DynaMed[®] Decisions

Getting FHIRd up about treatment of atrial fibrillation:

How a FHIR-connected clinical decision support tool facilitates high-quality, patient-centered management of stroke risk in atrial fibrillation





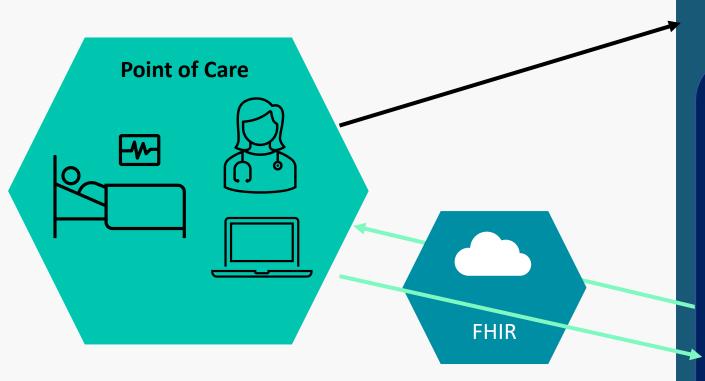
1 | www.clinicaldecisions.com

DynaMed Decisions Clinical and Editorial Team

- Marc Shapiro, MD
 - Physician Consultant, DynaMedex
- Katherine Eisenberg MD, PhD, FAAFP
 - Medical Director, DynaMed Decisions
- Martin Mayer, DMSc, MS, PA-C
 - Deputy Editor, DynaMed Decisions



DynaMed Decisions



DynaMed Decisions extends DynaMedex value:

- 1. Deeper workflow integration
- 2. Executable information (content customized using patient data)
- 3. Technology upon which to build more innovation

DynaMedex[™]

DynaMed Decisions™

Complex decision pathways leveraging patient data

Benefit/risk visualizations

Comprehensive breadth and depth across medicine

Systematic Literature Surveillance and personalized alerts

Medication information and tools from Micromedex

Continuing education and maintenance of certification

DynaMed[®] Decisions

Shared Decision-Making Tools Clinical Calculators About

Clinical Calculators

Evidence-based, clinical decision support tools created by physicians to facilitate clinicians' workflows.

By Specialty	Expand All	
Allergy and Immunology		~
Cardiology		~
Emergency Medicine		~
Endocrinology		~
Gastroenterology		~
Gynecology		~
Hematology		~
Infectious Diseases		~
Inpatient Medicine		~
Neonatology		~
Nephrology		~
Neurology		~
Obstetrics		~
Oncology		~

DynaMed Decisions

Shared Decision-Making Tools Clinical Calculators About

Shared Decision-Making Tools



Our Shared Decision-Making Tools **enable health care providers and patients to have meaningful conversations** about critical health issues with information customized for the individual. **Developed by clinical experts and based on the most current evidence**, these tools allow providers to easily uncover patients' values, concerns and unique preferences. They help ensure that **any decision made is the best fit for the individual**.

Our Tools	Expand All	
Advanced Care Planning		~
Bone and Joints		~
Breast		~
Cancer		~
Children		~
Diabetes		~
Family Planning and Pregnancy		~
Goals of Care in Serious Illness		~
Heart		~
Infections		~
Kidneys		~
Mental Health and Substance Use		~

Why This Tool?

- Improve efficiency of time pressured end users
- Impossible to keep up with literature on your own
 - This is a key reason why apps are ubiquitous!
 - Key need: Tool to filter the information deluge, assess validity, etc.

Why This Tool?

 Evidence suggests clinician-patient conversations around this decision might not yet be fully optimized

Original Investigation

ONLINE FIRST

October 31, 2022

Qualitative Analysis of Patient-Physician Discussions Regarding Anticoagulation for Atrial Fibrillation

Kathryn A. Martinez, PhD, MPH¹; Heather McKee Hurwitz, PhD²; Michael B. Rothberg, MD, MPH¹

» Author Affiliations

JAMA Intern Med. Published online October 31, 2022. doi:10.1001/jamainternmed.2022.4918

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Atrial Fibrillation Treatment Options to Lower Stroke Risk

Patient Assessment Options

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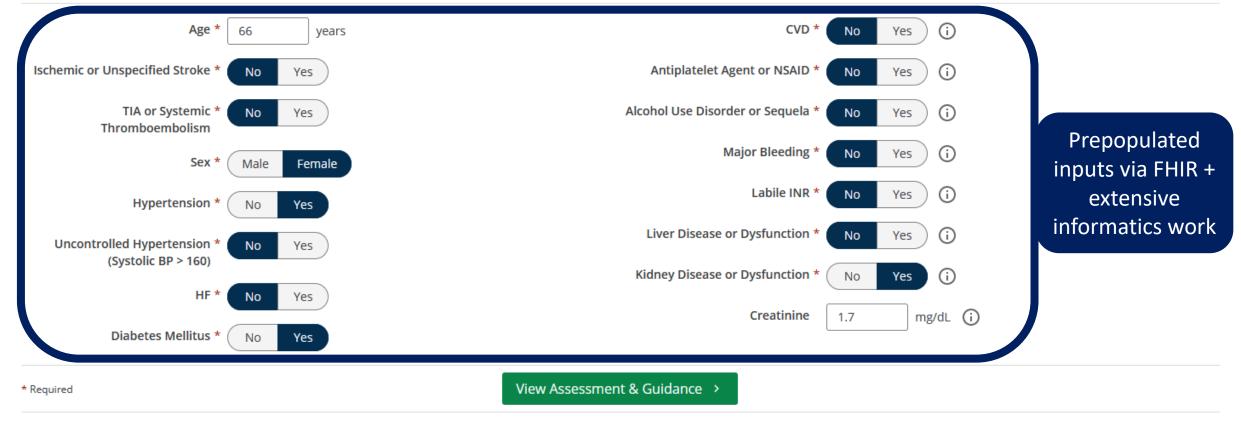
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Search

This tool is for adults with atrial fibrillation. It is not for people with moderate or severe mitral stenosis, a mechanical heart valve, or people who are pregnant or breastfeeding.

It incorporates personalized recommendations from the American Heart Association and American College of Cardiology 2019 guidelines, and provides a personalized risk visualization and decision aid for treatment options based on the CHA₂DS₂-VASc and HAS-BLED Scores.

RELATED TOOLS: CHA2DS2-VASc Score and HAS-BLED Score



References | More About This Tool | Last Update: Oct 7, 2022

DynaMed Decisions' Clinical Decision Tools are reviewed on an ongoing basis and updated to reflect the latest evidence.

= DynaMed Decisions	5		Sear	ch Q		
Atrial Fibrillation Treatment Options to Lower Stroke Ris Assessment & Guidance	sk		Ê Pa	atient Assessment Options		
PATIENT DATA SUMMARY 🧪		Assessment				
Age	66 years	Stroke Risk Without Treatment				
schemic or Unspecified Stroke	No	CHA ₂ DS ₂ -VASc Score	4	(i)		
TIA or Systemic Thromboembolism	No	Due diete d Diele Over 1 Veen	5 F W			
Sex	Female	Predicted Risk Over 1 Year	5.5 %	(j)		
Hypertension	Yes	Projected Risk Over 5 Years	24 %			
Uncontrolled Hypertension (Systolic BP > 160)	No	Major Bleeding Risk Without Treatment		_		
HF	No	HAS-BLED Score	2	1		
Diabetes Mellitus	Yes					
CVD	No	Predicted Risk Over 1 Year	0.6 %	0		
Antiplatelet Agent or NSAID	No	Projected Risk Over 5 Years	sk Over 5 Years 3.1 %			
Alcohol Use Disorder or Sequela	No					
Major Bleeding	No	Clinical Guidance		Ô		
Labile INR	No	 Take an anticoagulant Direct oral anticoagulants (such as apixaban, 	dabigatran, edoxaban, or	(j)		
Liver Disease or Dysfunction	No	rivaroxaban) preferred over warfarin				
Kidney Disease or Dysfunction	• Aspirin is no longer recommended • May consider left atrial appendage closure device (LAAC) device for those w					
Creatinine	1.7 mg/dL	contraindications to long-term anticoagulation		()		
eGFR 33 mL/	min/1.73m ²					

Assessment & Guidance			Ê	0	- - O
PATIENT DATA SUMMARY 🧪		Assessment			
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5ex	Female	Predicted Risk Over 1 Year	5.5 %	U	
Hypertension	Yes	Projected Risk Over 5 Years	24 %	i	
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HF	No	HAS-BLED Score	2	í	S
Diabetes Mellitus	Yes				appra
CVD	No	Predicted Risk Over 1 Year	0.6 %	í	guide
Antiplatelet Agent or NSAID	No	Projected Risk Over 5 Years	3.1 %	i	usir
Alcohol Use Disorder or Sequela	No				
Major Bleeding	No	Clinical Guidance		-	
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Liver Disease or Dysfunction	No	rivaroxaban) preferred over warfarin	0		
Kidney Disease or Dysfunction	Yes	Aspirin is no longer recommended	(i)		
Creatinine	1.7 mg/dL	 May consider left atrial appendage closure device (LAAC) device for those with contraindications to long-term anticoagulation 			
eGFR 33 mL/	min/1.73m ²				

Every tool is based on a systematic search, appraisal, and synthesis of guidelines and evidence, using <u>GRADE</u> methods

Atrial Fibrillation Treatment Options to Lower Stroke Ris Assessment & Guidance	k		Ê	O	sessment Options
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TIA or Systemic Thromboembolism	No				
Sex	Female	Predicted Risk Over 1 Year	5.5 %	(i)	['] Individualized risk scores
Hypertension	Yes	Projected Risk Over 5 Years	24 %	i	and corresponding risk
Uncontrolled Hypertension (Systolic BP > 160)	No	Major Bleeding Risk Without Treatme	ent		estimates for key benefit
HF	No	HAS-BLED Score	2	i	and harm outcomes
Diabetes Mellitus	Yes				
CVD	No	Predicted Risk Over 1 Year	0.6 %	(j)	
Antiplatelet Agent or NSAID	No	Projected Risk Over 5 Years	3.1 %	i	
Alcohol Use Disorder or Sequela	No				
Major Bleeding	No	Clinical Guidance			
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Kidney Disease or Dysfunction	Yes	Aspirin is no longer recommended			
Creatinine	1.7 mg/dL	 May consider left atrial appendage closur contraindications to long-term anticoagu 		í	
eGFR 33 mL/r	nin/1.73m²				

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PATIENT DATA SUMMARY 🧪		Assessment			
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Kidney Disease or Dysfunction	Yes	 Aspirin is no longer recommended May consider left atrial appendage closure of 	levice (LAAC) device for those with	<u>(</u>)	
Creatinine	1.7 mg/dL	contraindications to long-term anticoagulati			
eGFR 33 mL/	min/1.73m ²				

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Atrial Fibrillation Treatment Options to Lower Stroke Risk Patient Options KEY DATA OPTION GRID	Patient Assessment Options
No Treatment Warfarin Apixaban Dabigatran Rivaroxaban Edoxaban LAAC	1 year 🗡 100 people 🗡
For 100 people like you over 1 year with no treatment:	
6 Have Ischemic Strokes, 94 Do Not	Other
6 Ischemic strokes with no treatment 1 Have major bleeds, 99 do not	No stroke and no major bleed (i)
1 Major bleeds with no treatment	
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Pat	rial Fibrillation Treatment Options to Lower Stroke Risk Patient Options KEY DATA OPTION GRID														Patient Ass O	essment O	Options	
No	No Treatment Warfarin Apixaban Dabigatran Rivaroxaban Edoxaban LAAC													1 year 👻	100 pe	eople 👻		
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PATIENT QUESTIONS	No Treatment X	Warfarin ×	Rivaroxaban ×	Apixaban ×	
What does the option involve?	No treatment means you will not take medicine or use a device to lower your risk of stroke due to blood clots.	Warfarin is a medicine that makes it less likely for the blood to clot. You will take a pill once a day. Avoid large changes in what you eat and drink.	Rivaroxaban is a medicine that makes it less likely for the blood to clot. You will take a pill once a day.	Apixaban is a medicine that makes it less likely for the blood to clot. You will take a pill twice a day.	
Will I need blood tests?	No	You will need regular blood tests to check how well the medicine is working. Your healthcare professional may change how much medicine you take.	You may need blood tests to check how well your kidneys are working.	You may need blood tests to check how well your kidneys are working.	
What is my risk of stroke due to blood clots?	About 6 of 100 people (6%) have a stroke due to blood clots within 1 year.	About 2 of 100 people (2%) have a stroke due to blood clots within 1 year.	About 2 of 100 people (2%) have a stroke due to blood clots within 1 year.	About 2 of 100 people (2%) have a stroke due to blood clots within 1 year.	Written with plain language experts to be
What is my risk of major bleeding needing treatment?	About 1 of 100 people (1%) have a serious bleed within 1 year.	About 2 of 100 people (2%) have a serious bleed within 1 year.	About 2 of 100 people (2%) have a serious bleed within 1 year.	About 1 of 100 people (1%) have a serious bleed within 1 year.	understood at 6 th - grade reading level
Are there other risks and side effects?	Does not apply	You might have nose or gum bleeding. This is usually not serious.	You might have nose or gum bleeding. This is usually not serious.	You might have nose or gum bleeding. This is usually not serious.	
Can the medicine be reversed in an emergency?	Does not apply	Yes, but it is not common to need to reverse the treatment.	Yes, but it may not be available at all hospitals. It is not common to need to reverse the treatment.	Yes, but it may not be available at all hospitals. It is not common to need to reverse the treatment.	
Is a generic available?	Does not apply	Yes	No	No	

Glossary Terms

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Glossary Terms

■ DynaMed D	ecisions		(Search Q	
Atrial Fibrillation Treatment Options Patient Options KEY DATA OPTION GR				Patient Assessment Options	
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Is a generic available?	Does not apply	Yes	No	No	

Glossary Terms

Decision Aids: Cochrane Systematic Review

Outcome	Usual Care	Decision Aids	Quality of Evidence	Comments		
Knowledge	Mean 56.9%	Mean 70.2%	High	Score 0-100		
Accurate Risk Perception	269 per 1000	565 per 1000	High	RR 2.1		
Congruence between chosen option and informed values	289 per 1000	595 per 1000	Low	RR 2.0		
Decisional conflict		Mean 9 % lower	High	Score 0-100 Lower score better		
Participation in decisionmaking: clinician controlled decision making	228 per 1000	155 per 1000	Moderate	Lower score is better		

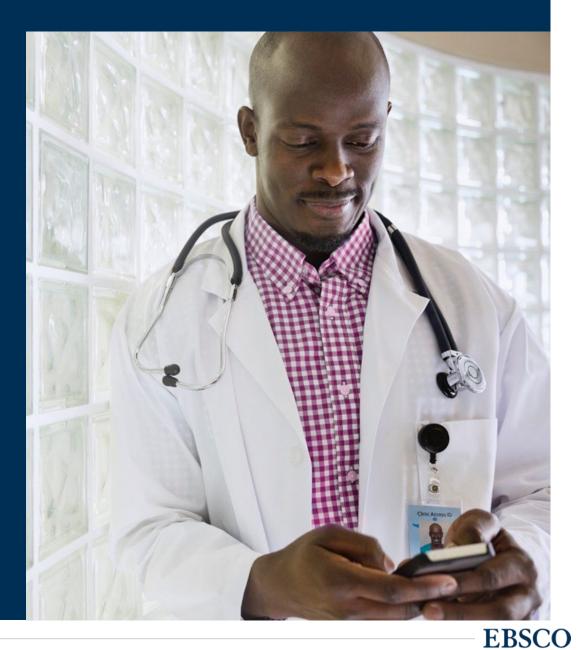
Adapted from: Stacey D, Légaré F, Lewis K, Barry MJ, Bennett CL, Eden KB, Holmes-Rovner M, Llewellyn-Thomas H, Lyddiatt A, Thomson R, Trevena L. Decision aids for people facing health treatment or screening decisions. Cochrane Database of Systematic Reviews 2017, Issue 4. Art. No.: CD001431. DOI: 10.1002/14651858.CD001431.pub5. Accessed 17 October 2022.



R4 Upgrade

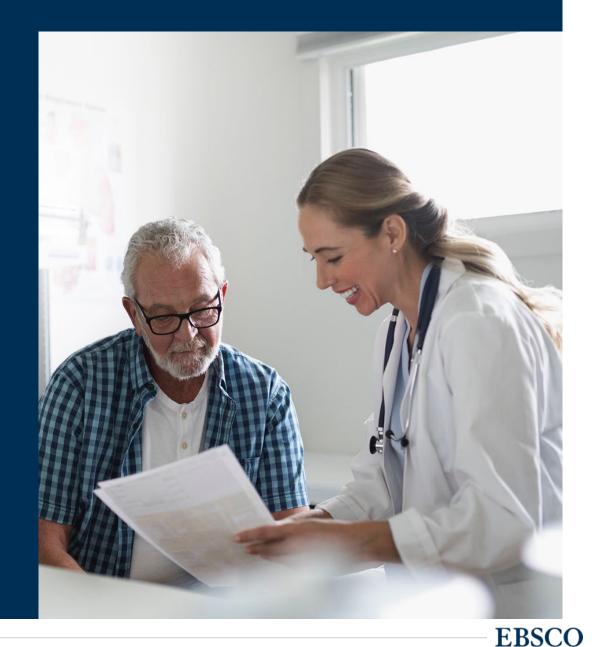
- Coming soon (presently DSTU 2)
- Taking input from EHR:
 - problem list
 - demographics (e.g., age)
 - family history
 - -labs

• Plan to write back to EHR



R4 Upgrade

- Will allow greater granularity in information retrieval and use → more efficient tools
- Hope to take advantage of FHIR terminology services for more efficient mapping



DynaMed[®] Decisions

Shared Decision-Making Tools Clinical Calculators About

Clinical Calculators

Evidence-based, clinical decision support tools created by physicians to facilitate clinicians' workflows.

By Specialty	Expand All	
Allergy and Immunology		~
Cardiology		~
Emergency Medicine		~
Endocrinology		~
Gastroenterology		~
Gynecology		~
Hematology		~
Infectious Diseases		~
Inpatient Medicine		~
Neonatology		~
Nephrology		~
Neurology		~
Obstetrics		~
Oncology		~

DynaMed Decisions

Shared Decision-Making Tools Clinical Calculators About

Shared Decision-Making Tools



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Our Tools	Expand All	
Advanced Care Planning		~
Bone and Joints		~
Breast		~
Cancer		~
Children		~
Diabetes		~
Family Planning and Pregnancy		~
Goals of Care in Serious Illness		~
Heart		~
Infections		~
Kidneys		~
Mental Health and Substance Use		~

Thanks!

★SMART® App Gallery

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Website

DynaMed

Décisions

Add New Listing Your Listings



Atrial Fibrillation Treatment Options to Lower Stroke Risk DynaMed Decisions

	Patient Options	Inde Rai	Carlos Carlos	
		dan Daligaran Kharavahan Education LAAC *per*	100 people ·	
	Rear public dise should be reduced to	15 mg daily when creatinine cleanance is 15 is 50 mL/min purrently 34 mL/min	0	
	For 100 people like you over 1			
		4 Have lochemic Strokes, 96 Do Not		
		🛉 4 Inchemic strokes with apisaban		
		 7 Ausid inchemic strokes due to apisaban 2 Have major bleeds, 98 do not. 	0	
		1 Major bleeds with or without treatment	0	
		1 More major bleeds due to apixaban Other	0	
		No stroke and no major bleed	٥	>>
	No Treatment Warfarin Api	uban Dabipitran Rharouban Edouban LANC		
	For 100 people like you over 1	year with no treatment:		
		11 Have tochemic Strokes, 89 Do Not		
	••••••	11 Ischemic strokes with no treatment		
		1 Have major bleeds, 99 dis not		
	••••••	1 Major bleeds with no treatment Other	0	
		No stroke and no major bleed	0	
	References More About This Tool	Last Update: New 17, 2022		
	Openational Decisions' Clinical Decision Tools	are reviewed an an anguing basis and updated in reflect the latest evidence.		
	About Dynamical Decisions Help 1	ystem Check Privacy Policy Terms of Use Copyright	¥ 🖪	
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The Atrial Fibrillation Treatment Options to Lower Stroke Risk tool supports high-quality, patient-centered care by providing personalized risk profiles, clinical guidance, and visual displays of the benefits and harms of treatment options for each patient for whom the clinician uses the tool. The tool targets patient-centered outcomes and keeps clinicians current, all while keeping clinicians' and patients' needs and desires at the forefront of the tool experience. This tool is one of over 100 tools in the DynaMed Decisions portfolio that support clinician, patient, and/or shared decision-making. DynaMed Decisions has developed and refined technical and editorial processes that offer best-in-class evidence and guideline curation, appraisal, synthesis, and maintenance of currency in a way that seamlessly integrates into clinician workflows by leveraging FHIR to prepopulate data inputs, with a vision to expand the use of FHIR for additional functionality in the future.

https://apps.smarthealthit.org/app/atrial-fibrillation-treatment-options-to-lower-stroke-risk

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Atrial Fibrillation Treatment Options to Lower Stroke Risk

Patient Assessment Options

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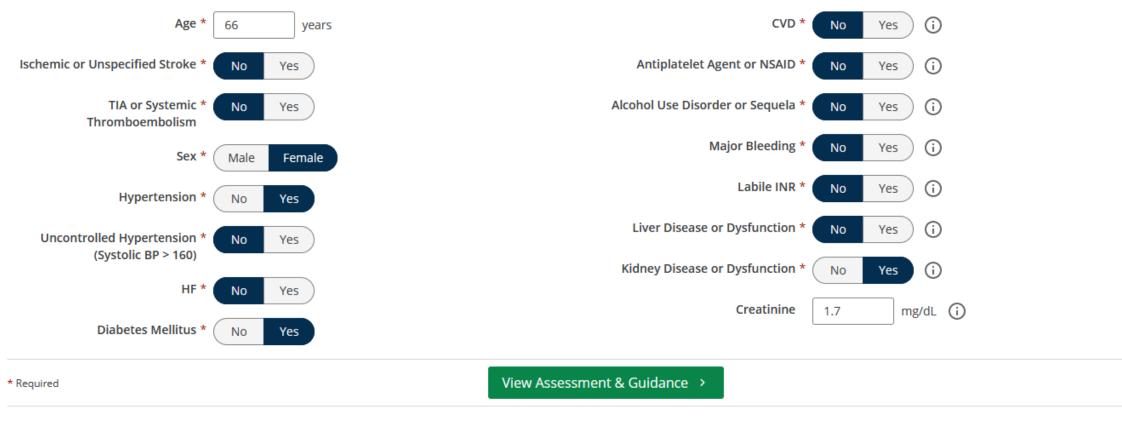
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This tool is for adults with atrial fibrillation. It is not for people with moderate or severe mitral stenosis, a mechanical heart valve, or people who are pregnant or breastfeeding.

It incorporates personalized recommendations from the American Heart Association and American College of Cardiology 2019 guidelines, and provides a personalized risk visualization and decision aid for treatment options based on the CHA₂DS₂-VASc and HAS-BLED Scores.

RELATED TOOLS: CHA2DS2-VASc Score and HAS-BLED Score



References | More About This Tool | Last Update: Oct 7, 2022

DynaMed Decisions' Clinical Decision Tools are reviewed on an ongoing basis and updated to reflect the latest evidence.

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Atrial Fibrillation Treatment Options Patient Options KEY DATA OPTION GR				Patient Assessment Options
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PATIENT QUESTIONS	No Treatment X	Warfarin X	Rivaroxaban ×	Apixaban ×
What does the option involve?	No treatment means you will not take medicine or use a device to lower your risk of stroke due to blood clots.	Warfarin is a medicine that makes it less likely for the blood to clot. You will take a pill once a day. Avoid large changes in what you eat and drink.	Rivaroxaban is a medicine that makes it less likely for the blood to clot. You will take a pill once a day.	Apixaban is a medicine that makes it less likely for the blood to clot. You will take a pill twice a day.
Will I need blood tests?	No	You will need regular blood tests to check how well the medicine is working. Your healthcare professional may change how much medicine you take.	You may need blood tests to check how well your kidneys are working.	You may need blood tests to check how well your kidneys are working.
What is my risk of stroke due to blood clots?	About 6 of 100 people (6%) have a stroke due to blood clots within 1 year.	About 2 of 100 people (2%) have a stroke due to blood clots within 1 year.	About 2 of 100 people (2%) have a stroke due to blood clots within 1 year.	About 2 of 100 people (2%) have a stroke due to blood clots within 1 year.
What is my risk of major bleeding needing treatment?	About 1 of 100 people (1%) have a serious bleed within 1 year.	About 2 of 100 people (2%) have a serious bleed within 1 year.	About 2 of 100 people (2%) have a serious bleed within 1 year.	About 1 of 100 people (1%) have a serious bleed within 1 year.
Are there other risks and side effects?	Does not apply	You might have nose or gum bleeding. This is usually not serious.	You might have nose or gum bleeding. This is usually not serious.	You might have nose or gum bleeding. This is usually not serious.
Can the medicine be reversed in an emergency?	Does not apply	Yes, but it is not common to need to reverse the treatment.	Yes, but it may not be available at all hospitals. It is not common to need to reverse the treatment.	Yes, but it may not be available at all hospitals. It is not common to need to reverse the treatment.
Is a generic available?	Does not apply	Yes	No	No