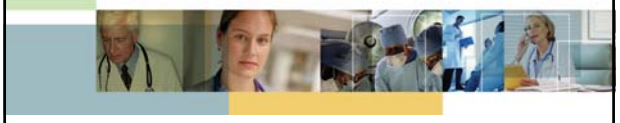
Canadian Cardiovascular Society



Atrial Fibrillation Guidelines Update

Introduction

100.10.17

Presented by:
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Presenter Disclosure Information

Relationships related to this presentation:

Medtronic Inc
- Member – Council of Advisors
- Consultant
- Investigator – industry sponsored
- Clinical trials
- Fellowship support
- Speaker Honoraria

Sanofi Aventis
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Boerhinger Ingleheim
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AHA
Associate Editor – Circulation
Arrhythmias and Electrophysiology

Primary Panel

- **Anne Gillis**
- **Allan Skanes**
- **Stuart Connolly**
- **John Cairns**
- **Jafna Cox**
- **Paul Dorian**
- **Jeff Healey**
- **Laurent Macle**
- **Sean McMurtry**
- **Brent Mitchell**
- **Stanley Nattel**
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- **Ratika Parkash**
- **P. Timothy Pollak**
- **Michael Stephenson**
- **Ian Stiell**
- **Mario Talajic**
- **Teresa Tsang**
- **Atul Verma**

Secondary Panel

- **Malcolm Arnold**
- **David Bewick**
- **Vidal Essebag**
- **Milan Gupta**
- **Brett Heilbron**
- **Charles Kerr**
- **Bob Kiaii**
- **Jan Surkes**
- **George Wyse**

GRADE
Grades of Recommendation Assessment, Development and Evaluation


RATING QUALITY OF EVIDENCE AND STRENGTH OF RECOMMENDATIONS

GRADE: an emerging consensus on rating quality of evidence and strength of recommendations

Guidelines are inconsistent in how they rate the quality of evidence and the strength of recommendations. This article explores the advantages of the GRADE system, which is increasingly being adopted by organisations worldwide

BMJ | 26 APRIL 2008 | VOLUME 336

The GRADE Approach

Clear separation of 2 issues:

1. Four Categories of Quality of Evidence:
- **High, Moderate, Low or Very Low**

2. Strength of Recommendations : 2 Grades
- **Strong or Conditional (weak)**
- **Quality of evidence only one factor**

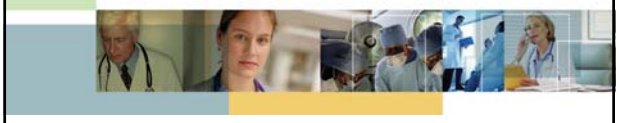
*www.GradeWorkingGroup.org

GRADE

Determinants of strength of recommendation

Factor	Comment
Balance between desirable and undesirable effects	The larger the difference between the desirable and undesirable effects, the higher the likelihood that a strong recommendation is warranted. The narrower the gradient, the higher the likelihood that a weak recommendation is warranted
Quality of evidence	The higher the quality of evidence, the higher the likelihood that a strong recommendation is warranted
Values and preferences	The more values and preferences vary, or the greater the uncertainty in values and preferences, the higher the likelihood that a weak recommendation is warranted
Costs (resource allocation)	The higher the costs of an intervention—that is, the greater the resources consumed—the lower the likelihood that a strong recommendation is warranted

Guyatt et al. BMJ 2008;336:1050



Therapies for the Prevention of Stroke in Atrial Fibrillation

John Cairns, Chair
Stuart Connolly
Sean McMurtry
Michael Stephenson
Mario Talajic
Grant Stotts (Stroke liaison)

Presenter Disclosure Information

Relationships related to this presentation:

DSMBs

Chair, AVERROES (apixaban)

Member, ACTIVE Trials (warfarin, clopidogrel, aspirin)

PALLAS (dronedarone)

Recommendations

- 1. We recommend that all patients with AF or AFL (paroxysmal, persistent or permanent), should be stratified using a predictive index for stroke (e.g. $CHADS_2$) and for the risk of bleeding (e.g. HAS-BLED), and that most patients should receive antithrombotic therapy. (Strong recommendation, High Quality Evidence)

$CHADS_2$ Risk Criteria	Score
Prior stroke or TIA	2
Age >75 y	1
Hypertension	1
Diabetes mellitus	1
Heart failure	1

Patients (N=1733)	Adjusted Stroke Rate (%/y)* (95% CI)	$CHADS_2$ Score
120	1.9 (1.2 to 3.0)	0
463	2.8 (2.0 to 3.8)	1
523	4.0 (3.1 to 5.1)	2
337	5.9 (4.6 to 7.3)	3
220	8.5 (6.3 to 11.1)	4
65	12.5 (8.2 to 17.5)	5
5	18.2 (10.5 to 27.4)	6

Recommendations

- 1. We recommend that all patients with AF or AFL (paroxysmal, persistent or permanent), should be stratified using a predictive index for stroke (e.g. $CHADS_2$) and for the risk of bleeding (e.g. HAS-BLED), and that most patients should receive antithrombotic therapy. (Strong recommendation, High Qulaity Evidence)

Bleeding Risk – HAS-BLED Score

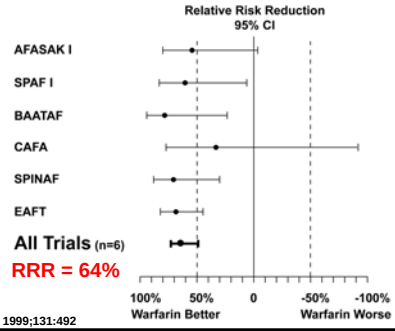
Letter	Clinical characteristic[a]	Points awarded
H	Hypertension	1
A	Abnormal renal and liver function (1 point each)	1 or 2
S	Stroke	1
B	Bleeding	1
L	Labile INRs	1
E	Elderly (e.g. age >65 years)	1
D	Drugs or alcohol (1 point each)	1 or 2
		Maximum 9 points

www.escardio.org

Recommendations

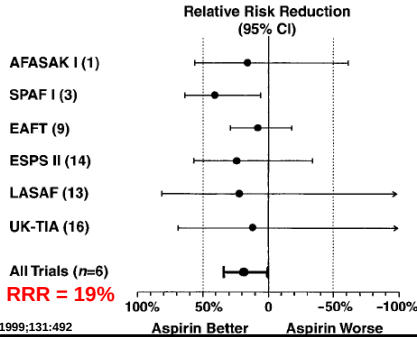
- 1. We recommend that all patients with AF or AFL (paroxysmal, persistant or permanent), should be stratified using a predictive index for stroke (e.g. $CHADS_2$) and for the risk of bleeding (e.g. HAS-BLED), and that most patients should receive antithrombotic therapy. (Strong Recommendation, High Quality Evidence)

Adjusted-dose Warfarin Compared with Placebo/Control



Hart Ann Int Med 1999;131:492

Aspirin Compared with Placebo



Hart Ann Int Med 1999;131:492

Recommendations - Antithrombotic

- 2. We recommend that patients at very low risk of stroke ($CHADS_2 = 0$) should receive aspirin (75-325 mg/day). (Strong recommendation, High Quality Evidence). We suggest that some young persons with no standard risk factors for stroke may not require any antithrombotic therapy. (Conditional recommendation, Moderate Quality Evidence).

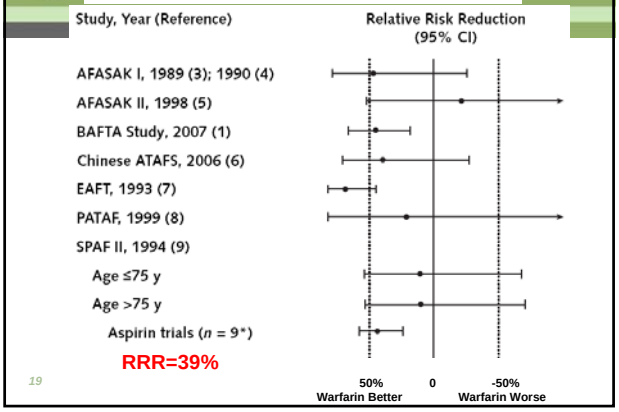
Recommendations - Antithrombotic

- 3. We recommend that patients at low risk of stroke ($CHADS_2 = 1$) should receive OAC therapy (either warfarin [INR 2 – 3] or dabigatran). (Strong recommendation, High Quality Evidence). We suggest, based on individual risk/benefit considerations, that aspirin is a reasonable alternative for some. (Conditional recommendation, Moderate Quality Evidence).

- 4. We recommend that patients at moderate risk of stroke ($CHADS_2 \geq 2$) should receive OAC therapy (either warfarin [INR 2 – 3] or dabigatran). (Strong recommendation, High Quality Evidence)

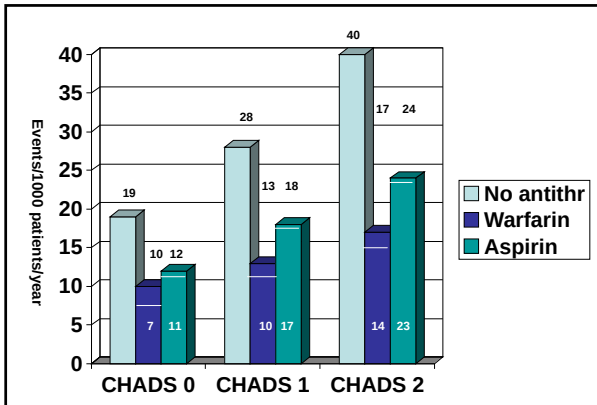
RCTs of Adjusted Dose Warfarin vs. Aspirin

Hart. Ann Int Med 2007;147:590



RRR=39%

19



Risk of Stroke + Non-cerebral Major Bleed among AF Patients

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Recommendations - Antithrombotic

- 5. We suggest, that when OAC therapy is indicated, most patients should receive dabigatran in preference to warfarin. In general, the dose of dabigatran 150 mg po bid is preferable to a dose of 110 mg po (exceptions discussed in text).
  (Conditional recommendation. High Quality Evidence).

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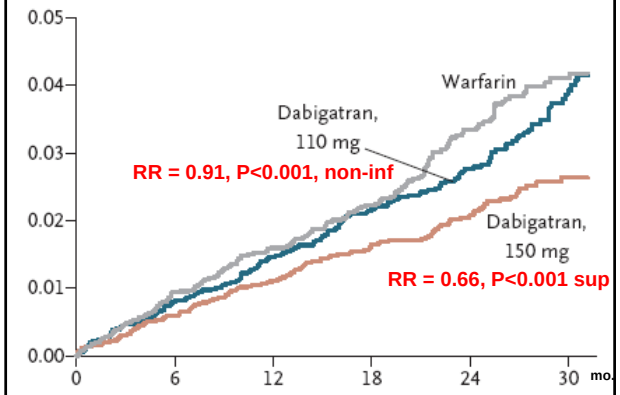
Leadership. Knowledge. Community.

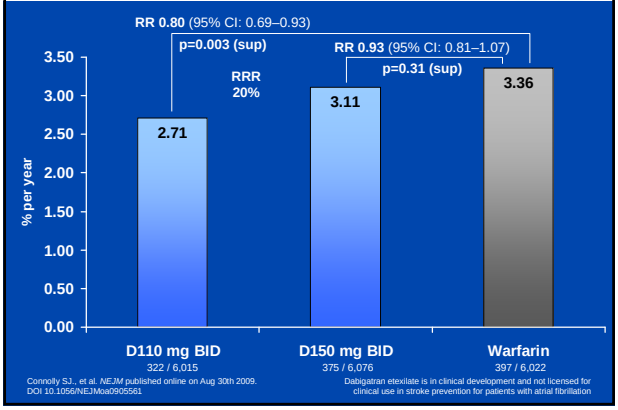
Connolly SJ, et al. NEJM 2009;361



RE-LY Trial. Stroke or Systemic Embolism

Major bleeding rates

RELY



Connolly SJ., et al. *NEJM* published online on Aug 30th 2009. DOI 10.1056/NEJMoa0905561

Dabigatran etexilate is in clinical development and not licensed for clinical use in stroke prevention for patients with atrial fibrillation

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Recommendations - Cardioversion

6. We recommend that hemodynamically stable patients with AF or AFL of ≥ 48 hr or uncertain duration for whom electrical or pharmacological cardioversion is planned should receive therapeutic OAC therapy (warfarin [INR 2-3] or dabigatran) for 3 weeks before and at least 4 weeks post cardioversion.

   Following attempted cardioversion:

   - If AF or AFL persists or recurs or if symptoms suggest that the presenting AF or AFL has been recurrent, the patient should have antithrombotic therapy continued indefinitely using either OAC or aspirin as appropriate.
   - If sinus rhythm is achieved and sustained for 4 weeks, the need for ongoing antithrombotic therapy should be based upon the risk of stroke and, in selected cases, expert consultation may be required.

   (Strong recommendation, Moderate Quality Evidence)

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Recommendations - Cardioversion

- 6. ***A prospective cohort study (1969) reporting a dramatic reduction of post cardioversion stroke, confirmatory case series and cohort studies of cerebral embolization post cardioversion, and earlier case series of patients undergoing pharmacological cardioversion.***

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Recommendations - Cardioversion

7. We recommend that **hemodynamically stable** patients with AF or AFL of **known duration < 48 hr** may undergo cardioversion **without prior or subsequent anticoagulation**. However, if the patient is at particularly high risk of stroke (e.g. mechanical valve, rheumatic heart disease, recent stroke or TIA), cardioversion should be delayed and the patient should receive OAC for 3 weeks before and at least 4 weeks post cardioversion.

Following attempted cardioversion:

- If **AF or AFL persists**, recurs, or if symptoms suggest that the presenting **AF or AFL** has been **recurrent**, antithrombotic therapy (OAC or aspirin as appropriate) should be commenced and continued indefinitely.
- If NSR is achieved and sustained for 4 weeks, the need for ongoing antithrombotic therapy should be based on the risk of stroke according to $CHADS_2$ score and, in selected cases, expert consultation may be required.

(Strong recommendation, Low Quality Evidence)

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Recommendations - Cardioversion

- 7.

Case series showing <1% incidence of thromboembolism without OAC in this setting, and similar recommendations made by prior consensus groups (ACCP, AHA/ACC, ESC).

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Recommendations - Cardioversion

- 8. We suggest that hemodynamically unstable patients with AF or AFL who require emergency cardioversion be managed as follows:

a) If the AF or AFL is of known duration < 48 hr, the patient may generally undergo cardioversion without prior anticoagulation. However, if the patient is at particularly high risk of stroke (e.g. mechanical valve, rheumatic heart disease, recent stroke or TIA), the patient should receive **IV UFH or LMWH** before cardioversion is possible, or immediately thereafter if even a brief delay is unacceptable, and then be converted to **OAC** for at least **4 weeks** post cardioversion.

b) If the AF or AFL is of ≥ 48 hr or uncertain duration, we suggest the patient receive IV UFH or LMWH before cardioversion ***if*** possible, or immediately therafter if even a brief delay is unacceptable. Such a patient should then be converted to OAC for at least 4 weeks post cardioversion.

Following attempted cardioversion, the guidelines for subsequent antithrombotic therapy are identical to those for the management of hemodynamically stable patients undergoing cardioversion.

(Conditional recommendation, Low Quality Evidence)

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Recommendations - Cardioversion

- 8.

Logical extrapolations from the studies used to support recommendations 6 and 7, and analogous to the recommendations made by prior consensus groups (ACCP, AHA/ACC, ESC)

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Recommendations - Cardioversion

- 9. We suggest that hemodynamically stable patients with AF or AFL of duration ≥ 48 hr or unknown, may undergo cardioversion guided by TEE, following the protocol from the ACUTE trial. (Conditional recommendation, High Quality Evidence)

A high quality RCT of conventional OAC strategy vs. OAC guided by TEE, and the recommendations of prior consensus groups (ACCP, AHA/ACC, ESC)

Canadian Cardiovascular Society

Recommendations – Stable CAD

- 10. We suggest that patients with AF or AFL who have stable CAD should receive antithrombotic therapy selected based upon their risk of stroke (aspirin for $CHADS_2$ = 0 and OAC for $CHADS_2 \geq 1$). Warfarin is preferred over dabigatran for those at high risk of coronary events.

  (Conditional Recommendation, Moderate Quality Evidence)

RCTs of aspirin and warfarin showing similar risk reductions for primary prevention and for stable CAD. No studies of dabigatran for prevention of coronary events. RCT showing increased risk of MI with dabigatran vs. warfarin.

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Recommendations – ACS and/or PCI

- 11. We suggest that patients with AF or AFL who have experienced ACS or who have undergone PCI, should receive antithrombotic therapy selected based on a balanced assessment of their risks of stroke, of recurrent coronary artery events and of hemorrhage associated with the use of combinations of antithrombotic therapies, which in patients at higher risk of stroke may include aspirin plus clopidogrel plus warfarin. (Conditional Recommendation, Low Quality Evidence).

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Recommendations – ACS and/or PCI

RCTs showing incremental benefit of clopidogrel + aspirin post ACS and post PCI for up to 1 year. In ACS, no trials of warfarin vs clopidogrel + aspirin. In PCI, RCTs show warfarin inferior to clopidogrel + aspirin.

RCTs showing required duration of clopidogrel + aspirin for BMS < DES.

Case series showing wide range of bleeding risks with «Triple therapy» post ACS/PCI, but likely increase over clopidogrel + aspirin.

Recommendations from consensus groups are evolving.

Recommendations – Surgical/Diagnostic Procedures

- 12. We suggest that patients with AF or AFL who are receiving aspirin, clopidogrel, or OAC and are scheduled for a surgical or diagnostic procedure carrying a risk of major bleeding be stratified by their risk of stroke:

  a) If there is a very low to moderate risk of stroke ($CHADS_2 \leq 2$), the patient should have their antithrombotic agent discontinued before the procedure (aspirin or clopidogrel for 7-10 days, warfarin for 5 days if the INR was in the range 2- 3, and dabigatran for 2 days). Once post procedure hemostasis is established (about 24 hr) the antithrombotic therapy should be reinstated. (Conditional Recommendation, Low Quality Evidence)

Recommendations – Surgical/Diagnostic Procedures

- **b) If there is a particularly high risk of stroke (e.g. prosthetic valve, recent stroke or TIA, rheumatic valve disease, $CHADS_2 \geq 3$) or of other thromboembolism (e.g. Fontan procedure), further consideration should be given to the risk of major bleeding from the procedure:**
- **i) If there is an acceptable perioperative bleeding risk (i.e. risk of stroke outweighs risk of bleeding) the patient should have OAC therapy continued perioperatively or have their OAC discontinued before the procedure and be bridged with LMWH or UFH perioperatively. (Conditional Recommendation, Low Quality Evidence)**
- **ii) If there is a substantial risk of major and potentially problematic bleeding (i.e. risk of bleeding and risk of stroke are both substantial) the patient should have their OAC discontinued before the procedure with LMWH or UFH bridging until 12-24 hr preprocedure. Once post procedure hemostasis is established (about 24 hr) the OAC should be reinstated with LMWH or UFH bridging. (Conditional Recommendation, Low Quality Evidence)**

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Recommendations – Surgical/Diagnostic Procedures

Evidence-based guidelines of ACCP and emerging data that perioperative stroke rates are relatively high.

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Recommendations – Stroke

- 13. We recommend that **patients with AF or AFL who experience a stroke** be managed acutely according to the **published practice guidelines** of the American Heart and American Stroke Associations. (Strong Recommendation, Moderate Quality Evidence)

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Recommendations – Hemorrhage

- 14. We suggest that patients with AF or AFL who experience hemorrhage while on OAC be managed according to the published practice guidelines of the American College of Chest Physicians. (Conditional Recommendation, Low Quality Evidence)

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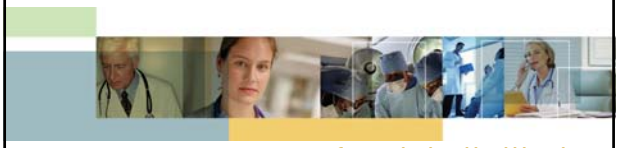

Drug Management of Atrial Fibrillation (Rate and Rhythm Control)

Atul Verma
Mario Talajic
Stanley Nattel
Paul Dorian
Anne Gillis

Canadian Cardiovascular Society

Presenter Disclosure Information

Relationships related to this presentation:

Biosense Webster	Research Grant, Speaker Bureau
Boehringer-Ingelheim	Research Grant, Speaker Bureau
Medtronic Inc	Research Grant, Speaker Bureau
Sanofi Aventis	Research Grant, Speaker Bureau
St. Jude Medical	Research Grant, Speaker Bureau

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Overview

- **Overview of goals of AF drug management**
- **Review guidelines for pharmacologic rate control**
- **Review guidelines for pharmacologic rhythm control**

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Goals of AF Arrhythmia Management

- **Identify and treat underlying structural heart disease and other predisposing conditions**
- **Relieve symptoms**
- **Improve functional capacity/quality of life**
- **Reduce morbidity/mortality associated with AF or AFL**

- We recommend that goals of ventricular rate control should be to improve symptoms and quality of life which are attributable to excessive ventricular rates. (Strong recommendation, low quality)
- We recommend that the goals of rhythm control therapy should be to improve patient symptoms and clinical outcomes, and that these do not necessarily imply the elimination of all AF. (Strong recommendation, moderate quality)

Rate or Rhythm Control?

- **How do you decide if you are going to pursue rate or rhythm control for a patient with AF?**
- **No right or wrong answer**
- **Often, the two are simultaneous:**
  - **Rhythm control requires good rate control when patient goes back into AF**
- **Need to continuously re-evaluate the strategy as the AF progresses**
  - **What may have been a good initial strategy may no longer be warranted**

Favors Rate Control	Favors Rhythm Control
Persistent AF	Paroxysmal AF
	Newly Detected AF
Less Symptomatic	More Symptomatic
>65 years of age	< 65 years of age
Hypertension	No Hypertension
No History of Congestive Heart Failure	Congestive Heart Failure clearly exacerbated by AF
Previous Antiarrhythmic Drug Failure	No Previous Antiarrhythmic Drug Failure

Rate Control of AF

- **Primary goal is to improve symptoms and prevent deterioration of cardiac function associated with excessively rapid ventricular rates during AF or AFL**
  - **Tachycardia induced cardiomyopathy**
- **What is the target?**

RACE II Trial

- **Suggested that strict rate control (< 80 at rest, < 110 with exercise) was no different compared to lenient strategy (< 110)**
- **However, actual HR in both groups were 75 and 86 respectively**
- **Thus, the trial was not that lenient**
- **Few patients had HR > 100 bpm**

	Heart Rate Target
2010 CCS Guidelines	We recommend that treatment for rate control of persistent/permanent AF or AFL should aim for a resting heart rate of less than 100 bpm (Strong recommendation, high quality)
2010 ESC Guidelines	Lenient rate control protocol aimed at resting HR <110 bpm.
	Adopt a stricter rate control strategy when symptoms persist or tachycardiomyopathy occurs, despite lenient rate control: HR <80 bpm and
2004 CCS Guidelines	HR <80 bpm at rest and <110 bpm during 6 min hallwalk (AFFIRM)

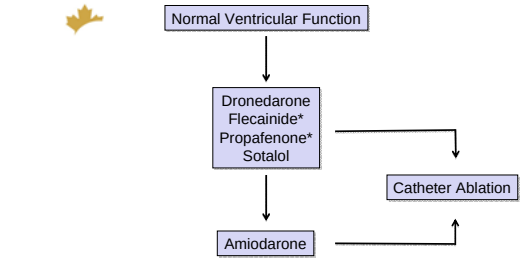
Agents for Rate Control

- **Beta-blockers**
- **Non-dihydropyridine calcium channel blockers**
  - **Diltiazem, Verapamil**
- **Digoxin, digitalis**
  - **Reserved for sedentary, LV dysfunction, second-line therapy**
- **Dronedarone**
  - **Second line therapy**
- **Amiodarone**
  - **Avoid using unless exceptional circumstances**

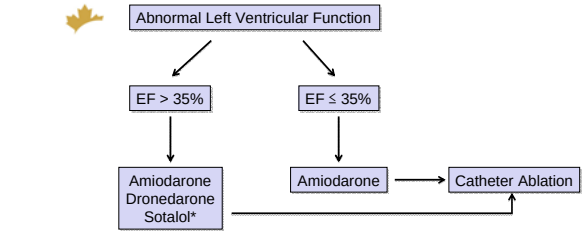
Rhythm Control of AF

- **Strategy of rhythm control has *never* been shown to reduce mortality compared to rate control (AFFIRM, RACE, PIAF trials, AF CHF)**
- **Therefore, goals of rhythm control should focus on improving quality of life**
- **Rhythm control does *not* necessitate elimination of all AF**

- We recommend a rhythm control strategy for patients with AF or AFL who remain symptomatic with rate control therapy or in whom rate control therapy is unlikely to control symptoms. (Strong Recommendation, Moderate Quality Evidence)
- We recommend that the goal of rhythm control therapy should be improvement in patient symptoms and clinical outcomes, and not necessarily the elimination of all AF. (Strong Recommendation, Moderate Quality Evidence)
- We recommend use of maintenance oral antiarrhythmic therapy as first-line therapy for patients with recurrent AF in whom long-term rhythm control is desired (see flow charts). (Strong recommendation, Moderate Quality Evidence)

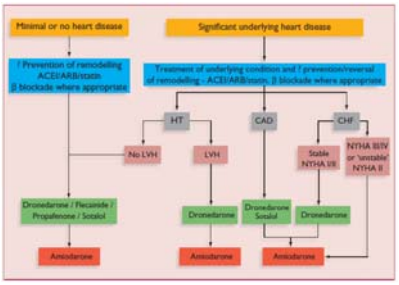


* Class I agents should be AVOIDED in CAD
They should be combined with an AV-nodal blocking agents



* Sotalol should be used with caution with EF 35-40%
Contra-indicated in women >65 yrs taking diuretics

2010 ESC Guidelines



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What About LVH?

- **2010 ESC and 2006 AHA guidelines both do not recommend class Ic agents or sotalol with significant LVH**
- **Data supporting this recommendation is very weak**
- **Only worry about it if abnormal repolarization is seen on the ECG**
- **Otherwise, LVH is not a contraindication in and of itself**

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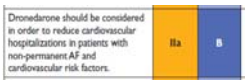
Is Dronedarone Distinct?



2010 ESC Guidelines

- **ATHENA trial did show that dronedarone reduced hospitalization or death in patients with AF**
- **However, one trial – effect mediated by rate control?**
- **Rhythm control efficacy similar to sotalol**
- **Decided to include it as a choice, but no distinct status in 2010 CCS guidelines**

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Pill in Pocket Therapy

- We recommend intermittent antiarrhythmic drug therapy ("pill in pocket") in symptomatic patients with infrequent, longer-lasting episodes of AF or AFL as an alternative to daily antiarrhythmic therapy.

  (Strong Recommendation, Moderate Quality Evidence)
  - **Single dose flecainide (200-300 mg) or propafenone (450-600 mg) as an oral dose**
  - **Often prescribed with a short-acting beta-blocker at the same time (metoprolol 50-100 mg)**

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Rhythm Control Does Not Replace Anticoagulation

- ***No* evidence that AF reduction via antiarrhythmic therapy reduces the risk of stroke/thromboembolism**
- **Patients *must* continue on appropriate anticoagulation according to their individual embolic risk ($CHADS_2$ score)**

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AF Guidelines Update: Catheter Ablation of Atrial Fibrillation and Atrial Flutter

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Laurent Macle
Jafna Cox

Canadian Cardiovascular Society

Presenter Disclosure Information

Relationships related to this presentation:

Medtronic Inc:
Speaker Honoraria
Fellowship support

Biosense Webster:
Speaker honoraria
Physician Advisory Board
Investigator grant
Fellowship support

Sanofi Aventis:
Investigator grant

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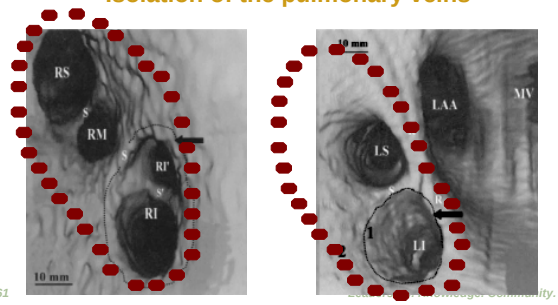
Catheter Ablation of AF: Isolation of the pulmonary veins



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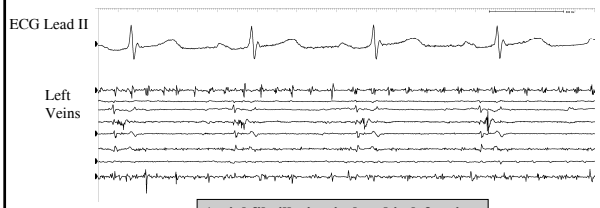
Fibrillation Isolated to the Left PV's

Normal Sinus rhythm



Atrial fibrillation isolated in left veins

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Catheter Ablation of AF

2004 recommendation:

Patients with highly symptomatic, paroxysmal AF refractory to medical therapy should be considered for an ablation procedure aimed at maintaining sinus rhythm

Class IIa (Conditional), Level of Evidence B (Mod)

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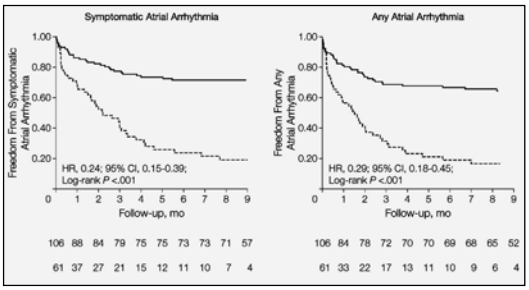
Thermacool study: Freedom from PAF



Wilber DJ et al JAMA 2010;303:333

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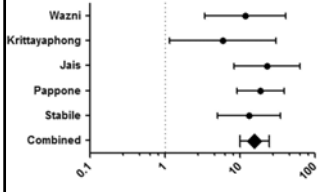
Systematic Review of RCTs of Ablation vs Rx



	Ablation	Control	OR	95% CI
	28/32	13/35	11.85	3.4-41.4
	12/15	6/15	6.0	1.2-30.7
	46/53	13/59	23.3	8.5-63.6
	85/99	24/99	19.0	9.2-39.3
	38/68	6/69	13.3	5.1-34.9
	266/344	**102/346**	**15.8**	**10.1-24.7**

- ***9 RCTs / 3 systematic reviews in 1274 patients who have failed ≥1 drug***
- ***uniformly demonstrate large differences in recurrence of AF***
- ***(OR 9.74 95% CI, 3.98 to 23.87) in favour of ablation vs AAD***

Piccini JP et al. Circ Arrhythm 2009;2:626

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Worldwide AF Ablation ('03-'06)

Type of Complication (n=14,218)	No of Pts	Rate%
Femoral pseudoaneurysm	152	0.93
AV fistulae	88	0.54
Pneumothorax	15	0.09
Valve damage/requiring surgery	11/7	0.07
Tamponade	213	1.31
Transient ischaemic attack	115	0.71
PV stenosis requiring intervention	48	0.29
Stroke	37	0.23
Permanent diaphragmatic paralysis	28	0.17
Death	25	0.15
Atrium-esophageal fistulae	3	0.02
TOTAL	**741**	**4.54%**

Cappato R et al. Circ Arrhythm Electrophysiol. 2010 Feb 1;3(1):32-8

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Catheter Ablation of AF

We suggest catheter ablation to maintain sinus rhythm in select patients with **symptomatic** atrial fibrillation and mild-moderate structural heart disease who are refractory or intolerant to **at least one** anti-arrhythmic medication.

(Conditional Recommendation, Moderate Quality Evidence)

Values and Preferences:

This recommendation recognizes that the balance of **risk with ablation** and **benefit in symptom relief** and **improvement in quality of life** must be individualized. It also recognizes that patients may have relative or absolute cardiac or non-cardiac contra-indications to specific medications.

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Catheter Ablation of AF

We recommend catheter ablation of AF in patients who remain symptomatic **following adequate trials** of anti-arrhythmic drug therapy and in whom a rhythm control strategy remains desired.

(Strong Recommendation, Moderate Quality Evidence)

Values and Preferences:

This recommendation recognizes that failure of multiple anti-arrhythmic drugs results in few alternative strategies if maintenance of sinus rhythm is preferred based on symptom burden reduction and quality of life improvement.

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AF Ablation: 1st Line Therapy

We suggest catheter ablation to maintain sinus rhythm as first-line therapy for relief of symptoms in highly selected patients with symptomatic, paroxysmal atrial fibrillation.

(Conditional Recommendation, Low Quality Evidence)

There is one small RCT of 70 patients demonstrating a large difference in freedom from AF for catheter ablation vs drugs as first line therapy.

A second larger RCT that has enrolled 220 patients is completing follow-up.

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Typical Atrial Flutter

We recommend curative catheter ablation for symptomatic patients with typical atrial flutter as **first line therapy** or as a reasonable alternative to pharmacologic rhythm or rate control therapy.

(Strong Recommendation, Moderate Quality Evidence)

(Unchanged from 2004)

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Guideline Comparison

	CCS Guidelines		ESC Guidelines	
	Strength	**LOE**	**Class**	**LOE**
Paroxysmal AF	Conditional	Moderate	IIa (Cond)	A (High)
Persistent AF	Conditional	Moderate	IIa (Cond)	B (Mod)
Failed ≥ 1 drug	Conditional	Moderate	--	--
Failed ≥ 2 drugs	Strong	Moderate	--	--
1st Line	Conditional	Low	IIb (Cond)	B (Mod)
Flutter	Strong	Mod	I (Strong)	B (Mod)

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PREVENTION AND TREATMENT OF ATRIAL FIBRILLATION FOLLOWING CARDIAC SURGERY

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Presenter Disclosure Information

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Astellas	Clinical Trials Funding, Speaker Honoraria
Boehringer-Ingelheim	Consultant, Clinical Trials Funding, Speaker Honoraria
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Cardiome Pharma	Consultant
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Merck	Consultant
Sanofi Aventis	Consultant, Clinical Trials Funding
St. Jude Medical	Clinical Trials Funding

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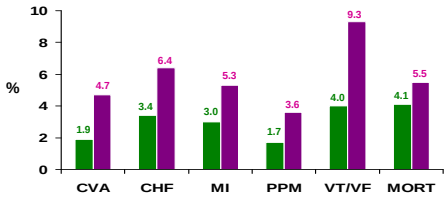
POSTOPERATIVE AF (POAF)

COMPLICATIONS RATES – no POAF versus POAF



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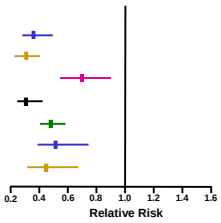
POAF - PREVENTION

TREATMENTS WITH GOOD EVIDENCE OF EFFICACY

THERAPY	N	n	RR (95% CI)
beta-blockers	31	4452	0.36 (0.28 – 0.47)
BB withdrawal	25	2600	0.30 (0.22 – 0.40)
no BB withdrawal	3	1163	0.69 (0.54 – 0.87)
sotalol	9	1382	0.34 (0.26 – 0.45)
amiodarone	18	3296	0.48 (0.40 – 0.57)
IV magnesium	22	2896	0.54 (0.40 – 0.74)
biatrial pacing	10	754	0.44 (0.31 – 0.64)



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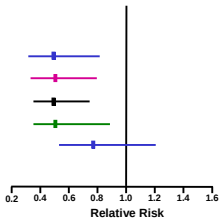
POAF - PREVENTION

COMPARISONS OF TREATMENT EFFICACIES

THERAPY	N	n	RR (95% CI)
amio vs AP	1	74	0.50 (0.30 – 0.82)
BB vs magnesium	1	134	0.53 (0.36 – 0.80)
sotalol vs BB	4	900	0.50 (0.34 – 0.74)
amio vs BB	1	102	0.53 (0.37 – 0.93)
amio vs sotalol	1	160	0.77 (0.54 – 1.12)



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POAF - PREVENTION

We recommend that patients who have been receiving a beta-blocker before cardiac surgery have that therapy continued through the operative procedure in the absence of the development of a new contraindication
(Strong Recommendation, High Quality Evidence).

We suggest that patients who have not been receiving a beta-blocker before cardiac surgery have beta-blocker therapy initiated immediately after the operative procedure in the absence of a contraindication (Conditional Recommendation, Low Quality Evidence).

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POAF - PREVENTION

We recommend that patients who have a contraindication to beta-blocker therapy before or after cardiac surgery be considered for prophylactic therapy with amiodarone to prevent postoperative atrial fibrillation
(Strong Recommendation, High Quality Evidence).

We suggest that patients who have a contraindication to beta-blocker therapy and to amiodarone therapy before or after cardiac surgery be considered for prophylactic therapy to prevent postoperative atrial fibrillation with IV magnesium (Conditional Recommendation, Moderate Quality Evidence) or with biatrial pacing (Conditional Recommendation, Low Quality Evidence).

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POAF - PREVENTION

We suggest that patients at high risk of postoperative atrial fibrillation be considered for prophylactic therapy to prevent postoperative atrial fibrillation with sotalol or combination therapy including two or more of a beta-blocker, amiodarone, IV magnesium, or biatrial pacing (Conditional Recommendation, Low to Moderate Quality Evidence).

Values and Preferences: These recommendations place a higher value on reducing post-operative atrial fibrillation and a lower value on any adverse effects of prophylactic therapy during or after cardiac surgery. It is also noted that inherent in a strategy of prophylaxis, a number of patients will receive such therapy without personal benefit.

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Comparison - Prevention

	CCS Guidelines		ESC Guidelines	
	Strength	LOE	Class	LOE
BB continued if on	Strong	High	I	A
BB started if not on	Cond	Low		
Amio if BB contraindicated	Strong	High	IIa	A
Sotalol may be considered	Cond	Mod	IIb	A
Bi-A Pace may be considered	Cond	Low	IIb	A
IV Mag may be considered	Cond	Low	--	--
corticosteriods considered	--	--	IIb	B

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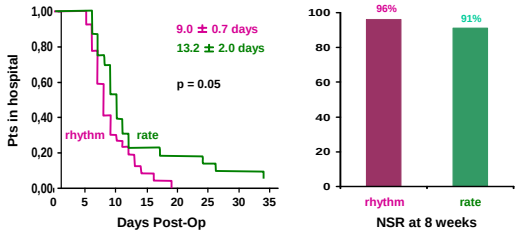
POAF - TREATMENT

RCT of Rate- vs Rhythm-Control Treatment of PAOF (N=50)



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POAF - TREATMENT

We recommend that temporary epicardial pacing electrode wires be placed at the time of cardiac surgery to allow backup ventricular pacing as necessary (Strong Recommendation, Low Quality Evidence).

We recommend that postoperative atrial fibrillation with a rapid ventricular response be treated with a beta-blocker, a non-dihydropyridine calcium antagonist, or amiodarone to establish ventricular rate control. The specific agent chosen will be individualized for each patient but a beta-blocker is usually preferred (Strong Recommendation, High Quality Evidence).

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POAF - TREATMENT

We recommend that post-operative atrial fibrillation may be appropriately treated with either a ventricular response rate-control strategy or a rhythm-control strategy (Conditional Recommendation, Low Quality Evidence).

We suggest that consideration be given to anticoagulation therapy if post-operative atrial fibrillation persists for more than 72 hours. This consideration will include individualized assessment of the risks of a thromboembolic event and the risks of postoperative bleeding (Conditional Recommendation, Low Quality Evidence).

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POAF - TREATMENT

We recommend that, when anticoagulation therapy, rate-control therapy and/or rhythm-control therapy has been prescribed for post-operative atrial fibrillation, formal reconsideration of the ongoing need for such therapy should be undertaken six to twelve weeks later (Strong Recommendation, Moderate Quality Evidence).

Values and Preferences: These recommendations place a high value on the randomized control trials investigating rate control as an alternative to rhythm control for atrial fibrillation, recognizing that these trials did not specifically address the post-operative period and they place a higher value on minimizing the risk of thromboembolic events and a lower value on the potential for post-operative bleeding.

Comparison - Treatment

	CCS Guidelines		ESC Guidelines	
	Strength	LOE	Class	LOE
epicardial V-Pace wires at OR	Strong	Low	--	--
Rate control with BB, CA, dig	Strong	High	I	B
Rate control in that order	Strong	High	agree in text	
AF control AAD considered	Cond	Low	IIa	C
anticoag considered at 72hr	Cond	Low	IIa (48hr)	A (48 hr)
consider DC Rx at 6-12 weeks	Strong	Mod	--	--

Please visit our website:

www.ccsguidelineprograms.ca