A. ED AFib/Flutter Management: Acute Rate and Rhythm Control

	STEP 1:	STEP 2:		STEP 3:
UNSTABLE • Acute CHF • Hypotension • New ischemic changes on ECG • Altered LOC	**Duration ≤ 48 hrs**	Synchronized cardioversion 150-200J biphasic*		**Proceed to Stroke Prevention** **Refer to cardiology**
	Duration > 48 hrs	Judicious rate control can obviate the need for cardioversion – however if worsening or unable to control symptoms then: Synchronized cardioversion 150-200J biphasic* Note: If ventricular rate < 150, instability is likely from causes other than AF.		

	STEP 1:	STEP 2:		STEP 3:
STABLE and HR ≤ 110	**New onset or Paroxysmal**	**Duration ≤ 48 hrs or anticoagulated**	Rhythm control strategy	**See CARDIOVERSION below**	**Proceed to Stroke Prevention** **Discharge home** and refer to AF-QCP‡**
			Rate control strategy	**See RATE CONTROL below** **NB: As target HR is 60-110, acute rate control may not be necessary.**	
		Duration > 48 hrs or High risk for stroke* AND not anticoagulated or INR < 2 (if on warfarin)**			
	Permanent				

	STEP 1:	STEP 2:		STEP 3:
STABLE and HR 110 - 200	**New onset or Paroxysmal**	**Duration ≤ 48 hrs or anticoagulated**	Rhythm control strategy	**See CARDIOVERSION below**	**Proceed to Stroke Prevention** **Discharge home** and refer to AF-QCP‡**
			Rate control strategy	**See RATE CONTROL below**	
		Duration > 48 hrs OR High risk for stroke* AND not anticoagulated or INR < 2**			
	Permanent				

	STEP 1:	STEP 2:
STABLE HR > 200 or Wide QRS	**Cardiovert with any of:** Synchronized cardioversion 150-200J biphasic or procainamide (If duration > 48 hrs consider TEE guided if available)	**Proceed to Stroke Prevention** **Refer to cardiology**

Your Quick Guide to RATE CONTROL in the Emergency Department

Target: Resting heart rate 60-110 bpm and symptom control. If patient is already on one rate control agent optimize their dose before switching to another agent.

AGENT	HOW TO GIVE IT	
Diltiazem • Exercise caution in LV dysfunction	Diltiazem IV 0.25 mg/kg max 20 mg given over 2-10 mins May repeat 0.35 mg/kg max 25 mg given over 2-10 mins	Once acute rate control is achieved give oral medication: • Diltiazem – starting dose CD 120 mg po daily (usual range 120-360 mg daily) • Metoprolol – starting dose 12.5 mg po bid (usual range 25-150 mg po bid)
Metoprolol • Exercise caution in LV dysfunction • Preferred in ACS • Not contraindicated in asthma unless severe or uncontrolled	Metoprolol IV 5 mg given over 2-5 minutes. May repeat x 2	
Digoxin • Preferred in LV dysfunction • Full effect may take up to 6 hours	Digoxin 0.5 mg IV bolus. Repeat 0.25 mg IV every 6hrs up to 1 mg total dose (0.75 mg total dose in renal dysfunction) until rate control. Stop if digoxin toxicity. Usual oral maintenance dose 0.125-0.25 mg po daily.	

Your Quick Guide to CARDIOVERSION in the Emergency Department

If you choose cardioversion as your first approach, avoid rate control as it may reduce success rates. If cardioversion fails, use rate control.

AGENT AND HOW TO GIVE IT	
ELECTRICAL Synchronized cardioversion 150-200J biphasic. *Cardioversion at 200J (monophasic) for AFib has been shown to reduce need for repeat shocks. Lower joules are required in aflutter.*	• Works in 80-90% in converting to sinus in both AFib and aflutter. If it does not work, proceed to rate control.
CHEMICAL**** Procainamide 15-17 mg/kg IV (usual dose 1 g) in 250 mL D5W or NS over 60 minutes until conversion to sinus. *Look for, and slow down or stop infusion if, QRS widening and/or hypotension*	• Converts AFib to sinus in 50-60%; 18% in aflutter • Can be safely combined with electrical cardioversion

*** The 2014 CCS guidelines suggest, despite the lack of good evidence, to give either a novel direct oral anticoagulant (NOAC) or a dose of low molecular weight heparin (i.e. enoxaparin 1mg/kg SC) or unfactionated heparin with bridging to warfarin if a NOAC is contraindicated in the following 2 scenarios:**

1. Duration of AF < 48 hrs AND High risk for stroke (i.e. rheumatic vavle disease, prosthetic heart valve, TIA/Stroke < 6 months) AND no therapeutic OAC for at least 3 weeks
2. Duration > 48 hrs OR unknown duration AND no therapeutic OAC for at least 3 weeks

**Unless admission required for any secondary diagnosis

***High risk for stroke = rheumatic heart disease, mitral stenosis, prosthetic heart valve, previous TIA/stroke < 6 months

****Other options are ibutilide, flecainide, propafenone

‡ Atrial Fibrillation Quality Care Program

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Reviewed by UHN CV Subcommittee January 2015

B. ED AFib/Flutter Management: Stroke Prevention

All patients with AFib/AFlutter require risk stratification for anticoagulation regardless of the type of AFib/AFutter, or the chosen rate or rhythm control strategy.

STEP 1 DETERMINE IF VALVULAR DISEASE IS PRESENT:

If mitral stenosis or prosthetic heart valve is present, patient is classified as **high risk and anticoagulation with warfarin is strongly recommended-** Proceed to Step 3 to determine bleeding risk and choose **warfarin** for anticoagulation.

If no valvular disease go to Step 2.

STEP 2 DETERMINE $CHADS_2$ SCORE:

CHF/LV Dysfunction	(1 point)
Hypertension	(1 point)
Age ≥75	(1 point)
Diabetes Mellitus	(1 point)
Stroke/TIA or embolism	(2 points)

Total points = CHADS2 score

STEP 3 DETERMINE BLEEDING RISK:

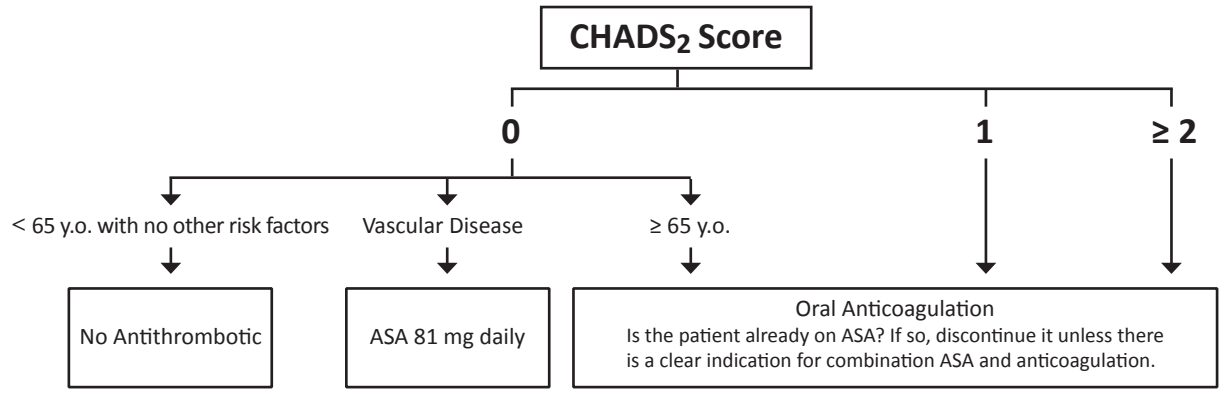
Does the patient have:

- Current or recent active bleed
- Severe hepatic disease
- History of intracranial hemorrhage (ICH)
- Recent surgery
- A terminal illness (active cancer)
- Severe cognitive dysfunction
- Severe renal disease/dialysis

Is the patient currently receiving dual antiplatelet therapy?

If YES to any of the above, we suggest not initiating anticoagulation in the ED; reassessment will occur during follow up care in the AF-QCP

STEP 4 SELECT THERAPY FOR STROKE PREVENTION:



Your Quick Guide to Oral Anticoagulation Selection

		PREFERRED* Listed in alphabetical order	ALTERNATIVE
> 80 y.o. OR Bleeding Risk OR CrCl 30-50 ml/min¶	Yes†	Apixaban 2.5 mg po bid OR Dabigatran 110 mg po bid OR Rivaroxaban 15 mg po daily (w/ main meal)	Warfarin 5 mg po daily x 5d then reassess to maintain INR 2-3
	No	Apixaban 5 mg po bid OR Dabigatran 150 mg po bid OR Rivaroxaban 20 mg po daily (w/ main meal)	Warfarin 5 mg po daily x 5d then reassess to maintain INR 2-3
Impaired renal function (CrCl < 30 ml/min)¶		Warfarin 5 mg po daily x 5d then reassess to maintain INR 2-3	If warfarin not appropriate, refer for specialist consultation

*Ensure patient has coverage. For eligible patients, ODB LU codes are: 448 for Apixaban, 431 for Dabigatran and 435 for Rivaroxaban. Drug interactions with these agents exit, although to a lesser extent than with warfarin. Please advise the patient to discuss possible drug interactions with their pharmacist.

†Dose adjustments have been simplified. Refer to product monographs of each agent for full dosing recommendations.

¶CrCl formula (for Cr measured in umol/L): $CrCl = \frac{(140 - age)\ (weight\ in\ kg) \times 1.23 \quad (\times 0.85\ if\ female)}{SerumCr\ (umol/L)}$

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The Pharmacotherapy Handbook is intended to be used as a tool to aid in the appropriate prescribing and administration of cardiovascular formulary agents.

This information in this Handbook is intended for use by and with experienced physicians and pharmacists. The information is not intended to replace sound professional judgment in individual situations, and should be used in conjunction with other reliable sources of information. Decisions about particular medical treatments should always be made in consultation with a qualified medical practitioner knowledgeable about Cardiovascular illness and the treatments in question.

Due to the rapidly changing nature of cardiovascular treatments and therapies, users are advised to recheck the information contained herein with the original source before applying it to patient care.

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Your comments on the usefulness of the resources contained in the Handbook are welcomed and may be forwarded to Amita Woods, Department of Pharmacy Services (amita.woods@uhn.ca).