

DynaMed[®] Decisions

Getting FHIRd up about treatment of atrial fibrillation:

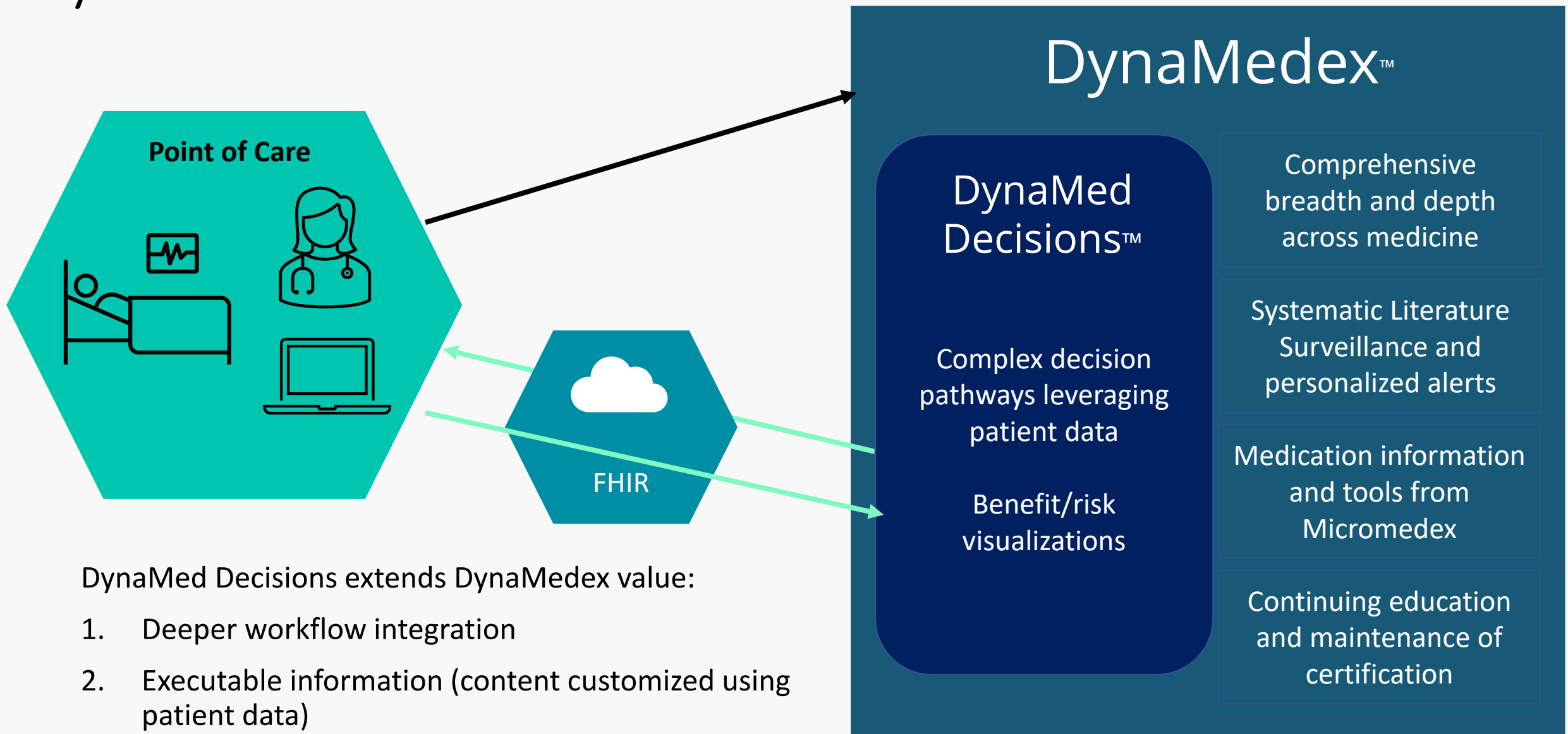
How a FHIR-connected clinical decision support tool facilitates high-quality, patient-centered management of stroke risk in atrial fibrillation



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

Clinical Calculators

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

By Specialty Expand All Collapse All

Allergy and Immunology	▼
Cardiology	▼
Emergency Medicine	▼
Endocrinology	▼
Gastroenterology	▼
Gynecology	▼
Hematology	▼
Infectious Diseases	▼
Inpatient Medicine	▼
Neonatology	▼
Nephrology	▼
Neurology	▼
Obstetrics	▼
Oncology	▼

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 Collapse 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

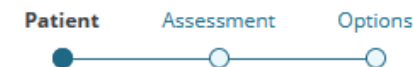
Qualitative Analysis of Patient-Physician Discussions Regarding Anticoagulation for Atrial Fibrillation

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

Atrial Fibrillation Treatment Options to Lower Stroke Risk



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](#)

Age * 66 years

Ischemic or Unspecified Stroke * No Yes

TIA or Systemic Thromboembolism * No Yes

Sex * Male Female

Hypertension * No Yes

Uncontrolled Hypertension * (Systolic BP > 160) No Yes

HF * No Yes

Diabetes Mellitus * No Yes

CVD * No Yes

Antiplatelet Agent or NSAID * No Yes

Alcohol Use Disorder or Sequela * No Yes

Major Bleeding * No Yes

Labile INR * No Yes

Liver Disease or Dysfunction * No Yes

Kidney Disease or Dysfunction * No Yes

Creatinine 1.7 mg/dL

Prepopulated inputs via FHIR + extensive informatics work

* Required

[View Assessment & Guidance](#)

[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.

Assessment & Guidance

PATIENT DATA SUMMARY

Age	66 years
Ischemic or Unspecified Stroke	No
TIA or Systemic Thromboembolism	No
Sex	Female
Hypertension	Yes
Uncontrolled Hypertension (Systolic BP > 160)	No
HF	No
Diabetes Mellitus	Yes
CVD	No
Antiplatelet Agent or NSAID	No
Alcohol Use Disorder or Sequela	No
Major Bleeding	No
Labile INR	No
Liver Disease or Dysfunction	No
Kidney Disease or Dysfunction	Yes
Creatinine	1.7 mg/dL
eGFR	33 mL/min/1.73m²

Assessment

Stroke Risk Without Treatment

CHA ₂ DS ₂ -VASc Score	4	
Predicted Risk Over 1 Year	5.5 %	
Projected Risk Over 5 Years	24 %	

Major Bleeding Risk Without Treatment

HAS-BLED Score	2	
Predicted Risk Over 1 Year	0.6 %	
Projected Risk Over 5 Years	3.1 %	

Clinical Guidance

- Take an anticoagulant
 - Direct oral anticoagulants (such as apixaban, dabigatran, edoxaban, or rivaroxaban) preferred over warfarin
- Aspirin is no longer recommended
- May consider left atrial appendage closure device (LAAC) device for those with contraindications to long-term anticoagulation

[View Patient Options >](#)




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[View Patient Options >](#)

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




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[View Patient Options](#) >

Individualized risk scores and corresponding risk estimates for key benefit and harm outcomes

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Individualized guidance

[View Patient Options](#) >

OPTION GRID

L AAC

100 people ▾

18



Atrial Fibrillation Treatment Options to Lower Stroke Risk

Patient Options

KEY DATA

OPTION GRID

No Treatment

Warfarin

Apixaban

Dabigatran

Rivaroxaban

Edoxaban

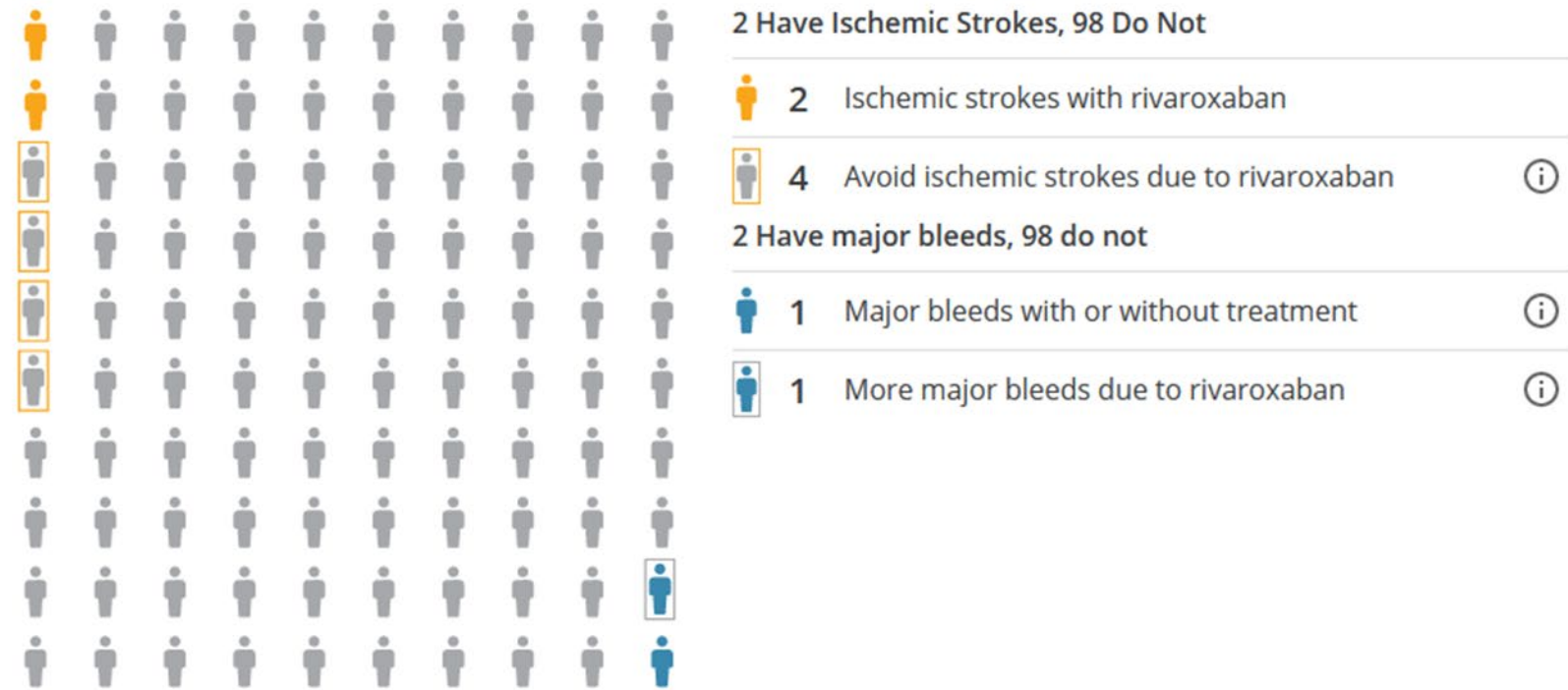
LAAC

1 year

100 people

Rivaroxaban dose should be reduced to 15 mg daily when creatinine clearance is 15 to 50 mL/min (currently 33 mL/min). ⓘ

For 100 people like you over 1 year with rivaroxaban:



Other

1 icon

No stroke and no major bleed ⓘ

Individualized data visualizations based on patient's risk and effects of treatment options

Facilitates optimal care, including patient engagement and satisfaction, and shared decision-making

Patient Options

KEY DATA OPTION GRID

No Treatment Warfarin Apixaban Dabigatran **Rivaroxaban** Edoxaban LAAC

1 year ▾

100 people ▾

Rivaroxaban dose should be reduced to 15 mg daily when creatinine clearance is 15 to 50 mL/min (currently 33 mL/min). ⓘ

Individualized clinical decision support continues

For 100 people like you over 1 year with rivaroxaban:



- 2 Have Ischemic Strokes, 98 Do Not
 - 2 Ischemic strokes with rivaroxaban
 - 4 Avoid ischemic strokes due to rivaroxaban ⓘ
- 2 Have major bleeds, 98 do not
 - 1 Major bleeds with or without treatment ⓘ
 - 1 More major bleeds due to rivaroxaban ⓘ

Other

- No stroke and no major bleed ⓘ

Patient Options

KEY DATA **OPTION GRID**



Patient

Assessment

Options



Hidden: Dabigatran +2 ▾

Grid View ▾

optiongrid



PATIENT QUESTIONS	No Treatment	Warfarin	Rivaroxaban	Apixaban
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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.
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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

Written with plain language experts to be understood at 6th-grade reading level

Patient Options

KEY DATA **OPTION GRID**



Patient

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optiongrid



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Glossary Terms

Specific to the patient

Patient Options

KEY DATA **OPTION GRID**



Patient

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Options



Hidden: Dabigatran +2 ▾

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optiongrid



Accessible via QR code,
permalink, or PDF

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Patient Options

KEY DATA

OPTION GRID



Patient

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Hidden: Dabigatran +2 ▾

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Options shown under user control

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



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Mental Health and Substance Use	▼

Thanks!

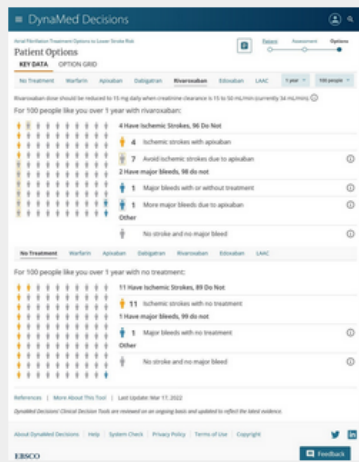
DynaMed®
Decisions

Atrial Fibrillation Treatment Options to Lower Stroke Risk

DynaMed Decisions

Website

Contact



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>

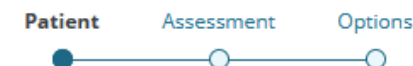
DynaMed® Decisions

<https://l.ead.me/AMIADynaMedDecisions>



AMIA DynaMed Decisions

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Creatinine mg/dL

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[View Assessment & Guidance >](#)

[References](#) | [More About This Tool](#) | Last Update: Oct 7, 2022

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Patient Options

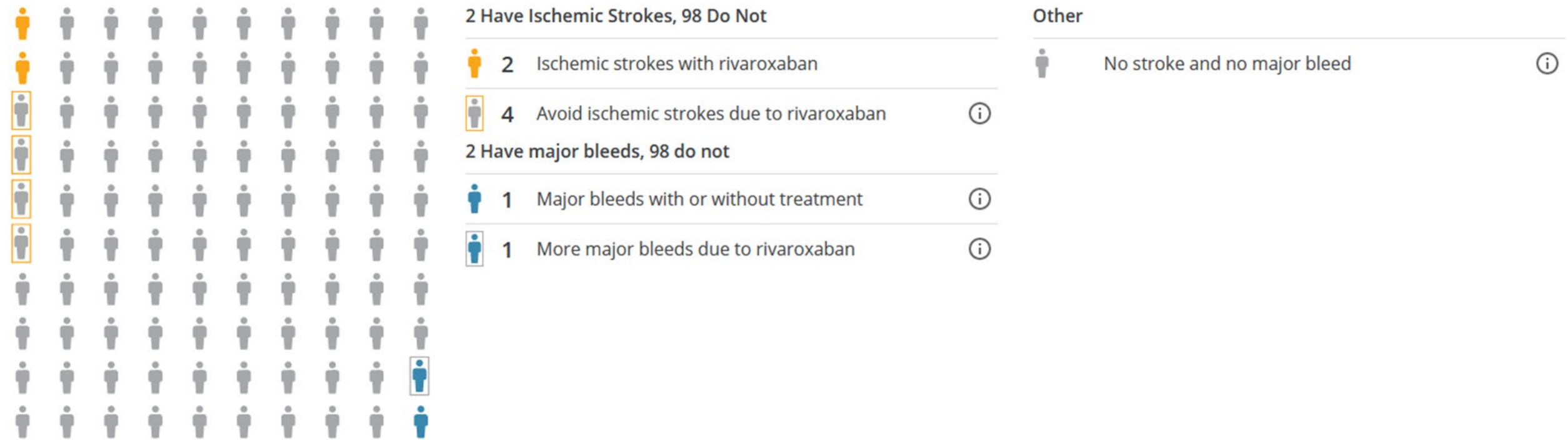
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1 year 100 people

Rivaroxaban dose should be reduced to 15 mg daily when creatinine clearance is 15 to 50 mL/min (currently 33 mL/min). ⓘ

For 100 people like you over 1 year with rivaroxaban:



Patient Options

KEY DATA

OPTION GRID




Patient

Assessment

Options







Hidden: Dabigatran +2 ▾

 Grid View ▾

optiongrid



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