**Online Supplemental Material**

Shared decision making tools for people facing stroke prevention strategies in atrial fibrillation: a systematic review and environmental scan

Torres Roldan et al.

# Supplementary material 1: Search strategy for academic databases

Ovid

Database(s): APA PsycInfo 1806 to May Week 2 2020, EBM Reviews - Cochrane Central Register of Controlled Trials April 2020, EBM Reviews - Cochrane Database of Systematic Reviews 2005 to May 14, 2020, Embase 1974 to 2020 May 19, Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily 1946 to May 19, 2020   
Search Strategy:

|  |  |  |
| --- | --- | --- |
| **#** | **Searches** | **Results** |
| 1 | Atrial Fibrillation/ | 118849 |
| 2 | heart atrium fibrillation/ | 108587 |
| 3 | ("atrial fibrillation\*" or "atrium fibrillation\*" or "auricular fibrillation\*").ti,ab,hw,kw. | 262804 |
| 4 | 1 or 2 or 3 | 262974 |
| 5 | \*Decision Making, Computer-Assisted/ | 11313 |
| 6 | \*Decision Support Techniques/ | 20749 |
| 7 | \*Decision Support Systems, Clinical/ | 7002 |
| 8 | \*decision support system/ | 13359 |
| 9 | \*patient decision making/ | 2175 |
| 10 | (((decision\* or decid\*) adj2 (support\* or aid\* or tool\* or instrument\* or technolog\* or technique\* or system\* or program\* or algorithm\* or process\* or method\* or intervention\* or material\*)) or (decision adj2 (board\* or guide\* or counseling)) or "adaptive conjoint analys\*" or "Patient decision making" or "Shared decision making").ti,ab,hw,kw. | 251241 |
| 11 | 5 or 6 or 7 or 8 or 9 or 10 | 252074 |
| 12 | 4 and 11 | 2045 |
| 13 | remove duplicates from 12 | 1505 |

Scopus

1 TITLE-ABS-KEY("atrial fibrillation\*" or "atrium fibrillation\*" or "auricular fibrillation\*")

2 TITLE-ABS-KEY(((decision\* or decid\*) W/2 (support\* or aid\* or tool\* or instrument\* or technolog\* or technique\* or system\* or program\* or algorithm\* or process\* or method\* or intervention\* or material\*)) or (decision W/2 (board\* or guide\* or counseling)) or "adaptive conjoint analys\*" or "Patient decision making" or "Shared decision making")

3 1 and 2

4 INDEX(embase) OR INDEX(medline) OR PMID(0\* OR 1\* OR 2\* OR 3\* OR 4\* OR 5\* OR 6\* OR 7\* OR 8\* OR 9\*)

5 3 and not 4

Web of Science

1. **TOPIC:** (("atrial fibrillation\*" or "atrium fibrillation\*" or "auricular fibrillation\*")) *AND* **TOPIC:** ((((decision\* or decid\*) NEAR/2 (support\* or aid\* or tool\* or instrument\* or technolog\* or technique\* or system\* or program\* or algorithm\* or process\* or method\* or intervention\* or material\*)) OR (decision NEAR/2 (board\* or guide\* or counseling)) OR "adaptive conjoint analys\*" OR "Patient decision making" OR "Shared decision making")) Indexes=SCI-EXPANDED, ESCI Timespan=All years
2. PMID=(0\* or 1\* or 2\* or 3\* or 4\* or 5\* or 6\* or 7\* or 8\* or 9\*)
3. 1 NOT 2

# Supplementary material 2: Keywords used for social media search

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Social Network** | **Keywords** | **No of results** | **No of decision aids** | **Decision aids’ name** |
| Twitter ([www.twitter.com](http://www.twitter.com)) | #AFib shared | 58 | 3 | CardioSmart; AF Manager; Anticoagulation Choice |
| #SharedDecisionMaking Afib | 34 | 2 | CardioSmart; WISDM for A FIB |
| #SharedDecisionMaking atrial fibrillation | 10 | 3 | CardioSmart; WISDM for A FIB; Anticoagulation Choice |
| #AFib #SharedDecisionMaking | 27 | 2 | WISDM for A FIB; CardioSmart |
| #atrialfibrillation shared | 23 | 1 | Anticoagulation Choice |
| Facebook ([www.facebook.com](http://www.facebook.com)) | #atrialfibrillation shared | 18 | 0 |  |
| #AFib shared | 19 | 1 | CardioSmart |
| #SharedDecisionMaking Afib | 1 | 1 | CardioSmart |
| #SharedDecisionMaking atrial fibrillation | 1 | 1 | No name (Edward's risk communication aids) |

**Supplementary material 3: Template email for author contact**

We hope this email finds you well. Our research group, the [Knowledge and Evaluation Research (KER) Unit](https://www.mayo.edu/research/labs/knowledge-evaluation-research-unit/overview) from Mayo Clinic, Rochester, Minnesota, USA, writes to ask for your assistance.

Along with researchers from University of Utah, Salt Lake City, Utah, USA, we are conducting a systematic review and environmental scan to identify the patient decision aids and encounter decision aids available for patients with atrial fibrillation who are considering anticoagulation. We hope to optimize those tools by updating their content and adapting them for implementation in clinical and electronic workflows.

The decision aid you and your team developed has been identified as a candidate to be included in this review. We would be grateful if you could

1)   Review the information about your decision aid (name, setting and published articles) in the attachment and let us know if our data is correct.

2)   Let us know if you are aware of any decision aids we are missing (published or not) that fall within our scope.

3)   Provide us with access or a copy of your decision aid.

Thank you for taking the time to read this letter and help us improve the systematic review. If you are interested, we will follow up with updates on the project. Dr. Brito will be available to discuss any questions you may have by phone (507-XXX-XXX) or via email ([XXX.XXX@mayo.edu](mailto:XXX.XXX@mayo.edu)).

# Supplementary material 4: International Patient Decision Aid Standards instrument (IPDAS) version 4 dimensions and items

|  |  |
| --- | --- |
| **Dimension** | **Items** |
| **Information (8 items)** | 1. Describes the health condition or problem (intervention, procedure or investigation) for which the index decision is required  2. Describes the decision that needs to be considered (the index decision)  3. Describes the options available.  4. Describes the natural course of the health condition or problem, if no action is taken.  5. Describes the positive features (benefits or advantages) of each option  6. Describes negative features (harms, side effects or disadvantages) of each option.  7. Makes it possible to compare the positive and negative features of the available options.  8. Shows the negative and positive features of options with equal detail (e.g. Using similar fonts, order, and display of statistical information). |
| **Probabilities (6 items)** | 1. Provides information about outcome probabilities associated with the options  2. Specifies the reference class of patients for which the outcome probabilities apply.  3. Specifies the event rates for the outcome probabilities in natural frequencies.  4. Specifies the time period over which the outcome probabilities apply.  5. Allows the user to compare outcome probabilities across options using the same denominator and time period.  6. Provides more than one way of viewing the probabilities (e.g. words, numbers, and diagrams). |
| **Values** **(2 items)** | 1. Helps patients imagine what it is like to experience the physical, psychological, and social effects.  2. Asks patients to think about which positive and negative features matter most to them. |
| **Decision Guidance (2 items)** | 1. Provides a step-by-step way to make a decision.  2. Includes tools like worksheets or lists of questions to use when discussing options with a practitioner. |
| **Development (6 items)** | 1. The development process included needs assessment by patients.  2. The development process included needs assessment by health professionals.  3. The development process included review by patients not involved in producing the decision aid.  4. The development process included review by health professionals not involved in producing the decision aid.  5. It was field tested with patients who were facing the decision.  6. It was field tested with practitioners who counsel patients who face the decision. |
| **Evidence (6 items)** | 1. Provides citations to the studies selected.  2. Provides a production or publication date.  3. Provides information about the proposed update policy.  5. Provides information about the levels of uncertainty around outcome probabilities (e.g. by giving a range or by using phrases such as ‘‘our best estimate is…’’)  4. Describes how research evidence was selected or synthesized.  6. Describes the quality of the research evidence used. |
| **Disclosure (2 items)** | 1. Provides information about the funding source.  2. Includes author/developer credentials or qualifications. |
| **Plain Language (1 item)** | 1. Reports readability levels (using one or more of the available scales). |
| **Evaluation (2 items)** | 1. There is evidence that it improves the match between the features that matter most to the informed patient and the option that is chosen  2. There is evidence that it helps patients improve their knowledge about options’ features |

# Supplementary material 5: Decision aids’ treatment related content

| **Decision aid** | **Stroke prevention options** | **Stroke risk communication** | **Bleeding risk communication** | **Other decision related issues** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Warfarin** | **DOACs** | **Aspirin** | **Left atrial appendage closure** |
| 1. AF Manager | W, DOACs (NS) | NA | NA | NA | NA | NA | NA |
| 1. Afib: Which anticoagulant should I take to prevent stroke? | W, DOACs (A, D, E, R) | An average annual risk of stroke among patients with atrial fibrillation is presented. | An average annual risk of severe bleeding among patients in anticoagulation is presented. | 1. Cost 2. Lab testing 3. Dosing 4. Diet and alcohol 5. Side effects | 1. Cost 2. Lab testing 3. Dosing 4. Contraindications | NA | NA |
| 1. ANTICOAGULATION CHOICE | W, ASA, DOACs (NS) | Pictogram of individualized absolute risk reduction in 1 or 5 years is displayed. Calculator:  CHA2DS2-VASc . | Pictogram of individualized risk of bleeding with anticoagulation in 5 years is displayed. Calculator: HAS-BLED. | 1. Cost 2. Dosing 3. Reversing agent 4. Diet 5. Interactions | 1. Cost 2. Dosing 3. Reversing agent 4. Diet 5. Interactions | NA | NA |
| 1. Atrial Fibrillation Shared Decision Making (AFSDM) Tool | W, ASA, DOACs (A, D, E, R) | Pictogram of individualized absolute risk of stroke at 1 year is displayed. Calculator:  CHA2DS2-VASc | Pictogram of individualized risk of bleeding with anticoagulation at 1 year is displayed. Calculator:  HAS-BLED. | 1. Cost 2. Lab testing 3. Dosing 4. Diet 5. Reversing agent | 1. Cost 2. Dosing 3. Lab testing 4. Reversing agent 5. Side effects  6. Diet | 1. Cost 2. Dosing  3. Diet | NA |
| 1. Blood Thinners for Atrial Fibrillation | W, ASA, DOACs (A, D, E, R) | Pictogram of individualized absolute risk reduction in 5 years is displayed. Also, risk is categorized as low, moderate, and high. Calculator:  CHA2DS2-VASc . | An average risk of severe bleeding at 5 years among patients taking anticoagulation and not taking it is presented as a pictogram. | 1. Cost  2. Lab testing 3. Dosing 4. Lifestyle changes  5. Diet | 1. Cost 2. Lab testing 3. Dosing 4. Lifestyle changes | 1. Cost 2. Dosing 3. Lifestyle changes | NA |
| 1. CardioSmart. Atrial Fibrillation: Anticoagulants/Left Atrial Appendage (LAA) Closure | W, DOACs (A, D, E, R), LAAC | Annual risk of stroke is calculated with CHA2DS2-VASc. The risk is categorized as low, moderate, high and very high risk. | Annual risk of major bleeding is calculated with HAS-BLED. The risk is categorized as low, moderate, high and very high risk. | 1. Cost 2. Lab testing, 3. Diet 4. Side effects 5. Dosing | 1. Cost 2. Lab testing 3. Side effects 4. Dosing 5. Interactions | NA | 1. Cost 2. Efficacy 3. Side effects 4. Side effects 5. Lifestyle changes 6. Diet 7. Other medication |
| 1. Don’t Wait to Anticoagulate (DWAC) | W, DOACs (A, D, E, R) | Pictogram of individualized absolute risk (and reduction) of stroke at 1 year is displayed. Calculator:  CHA2DS2-VASc | Pictogram of individualized risk of bleeding with and without anticoagulation at 1 year is displayed. Calculator:  HAS-BLED. | 1. Cost 2. Reversing agent 3. Lab testing | 1. Cost 2. Lab testing | NA | NA |
| 1. Healthdecision | W, ASA, DOACs (A, D, E, R) | Pictogram of individualized absolute risk reduction in 1, 5 or 10 years is displayed. Calculator:  CHA2DS2-VASc . | Pictogram of individualized risk of bleeding with anticoagulation in 1, 5 or 10 years is displayed. Calculator: HAS-BLED. | 1. Lab testing  2. Dosing 3. Interactions 4. Diet | 1. Lab testing  2. Dosing  3. Interactions 4. Diet | 1. Lab testing 2. Dosing  3. Interactions 4. Diet | NA |
| 1. mAF app | W, DOACs (NS) | Risk of stroke is calculated with CHA2DS2-VASc. The risk is categorized as low, moderate, high and very high risk. Timeframe not specified. | Risk of major bleeding is calculated with HAS-BLED. The risk is categorized as low, moderate, high and very high risk. Timeframe not specified. | 1. Cost  2. Lab testing | 1. Cost | NA | NA |
| 1. Mhealth Application for anTicoagulation Care in Atrial Fibrillation (MATCh AFib) | W, ASA, DOACs (A, D, E, R) | Pictogram of individualized absolute risk (and reduction) of stroke in 1 year is displayed. Calculator:  CHA2DS2-VASc. | Pictogram of individualized risk of bleeding with and without anticoagulation at 1 year is displayed. Calculator:  HAS-BLED. | NR | NR | 1. Cost 2. Lab testing 3. Side effects 4. Diet 5. Contraindications | NA |
| 1. PtDA (Patient Decision Aids) | W, ASA, DOACs (A, D, R) | All patients were assumed to have a 3% risk of stroke at 2 years if taking an anticoagulant. The risk is displayed in a pie chart and a pictogram. Comparison between warfarin and NOACs is made using RR. | All patients were assumed to have a 6% risk of bleeding at 2 years if taking an anticoagulant. The risk is displayed in a pie chart and a pictogram. Comparison between warfarin and NOACs is made using RR. | 1. Cost 2. Dosing 3. Lab testing  4. Lifestyle changes 5. Reversing agent 6. Diet 7. Interactions  8. Side effects | 1. Cost 2. Dosing  3. Lab testing 4. Lifestyle changes 5. Interactions  6. Side effects | 1. Side effects | NA |
| 1. The National Institute for Health and Care Excellence (NICE) decision aid | W, DOACs (A, D, R) | Pictogram and bar charts of absolute risk of stroke at 1 year and reduction with anticoagulation by CHA2DS2-VASc score. | Pictogram and bar charts of absolute risk of bleeding at 1 year with and without anticoagulation by HASBLED score. | 1. Lab testing  2. Dosing 3. Side effects 4. Lifestyle changes 5. Diet 6. Interactions | 1. Lab testing  2. Dosing  3. Side effects 4. Lifestyle changes  5. Interactions | NA | NA |
| 1. WISDM for A FIB | W, ASA, DOACs (A, D, E, R), LAAC | Individualized risk at 1 year presented as % in a bar graph. Effect on risk reduction is presented as RR, ARR and NNT. Calculator:  CHA2DS2-VASc . | Individualized risk at 1 year presented as % in a bar graph. Probability of harm is presented as RR, AR and NNH. Calculator:  HAS-BLED. | 1. Side effects 2. Dosing  3. Interactions 4. Reversing agent | 1. Side effects 2. Dosing 3. Interactions 4. Reversing agent | 1. Side effects  2. Dosing 3. Interactions 4. Reversing agent | NA |
| 1. PDA | W, ASA, DOACs, no treatment | Treatment effect presented as Individualized risk at 1 year presented in %.  Calculator:  CHA2DS2-VASc | Treatment effect presented as Individualized risk at 1 year presented in %.  Calculator:  HAS-BLED. | 1. Cost 2. Dosing 3. Lab testing  4. Lifestyle changes 5. Reversing agent 6. Diet | 1. Cost 2. Dosing 3. Lab testing  4. Lifestyle changes 5. Reversing agent 6. Diet | 1. Cost 2. Dosing 3. Lab testing  4. Lifestyle changes 5. Reversing agent 6. Diet | NA |

A=apixaban; ASA=aspirin; D=dabigatran; DOACS=direct oral anticoagulants; E=edoxaban; LAAC=left atrial appendage closure; NA=not available; NS=not specified; R=rivaroxaban; W=warfarin

Supplementary material 6. Risk of bias

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Randomized clinical trials** | | |  |  | |  | | |  |  | |  |
| **Study** | **Random sequence Generation** | **Allocation concealment** | **Selective Reporting** | **Blinding of Participants and Personnel** | | **Blinding of Outcome Assessment** | | | **Incomplete Outcome Data** | **Other bias** | | **Overall RoB** |
| Kunneman 2020 | Low | Low | Low | High | | High | | | High | Low | | High |
| Guo 2017 | Low | High | High | Low | | Low | | | Unclear | Unclear | | High |
| **Non-randomized studies** | | |  |  | |  | | |  |  | |  |
| **Study** | **Representativeness** | **Ascertainment of exposure** | **Comparability** | | **Assessment of outcome** | | **Follow-up long enough** | **Adequacy of follow-up** | | **Overall RoB** |
| Loewen 2019 | High | Low | N/A | | High | | Low | Low | | High |
| Eckman 2018 | Unclear | Low | N/A | | High | | Low | Low | | High |
| Stephan 2017 | High | Low | N/A | | High | | Low | Low | | High |
| Hong 2013 | High | Low | N/A | | High | | Low | High | | High |
|  |  |  |  | |  | |  |  | |  |

RoB=risk of bias