagnant blood can then potentially turn into a thrombus or a clot and if that clot moves or embolizes outside of the left atrial appendage it could potentially cause a stroke. The way that we reduce this risk is to use special types of blood thinners called anti-coagulants. The first step is to determine your personal risk of an afib related stroke. We do this by using a scoring system called the CHADS ASC score. It looks at your specific risk factors for stroke and creates a score which then places you into a high risk or low risk category. Based upon where you fall on the scale it helps us to make a decision about whether or not you may benefit from anticoagulation.



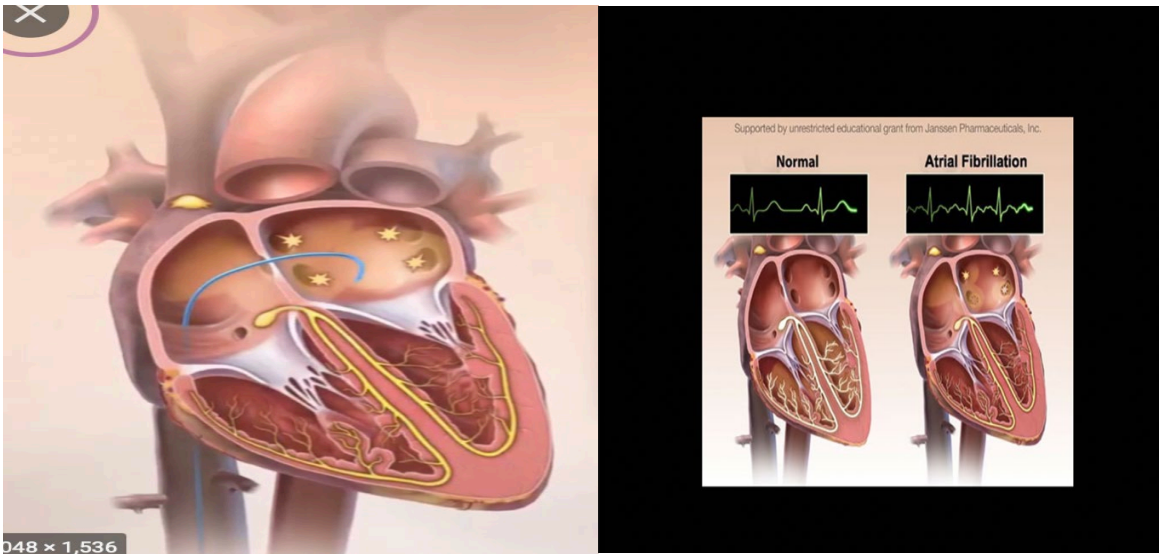


Afib Treatment

We broadly categorized treatment of atrial fibrillation into two categories, rate control and rhythm control. Rate control of afib involves using medication's which act on the AV node to slow down the number of impulses moving from your atria into your ventricles to control your pulse. Rate control medications do not necessarily prevent or reduce episodes of atrial fibrillation but do help to control your pulse during the episodes which can result in better symptom control.

A rhythm control strategy for afib is more focused on trying to prevent episodes or reduce the number of episodes of a fib which you experience. We further categorize rhythm control into short term or longer-term strategies. Short term may refer to either pharmacologic or electrical cardioversion which can quickly terminate an episode of atrial fibrillation at that moment. This is a short-term strategy because it does not prevent future events of a fib but does help to improve your symptoms in that moment. Longer-term strategies of rhythm control involve antiarrhythmic drug therapy and or catheter ablation. Antiarrhythmic drugs are medications which you take daily and they work to suppress those impulses originating from your pulmonary veins to attempt to keep you in sinus rhythm. Catheter ablation is an interventional approach where a catheter is threaded up from your femoral vein into your heart and then using thermal energy lesion sets are applied around the 4 pulmonary veins resulting in areas of scar. This then prevents the impulses from exiting the pulmonary veins and is commonly referred to as pulmonary vein isolation.

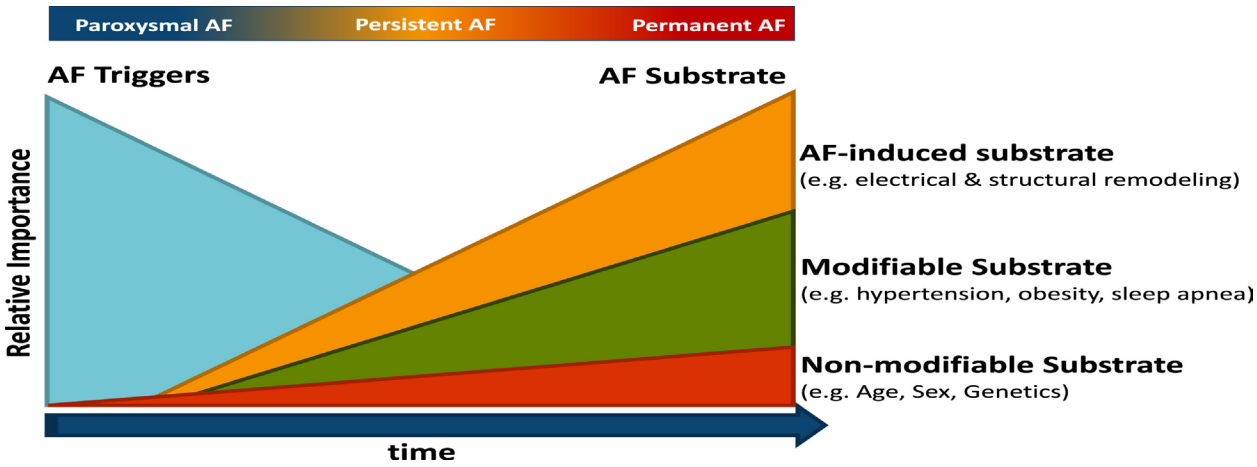
***at this point in the conversation I usually then start to discuss how we choose between rate vs rhythm control, review any risk factors which would contribute to the decision (age, symptoms, heart failure, etc) and then focus on more details regarding AAD vs ablation, review R/B of both, etc. I think we are just keeping this pretty generic so did not include that here.*



Afib Disease Progression

It is important to recognize that afib is a chronic progressive disease. Your first episode may have happened without you even realizing it and we refer to those as subclinical episodes meaning you may have had short episodes of a fib lasting a brief period of time that went undetected by you. Then you have your first episode which causes you symptoms or is detected by a watch or other wearable device and it's usually short-lived and may go away on its own and we would call that a "paroxysmal episode". Some of these early episodes are usually highly dependent on triggers and triggers can be defined as something which causes you to have an episode of a fib but the episode then does not maintain and terminates on its own. You may have several episodes of paroxysmal atrial fibrillation occur over years but then notice that the episodes will start to last longer in duration and occur more frequently over time. At some point if an episode lasts more than seven days continuously that suggests that you may have transitioned to persistent type afib. What causes this progression overtime? Generally, it's correlated to the development and increase of AF substrate in your heart. Substrate refers to structural or cellular changes which have occurred and now allow these previously brief, self-terminating episodes to now persist and maintain overtime. Substrate can be broken down into three main categories. There is non-modifiable substrate which can refer to your age, gender, or genetic predisposition to having AF. Then there is modifiable causes of substrate and that can relate to having high blood pressure, obesity, diabetes, drinking alcohol, or sleep apnea. The third type of substrate refers to the changes that occur in your heart from the afib itself. This is why when we treat afib we need to use a comprehensive approach to not only try to reduce the number of episodes of afib you have but also treat your underlying risk factors as well, all with the goal of helping to prevent or slow the disease progression over time.

*** with this chart Im drawing I generally start by drawing time on the x axis and AF episodes on the Y. I then designate a line on the X as first episode and write paroxysmal, then move to the left and place several small lines and title them subclinical. Then I draw a few lines showing the increase density and then write persistent. The rest looks the same as to how I then draw the top line showing increased substrate over time (the top of the yellow) and then break that down into the 3 type.*



Comprehensive Treatment Plan

Atrial fibrillation is a pretty complex disease. In order to effectively treat it you will need comprehensive therapy. Let's briefly go through what this looks like for most patients.
First we will calculate your chads vasc score to determine if you may benefit from anticoagulation to reduce your risk of stroke. We will then review the different types of anticoagulants that are available. Some patients may be at high risk for bleeding on anticoagulation and a procedure may also be discussed called left atrial appendage closure which is an alternative to using blood thinners in some patients.
Next we then determine if you would benefit from addition of medication to help control your heart rate during episodes of afib. We then have a discussion about different rhythm control therapies including both short-term and long-term options and this may include cardioversion, antiarrhythmic drug therapy, and catheter ablation.
Last, and certainly not least, we will review individual risk factors that contribute to afib and set goals for management which may help to slow the progression of the disease and improve outcomes over time.

My Atrial Fibrillation Treatment Plan

How will I prevent Stroke?	What is my plan for rhythm or rate management?	What is my Plan for Risk Factor Modification (RFM)? **recommendations based on the ARREST AF Cohort Study, JACC 2014, demonstrating better outcomes in maintaining sinus rhythm with RFM*
My CHa_2DS_2VASc Score is ____ **If 2 or greater for men or 3 or greater for women, I am indicated for anticoagulation based on increased stroke risk** O Eliquis (apixaban) O Xarelto (Rivaroxaban) O Pradaxa (Dabigatran) O Coumadin (warfarin) O Aspirin O Left Atrial Appendage Closure (LAA) O Referred to Anticoagulation Clinic	**Rate Management:** This is how fast or slow my heart rate is going in atrial fibrillation O Beta Blocker _____ O Calcium Channel Blocker _____ **Rhythm Management:** This is a plan to help keep me in sinus rhythm **Acute** (short term strategy) O Electrical Cardioversion O Pharmacologic Cardioversion **Intermediate** (longer term strategy) O Catheter Ablation O Anti-Arrhythmic Drugs Class IC – O Flecainide _____ O Propafenone _____ Class III- O Tikosyn _____ O Sotalol _____ O Multaq O Amiodarone _____	O **Weight Management:** Your BMI is _____ Recommended BMI is 27 kg/m and lower and an initial weight loss goal of 10%. We recommend that you exercise 3-4 times a week for 30 minutes and increase total endurance to 250 minutes weekly. Focus on eating a healthy diet o Referral to Nutrition o Referral to Weight Management O **Cholesterol:** Your LDL is _____ Recommended LDL is 100 or lower. We recommend healthy lifestyle measures to achieve this goal and at 3 months if above goal consider statin therapy O **Sleep Apnea:** _____ We may recommend an evaluation by a sleep specialist. If you have previously been diagnosed we recommend that you are compliant with your CPAP/BIPAP. o Referral to Sleep Medicine O **Blood Pressure:** _____ Current recommendations are that your blood pressure is below 130/80. If you have been previously diagnosed with hypertension we recommend strict compliance with medications and a low sodium diet. Consider a home BP diary to bring to your next visit o Referral to Hypertension Clinic O **Diabetes:** _____ Current recommendations is HbgA1c less than 6.5%. We recommend healthy lifestyle changes and if not at goal in 3 months, consider medical therapy O **Alcohol Intake:** _____ Recommendations have been made to decrease alcohol intake to no more than 3 standard drinks per week or to cut back weekly intake in half.