Luminis Health℠

Atrial Fibrillation

An Integrated Care Pathway of the

Collaborative Care Network

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First, a Friendly Reminder…

This Integrated Care Pathway was developed by and for members of the AAMC CCN.

These materials will refer to some resources available only to CCN members and their patients.

Not a CCN Member?

We invite you to join the CCN! Please contact the CCN: aamccollaborativecarenetwork@aahs.org

Learning Objectives

This CME material was designed to help you to:

- Optimize treatment of atrial fibrillation for patients in ambulatory, emergency room, and hospital settings
- Increase knowledge regarding diagnosis of atrial fibrillation and its treatment.
- To improve patient health and safety by providing evidence-based care pathways for patients with atrial fibrillation

These materials reference a Toolkit

This is provided to you by the CCN Field Operations Team

It will include larger versions of the overview slides, plus screening tools, patient pamphlets, and phone numbers to call.

Intended Audience and Scope

- Intended Audience for this Pathway
  - CCN primary care, emergency room providers, hospitalists, and specialist diagnosing atrial fibrillation in ambulatory, emergency room, and skilled nursing facilities.
- Scope of Pathway
  - Patients aged 18 and up with atrial fibrillation
  - Improving diagnosis of new onset atrial fibrillation
  - Identification of patient's appropriate for out-patient treatment using evidence-based pathways
  - Optimization of treatment atrial fibrillation for both rate control and anti-coagulant therapy

Disclaimer

No CME program, Tool Kit, algorithm, or recipe will address every scenario you encounter.

Use clinical judgment and call subject matter experts when you sense you need guidance!

We are here to help.

In these materials, we will describe:

Appropriate treatment pathways for patients with new onset atrial fibrillation

Evidence based diagnostic work up for atrial fibrillation

A review of anti-coagulation recommendations for patients with chronic and newly diagnosed atrial fibrillation.

Available resources to help you and your patients

Some quick definitions…

- In this pathway we will use the abbreviation “AF” for atrial fibrillation
- In this pathway we will often use the abbreviation “ED” to reference the Emergency Department
- In this Pathway we will use the abbreviation “AC” for anticoagulation
- “DOAC” stands for Direct oral anticoagulation “DOAC” medication.
- For convenience this will use the abbreviation “CHADS2VASC” for the “CHA2DS2-VASc” score

Definitions and terms continued…

- DOAC refers specifically to class of direct clotting factor Xa* inhibitors Including: ivaroxaban (Xarelto), apixaban (Eliquis), Dabigatran (Pradaxa) and edoxaban (Savaysa).
- This class was originally called “NOAC” the N standing for Novel or Non-vitamin K(to separate from warfarin).
- For Safety reasons, the class name NOAC** was changed to DOAC as referring to a class of anticoagulants as “NO AC” was potentially dangerous.

* Xa is the clotting factor responsible for activating prothrombin to thrombin.

** The term NOAC is still occasionally used in literature and found in some societies recommendations.

Atrial Fibrillation

- Atrial fibrillation (AF) is the most common cardiac arrhythmia.
- It has the following characteristics
  - The RR intervals follow no repetitive pattern
    - “irregularly irregular”
  - There are no distinct p waves

Atrial Fibrillation

- Consequences
  - Reduction in cardiac output
  - Thrombus formation
  - Increased risk for mortality
- Conditions that increased risk of AF
  - CAD
  - Hypertension
  - Rheumatic valve disease

Atrial Fibrillation Terminology

- NON-VALVULAR vs. VALVULAR HEART DISEASE — Patients with atrial fibrillation may or may not have valvular heart disease. This issue is of particular importance in choosing antithrombotic therapy and we will discus it later
- In 2014 the AHA/ACA guidelines did away with the terms acute and chronic and replaced them with the following classifications…

Classification of AF

- **Paroxysmal AF** – Paroxysmal AF is defined as AF that terminates spontaneously or with intervention within seven days of onset. Episodes may recur with variable frequency.
- **Persistent AF** – Persistent AF is defined as AF that fails to self-terminate within seven days. Episodes often require pharmacologic or electrical cardioversion to restore sinus rhythm. While a patient who has had persistent AF can have later episodes of paroxysmal AF, AF is generally considered a progressive disease.

Classification of AF

- **Long-standing persistent AF** – AF that has lasted for more than 12 months.
- **Permanent AF** – "Permanent AF" is a term used to identify individuals with persistent atrial fibrillation where a joint decision by the patient and clinician has been made to no longer pursue a rhythm control strategy.

Symptoms of Atrial Fibrillation

- Tachycardia
- Fatigue
- Weakness
- Dizziness
- Lightheadedness
- Reduced exercise capacity
- Dyspnea
- Angina
- Presyncope
- Syncope
- Edema
- Stroke
- TIA
- Signs of heart failure
  - Pulmonary edema
  - Ascites
  - Peripheral edema

Precipitating factors triggering AF

- The following have been identified as precipitating factors in triggering the occurrence of Atrial Fibrillation.
  - Exercise
  - Emotion
  - Alcohol

Potentially reversible causes of AF

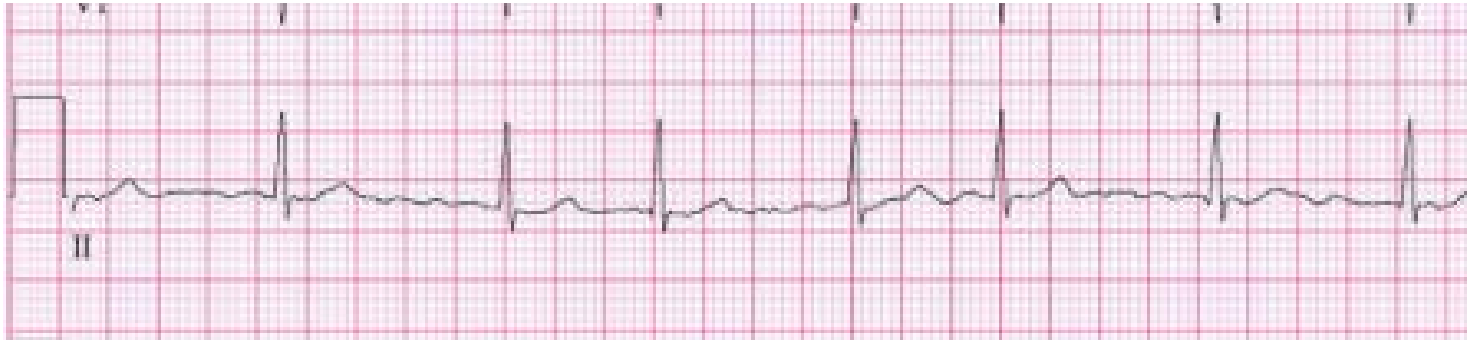
- Hyperthyroidism
- Excessive alcohol intake
- Obstructive Sleep apnea

Associated conditions in Atrial Fibrillation

- Cardiovascular disease
- Cerebrovascular disease
- Diabetes
- Hypertension
- COPD
- Obstructive sleep apnea
- Alcohol Induced Cardiomyopathy “Holiday Heart”

Making the Diagnosis: EKG findings

- There are no distinct p waves.
  - While atrial activity suggestive of p waves may be seen, there are no distinct p waves
- The RR intervals follow no repetitive pattern



When the EKG is not clear…

- Many variables can effect an EKG and make the diagnosis of AF challenging.
- You have a team of CCN Cardiology experts ready to help!
  - AAMG Cardiology # **443-481-6700**
  - Cardiology Associates # **443-573-6480**
  - Did you know you can send a picture of an EKG securely to cardiology using HALO?

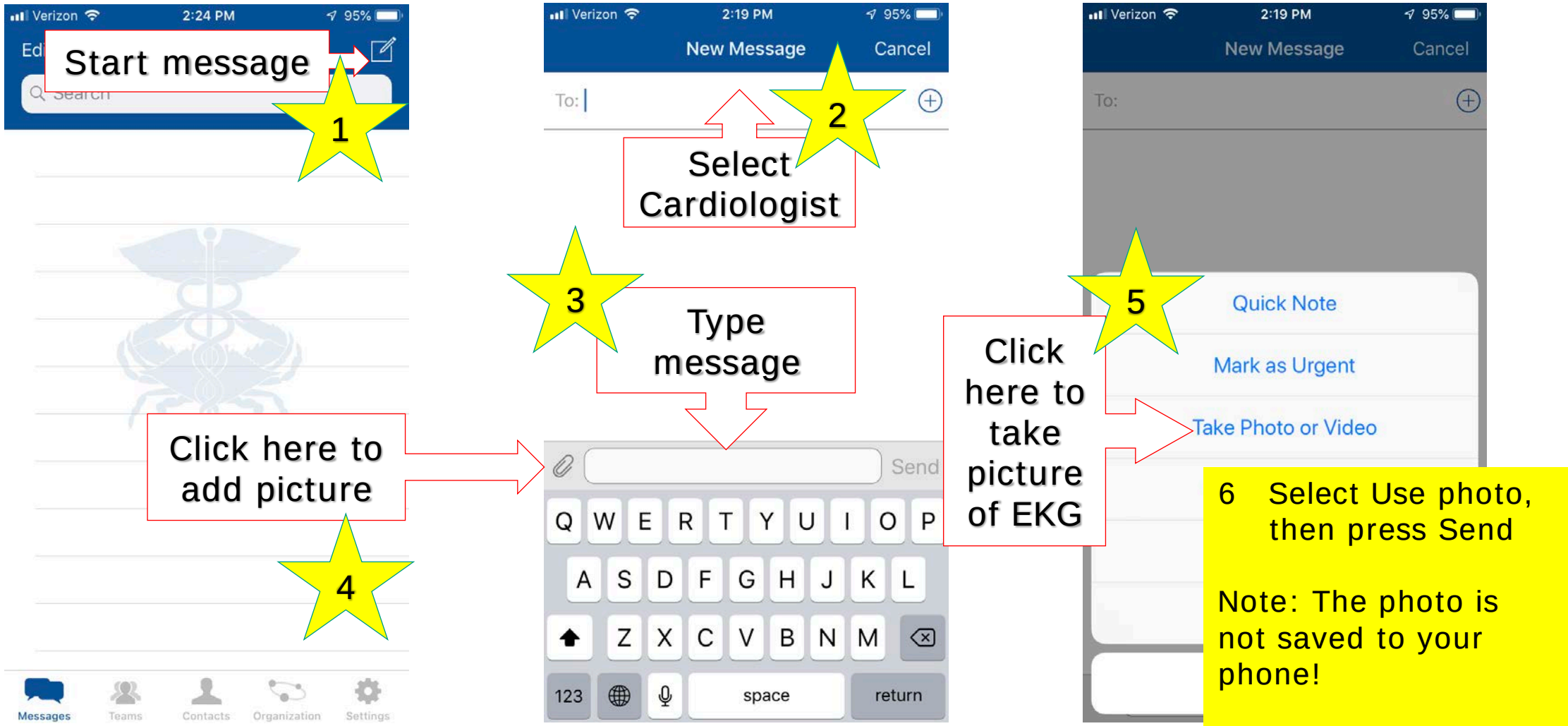
HALO -- The CCN's secure texting tool

- If you do not have HALO
  - Call the CCN at 443-481-6619 OR
  - Email aamccollaborativecarenetwork@aahs.org

Do it now!

We will wait for you….

Using HALO to send a secure EKG



YOU HAVE A PATIENT IN YOUR OFFICE WITH NEWLY DISCOVERED ATRIAL FIBRILLATION. WHAT IS THE NEXT STEP?

- Not every patient with new onset/newly discovered atrial fibrillation needs to go to the ED or have an emergent cardiovascular work up.
- This ICP pathway is not intended to replace your clinical judgement. You know your patient better than anyone!
- However, you can safely keep some patients out of the ED/Hospital.

There are 3 initial steps

- Assess the patient: are they symptomatic or are they appropriate for outpatient management?
  - Use the flowsheet to easily evaluate for concerning history, signs and symptoms
- Assess the patient's Heart Rate: Establish if rate control is needed.
- Assess patient for oral anticoagulation using the **CHADS2Vasc** Scoring system.

Outpatient vs ER/inpatient management

- Heart Rate >120 Send to ER
- Systolic BP <100 Send to ER
- Any Symptoms below: Send to ER
  - Chest pain
  - Dyspnea
  - Orthopnea
  - Pulmonary or Peripheral edema
  - Symptoms of Stroke

Outpatient vs ER/inpatient management

- Additional symptoms or conditions requiring ED evaluation for new onset AF
  - MI or coronary stent in last 6 months
  - History of heart failure
  - Active CHF
  - Known valvular hear disease
  - New murmur
  - Recent Stroke
  - Acute pulmonary illness like pneumonia or COPD exacerbation

Stable for Outpatient Management

- Hemodynamically stable
- Heart Rate under 120
- No chest pain or evidence of unstable coronary heart disease
- No evidence of heart failure
- No evidence of new valvular disease/new murmur
- No evidence of stroke
- No acute pulmonary condition

Outpatient work up for patients designated as stable for outpatient work up

- History: screen for alcohol abuse and evidence of sleep apnea. Obtain prior EKG if available
- Physical exam/ EKG
- Labs: CBC, CMP, TSH/free T4, INR*
- Referral to Cardiology for echocardiogram an evaluation
- Referral for sleep study (if indicated)

* Check INR if planning on using coumadin for anticoagulation

Rate control in Atrial Fibrillation

- In AF - long term goal will be to reduce Heart Rate to less that 80 bpm
- If a patient is asymptomatic and HR is 60-100 bpm rate control can be delayed until patient is seen by Cardiology.
- If heart rate is 100-120 bpm and the patient has no signs or symptoms of heart failure -we would advise initiating rate control with either beta blockers or calcium channel blockers

Points to consider when initiating rate control in newly diagnosed AF

- Both Calcium channel blockers and beta blockers have negative ionotropic effects and can worsen heart failure.
  - Remember if you suspect heart failure or the patient has a history of CHF/Cardiomyopathy this patient needs emergency hospital evaluation
- Both CCBs & BBs can also cause a paradoxical increase in heart rate for patients with pre-excitation syndromes such as Wolff-Parkinson-White (WPW) syndrome
  - If you suspect this may be present, consult cardiology first
- CCN Cardiologist are here to help you, Call us!

Rate controlling options: Starting Beta Blockers

- Metoprolol succinate ER once a day
  - Start at 25 mg daily
- Metoprolol tartrate twice a day
  - Start at 25 mg 2x a day
- Atenolol once a day
  - Start at 25 mg

Major Side effects of beta blockers

- Worsening heart failure
  - Patients with signs of heart failure need an ED evaluation
- Hypotension
  - Avoid in patients with low blood pressure
- Bronchospasm
  - Consider alternatives in patients with lung disease
- High-degree AV block
  - Consult cardiology for patients with AV block
- Bradycardia
- Reduced exercise tolerance

Rate control: calcium channel blockers

- Diltiazem ER
  - Start 120 ER daily
- Diltiazem
  - Start 30 mg 4x a day

Major side effects of Calcium Channel Blockers

- Can worsen heart failure
  - CCB should **not** be given to patients with severe heart failure (New York Heart Failure class III or IV).
- Hypotension
- CCBs should be given with caution to patients with:
  - sinus node dysfunction
  - significant liver disease
  - marked first-degree heart block
  - Preexcitation syndrome like Wolff-Parkinson-White
  - the concurrent intake of other drugs that inhibit SA nodal function or slow AV nodal conduction (beta blockers/digoxin)

Rhythm Control

- Rhythm control will be addressed by cardiology
- Rhythm control can be accomplished with medication
  - There are multiple medications that can be used
  - Flecainide “pill in the pocket” can be used for appropriate patients with paroxysmal AF
- Rhythm control can also be accomplished by an ablation procedure

Anticoagulation

- The biggest risk of atrial fibrillation is having a stroke
- Appropriate initiation of anticoagulation for patients with newly diagnosed AF is critical.
- In the majority of cases you will be initiating anticoagulation to prevent stroke.

Anticoagulation overview

- Oral anticoagulants
  - Warfarin (Coumadin)
  - Approved for use in “Valvular Disease”
- Direct oral anticoagulants [DOAC]
  - Dabigatran (Pradaxa)
  - Rivaroxaban (Xarelto)
  - Apixaban (Eliquis)
  - Edoxaban (Savaysa)
  - Not approved for use in “Valvular Disease”

Approach to anticoagulation

- Should the patient be anticoagulated?
  - Calculate a CHADS2-VASC score
- What anticoagulant should be used?
  - Unless there is a contraindication or in cases of valvular heart disease, DOAC should be considered as first line therapy
  - We will not discuss initiating anticoagulation with coumadin here as this process has been well established

Obtain the CHA_2DS_2-VASc Score

____ CHF: (1point)

____ Hypertension history (1point)

____ Age <65 (0 point) 65-74 (1point) >75 (2points)

____ Diabetes (1point)

____ Sex (female =1 point; Male = 0 points)

____ Stroke History (2 Points)

____ Vascular Disease History (1 point)

____ Total

Online Calculators are available

https://www.mdcalc.com/cha2ds2-vasc-score-atrial-fibrillation-stroke-risk

Should the patient be anticoagulated?

- The decision to start AC is based on the CHADS2VASC score
- If the patient has a score of 2 or greater anticoagulation is advised as data supports a favorable risk benefit ratio for stroke reduction.
- For scores of 0 anticoagulation is not generally recommended but can be considered based on shared decision making with the patient.

Consideration for CHADS2VASC score of 1

- We advise starting AC with NOAC for
  - Men with a score of 1 or greater
  - Women (who get 1 point for gender) with a score of 2 or greater.

  WHY the different gender recommendation?
  - While female gender is a risk factor for stroke, it is not considered as great as other risk factors. AC should not be automatically initiated based on female gender alone.
  - We would advise a case-by-case risk/benefit evaluation for women with a score of 1.

Using DOAC for CHADS2-Vasc score of 1

- For men with a score of 1 starting AC with DOAC (if not contraindicated) is advised.
- Evidence suggests the risk of **significant** bleeding event (ICH) on DOAC is lower than the risk of stroke if not on DOAC.
- DOAC appears to offer superior stroke prevention when compared to warfarin for atrial fibrillation.
- Be sure to provide detailed review and document the risk/benefits of starting DOAC

Stroke risk based on CHADS2VASC score

CHA_2DS_2-VASc acronym	Unadjusted ischemic stroke rate (% per year)*
0	0.2%
1	0.6%
2	2.2%
3	3.2%
4	4.8%
5	7.2%
6	9.7%
7	11.2%
8	10.8%
9	12.2%

* These unadjusted (not adjusted for possible use of aspirin) stroke rates were published in 2012[1]. Actual rates of stroke in contemporary cohorts might vary from these estimates.

For comparison: In most contemporary studies, the risk of a significant bleeding event on anticoagulation is about 0.2 to 0.4 percent per year

A note on bleeding risk…

- In regards to bleeding events, Intracerebral Hemorrhage (ICH) is associated with highest morbidity and mortality.
  - The annual risk of ICH in patients with AF who are not anticoagulated is estimated to be around 0.2 percent.
  - This risk approximately doubles with anticoagulation with warfarin.
  - Many studies have shown that the risk of ICH may be less than ½ of that with DOAC.

Risk factors for bleeding

- Thrombocytopenia or known coagulation defect associated with bleeding
- Active bleeding or recent surgery with a concern for ongoing bleeding
- Prior severe bleeding (including ICH) while on an oral anticoagulant
- Suspected aortic dissection
- Malignant hypertension
- Combined use of anticoagulant and antiplatelet agents

Bleeding risk: HAS-BLED score

- You can use the HAS-BLED risk score to estimate a patient's bleeding risk
- It should be noted that this scoring system does not differentiate type of bleeding and can be challenging to use this tool to compare risk of a significant or fatal bleeding event (on AC) to risk of stroke (when not on AC).
- Link to HAS-BLED score

https://www.mdcalc.com/has-bled-score-major-bleeding-risk

WHY Choose DOACs over warfarin

- At least three meta-analyses have been performed and reached the conclusions that DOAC medications as compared to warfarin are associated with the following
  - A significant reduction of stroke/systemic embolism
  - A significant and marked relative reduction in hemorrhagic stroke
  - In these meta-analyses, there was a trend toward reduced major bleeding with the DOAC agents

Using “DOAC” therapy

Agent	Standard	Low Dose	Average COST / month**
Dabigatran (Pradaxa)	150 bid	75 bid if CrCl 15-30	$418.00
Rivaroxaban (Xarelto)	20 mg QD (with evening meal)	15 mg QD if CrCl ≤ 30	$460.00
Apixaban (Eliquis)	5 mg bid	2.5 mg if 2 or more are true for patient Age ≥80 Weight ≤60Kg Creatinine ≥1.5	$460.00
Edoxaban (Savaysa)	60 mg QD if CrCl >50 and ≤95 mL/min	30 mg QD if CrCl >15 and ≤50	$380.00

*Review prescribing information regarding additional adjustments for Pradaxa

**Monthly cost for cash paying patients estimated using Good Rx 1/2019

Why choose warfarin

- Patients is already on warfarin for other condition
- Patients with prosthetic heart valves, those with rheumatic mitral valve disease, mitral stenosis of any origin, or those with other valvular lesions associated with moderate to severe heart failure that might lead to valve replacement in the near future. These patients should not receive DOAC.
- Patients who are not likely to comply with the twice daily dosing of some DOACs
- Patients with severe liver impairment or wt >120Kg (limited data)
- Patients for whom the DOAC agents will lead to an unacceptable increase in cost.
- Patients with chronic severe kidney disease whose estimated glomerular filtration rate is less than 30 mL/min can only use apixaban.
- Patients for whom the DOAC agents are contraindicated, including those on enzyme-inducing antiepileptic drugs and protease inhibitors

A note on warfarin and CHADS2VASC score of 1 in men…

- For patients who are not candidates for DOAC medications we can not make a specific recommendation for men who have a score of 1.
- CCN Cardiologist are standing by and ready to help in the case-by-case risk/benefit analysis for these patients

What about Aspirin in Atrial Fibrillation?

- The evidence does not support the use of aspirin as monotherapy for prevention of thromboembolic events in patients with AF. If you think a patient needs stroke prevention therapy, DOAC are far superior.
- There is very little evidence to show any statistical benefit of Aspirin monotherapy in patients with CHADS2VASC scores of 0.

Initiation of Anticoagulation for stroke prevention and timing of cardioversion

- For patients with AF of less than 48 hours start DOAC prior to cardioversion and continue for 4 weeks after.
- For patients with AF of more that 48 hours (or unknown) duration they will require a minimum of 3 weeks of therapy prior to cardioversion and continue for 4 weeks after.

Review new onset Atrial Fibrillation

- Patients in distress should be transferred to ER
- Perform EKG (Consult Cardiology if needed)
- Evaluate if patient is appropriate for outpatient management based on symptoms and medical conditions
- Evaluate for rate control
- Perform CHADS2VASC score
- Initiate oral Anticoagulation when appropriate
- Order BMP, CBC, TSH/T4
- Cardiology referral

Case 1

- J. is a 61 year old female diabetic presenting for a wellness visit. Her hypertension is controlled on lisinopril. BP is 126/78 Pulse is 96bpm. She has no history of CHF, CVA, lung disease, or vascular disease. She does not drink alcohol. She notes some increased fatigue but is otherwise without complaints. She has no Chest Pain. You notice an irregularly irregular pulse. No murmur. EKG confirms atrial fibrillation.
- What are next steps?

Case 1

- J. is not in distress.
- Evaluation reveals no concerning symptoms of CAD/CHF/valvular disease or CVA.
- She is appropriate for outpatient management
- There are no obvious precipitating factors
- Her rate is 96. Goal pulse will be under 80. You can consider starting rate therapy as her blood pressure is stable and she has no evidence of CHF. She will be seeing cardiology soon so you can also delay this until after that visit. Then you can decide with cardiologist what is the best rate controlling medication for your patient.

Case 1 CHADS2VASC Score = 3

- J. is a 61-year-old female diabetic presenting for a wellness visit. Her hypertension is controlled on lisinopril. BP is 126/78 Pulse is 96 bpm. She has no history of CHF, CVA or vascular disease. She notes some increased fatigue but is otherwise without complaints. You notice an irregularly irregular pulse. No murmur. EKG confirms atrial fibrillation.

Case 1

- Based on her CHADS2VASC score you will initiate anticoagulation using a NOAC medication.
- As duration of AF is unknown she will need a minimum of 3 weeks of Anticoagulation before cardioversion (and 4 weeks after)
- Given her CHADS2VASC she should be considered for long term NOAC therapy even if she spontaneously converts back to normal rhythm.

Case 1

- You write her CHADS2VASC score on a CCN patient handout and review risks and benefits of initiating NOAC therapy.
- She has a HAS-BLED score of 0, so her overall bleeding risk is low.
- You order labs CBC, BMP, TSH/free T4
- She does snore, has a BMI of 32.1, and admits to daytime fatigue. You decide to order a home sleep study.

Case 1

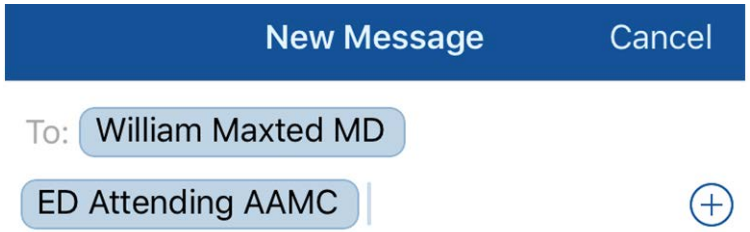
- Refer to CCN Cardiologist using one call care management or HAL0
- Cardiology will perform echocardiogram and additional testing as indicated
- Cardiology will determine rhythm control, need for cardioversion & rate control (if you have not done so already)

Case 2

- B. is a 68 y/o male with a history of hypertension and CAD. He been having dyspnea on exertion reports orthopnea. He has been drinking a lot over the holidays. His legs have been swollen. His pulse is 112. His BP is 150/96. He denies Chest pain. Exam reveals bibasilar rales.
- EKG confirms atrial fibrillation
- What are next steps?

Case 2

- You transfer B. to care of the Emergency Department
- B. has new onset AF with signs and symptoms of heart failure
- He is not appropriate for outpatient management of new onset AF
- You send a note to his cardiologist and AAMC ED attending using HALO



- You will see B. for follow up after hospital visit.

If You're Not Sure the Patient Will Follow Through with Your Referral to These Resources. . .

- Call One Call Care Management and let them know that this patient may need extra help making and keeping an appointment with smoking cessation counseling.
- Contact phone number: 443 481 5652

How Did We Do in Helping You Achieve These Learning Objectives?

- This CME material was designed to help you to:
  - Streamline screening for and addressing nicotine use
  - Engage CCN people, processes, and tools to enhance patient safety and health outcomes

Let us know by taking the post-test, which will allow you to receive free CME credit.

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