

Pearls and deeper thinking about stroke prevention for AF patients

all these slides posted at
peterloewen.com

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UBC Collaboration for Outcomes Research & Evaluation

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Faculty/Presenter Disclosure

- **Faculty:** Peter Loewen
- **Relationships with financial sponsors:**
 - No financial relationships with the pharmaceutical industry
 - Employee of the University of British Columbia
 - Vice-Chair, BC Ministry of Health Expensive Drugs for Rare Diseases Advisory Committee

Learning Outcome Objective

After the session and upon personal reflection, participants will have a deeper understanding of the importance of patients having correct beliefs about their AF and stroke prevention therapy for it, and have a basis for prescribing therapy that most closely aligns with their patients' values & preferences.

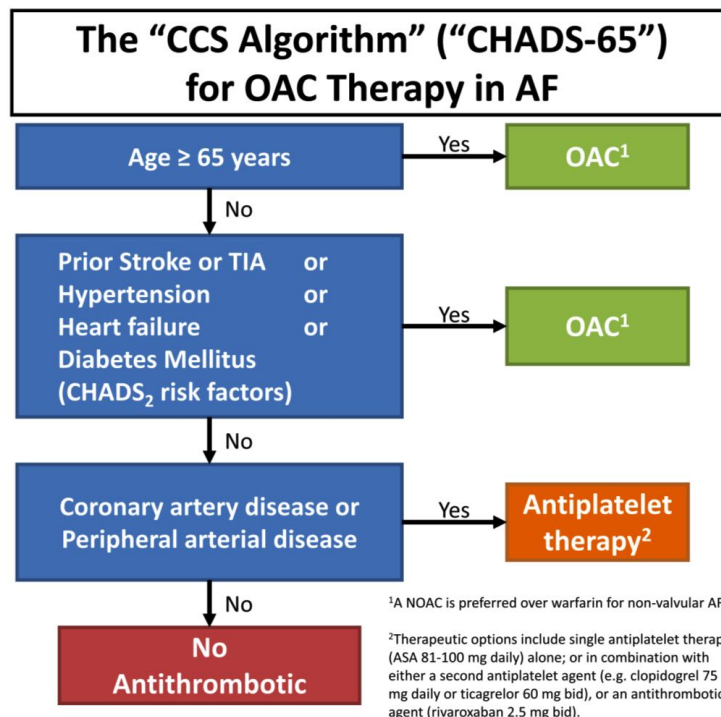
AF is common

~350,000 Canadians have AF
similar lifetime risk for women and men
prevalence will ↑ 2-3 fold

AF strokes are common and bad

~5x risk of stroke with AF
1/3 of strokes >60y/o's are AF associated
3x risk of death and disability vs. non-AF strokes

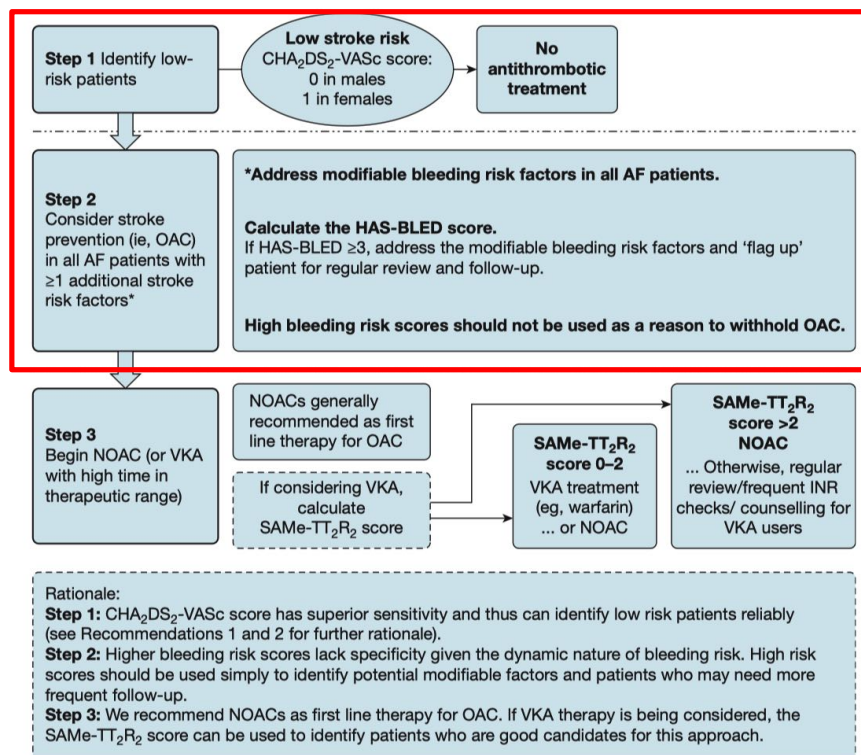
CCS Guideline



Andrade J, et al. 2018 Focused Update of the CCS Guidelines for the Management of AF. Can J Cardiol 2018;34:1371–92.

ACCP algorithm

“Birmingham 3-step”



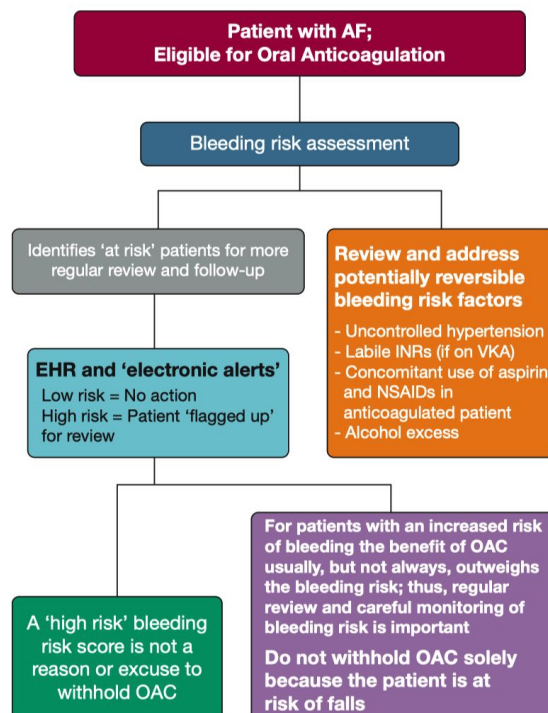
AHA/ACC/HRS 2019 Guideline

For patients with AF and an elevated CHA₂DS₂-VASc score of 2 or greater in men or 3 or greater in women, oral anticoagulants are recommended.

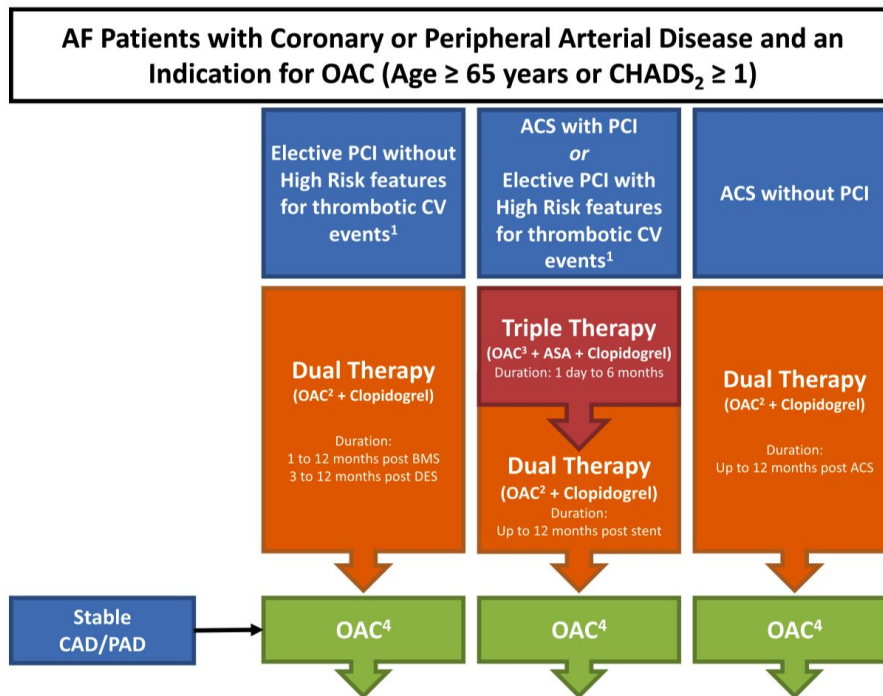
In patients with AF, anticoagulant therapy should be individualized on the basis of shared decision-making after discussion of the absolute risks and relative risks of stroke and bleeding, as well as the patient's values and preferences.

Circulation. 2019;139:doi: 10.1161/CIR.0000000000000665

Practical bleeding risk assessment



AF + stable CAD



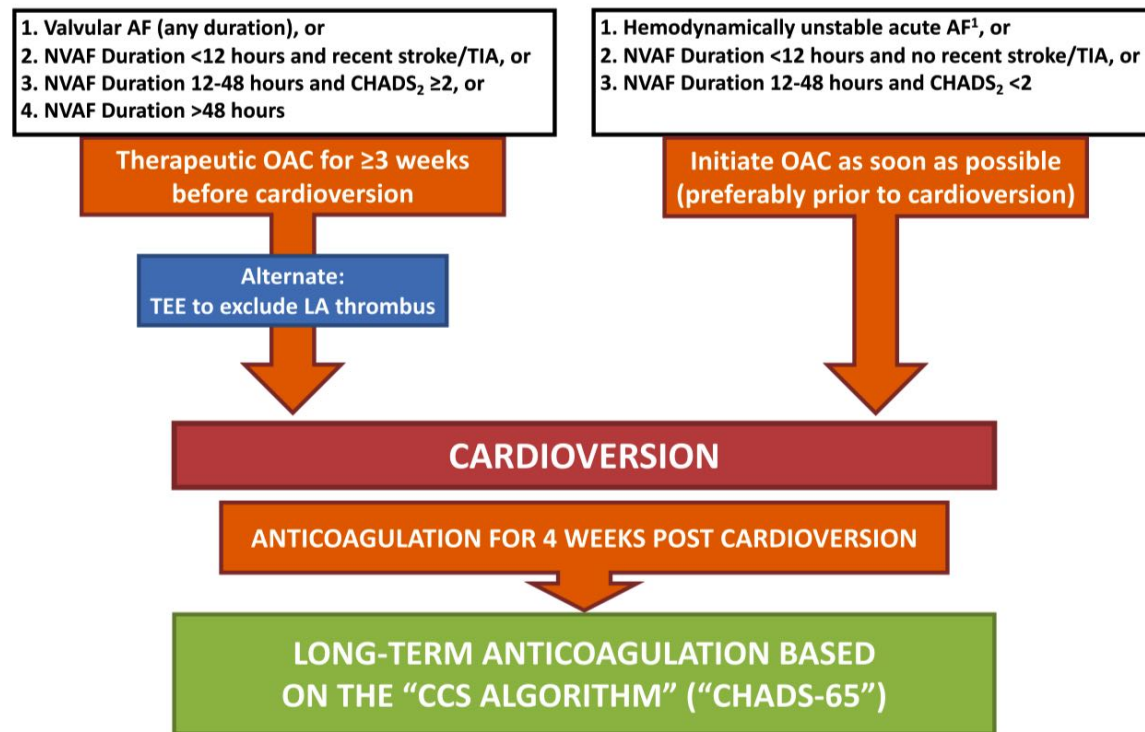
Andrade J, et al. 2018 Focused Update of the CCS Guidelines for the Management of AF. Can J Cardio 2018;34:1371–92.

Mitigating bleed risk

Modifiable bleeding risk factors	Potentially modifiable bleeding risk factors	Nonmodifiable bleeding risk factors
<p>Hypertension/elevated SBP</p> <p>INR control (target 2.0–3.0)^a; target TTR ≥65%</p> <p>Concomitant APTs and NSAIDs</p> <p>Excessive alcohol intake</p> <p>Nonadherence to OAC/APT</p> <p>Avoidance of hazardous hobbies/occupations</p> <p>Avoidance of bridging therapy with OAC</p> <p>Appropriate choice of OAC and correct dose^b</p>	<p>Extreme frailty ± excessive falls risk^c</p> <p>VKA management strategy^d</p> <p>Anemia</p> <p>Reduced platelet count or function</p> <p>Renal impairment (CrCl >30 mL/min)</p>	<p>Age (>65 y)</p> <p>Previous major bleeding</p> <p>Severe renal impairment (dialysis or renal transplant)</p> <p>Severe hepatic disease (cirrhosis)</p> <p>Malignancy</p> <p>Genetic factors (eg, CYP 2C9 polymorphisms)</p> <p>Previous stroke, small vessel disease etc</p> <p>Diabetes mellitus</p> <p>Cognitive impairment/dementia</p>

Risk factors for bleeding with oral anticoagulation and antiplatelet therapy. ^a For patients receiving VKA treatment. ^b Dose adaptation based on patient's age, body weight, and serum creatinine level. ^c Walking aids; appropriate footwear; home review to remove trip hazards; neurologic assessment where appropriate. ^d Increased INR monitoring, dedicated OAC clinicals, self-monitoring/self-management, educational/behavioral interventions. APTs = antiplatelets; CrCl = creatinine clearance; INR = international normalized ratio; NSAIDs = nonsteroidal antiinflammatory drugs; SBP = systolic blood pressure.

Peri-cardioversion thromboprophylaxis



¹Hemodynamically unstable acute AF is defined as AF causing hypotension, cardiac ischemia, or pulmonary edema

Andrade J, et al. 2018 Focused Update of the CCS Guidelines for the Management of AF. Can J Cardio2018;34:1371–92.

Peri-ablation thromboprophylaxis

RECOMMENDATION

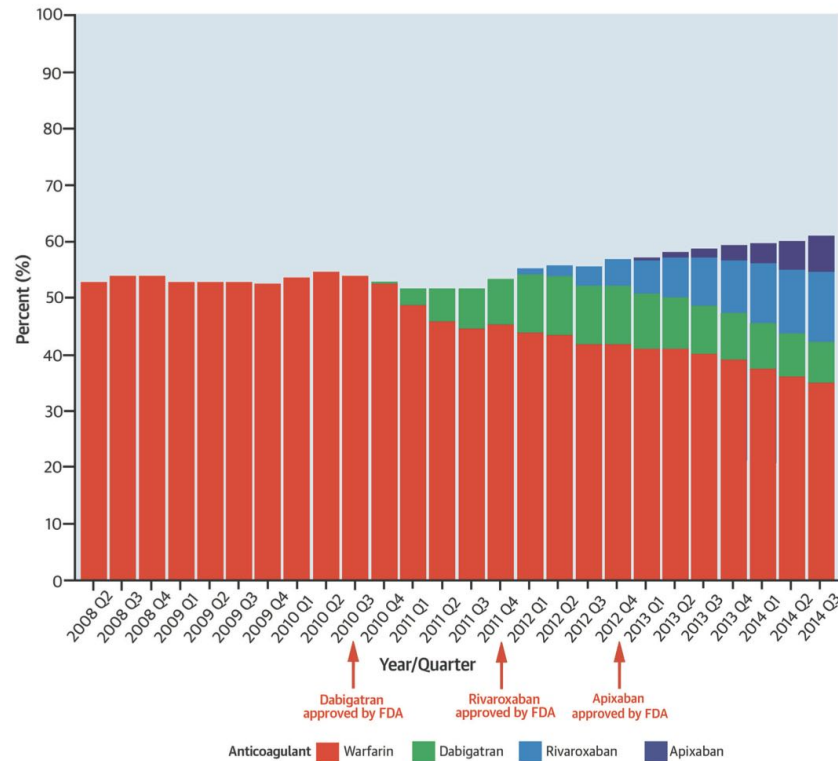
16. We suggest that catheter ablation may be performed using uninterrupted therapeutic oral anticoagulation with either a NOAC or adjusted-dose warfarin (Weak Recommendation, Moderate-Quality Evidence).

rivaroxaban (VENTURE-AF), dabigatran (RE-CIRCUIT): **less bleeding with NOAC than VKA.**
apixaban (AXAFA): **same bleeding with NOAC and VKA.**
edoxaban (ELIMINATE-AF): **trial ongoing.**

Andrade J, et al. 2018 Focused Update of the CCS Guidelines for the Management of AF. Can J Cardio2018;34:1371–92.

N=655,000 patients with nonvalvular AF and a CHA₂DS₂-VASC score of >1 in the National Cardiovascular Data Registry PINNACLE registry

CENTRAL ILLUSTRATION Introduction of Direct Oral Anticoagulants Is Associated With Increase in Overall Rates of Oral Anticoagulation for Atrial Fibrillation



Marzec, L.N. et al. J Am Coll Cardiol. 2017;69(20):2475-84.

SPARC - Stroke Prevention in Atrial Fibrillation Risk Tool

for estimating risk of stroke and benefits & risks of antithrombotic therapy in patients with chronic atrial fibrillation

Developed by Peter Loewen, ACPR, Pharm.D., FCSHP

peter.loewen@ubc.ca

[references/notes](#)

version 9, May 2019

DISCLAIMER: this tool may be used unaltered for learning purposes and the author assumes no responsibility whatsoever for any decisions or harms to anyone resulting from its use. The author makes no representations, conditions or warranties, either express or implied, regarding this tool.

Patient:

Date: Friday, May 03, 2019

In your patient with atrial fibrillation, which of the following stroke or bleeding risk factors are present?

Stroke Risk (CHA₂DS₂-VASC)

[Reset](#)

Age		<input checked="" type="radio"/> <65	<input type="radio"/> 65-74	<input type="radio"/> 75+
TIA or stroke (at any time in the past)	<input type="checkbox"/>	CHF/LV dysfunction (diagnosed at any time in the past)		<input type="checkbox"/>
Prior MI, peripheral artery disease, or aortic plaque	<input type="checkbox"/>	Hypertension (controlled or uncontrolled)		<input type="checkbox"/>
Female	<input type="checkbox"/>	Diabetes Type I or II (controlled or uncontrolled)		<input type="checkbox"/>

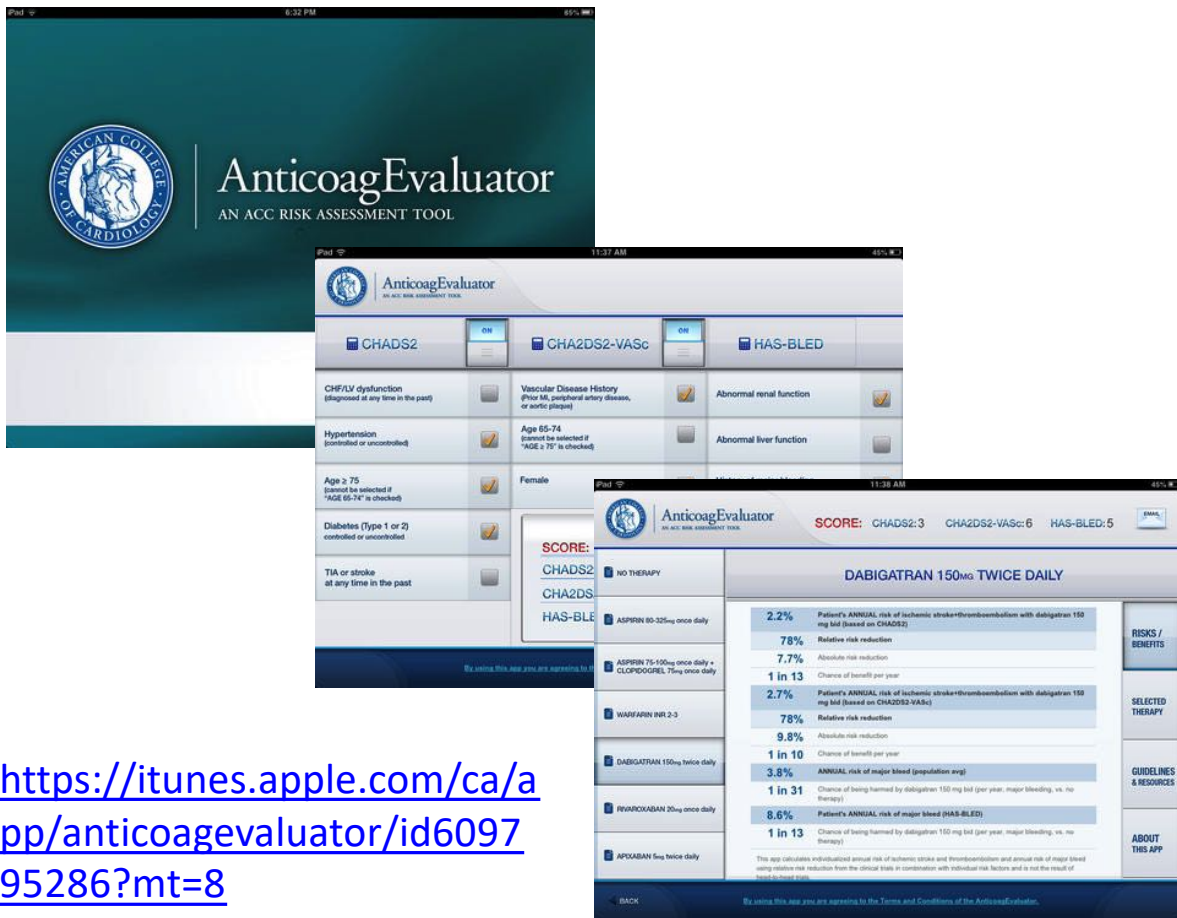
CHA₂DS₂-VASC SCORE (0-9): 0

Major Bleeding Risk (HAS-BLED)

Abnormal renal function (dialysis, SCr>200 mcmol/L, or transplant)	<input type="checkbox"/>	History of labile INR (time in therapeutic range <60%)	<input type="checkbox"/>
Hypertension (SBP>160mmHg)	<input type="checkbox"/>	Current use of alcohol (>8 drinks per week)	<input type="checkbox"/>
Abnormal liver function (cirrhosis or liver enzymes >3x ULN)	<input type="checkbox"/>	Currently taking antiplatelet drug or NSAID	<input type="checkbox"/>
History of major bleeding (any cause)	<input type="checkbox"/>		

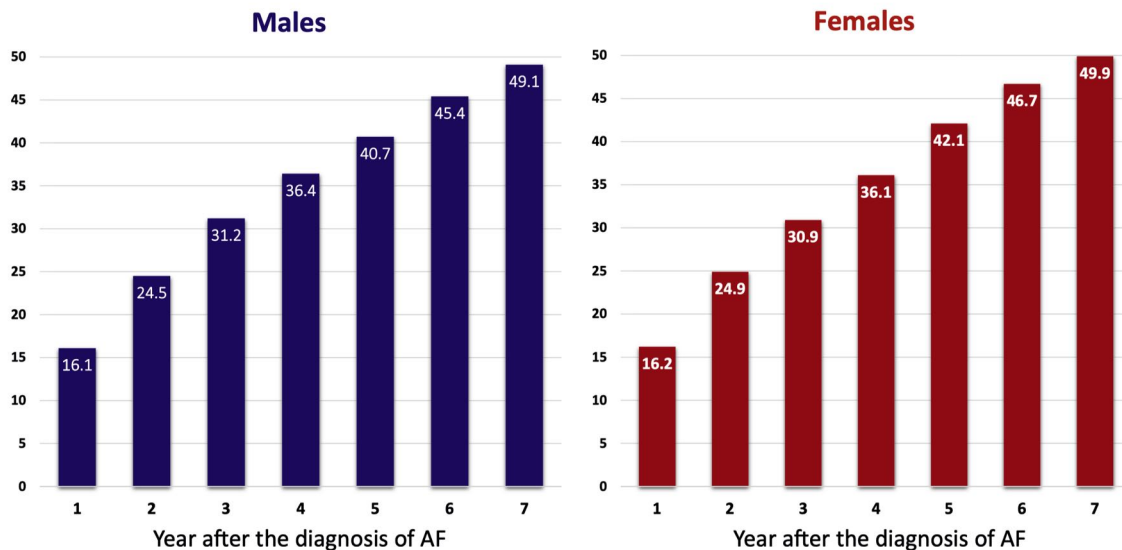
HAS-BLED SCORE (0-9): 0

www.sparctool.com



Risk assessment should be a dynamic process

Cumulative incidence (%) of increment of CHA₂DS₂-VASc score to ≥ 1 for males and ≥ 2 for females among initially low-risk incident AF patients (score 0 for males and 1 for females)



Do AF patients take what you prescribe?

ADHERENCE / NONADHERENCE

29 “real world” studies. N=849,814. Overall quality high.

1-year OAC MPR or PDC: 74 (/100) (95%CI 68-79)

apixaban 82 (74-89)

rivaroxaban 77 (69-86)

dabigatran 75 (68-82)

1-year % adherent: 70% (95%CI 64-76%)

apixaban 74% (62-87)

rivaroxaban 73% (64-81)

dabigatran 65% (54-76)

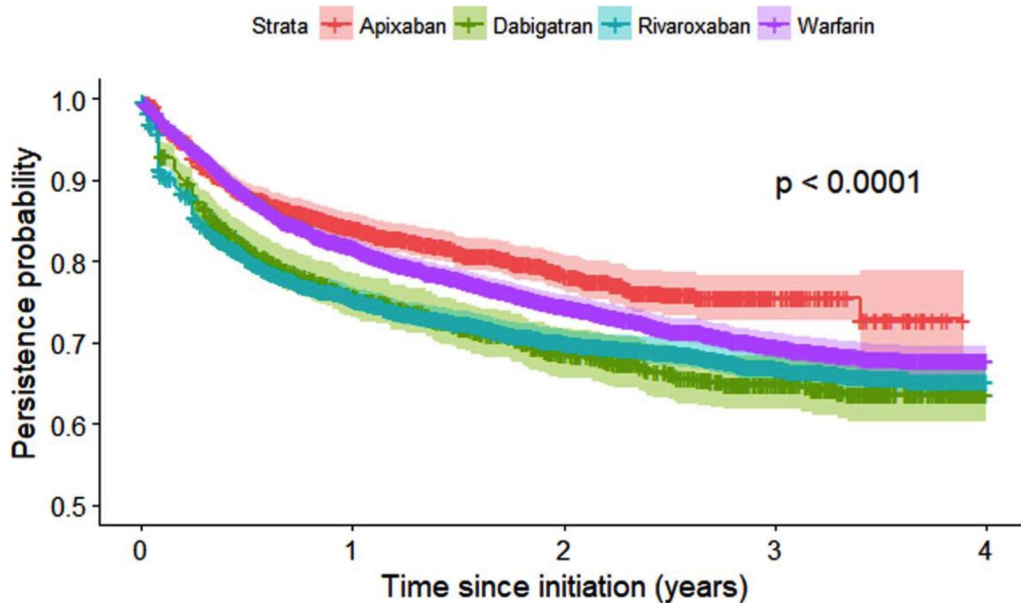
PERSISTENCE / NONPERSISTENCE

1-3 year nonpersistence rates:

warfarin	9-74%
rivaroxaban	4-43%
dabigatran	4-62%
apixaban	12-37%

PERSISTENCE / NONPERSISTENCE

N=39,078 BC AF patients prescribed OAC between 1996 and 2016



PERSISTENCE / NONPERSISTENCE

N=39,078 BC AF patients prescribed OAC between 1996 and 2016

4y nonpersistence by first-prescribed OAC

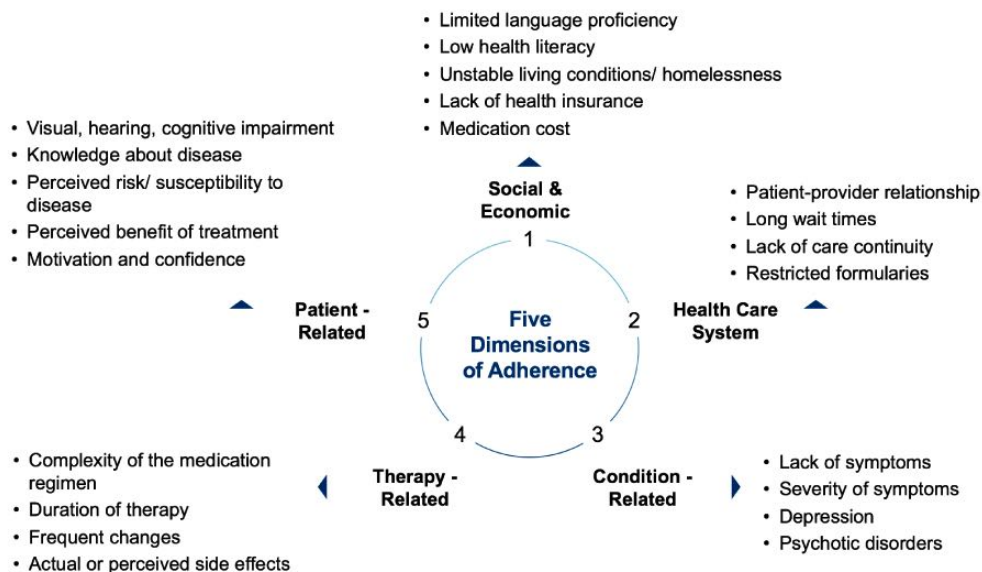
rivaroxaban	~36%
dabigatran	~36%
warfarin	~30%
apixaban	~21%

compared to warfarin, likelihood of nonpersistence:

dabigatran: aHR 1.28 (1.13-1.46)
rivaroxaban: aHR 1.29 (1.19-1.41)
warfarin: aHR 1.0 (reference)
apixaban: aHR 0.89 (0.79-1.0)

Loewen et al. *in progress*

WHO Dimensions of Adherence



Source: Sabaté, Eduardo. Adherence to long-term therapies: evidence for action. World Health Organization, 2003.

NEJM Catalyst (catalyst.nejm.org) © Massachusetts Medical Society

<https://catalyst.nejm.org/optimize-patients-medication-adherence/>

What do AF patients believe about their condition? About their medication?

Beliefs about AF and SPAF

Patients

Emotional appraisal

"Well a heart condition is scary, right? cause it's next to cancer...for ... shortening your life...I didn't even know what AF was and I didn't know what the short-term effects versus the long-term effects...I think the anxiety of it, more than anything... not knowing ...not knowing is what scares you, once you know a little bit your anxiety decreases."

"It started affecting my life in general. I love to ride the bicycle [...] but now I don't feel like it's appropriate to ride hills. I don't know what's gonna happen, I don't know whether the extra strain on my heart is gonna cause me to faint again."

Information-seeking

GOOGLE first, and "as new things come up".

"Pumpkin soup is really good, but their pumpkin soup really threw me out on the INR, and then I looked at it on Google. Yes! Some people say yes, but we are not too sure."

Beliefs about AF and SPAF

Patients

Knowledge gaps

Triggers vs. causes; Symptoms vs. side-effects

"It all started with me one day at work...I ended up having 5 coffees, by the afternoon ... and when I got home... my heart was just going crazy and I was like "what is this?" [...] And I guess, that was the beginning of me starting to feel it. I never felt it before".

Confused and anxious when experiencing less common symptoms of AF (e.g. sweating, dizziness) as did not understand **why** they were experiencing them and wondered if these were signs of being on the wrong therapy.

Risk communication

Some patients considered ARR and RRR and individualized stroke risk estimates to be "too complicated", "too deep" or "not meaningful enough" and preferred more descriptive terms such as "lower" or "higher", while some patients were interested in the numbers as justification of their physicians' decision.

Salmasi et al. Thrombosis Res. 2019;173:109-116

Beliefs about AF and SPAF

Clinicians

Knowledge gaps & misconceptions

patients confuse heart attack with stroke, and AF with heart attack

patients draw cause-and-effect inferences between nearly anything and AF occurrences, "causes"

"a chocolate bar on Tuesday and my INR was 3 on Friday so therefore that chocolate bar changed my INR"

patients associate any negative experience with either AF or medications.

patients stop engaging in activities they enjoyed such as going on vacation or exercising mostly due to the fear of precipitating an episode despite clinicians' assurance that they could continue living as usual.

Salmasi et al. Thrombosis Res. 2019;173:109-116

Beliefs about AF and SPAF

Clinicians

Knowledge gaps & misconceptions

Patients tend to overestimate bleeding risk and have difficulty weighing their risks against their benefits. Patients do not understand how the concepts link together. For example, patients find it difficult to link subtherapeutic INR or CHADS2 score to a higher risk of stroke.

AF is fatal: *“they think that AF itself can kill them, those flutters, those palpitations and they panic, something is wrong with their heart and it's going to kill them.”*
Major source of anxiety.

Education significantly reduces patients' anxiety.

Salmasi et al. Thrombosis Res. 2019;173:109-116

Beliefs about AF and SPAF

Clinicians

“People are willing to take every single natural [supplement] there is that promotes blood thinning even though there is no way to know how much blood thinning that's going to confer.”

Patients commonly assume a direct association between their symptom severity and their risk of stroke, therefore believing that the absence of symptoms translates into no risk of stroke. Clinicians found this particularly worrying in patients with asymptomatic AF.

Most anxiety is due to knowledge gaps and misconceptions.

Salmasi et al. Thrombosis Res. 2019;173:109-116

Beliefs about AF and SPAF

Clinicians

Risk communication requires more time than clinicians can afford to spend with patients.

Patients' individual risk of stroke is hardly ever communicated to them because of patients' perceived lack of interest and/or their inability to properly comprehend it.

Only done in cases of extreme unjustified fear of bleeding, poor understanding that medications' benefit in stroke risk reduction far exceeds the risk of bleeding, or when patients are resistant to taking medications.

Salmasi et al. Thrombosis Res. 2019;173:109-116

OAC Switching & Stopping

Patients...

- Requested changes or stopped, because of
 - experienced adverse effects (headache, knee swelling, bad mood, rosacea, itch, low energy)
 - anticipating future adverse effects
- Reduced dose without telling anyone
- Appreciated the lower complexity of NOACs compared to warfarin
 - No blood tests, waiting at clinic for tests, especially on vacation
 - Fear of needles
- Felt loss of control when switched from warfarin to NOAC
 - No way to know if the medication was working or not
 - Lack of antidote
 - High cost
 - Lack of evidence of long-term effects
- Strongly preferred not taking any medication, once daily over twice daily

Salmasi et al. *in progress*

OAC Switching & Stopping

Patients....

- Purposely skipped second daily dose or took both in the morning
- Were happy to be off OACs, superseding anxiety about stroke.
 - Believed they could protect themselves from stroke with diet, exercise, and natural blood thinners.
- Had no knowledge of rationale for therapy change
- Were switched from warfarin to NOAC without any discussion about cost. Never filled the Rx.
- Felt coerced and pressured. “*pressured me*”, “*insisted*”
- Assumed ulterior motives when excluded from decision-making
 - Relationship with pharmaceutical representatives
 - Lack of prescriber knowledge
- Believed reassessment of risk was required and not appropriate to be told to take something for the rest of their life.

Salmasi et al. *in progress*

OAC Switching & Stopping

“Yes, now I’m off of it for some weeks until internal medicine has examined properly what causes my swollen knees. I saw my doctor last week Wednesday, and we talked if Eliquis could be the cause or one of the reasons. This Tuesday I had some flutter and I kind of panicked that I’m not on a proper anticoagulant, so I took one Eliquis late at night. On Wednesday I woke up feeling much worse than the earlier days. So today, I’m sort of recuperating from the Eliquis dose. I’ve had other symptoms that may have been related to Eliquis right from the beginning.”

“I decided to go off the rivaroxaban on my own because I really was, and am, worried about the side effects. I have visited an intuitive healer who recommended me a naturopathic product Nattokinase. I also started taking magnesium and probiotics based on the literature I have read over the internet.”

“Once I have my echocardiogram done hopefully everything will be sorted out. They are going to do an ablation on me as well so hopefully I won’t need anticoagulants afterwards.”

“I have an ablation scheduled in January...After the procedure I am not sure what I will be put on but hopefully the AF will be gone and I can just go on aspirin.”

Salmasi et al. *in progress*

OAC Switching & Stopping

"I saw a [nurse practitioner], she left the room to confirm with the cardiologist, and she came back and said "the doctor feels you should try warfarin". She said "You cannot go back on this and with the way you've been bleeding, you have to change your medication." And she had mentioned two other medications prior, she asked me what I thought about them, she told me all about them. But when she came back from talking with the cardiologist, or whoever she spoke to, believed that I should not try the two other medications, I should try warfarin. So I didn't have a face-to-face conversation with cardiologist at that time. I may had argued the point but you cannot have an argument going on with one [person] going back and forth, back and forth."

"I'm not so sure why I was changed to warfarin from Eliquis, but here I am, taking now warfarin. They told me not to eat anything with vitamin K. So soon there's nothing I can eat, I guess."

"I feel hassled by the doctors who are pressuring me to take a blood thinner even when I've had those bleeding side-effects."

"GP didn't talk about NOAC options and didn't seem to know much about how to choose one, but had samples of apixaban on hand, so that's what I got, and a prescription for more."

"[doctor] persuaded me to be on Eliquis. Mostly because his 80-year old father is on it and it is the best choice when warfarin is not possible, and as it happened, when I was at the doctor's room, the rep came in and gave him a bunch of Eliquis packages."

Salmasi et al. *in progress*

OAC Switching & Stopping

"I had such awful experience with warfarin. I tried it because Eliquis is so expensive. But already in the end of the first week, I had some thing in my mouth and it burst and bled hours. It was scary! so I went back to Eliquis although it is so expensive. Yes, my opinions have changed because they [doctors] don't have enough information about the meds, they did not tell me beforehand that I could have a bleeding in my eye."

"I'm just so unclear what happens to me next: am I going to be on this medication for rest of my life?, is my stroke risk increased because my heart has enlarged or because I have implants in my bones or what. It's not that nobody knows, I think it's just that they don't tell me clearly why I am on warfarin still after all the operations."

"Sometimes I think, I'm sorry to say this, I think a lot of doctors overprescribe and I just am really not what you call a pill taker. Nobody checks to see if you really need them again in the future. Like my husband has been on warfarin now for what 5, 6 years, told to rest of his life. I've been told rest of my life. Why? You know, has anybody ever really checked to see if we need to take them. I really think that drug companies keep us, um, I don't know, um, but, um, anyway."

Salmasi et al. *in progress*

Helping patients clarify their values and preferences.

Values & Preferences Shared Decision-Making

AHA/ACC/HRS guideline

“In patients with AF, anticoagulant therapy should be individualized on the basis of shared decision-making after discussion of the absolute risks and relative risks of stroke and bleeding, as well as the patient’s values and preferences.”

CCS guideline

“Patient preferences are of great importance in deciding on stroke prevention therapy in relation to benefits and risks”

ESC guideline

antithrombotic therapy should be chosen based on “...careful assessment of the risk-benefit ratio and an appreciation of the patient’s values and preferences”

EHRA/HRS/APHRS/SOLEACE guideline

“Incorporation of patients’ values and preferences for therapy should now be considered as an integral part of the decision-making process and treatment strategy.”

Shared Decision Making and the Importance of Time

the care of patients in these complicated situations. For clinicians, being able to and choosing to spend time on understanding what truly matters to patients when making decisions together is an achievement that makes the work of clinicians meaningful and rewarding.¹ Yet many

or euros. A minute spent in providing information may turn out to be less important than a minute spent waiting silently for patient questions, or a minute responding empathically to angst and loss, or a minute discussing when the plan will be reviewed and revised if necessary. Time for care is precious. The health care system must

Pieterse AH, Stiggelbout AM, Montori VM. JAMA. April 19, 2019.



**Cochrane
Library**

Cochrane Database of Systematic Reviews

Decision aids for people facing health treatment or screening decisions (Review)

Stacey D, Légaré F, Lewis K, Barry MJ, Bennett CL, Eden KB, Holmes-Rovner M, Llewellyn-Thomas H, Lyddiatt A, Thomson R, Trevena L

Compared with usual care, patients who use a PDA take a more active role in decision making, feel more knowledgeable, are clearer about their values, have more accurate risk perceptions, and make more value-congruent decisions, with no adverse effects on health outcomes or satisfaction.

SPARC-DT

Introduction

SPARC-DT* helps people with atrial fibrillation (AF) decide which treatment is best for them to prevent strokes caused by their AF

Who should use SPARC-DT?

People who have AF and want to learn more about their treatment options to prevent stroke, whether they are already on a medication or not. It is especially for people who are curious about whether the treatment they are taking is the best one for them.

Who should not use SPARC-DT?

People with very poor kidney function, who have a mechanical heart valve, or are required to take oral anticoagulant medication for reasons other than AF. These conditions limit which choices are safe and effective for you, so you should decide on treatment in conversation with your doctor.

You do not have to enter any personally identifying information to use SPARC-DT.

*SPARC-DT stands for *Stroke Prevention in Atrial fibrillation Risk Calculator - Decision Tool*. It is based on [SPARCTool](#), created by [Dr. Peter Loewen](#)

click "CLOSE" below and to the right to continue

Close

Welcome

This is a tool d
SPARC-DT giv
treatment that
complete, dep

The steps a

1. Provide so
2. Answer 12
3. Choose a t
4. Save or pri

Display a menu

are some important parts of the decision that you may want to learn more about before starting:

Loewen et al. Ann Pharmacother 2019; DOI: 10.1177/1060028019828420

SPARC-DT | CHOOSING STROKE PREVENTION TREATMENT FOR AF

1. INTRO > 2. ABOUT ME > 3. OPTIONS > 4. MY VALUES > 5. MY CHOICE > 6. SUMMARY

Of the three items presented below, choose the item you think is the **MOST IMPORTANT** and the item you think is the **LEAST IMPORTANT** to you.

There are 12 questions altogether. The same options will appear more than once.

Question Set 2

Most Important		Least Important
<input type="checkbox"/>	Daily doses Taking fewer doses per day (e.g. 0 or 1) rather than more doses per day (e.g. 2).	<input type="checkbox"/>
<input type="checkbox"/>	Injury-risk activities Not having to avoid activities that put me at risk of injuries due to trauma, whether occupational (your job) or recreational (your activities).	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Cost Keeping the cost of my medication below \$50 per month.	<input type="checkbox"/>

Prev
Next

Loewen et al. Ann Pharmacother 2019; DOI: 10.1177/1060028019828420


Decision 2: Choosing which OAC is best for you

The green 'Best Match' option below was determined by your answers during the 'My Values' and 'About Me' sections. The % score shows how much that option aligns with your health information and preferences.

Please take a moment to look over your options. Click the **blue "i" buttons** in the left column to learn more about the options. **Click the LEFT and RIGHT arrows** to see more choices. When you are ready, select which treatment you think is best for you by **clicking the box below its name** and click 'Next'. You can always go back later if you change your mind.

	Best Match 33%	26%	18%
	Apixaban <input checked="" type="checkbox"/>	Dabigatran <input type="checkbox"/>	Edoxaban (not available in Canada at present) <input type="checkbox"/>
i Stroke	Your annual risk of a stroke would be 1.1%	Your annual risk of a stroke would be 0.9%	Your annual risk of a stroke would be 1.4%
i Daily doses	2 doses per day	2 doses per day	2 doses per day
i Major bleeding	Your annual risk of a major bleed would be 6.9%	Your annual risk of a major bleed would be 10%	Your annual risk of a major bleed would be 8%
i Antidote	No antidote available in Canada	Antidote may be available	No antidote available in Canada

Loewen et al. Ann Pharmacother 2019; DOI: 10.1177/1060028019828420



SPARC-DT
atrial fibrillation stroke prevention therapy decision tool

You have completed SPARC-DT!

A summary of your results is below.

The **table on the left** shows your choices (in green) and the % score shows how much each option matches your preferences. The **bar graph on the right** shows what matters most to you based on your choices during the 'My Values' section.

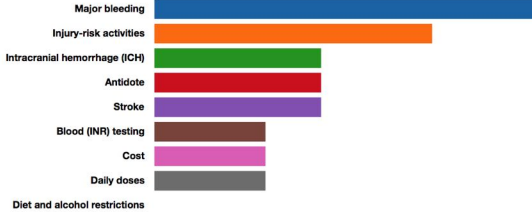
If you took no stroke prevention treatment, your stroke risk would be approximately 4.3% per year. If you did not have AF, your stroke risk would be approximately 0.56% per year. Your bleeding risk score is 4 (Risk of major bleeding 9.4% per year if you took OAC).

You can change your mind about about your choices by clicking the navigation buttons at the top of this page, or the "Prev" button at the bottom of this page.

No therapy, aspirin, or OAC?	
No treatment	22.9%
Aspirin	23.1%
Oral anticoagulant (OAC)	54.0%

Which OAC?	
Warfarin	14.2%
Apixaban	33.4%
Dabigatran	21.6%
Rivaroxaban	10.0%
Edoxaban (not available in Canada at present)	20.8%

What matters most to me



Your choice of stroke prevention therapy is:
Oral anticoagulant (OAC)

You have decided that you should be on OAC therapy.

The specific OAC medication you chose is:
Apixaban

You have decided that apixaban is the best option for you. See below for all the details about it.

Loewen et al. Ann Pharmacother 2019; DOI: 10.1177/1060028019828420



Hi..

In this module I will help you
learn about your Atrial Fibrillation (AF)

Let's begin.



Cardiac Services BC

Pearls

- **Ask** how it's going
- **Listen**, invite objections
- **Educate**, correct misconceptions
- Prescribe in alignment with each patient's **values & preferences**
- Refer patients to **decision aids**, and discuss their results