FINAL PROGRESS REPORT

A user-center designed anticoagulation shared decision-making tool for stroke prevention in atrial fibrillation

Michael Dorsch, PharmD, MS (PI); Allen Flynn, PharmD, PhD (Co-I); Brian Zikmund-Fisher, PhD (Co-I); Geoff Barnes, MD, MS (Co-I)

University of Michigan at Ann Arbor

08/01/2019 - 07/31/2021

Derrick Wyatt, MSN, RN-BC, CPHIMS

Acknowledgment of Agency Support: Agency for Healthcare Research and Quality

R21 HS026322

Structured Abstract

Purpose: The objective of the proposed project was to develop a technology-based shared decision-making tool to facilitate patient understanding of the risk tradeoffs in the anticoagulation decision for stroke prevention in atrial fibrillation (AF).

Scope: Atrial fibrillation (AF) is the most common cardiac arrhythmia in the US and oral anticoagulation (OAC) is a therapeutic option for the inherent risk of stroke. The ACC/AHA clinical performance measures identify shared decision making regarding OAC for AF between patients and providers as a metric for quality of care, but no standard exists that includes patient values.

Methods: User centered design with patients and providers was used to develop a shared decision-making support web application for anticoagulation in AF. A randomized controlled study was conducted to determine the most effective decision support tool in facilitating patient decision making.

Results: In general, both visuals helped participants feel more confident about their OAC choice compared to standard text education in AF with a CHADS-VASc of 1 for men and 2 for women. The visual groups were also less likely to choose OAC when compared to the standard education. Future work should implement this tool in clinical practice for a shared decision-making session with a patient and provider.

Key Words: Health IT, computable biomedical knowledge, shared decision making, user centered design

Purpose (Objectives of Study).

The objective of the proposed project was to develop a technology-based shared decision-making tool, optimize the tool for providers and patients and demonstrate the effectiveness of the tool to facilitate patient understanding of the risk tradeoffs in the anticoagulation decision for stroke prevention in atrial fibrillation (AF). The central hypothesis was that a shared decision-making tool will facilitate patient and provider discussion about risk and benefits of anticoagulation in AF, support elicitation of patient and provider values regarding the decision and increase knowledge of the risk tradeoffs. The proposed specific aims were:

1. Use user-centered design principles to design a decision support tool that clarifies the relevant risk tradeoffs for anticoagulation in AF for patients and providers.
2. Develop a shared decision-making support application for the anticoagulation decision in AF.
3. Demonstrate the comparative efficacy of the decision support tool in facilitating naïve patient knowledge of the risk tradeoffs during shared decision making for anticoagulation in AF.

Scope (Background, Context, Settings, Participants, Incidence, Prevalence).

Background. Anticoagulation is a therapeutic option in AF given the inherent risk of stroke, but guidelines are broad and should personalize risk of stroke with bleeding. In a wide variety of AF patients, anticoagulation reduces the risk of ischemic stroke by 65% with a relative 2-fold increase in major extracranial bleeding compared to placebo. While these are the average medication responses, personalized risk and benefits are available to clinicians. The CHA_2DS_2-VASc and HAS-BLED are the two most common risk scoring systems representing the risk of stroke and bleeding in AF, respectively. CHA_2DS_2-VASc includes cardiac failure, hypertension, age (≥75 years 2 points), diabetes, stroke (2 points), vascular disease, age (65-74 years) and female sex. Each risk factor is 1 point unless noted, then totaled to provide an annualized risk of stroke from 0% per year to 15.2% per year. HAS-BLED includes hypertension, abnormal renal function, abnormal liver function, stroke, prior bleeding, labile INRs, age (>65 years), drug and alcohol use. Each risk factor is 1 point and then totaled to provide an annualized risk of major bleeding from 1% per year to 12.5% per year. When used together, a patient's benefit and risk of anticoagulation in AF can be assessed. There are, however, several problems with the CHA_2DS_2-VASc and HAS-BLED approaches. There are overlapping risks for both ischemic stroke and bleeding in AF. This leads to inflation of a score without informing the relative benefit or risk of the therapy. Also, compared with warfarin, the newer anticoagulants offer less bleed risk providing enhanced net clinical benefit. Furthermore, there is a false equivalency imposed on these scoring systems. The HAS-BLED should not be used to exclude

patients from anticoagulation therapy. It should, however, be used to risk stratify patients for bleeding and remove or treat risk factors identified. For example, remove aspirin/NSAIDs or treat hypertension. Using a decision support tool to shift the HAS-BLED score message from percent bleed risk to modifying a patient's risk factors for bleeding is novel.

Context. Risk stratification and shared decision-making are essential in stroke prevention in AF. In a recent systematic review, 39-70% of AF patients that are at high risk of stroke do not receive oral anticoagulant therapy. In a national outpatient registry of AF patients (ORBIT-AF), 23% were not prescribed anticoagulation. Of these patients, 83% had a CHA_2DS_2-VASc score greater than or equal to 2, for which anticoagulation is recommended in the major guidelines. Also, those not prescribed anticoagulation had a higher risk of death, higher stroke risk and lower bleeding risk compared to those treated with anticoagulation.

Overestimation of bleeding risk is a common reason for the lack of anticoagulation in AF. Providers are more likely to assign a lower stroke risk and a higher bleeding risk compared to standard stroke and bleeding risk scores. Providers are less likely to recommend anticoagulation therapy in the elderly, despite evidence that demonstrates more benefit when compared to younger individuals. Provider-reported barriers to anticoagulation in the elderly are the risk of falls and previous bleeding thus a decision support tool must consider and address these barriers to truly impact patient and provider decisions.

The Ottawa Decision Support Framework (ODSF) is an evidence-based mid-range theory for guiding patients making health decisions. The framework is based on concepts from psychology, decision analysis and decision conflict and has been used in more than 30 patient decision aids, decision support resources and tools to evaluate the quality of outcomes in providing decision support. ODSF uses a three-step process that assesses provider and patient needs, provides tailored decision support using decision aids and evaluation of the decision-making process with outcomes. Grounded in this theory, our research engaged patients and providers in user-centered design of a decision support tool for anticoagulation in AF (ODSF step 1), built the technology to deliver this tailored decision support tool in health technology systems (ODSF step 2) and tested if the decision support tool with a value clarification improves patient knowledge of the tradeoffs of anticoagulation in AF (ODSF step 3).

Setting. For aim 1, we recruited from the general population of Ann Arbor, Michigan and providers and patients from the University of Michigan. For aim 3, we used Qualtrics panels to recruit participants across the United States.

Participants. For aim 1, general population participants from Ann Arbor, MI we completed February/March 2020 (first round), April 2020 (second round), and May 2020 (third round). In addition to these general patient interviews, we interviewed six providers and performed two patient-provider dyad interviews. For aim 3, participants were recruited from across the United States.

Incidence and Prevalence. AF is the most common cardiac arrhythmia with a projected increase in prevalence to 12.1 million by 2030 in the US. The estimated incidence of AF was 1.6 million in 2010 with an expected increase to 2.6 million by 2030. Incident AF is also associated with an increase in mortality. About 500,000 hospital admissions every year are for AF which equates to 5 per 100,000 people per year for patients between 15 and 44 years of age and 1323 per 100,000 people per year for those ≥85 years of age. Ischemic stroke is one of the most feared complications of AF, due to its debilitation. Before the widespread use of anticoagulants, AF was associated with a 5-fold increase in ischemic stroke.

Methods (Study Design, Data Sources/Collection, Interventions, Measures, Limitations).

Study Design. Aim 1 included qualitative cognitive interviews with adults from the general population in Ann Arbor, Michigan, medical providers, and patient-provider dyads. In aim 2, we used feedback from these interviews to create a user interface to support the shared decision making process. Aim 3 was a randomized controlled trial of the general population comparing standard written communication (Standard group), a visual representation of relevant probabilities (Visual group), or to the new decision support tool that combines design-tailored visual displays with value clarification (Visual+Value group) in a 1:1:1 ratio.

Data Sources/Collection. Aim 1 sessions used a process similar to a cognitive interview in which we observed participants interacting with prototype materials and elicit their impressions and concerns. Interview prompts sought (a) general reactions to prototype materials (e.g., what do users notice, what do they take away from what they see), (b) specific responses to design features (e.g., interpretations of the probability graphics shown), (c) feedback about different methods for eliciting relevant patient values, (d) inquiries about what would help them better understand relevant tradeoffs (e.g., “how could we help you compare the risks of bleeding versus the risks of cardiac events”), and (e) suggestions to increase usability of the tool interface. Particular prompts elicited participants' thoughts on how to ensure that users consider both the probabilities and the potentially serious implications of different possible outcomes. Study team members reviewed each interview for novel insights, then incorporated those insights into subsequent interview materials in a highly iterative process.

For aim 3, Qualtrics was used to inform the participant about the context of the study, randomize participants to the appropriate visual, and deliver the survey questions to collect study outcomes and baseline demographics.

Intervention.
This research did not involve an intervention.

Measures.
After each decision support tool, the participant was asked a question on anticoagulation intentions, the SURE test, and four standard questions. The SURE test is an evaluation tool that is part of the ODSF, our theoretical framework, and the primary outcome for the aim 3 study. The four Yes/No questions are: 1. Do you feel SURE about the best choice for you?, 2. Do you know the benefits and risks of each option?, 3. Are you clear about which benefits and risks matter most to you?, 4. Do you have enough support and advice to make a choice? The overall SURE test is the percentage of participants that answer yes to all of the questions.

Anticoagulation intentions will be measured by the question: “Based on how you feel about this decision right now, would you say you will choose to,” with anchors, “Definitely TAKE an anticoagulant,” (100) on the right of the scale and, “Definitely NOT take an anticoagulant,” (0) on the left.

The four standard survey questions have been used in previous research to assess understanding of risk in cancer and cardiovascular disease. The questions are: 1. How much of a reduction would anticoagulation make to your risk of stroke in AF? (0 to 100 scale: Very small (0) - Very large (100)), 2. How important is anticoagulation for stroke prevention in AF? (0 to 100 scale: Not at all important (0) - Very important (100)), 3. How worried would you be about bleeding if you took anticoagulation for stroke prevention in AF? (0 to 100 scale: Not at all worried-Very worried), 4. How worried would you be about having a stroke if you did NOT take anticoagulation? (0 to 100 scale: Not at all worried-Very worried).

Limitations.
There are several limitations of this study. The tool is meant for a shared decision making session with a patient and provider. The survey study was done in patients only. This was done to decrease any bias the provider would add to the shared decision making session situation in the study. If this tool was implemented, it could lead to a better patient understanding of the tool itself.

Results (Principal Findings, Outcomes, Discussion, Conclusions, Significance, Implications).

Principal Findings and Outcomes. The principal findings and outcomes of this research are presented by each aim.

Aim 1 - User centered design

General population interviews using round 1 of the prototype materials were conducted between February 27, 2020 and March 3, 2020. Six participants completed interviews. Based on the feedback from the interviews, an additional prototype design using a horizontal bar graph to illustrate relevant risk tradeoffs for anticoagulation was added. Risk clarification factors were also separated into two categories – demographics (age and gender) and health conditions. Minor wording and layout changes were also driven by this feedback.

General population interviews using round 2 of the prototype materials were conducted between April 8, 2020 and April 13, 2020. The purpose of this round was to test the vertical and horizontal bar graphs and the revised risk clarification factors. Six participants completed the interviews. Five of the six participants preferred the horizontal bar graphs which will be used going forward. The revised layout for the risk clarification factors were easier for the participants to understand. Feedback from this round of interviews elucidated the need for a visual representation of baseline risk throughout all the screens. A speedometer-like graph illustrating the risk was added to the home screen and will be carried through to the subsequent pages.

Provider interviews included six providers, two of which were outside the UM system. Providers recommended the addition of a "hover over" for many of the items in the user interface to make it easier to explain various portions of the interface to patients. They specifically wanted more information about male/female sex, which is a component of the CHADS2VASc, versus gender in the interface. They were concerned with the tick-marks on the speedometer-like graph that was used. Future versions did not include tick marks like this previous version. Providers also wanted more information about the meaning of the speedometer-like graph in the interface. For example, if the speedometer says a CHADS2VASc of 6, what does that mean? It was suggested to use a hover over so providers could see and explain what the CHADS2VASc risk of 6 means in annual stroke risk. Several wording recommendations were made so the interface was easier for a provider to explain stroke and bleeding risk to a patient.

Two patient-provider dyad interviews were completed in January and February 2021. The providers felt the overall tool does not fit in well with the conversations they have

with their patients; however, the risk clarification was the most helpful. The providers do not consider starting anticoagulation for atrial fibrillation a preference-based decision. The expectation of the provider is they will make the recommendation and discuss any fears. The conversation is more about mitigation than preference.

The patients wanted to know additional information such as, “What is my stroke risk? How was the risk relative to other people their age?” and “What is my risk if I start anticoagulation?” The patients did not feel the bar diagram provided information much beyond the recommendation their provider already gave them.

Once a patient has a CHADs-VASc score of 2 or more, the provider no longer views this a preference decision; anticoagulation is the guideline-based recommendation. The providers’ intent is the patient will leave the appointment taking an anticoagulant. Based on these results, the decision-making tool is being revised as a tool for patients with a CHADs-VASc of 1 for men or 2 for women. In these cases, patient preference does play a role in initiating anticoagulation. For patients with a score higher than 2, the tool indicates a guideline recommendation not a preference-based decision. Additional information to address patients’ input for more information such as the 5-year risk score for a stroke will be included.

It was ultimately determined that the target population for the decision-making tool is patients with a CHADs-VASc of 1 for men or 2 for women. In these cases, patient preference does play a role in initiating anticoagulation. The rationale for excluding individuals with a CHADs-VASc score of 2 or more is that providers do not view anticoagulation initiation as preference-based decision in this population; anticoagulation is the guideline-based recommendation.

Aim 2 - Creation of shared decision-making tool

Two Ways of Delivering Computable Biomedical Knowledge (CBK) Using A Knowledge Object

Decentralized web technology provides a scalable underlying infrastructure to deliver computable biomedical knowledge into client applications via the existing global World Wide Web (WWW). In a decentralized web environment, there are a variety of different ways to deliver computable knowledge.

In this study, we explored two conspicuously different ways to deliver CBK artifacts for evidence-based risk scoring and values clarification into web apps. These two different ways are (1) passing the CBK artifacts to the apps upon request and (2) remote computing with CBK artifacts. Both ways rely on APIs that are reached via the WWW.

Passing CBK Artifacts to Apps Upon Request

As portrayed in Figure 1 below, to pass CBK artifacts to apps via the WWW, we rely on an API call to deliver the artifacts to a web app so that the app can then compute with the knowledge locally, typically by running the CBK inside a browser. The figure shows how this works for a variety of wireless devices connected to the WWW. Whenever applications are started by users of the devices, a call is made once from the devices to a CBK artifact repository, and one or more CBK artifacts is then passed back to the web applications. The CBK artifacts are then run or executed locally in each device. This way of getting CBK artifacts to web apps is similar to how software developers routinely bring other software libraries and dependencies into web applications. Thus, it follows a *standard pattern for distributed software delivery* that already exists.

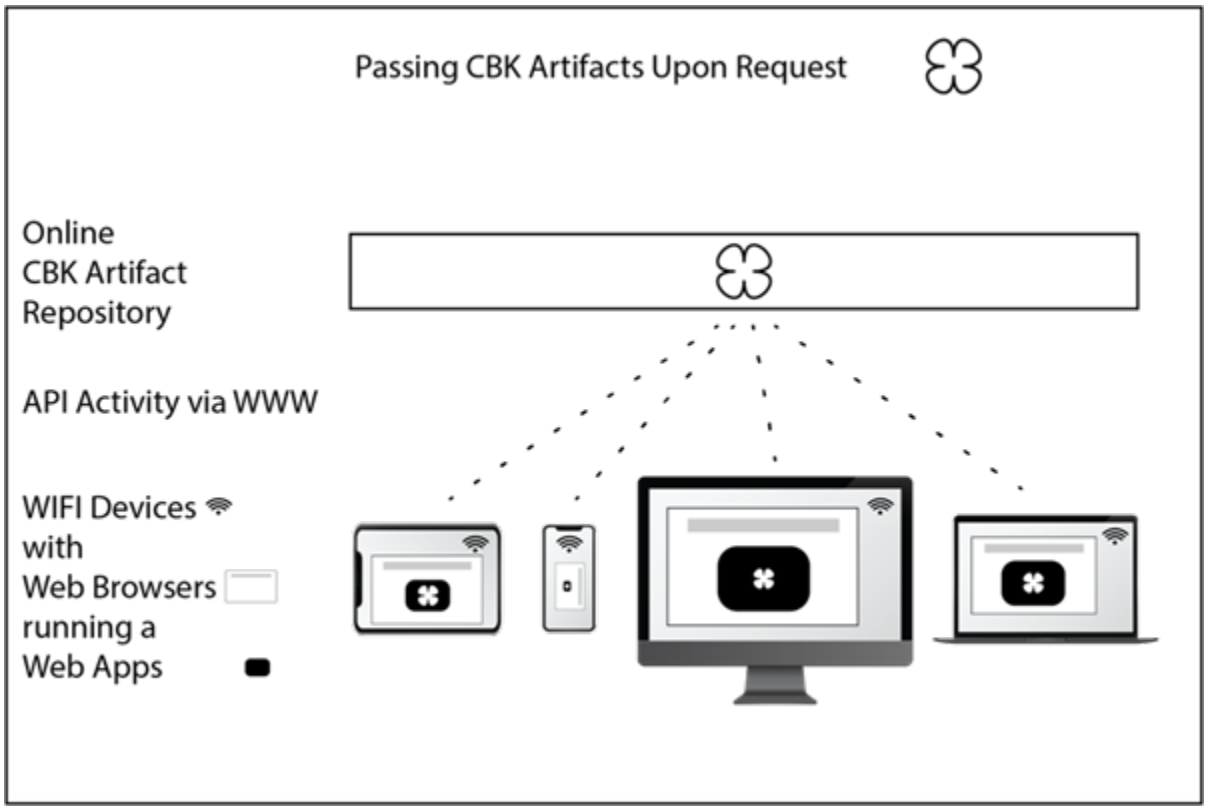

Figure 1. Passing CBK Artifacts to Web Applications Upon Request

Remote Computing with CBK Artifacts

Our other approach to overcoming the challenge of incorporating CBK artifacts into distributed web applications via the WWW uses persistent connections to online knowledge services backed by CBK artifacts. These services are typically engaged by web applications multiple times. Each time, web applications send data as inputs and

ask a remote server to process the inputs by running CBK artifacts, resulting in outputs that are returned from the remote server to the web application. This all happens very quickly. Figure 2 below shows this second way of remote computing with CBK artifacts over the WWW using frequent and multiple API calls.

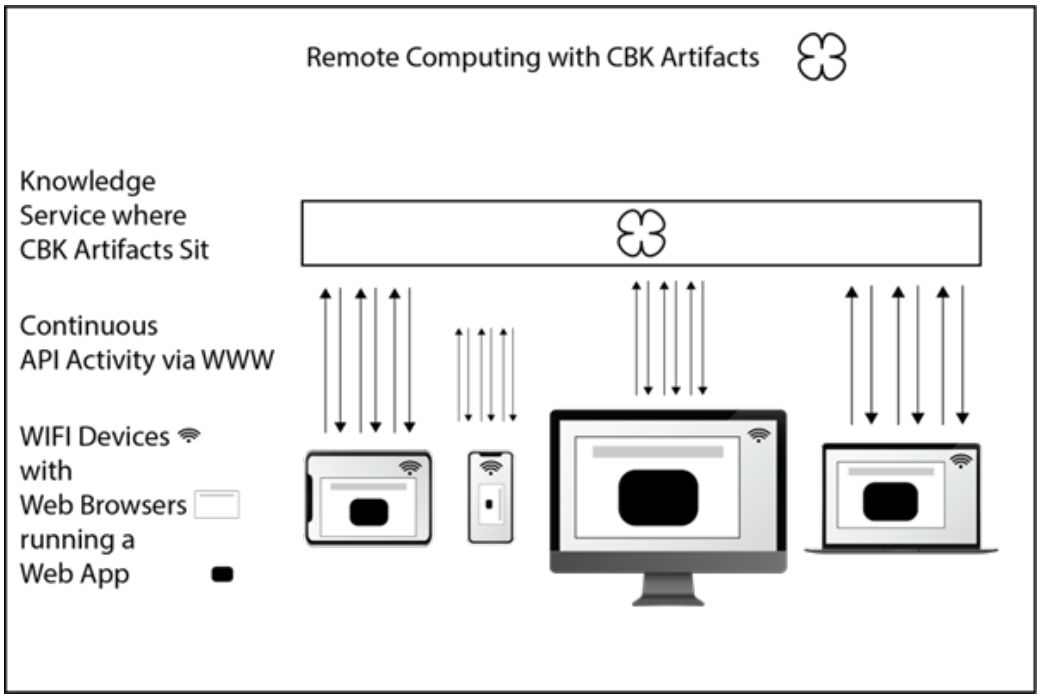

Figure 2. Remote Computing with CBK Artifacts using Many API Calls from Web Applications

Pros and Cons of these Two Ways of Delivering CBK via the WWW

There are critical pros and cons associated with these two different ways of delivering computable knowledge depicted in Figures 1 and 2 above.

On the plus side, passing CBK artifacts upon request (Figure 1) distributes the work of running or executing the CBK artifacts over all of the devices. In addition, passing CBK artifacts also greatly limits API communication just to initial requests for the CBK artifacts. However, modern browsers are not suitable for running or executing all types of CBK artifacts. Relatedly, sometimes CBK artifacts are very large in size, and in those cases, passing them via the WWW takes too much time and network bandwidth. So, passing CBK artifacts works well when the artifacts are modest in size and executable in modern browsers.

Along these same lines, there are pros and cons associated with remote computing with CBK artifacts, too (Figure 2). On the plus side, remote computing with CBK artifacts

allows the CBK artifacts to stay in one place online, typically inside web servers. Such servers support online web services backed by CBK artifacts. Another benefit of remote computing with CBK artifacts is that both very large CBK artifacts and highly specialized CBK artifacts written in uncommon programming languages can be run and executed. Moreover, remote computing with CBK artifacts enables data to be gathered more easily on how CBK artifacts are actually used. However, a major downside of remote computing with CBK artifacts is that this method of incorporating CBK into web applications requires many API calls and persistent, consistent network connectivity. Without stable, ongoing access to the WWW, this method fails.

The Promise of Knowledge Objects as digital CBK Packages:

Our work demonstrates that both ways of delivering and applying CBK artifacts shown above are supported by *every* Knowledge Object (KO) we create. Knowledge Objects are special digital packages that hold computable biomedical knowledge artifacts together with additional content for delivering the artifacts over the WWW.

The KOs that we developed for this project carry information about APIs with which web apps communicate. Available API endpoints (or connections) support passing computable biomedical knowledge as JavaScript implementations of the evidence-based risk score and the values clarification mechanism. Other API endpoints support remote execution of the same computable biomedical knowledge by accepting inputs from web applications and returning answers in the form of computed risk scores and preconfigured onscreen elements for *values clarification*.

For clinical decision support and other users, our work on this project demonstrates how one KO can support and enable two conspicuously different ways of delivering computable knowledge in a decentralized web environment. In the future, we anticipate that these two and other ways of delivering CBK artifacts will become critical capabilities supporting high-functioning learning health systems.

<u>Aim 3 - Testing the visuals with participants</u>

A total of 673 participants were randomized to receive standard written communication (Standard group), a visual representation of relevant probabilities (Visual group), or to the new decision support tool that combines design-tailored visual displays with value clarification (Visual+VC group). The average age was 54 (SD 6) and about half of the participants in the survey were female. Table 1 shows more detailed baseline demographics of the participants.

Variable	Standard (n=255)	Visual (n=218)	Visual + VC (n=200)	p-value
Age, years	54.4 (5.8)	54.5 (5.8)	54.3 (6.1)	0.932
Female, N (%)	128 (50.2%)	102 (46.8)	97 (48.5)	0.761
Race, N (%) White Black Other	 192 (75.3) 34 (13.3) 29 (11.4)	 170 (78) 27 (12.4) 21 (9.6)	 150 (75) 26 (13) 24 (12)	0.547
Hispanic or Latino, N (%)	55 (21.5)	44 (20.2)	24 (12)	0.022
Self-rated health status, N (%) Poor Fair Good Very Good Excellent	 4 (1.6) 40 (15.7) 126 (49.4) 66 (25.6) 19 (7.5)	 8 (3.7) 43 (19.7) 104 (47.7) 51 (23.4) 12 (5.5)	 7 (3.5) 34 (17) 90 (45) 57 (28.5) 12 (6)	0.681
Seen a HCP in last 12 months, N (%)	196 (76.9)	162 (74.3)	156 (78)	0.657
Prescription insurance, N (%)	210 (82.4)	177 (81.2)	164 (82)	0.947
Knows someone with AFib, N (%)	61 (23.9)	64 (29.4)	61 (30.5)	0.234
Knows someone taking an OAC, N (%)	115 (45.1)	103 (47.3)	103 (51.5)	0.393
Confidence filling out forms, N (%) Never Occasionally Sometimes Often Always	 6 (2.4) 0 (0) 18 (7.1) 42 (16.5) 189 (74.1)	 3 (1.4) 5 (2.3) 11 (5.1) 39 (17.9) 160 (73.4)	 1 (0.5) 2 (1) 10 (5) 40 (20) 147 (73.5)	0.242
Help reading, N (%)	102 (40)	74 (33.9)	87 (43.5)	0.126)
Problems reading, N (%)	101 (39.6)	77 (35.2)	77 (38.5)	0.618

Variable	Standard (n=255)	Visual (n=218)	Visual + VC (n=200)	p-value
Survey duration, secs	380 [291, 534]	447 [350, 617]	425 [348, 574]	0.179

Table 1. Baseline demographics

SURE Test

The overall SURE test, saying “yes” to all four components, was 61.2% (156/255) for the standard group, 66.5% (145/218) for the visual group and 67% (134/200) for the visual+VC group (Visual vs. Standard, odds ratio 1.26 (95% CI 0.86-1.84), p=0.229; Visual+VC vs. Standard, odds ratio 1.29 (95% CI 0.87-1.90), p=0.200). Participants felt more sure about the best choice for them, question 1 of the SURE test, if they were presented with either visual compared to standard education (Visual vs. Standard, odds ratio 1.59 (95% CI 1.01-2.49), p=0.044; Visual+VC vs. Standard, odds ratio 1.48 (95% CI 0.94-2.33), p=0.094). Table 2 shows the overall SURE test and the individual components.

Variable	Standard	Visual	Visual + VC
Do you feel SURE about the best choice for you? Yes, N (%)	191 (74.9)	180 (82.6)	163 (81.5)
Do you know the benefits and risks of each option? Yes, N (%)	224 (87.8)	193 (88.5)	179 (89.5)
Are you clear about which benefits and risks matter most to you? Yes, N (%)	225 (88.2)	185 (84.9)	173 (86.5)
Do you have enough support and advice to make a choice? Yes, N (%)	189 (74.1)	167 (76.6)	151 (75.5)
Overall SURE test, N (%)	156 (61.2)	145 (66.5)	134 (67)

Table 2. SURE test

Participants were less likely to choose to take an OAC when shown either visual compared to standard education. From a 0 to 100 rating, where 0 was do not take OAC and 100 was take OAC, the average rating was 58.3 (SD 30) in the standard group, 51.4 (SD 32) in the visual group, and 51.9 (SD 28) in the visual+VC group (p=0.031). Participants also felt that the reduction in stroke risk from an OAC was smaller in either visual group compared to standard education. From a 0 to 100 rating, where 0 was very small risk and 100 was very large risk, the average rating was 63.8 (SD 22) in the standard group, 54.2 (SD 28) in the visual group, and 58.6 (SD 25) in the visual+VC

group (p=0.0002). Table 3 demonstrates more detail on the questions asked about choosing OAC and stroke risk.

Variable	Standard	Visual	Visual + VC	p-value
Based on how you feel about this decision right now, would you say you will choose to: 0 - Do not take OAC 100 - Take OAC	58.3 (30)	51.4 (32)	51.9 (28)	0.031
How much of a reduction would anticoagulation make to your risk of stroke in AFib? 0 - very small 100 - very large	63.8 (22)	54.2 (28)	58.6 (25)	0.0002
How important is anticoagulation for stroke prevention in AFib? 0 - Not important 100 - Extremely important	75.6 (18)	75.7 (19)	73.9 (16)	0.549
How worried would you be about bleeding if you took anticoagulation for stroke prevention in AFib? 0 - Not worried 100 - Extremely worried	64.3 (24)	65.2 (25)	63 (23)	0.628
How worried would you be about having a stroke if you did NOT take anticoagulation? 0 - Not worried 100 - Extremely worried	66.3 (26)	63 (28)	62.1 (26)	0.207

Table 3. Questions about taking OAC and stroke risk by group. Data represented as mean (standard deviation).

Discussion.

We have demonstrated that using a user centered design approach with iterative feedback from patients and providers can produce visuals that change participant preferences for OAC for stroke prevention in AF. This was done in the setting when a participant is given a scenario where they have a CHADS-VASc risk score that the guidelines do not specifically state whether to take OAC or not. In general, both visuals

helped participants feel more confident about their choice about OAC in AF. The visual groups were also less likely to choose OAC when compared to the standard education.

Interestingly, the values clarification visual did not demonstrate a difference in any outcome compared to the visual group. This is contrary to what has been found in the area of pediatric vaccinations values clarification. A risk visual combined with a values clarification interface leads to more participants indicating they intend to vaccinate their child. This could have been due to several factors. First, we choose to use a horizontal bar for the values clarification. Previous versions of the tool we created and those in the literature used a vertical bar to represent the values clarification. Second, the intention to take OAC for stroke prevention in AF is a very different decision than the intention to vaccinate your child from influenza. Third, the participants in our study are older than those deciding to vaccinate their child for influenza. This could have led to more confusion with the intent of the visuals.

There are several limitations of this study. The tool is meant for a shared decision-making session with a patient and provider. The survey study was done in patients only. This was done to decrease any bias the provider would add to the shared decision-making session situation in the study. If this tool was implemented, it could lead to a better patient understanding of the tool itself. Future research should investigate use of the tool with a provider present to guide and educate the patient.

Conclusions.

In general, both visuals helped participants feel more confident about their OAC choice in AF with a CHADS-VASc of 1 for men and 2 for women. The visual groups were also less likely to choose OAC when compared to the standard education. Future work should implement this tool in clinical practice for a shared decision-making session with a patient and provider.

List of Publications and Products.

Dorsch MP, Barnes GD, Zikmund-Fisher B, Flynn A. (2021). ValueAF (version 1) [Computer Software]. Ann Arbor, MI: University of Michigan. Available from
https://afibchadsvasc.appspot.com/?view=results&widget=gauge&age=64&gender=female#/
https://afibchadsvasc.appspot.com/?view=choices&widget=gauge&age=64&gender=female#/