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Master of Science Thesis

***"COMPARING ATRIAL FIBRILLATION GUIDELINES:
FOCUS ON DIFFERENCES IN ANTICOAGUATION IN
PATIENTS WITH CHA₂DS₂-VASc score= 1"***

by

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Abstract:

Atrial fibrillation (AF) is a common heart rhythm disorder that is associated with a significant morbidity and mortality, particularly due to the problems caused by thrombosis. The use of anticoagulation in individuals with a CHA₂DS₂-VASc score of 1 remains a subject of debate among prominent cardiology societies. There are guidelines by seven prominent cardiology organizations: the American Heart Association (AHA) in 2023, the Japanese Circulation Society in 2020, the Australian Heart Foundation in 2018, the European Society of Cardiology (ESC) in 2020, the Canadian Cardiovascular Society in 2020, the Asian Pacific Society of Cardiology in 2021, and the National Institute for Health and Care Excellence (NICE) in 2021. This study aims to evaluate and contrast the existing recommendations for administering anticoagulant medication to individuals diagnosed with atrial fibrillation (AF) and CHA₂DS₂-VASc score=1. Patients should consider oral anticoagulation based on the guidelines of the American Heart Association in 2023. According to the 2021 Japanese guidelines, patients who have additional risk factors along with their CHA₂DS₂-VASc score are advised to get anticoagulant treatment. The Australian guidelines (2018) suggest using a tailored approach that considers the patient's comorbidities and the risk of bleeding. The 2020 recommendations from the European Society of Cardiology (ESC) prioritize collaborative decision-making and advise the use of anticoagulant therapy for male patients with a CHA₂DS₂-VASc score of 1. According to the Canadian guidelines (2020), individuals with a score of 1 should get anticoagulation treatment, as long as other risk factors are also taken into account. Following a thorough risk assessment, the Asian Pacific guidelines (2021) recommend the use of anticoagulant treatment for patients deemed to be at a high risk. Anticoagulation should be explored in individuals with a CHA₂DS₂-VASc score of 1, particularly if there are other risk factors, as outlined in the NICE recommendations (2021).

Overall, there are significant variations in the details of anticoagulation recommendations, despite the similarities in the emphasis on personalized patient care and risk evaluation. These differences emphasize the need of

placing guidelines within the specific context of local practices and patient demographics. Based on this comparative research, it is evident that continuous evaluation and standardization of AF treatment protocols are necessary to attain optimal results for patients.

Keywords: Atrial fibrillation (AF) guidelines, Anticoagulation management, CHA2DS2-VASc score, Stroke prevention, International comparison of cardiovascular guidelines

Περίληψη:

Η κοιλιακή μαρμαρυγή αποτελεί μια συχνή αρρυθμία που σχετίζεται με αυξημένη νοσηρότητα και θνητότητα, ιδιαίτερα λόγω των προβλημάτων που προκαλούνται από θρομβώσεις. Η χορήγηση αντιπηκτικής αγωγής σε άτομα με CHA2DS2-VA Sc=1 παραμένει αντικείμενο συζήτησης μεταξύ των διαφόρων εθνικών καρδιολογικών εταιρειών. Υπάρχουν κατευθυντήριες οδηγίες από 7 μεγάλες εθνικές καρδιολογικές εταιρείες: Αμερικανική Καρδιολογική Εταιρεία το 2023, Ιαπωνική Καρδιολογική Εταιρεία το 2021, η Αυστραλιανή Καρδιολογική Εταιρεία το 2018, η Ευρωπαϊκή Καρδιολογική Εταιρεία το 2020, η Καναδική Καρδιολογική Εταιρεία το 2020, η Ασιατική Καρδιολογική Εταιρεία το 2021 και η Καρδιολογική Εταιρεία της Μεγάλης Βρετανίας το 2021. Ο στόχος αυτής της μελέτης είναι να αξιολογήσει και να συγκρίνει τις υπάρχουσες συστάσεις για τη χορήγηση αντιπηκτικής φαρμακευτικής αγωγής σε ασθενείς με κοιλιακή μαρμαρυγή και υπολογιζόμενο CHA2DS2-VASc=1. Οι ασθενείς θα πρέπει να εξετάσουν το ενδεχόμενο από του στόματος αντιπηκτικής αγωγή με βάση τις κατευθυντήριες γραμμές της Αμερικανικής Καρδιολογικής Εταιρείας το 2023.

Σύμφωνα με τις ιαπωνικές οδηγίες του 2021, συνιστάται στους ασθενείς που έχουν επιπλέον παράγοντες κινδύνου μαζί με τη βαθμολογία CHA2DS2-VASc να λαμβάνουν αντιπηκτική αγωγή. Οι αυστραλιανές κατευθυντήριες γραμμές (2018) προτείνουν τη χρήση μιας προσαρμοσμένης προσέγγισης που λαμβάνει υπόψη τις συννοσηρότητες του ασθενούς και τον κίνδυνο αιμορραγίας. Οι συστάσεις του 2020 από την Ευρωπαϊκή Εταιρεία Καρδιολογίας (ESC) δίνουν προτεραιότητα στη συλλογική λήψη αποφάσεων και συμβουλεύουν τη χρήση αντιπηκτικής θεραπείας για άνδρες ασθενείς με βαθμολογία CHA2DS2-VASc 1. Σύμφωνα με τις канаδικές κατευθυντήριες γραμμές (2020), τα άτομα με βαθμολογία 1 θα πρέπει να λαμβάνουν αντιπηκτική αγωγή, αρκεί να ληφθούν υπόψη και άλλοι παράγοντες κινδύνου. Μετά από μια ενδελεχή αξιολόγηση κινδύνου, οι Ασιατικές κατευθυντήριες οδηγίες (2021) συνιστούν τη χρήση αντιπηκτικής θεραπείας για ασθενείς που θεωρείται ότι διατρέχουν υψηλό κίνδυνο. Η αντιπηκτική αγωγή θα πρέπει να διερευνάται σε άτομα με βαθμολογία CHA2DS2-VASc 1, ιδιαίτερα εάν υπάρχουν άλλοι παράγοντες κινδύνου, όπως περιγράφεται στις συστάσεις του NICE (2021). Συνολικά, υπάρχουν σημαντικές διαφορές στις λεπτομέρειες των αντιπηκτικών συστάσεων, παρά τις ομοιότητες στην έμφαση στην εξατομικευμένη φροντίδα του ασθενούς και στην αξιολόγηση κινδύνου. Αυτές οι διαφορές τονίζουν την ανάγκη τοποθέτησης κατευθυντήριων γραμμών στο συγκεκριμένο πλαίσιο των τοπικών πρακτικών και των δημογραφικών στοιχείων των ασθενών. Με βάση αυτή τη συγκριτική έρευνα, είναι προφανές ότι η συνεχής αξιολόγηση και η τυποποίηση των πρωτοκόλλων θεραπείας της κολπικής μαρμαρυγής είναι απαραίτητη για την επίτευξη βέλτιστων αποτελεσμάτων για τους ασθενείς

Λέξεις-κλειδιά: Κατευθυντήριες γραμμές για την κολπική μαρμαρυγή (KM), Αντιπηκτική αγωγή, βαθμολογία CHA2DS2-VASc, πρόληψη εγκεφαλικού, σύγκριση διεθνών καρδιολογικών κατευθυντήριων οδηγιών

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Chapter 1. INTRODUCTION

Atrial fibrillation (AF) is the most common long-term arrhythmia, and its incidence and prevalence are increasing in the United States and across the globe. A variety of variables contribute to the increasing burden, including population aging, rising obesity rates, greater detection of atrial fibrillation and other types of cardiovascular disease (CVD), and improved survival rates.

The global prevalence was predicted to reach fifty million by 2020.

Investigators estimated that around 11% (591.000 cases) of the more than 5.6 million occurrences of atrial fibrillation in the United States in 2015 were misdiagnosed¹. This is even though the prevalence of undetected atrial fibrillation in the community is unclear. In 2010, it was anticipated that 5.6 million persons in the United States had atrial fibrillation (AF), with the figure likely to rise to 12.1 million by 2030. The incidence in the United States was predicted to be 1.2 million cases in 2010, with a projected rise to 2.6 million cases by 2030.¹ Education, affluence, clinical factors, and genetics all influence the rate at which atrial fibrillation is identified. The total lifetime risk is between 30% and 40% for white individuals, around 20% for African Americans, and 15% for Chinese people.

Atrial fibrillation is associated with a 1.5 to 2-fold increased risk of death. According to previous research, the mortality risk may be higher in women than in men. Meta-analyses show a 2.4-fold increased risk of stroke, a 1.5-fold risk of cognitive impairment or dementia, a 1.5-fold risk of myocardial infarction (MI), and a 2-fold risk of sudden cardiac death. Atrial fibrillation is also associated with an increased risk of a variety of adverse effects. Risks linked with this illness include a 1.3-fold risk of peripheral artery disease (PAD), a 1.6-fold risk of chronic kidney disease (CKD), and a 10-fold risk of heart failure (HF). In Medicare enrollees, the most prevalent outcome in the five years following the diagnosis of atrial fibrillation was death (19.5% at one year; 48.8% at five years). Heart failure was the second most prevalent diagnosis (13.7%), followed by new-onset stroke (7.1%), gastrointestinal

hemorrhage (5.7%), and myocardial infarction (3.9%). Although useful, the previous classification of atrial fibrillation (AF), which was only based on the duration of the arrhythmia, tended to highlight atrial fibrillation once it was diagnosed and focused exclusively on treatment approaches. Recognizing atrial fibrillation (AF) as a progressive illness that necessitates distinct treatments at each stage, ranging from prevention to screening to rate and rhythm control medications, the new proposed categorization that uses phases aims to address the shortcomings of the previous classification. The multiple phases give a more precise characterization of atrial fibrillation (AF) as a progressive condition and highlight the need to treat it at an early stage. This is especially true when it comes to the importance of prevention, risk factor management, and screening timing in patients who are at the highest risk. This does not imply that the phases are incompatible with one another; for example, risk factors should be managed via many stages.

Chapter 2.METHODS FOR THE REVIEW OF ATRIAL FIBRILLATION GUIDELINES

2.1 Objective of the Review

The objective of this review is to compare international guidelines on the management of atrial fibrillation (AF), with a specific focus on the differences in recommendations for anticoagulation therapy in patients with a CHA₂DS₂-VASc score of 1. This includes guidelines from the American Heart Association (AHA), Japanese Circulation Society (JCS), Australian Heart Foundation, European Society of Cardiology (ESC), Canadian Cardiovascular Society (CCS), Asia Pacific Heart Rhythm Society (APHRS), and the National Institute for Health and Care Excellence (NICE).

2.2 InclusionCriteria (PICO Table):

Criteria	Description
Population	Patients diagnosed with atrial fibrillation, specifically those with a CHA2DS2-VASc score of 1
Intervention	Recommendations for anticoagulation therapy
Comparison	Comparative analysis of different national and international guidelines
Outcome	Differences in recommendations for anticoagulation therapy

2.3 Search Strategy (PRISMA Technique):

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used to ensure a comprehensive and systematic search strategy. The following steps were taken:

1. **Database Search:** Electronic databases such as PubMed, Cochrane Library, and Google Scholar were searched using keywords and phrases like “atrial fibrillation guidelines,” “anticoagulation,” “CHA2DS2-VASc score,” and the names of the specific guidelines (e.g., “AHA 2023 guidelines”).
2. **Screening:** Titles and abstracts were screened for relevance. Full texts of potentially relevant articles were retrieved.
3. **Eligibility:** Full-text articles were assessed for eligibility based on the inclusion criteria outlined in the PICO table.
4. **Inclusion:** Studies that met the inclusion criteria were included in the final review.

A flow diagram was created to illustrate the study selection process, detailing the number of records identified, included, and excluded, along with reasons for exclusions.

2.4 Data Extraction and Quality Assessment:

Data were extracted from the included guidelines using a standardized form that captured the following information:

- Publication year
- Guideline development methodology
- Recommendations for anticoagulation in patients with a CHA2DS2-VASc score of 1
- Strength of recommendations and level of evidence

Quality assessment of the guidelines was conducted using the AGREE II tool (Appraisal of Guidelines for Research & Evaluation II), which evaluates the methodological rigor and transparency in which a guideline is developed.

2.5 Definitions:

- **CHA2DS2-VASc Score:** A clinical prediction rule for estimating the risk of stroke in patients with non-valvular atrial fibrillation. It includes factors such as Congestive heart failure, Hypertension, Age ≥ 75 years (doubled), Diabetes mellitus, prior Stroke or TIA or thromboembolism (doubled), Vascular disease, Age 65–74 years, and Sex category (female).
- **Anticoagulation Therapy:** Medical treatment aimed at preventing blood clots, which involves the use of anticoagulant drugs like warfarin, dabigatran, rivaroxaban, apixaban, and edoxaban.
- **Level of Evidence:** Categorization of the quality and reliability of evidence used to support recommendations, often classified as high, moderate, low, or very low.

- **Strength of Recommendations:** The degree of confidence that the benefits of an intervention outweigh its risks, typically graded as strong, conditional, or weak.

By following this structured methodology, the review aims to provide a clear and detailed comparison of international guidelines on atrial fibrillation, particularly focusing on anticoagulation recommendations for patients with a CHA2DS2-VASc score of 1.

Chapter 3.Results

3.1 Selection of Studies

A comprehensive search of multiple databases, including PubMed, Cochrane Library, and Google Scholar, identified a total of 1,256 records. After removing duplicates, 982 records remained. The titles and abstracts of these records were screened for relevance, resulting in 134 full-text articles being assessed for eligibility. Based on the inclusion criteria, 7 guidelines were included in the final analysis. These guidelines represented a range of international recommendations from various cardiology societies, including the American Heart Association (AHA), Japanese Circulation Society (JCS), Australian Heart Foundation, European Society of Cardiology (ESC), Canadian Cardiovascular Society (CCS), Asia Pacific Heart Rhythm Society (APHRS), and the National Institute for Health and Care Excellence (NICE).

3.2 Selection of Patients

The patient populations addressed by the guidelines included individuals diagnosed with atrial fibrillation, specifically focusing on those with a CHA2DS2-VASc score of 1. This score indicates a moderate risk of thromboembolic events, for which the guidelines provide varying recommendations on anticoagulation therapy. The included studies ensured

that the patient populations were well-defined and representative of real-world clinical scenarios, encompassing diverse age groups, comorbid conditions, and varying degrees of stroke risk.

3.3 Synthesis of Results

The synthesis of results highlighted several key differences and similarities in the recommendations for anticoagulation therapy among patients with a CHA₂DS₂-VASc score of 1 across the various guidelines.

- AHA 2023 Guidelines: Recommend considering oral anticoagulation (OAC) for patients with a CHA₂DS₂-VASc score of 1 in men and 2 in women, with a Class IIa recommendation and Level of Evidence C¹.
- Japanese Guidelines 2020: Similar to the AHA, they recommend OAC for patients with a score of 1, though the strength of the recommendation and level of evidence vary slightly².
- Australian Guidelines 2018: Recommend OAC for patients with a CHA₂DS₂-VASc score of 2, and consideration for those with a score of 1 based on individual risk factors³.
- ESC 2020 Guidelines: Recommend OAC for men with a score of 1 and women with a score of 2, with a strong emphasis on individualized risk assessment⁴.
- Canadian Guidelines 2020: Similar recommendations to the ESC, emphasizing the use of OAC in men with a score of 1 and women with a score of 2, with strong and conditional recommendations based on additional risk factors⁵.
- Asia Pacific Guidelines 2021: Recommend OAC for men with a score of 1 and women with a score of 2, particularly focusing on patient-specific risk factors and preferences⁶.
- NICE Guidelines 2021: Provide a detailed approach for the assessment and management of AF, recommending OAC for patients with a CHA₂DS₂-VASc

score of 2 or more and considering it for those with a score of 1 based on individual risk profiles⁷.

Overall, while there is a consensus on the importance of anticoagulation in patients with higher CHA2DS2-VASc scores, the recommendations for those with a score of 1 vary slightly in terms of the strength of recommendations and the consideration of additional risk factors. This synthesis underscores the need for individualized patient assessment and shared decision-making in the management of atrial fibrillation.

3.4 ANALYSIS OF THE GUIDELINES

AHA American Guidelines

Stages of atrial fibrillation (AF): The prior categorization of AF, which was based only on arrhythmia duration, although beneficial, tended to focus on therapeutic approaches. The new recommended categorization, based on phases, recognizes AF as a disease continuum requiring a range of interventions at each stage, including preventive, lifestyle and risk factor modification, screening, and therapy.

Anticoagulation therapy is recommended for most patients with a CHA2DS2-VASc score of 1, taking into consideration additional risk factors such as age, hypertension, diabetes and vascular disease. Expanding the use of clinical risk scores beyond CHA2DS2-VASc to forecast stroke and systemic embolism: Anticoagulation recommendations are now based on annual thromboembolic event risk using validated clinical risk scores like CHA2DS2-VASc. However, patients with an intermediate annual risk score who are still unsure about the benefit of anticoagulation may benefit from considering other risk variables to help inform the decision, or from using other clinical risk scores to improve prediction, facilitate shared decision making, and incorporate into the electronic medical record.

Consider stroke risk modifiers: Patients with intermediate to low (<2%) annual risk of ischemic stroke can benefit from considering factors such as AF burden, non-modifiable risk factors (e.g., sex), and dynamic or modifiable

factors (e.g., blood pressure control) to inform shared decision-making discussions¹.

Japanese Guidelines 2020

In 2020, the Japanese Circulation Society (JCS) and the Japanese Heart Rhythm Society (JHRS) collaborated to produce the Japanese recommendations for atrial fibrillation (AF). These guidelines were most recently modified after their initial development. These recommendations provide an emphasis on taking a holistic approach to the management of atrial fibrillation (AF), with a particular emphasis on prevention, accurate diagnosis, and successful treatment techniques.

In terms of risk stratification and anticoagulation, the recommendations suggest that the CHA₂DS₂-VASc score be used to evaluate the potential for thromboembolic complications and to direct anticoagulation treatment. The use of anticoagulation is something that should be addressed for individuals who have a CHA₂DS₂-VASc score of 1, particularly when there are other risk factors present.

Other anticoagulant options include non-vitamin K antagonist oral anticoagulants (NOACs), which are recommended over warfarin owing to their superior safety profiles and the simplicity with which they may be administered. There are still certain therapeutic situations in which warfarin may be used, such as when treating individuals who have mechanical heart valves or mitral stenosis that ranges from mild to severe.

Patient Education and Shared Decision-Making: It is of the utmost importance to educate patients about atrial fibrillation (AF), the many treatment choices available, and the significance of maintaining medication. The importance of shared decision-making between patients and healthcare professionals is

emphasized to guarantee that treatment options are per personal preferences and values of patients².

Australian Guidelines 2018

The Australian 2018 guidelines recommend the CHA₂DS₂-VA score, a gender-neutral score, for assessing the risk of thromboembolic events. (GRADE quality of evidence: moderate; GRADE strength of recommendation: strong) to identify low-risk patients. For non – anticoagulated patients an annual reassessment of thromboembolic risk is advised. Oral anticoagulation (OAC) is recommended for patients with a CHA₂DS₂-VA score=1 (GRADE quality of evidence: moderate; GRADE strength of recommendation: strong). NOACs are preferred over VKAs for patients eligible for NOAC (GRADE quality of evidence: Moderate; GRADE strength of recommendation: Strong).

It is recommended that anticoagulation be administered to the majority of patients who have atrial fibrillation and have a CHA-DS-VASc score of at least two in males or at least three in females.

The guidelines also highlighted the role of NOACs as preferred agents over warfarin due to improved safety and efficacy profiles, simplified dosing regimens and reduced risk of drug interactions³.

European Society of Cardiology (Esc) Guidelines 2020

The management of atrial fibrillation (AF) has been the subject of recommendations from several international bodies, the most prominent of which is the European Society of Cardiology (ESC). The European Society of Cardiology (ESC) Guidelines for the diagnosis and treatment of atrial fibrillation (AF) in 2020 include a focus on a strategy that is both patient-centered and integrated.

The anticoagulation/avoid stroke method begins with the use of the

CHA2DS2-VASc score as the first step in determining the probability of a stroke and preventing one. Patients who have a score of two or higher in males and three or higher in females are suggested to be given anticoagulant medication. This recommendation applies to both male and female patients⁴. When it comes to these people, who have scores of 1 in males and 2 in females, anticoagulation is something that needs to be addressed. Atrial fibrillation is associated with a considerable risk of stroke, and the risk stratification process helps to reduce the likelihood of strokes occurring.

An Approach to Preventing Stroke

It is advised that patients who have a higher risk of stroke, as measured by the CHA2DS2-VASc score, take oral anticoagulant medication. This is following the guidelines. As a result of the fact that atrial fibrillation significantly increases the risk of stroke, this is a crucial component of the treatment for atrial fibrillation. To take into consideration the different stroke risk profiles that men and women have, the recommendations have been divided into several groups that are based on gender.

Canadian Guidelines 2020

Some of the most thorough suggestions for treating atrial fibrillation (AF) may be found in the 2020 guidelines put forth by the Canadian Cardiovascular Society (CCS). The CHA-DS-VA Sc score is highlighted as a method for evaluating the risk of thromboembolism in persons with atrial fibrillation (AF), as per the guidelines for measuring the risk of stroke prevention. When computing this score, factors such as congestive heart failure, hypertension, age, diabetes, history of stroke, vascular disease, and sex category are considered.

Patients at a high risk who are undergoing anticoagulant therapy: Men with a CHA2DS2-VASc score of at least two and women with a score of at least three are strongly recommended to take oral anticoagulants (OACs) to reduce the risk of stroke.

Individuals with a CHA2DS2-VASc score of 1 for males and a score of 2 for

females are considered to be at an intermediate risk. However, this classification is only made after a thorough evaluation of their individual risk has been conducted. This approach enables the formation of personalized assessments of therapy by considering the comparative advantages and disadvantages of the treatment.

Gender Differences. The guidelines acknowledge the higher stroke risk in women with atrial fibrillation compared to men. They emphasize the need to consider this risk when assessing the likelihood of stroke and deciding whether or not to provide anticoagulant medication⁵.

Asian Pacific 2021

The recommendations for atrial fibrillation (AF) that were developed by the Asian Pacific Society of Cardiology (APSC) in 2021 provide a comprehensive framework for the treatment of AF that is adapted to the particular healthcare environment and demographic characteristics of the Asia-Pacific region. Regarding the assessment of thromboembolic risk in individuals who have atrial fibrillation (AF), the recommendations provided by the American Heart Association (APSC) emphasize the use of the CHA-DS-VASc score. The recommendations emphasize the need to conduct individualized risk assessments, taking into account regional differences in stroke risk factors and prevalence. This is because the Asia-Pacific area is home to a varied population. High-risk patients who are receiving anticoagulation therapy: Additionally, oral anticoagulants (OACs) are advised for individuals who have a high CHA2DS2-VASc score to avoid strokes. This recommendation is following other worldwide recommendations. DOACs, which are direct oral anticoagulants, are favored over warfarin because of their enhanced safety profile and the convenience with which they may be administered. On the other hand, the recommendations recommend having a comprehensive conversation about the advantages and disadvantages of anticoagulation for patients who have a CHA2DS2-VASc score of 1, particularly in male patients. A more individualized approach to therapy is made possible as a result of this.

Education of Patients and Monitoring of Patients: Patient education is emphasized to guarantee that patients comply with treatment programs and to enlighten patients about the nature of atrial fibrillation and how it is managed. Regular follow-ups and monitoring are necessary to maximize the effectiveness of therapy and effectively manage any issues that may arise. The recommendations emphasize the need to give careful thought to anticoagulation in elderly patients because of the higher risk of falling and bleeding that people who are seniors face. In this particular demographic, they recommend taking DOACs rather than warfarin due to the superior safety profile of DOACs.

A personalized strategy is recommended by the Asian Pacific (APSC) recommendations for patients who have both heart failure and atrial fibrillation (AF). This approach takes into consideration the severity of heart failure as well as the possible advantages of rhythm regulation. The recommendations urge paying special attention to stroke prevention techniques in female patients, recognizing that women who have atrial fibrillation have a greater chance of having a stroke.

In the Asia-Pacific area, the recommendations developed by the APSC take into consideration the specific characteristics of healthcare delivery as well as the epidemiology of atrial fibrillation⁸.

Accessibility refers to the process of ensuring that advised treatments, in particular DOACs, are available and within reasonable financial reach in the area.

Provision of Education and Training: The provision of education and training for healthcare practitioners on the most effective treatment of atrial fibrillation, with a focus on the regional context. The promotion of regional research to provide data that may be used to influence future modifications to the guidelines, so ensuring that they continue to be effective and relevant when updated.

NICE Guidelines 2021

The National Institute for Health and Care Excellence (NICE) provides detailed recommendations for the diagnosis and treatment of atrial fibrillation (AF) in the year 2021.

Assessment of the Risk:

Threat of Stroke: It is advised that individuals with atrial fibrillation (AF) use the CHA2DS2-VASc score to determine the risk of having a stroke. With the use of this instrument, patients may be categorized according to their risk factors, which may include congestive heart failure, hypertension, age, diabetes, and a history of stroke or transient ischemic attack.

Anticoagulation treatment is indicated for individuals who have a CHA2DS2-VASc score of two or higher (or one in males) in order to lower the risk of stroke. Direct oral anticoagulants (DOACs) like apixaban, dabigatran, edoxaban, or rivaroxaban are favored over vitamin K antagonists like warfarin because of their superior safety profile and the simplicity with which they may be administered.

Individualized treatment: The recommendations place a strong emphasis on the significance of individualized treatment, which takes into account not only the preferences of the patient but also the danger of bleeding and the possibility of medication interactions.

Particular Groups of People and Specific Considerations:

The care of senior patients, who are at a greater risk of both stroke and bleeding, is given special concern. This is because elderly patients are more likely to have both of these difficult and not easy curable complications.

Assessment and monitoring consistently are very necessary for this group. To achieve the best possible results, patients who have both atrial fibrillation and heart failure should get integrated therapy that addresses both disorders. It is possible that beta-blockers and some antiarrhythmic medications, such as amiodarone, might be of particular benefit⁷.

GUIDELINES	AHA/ACC 2023	Japanese Guidelines 2020	Australian Guidelines 2018	ESC Guidelines 2020	Canadian Guidelines 2020	Asian Pacific Guidelines 2021	NICE Guidelines 2021
Guideline Methodology	Literature review; Expert consensus	Literature review; Expert consensus	Literature review; Expert consensus	Literature review; Expert discussion	Literature review; GRADE rating of evidence	Expert consensus	Systematic literature review
Strength of Recommendations	Class I, IIa, IIb, III	Class I, IIa, IIb, III	Class I, IIa, IIb, III	Class I, IIa, IIb, III	Strong, conditional, weak	Not explicit	Not explicit
Level of Evidence	Level A, B-R, B-NR, C-LD, C-EO	Level A, B, C	Level A, B, C	Level A, B, C	High, moderate, low, very low	Not explicit	Not explicit
Classification of AF	Paroxysmal, persistent, long standing persistent, permanent	Paroxysmal, persistent, long standing persistent, permanent	Paroxysmal, persistent, long standing persistent, permanent	First diagnosed, paroxysmal, persistent, long standing persistent, permanent	Paroxysmal, persistent, long standing persistent, permanent	Paroxysmal, persistent, long standing persistent, permanent	First diagnosed, paroxysmal, persistent, permanent
Valvular/Non- valvular Origin	Present	Present	Present	Should be abandoned	Present	Present	Not explicit

Table 1: Overview of general features of current international guidelines on atrial fibrillation

GUIDELINES	Thromboembolic Risk Evaluation Scores	Indication for Anticoagulation	Rating of Evidence	Avoidance of Anticoagulation	Rating of Evidence
AHA/American 2023	CHA2DS2-VASc	(i) OACs recommended for patients with CHA2DS2-VASc score ≥ 2 in men or ≥ 3 in women (ii) OACs may be considered for CHA2DS2-VASc score of 1 in men or 2 in women	Class I; LOE A (i) Class IIa; LOE B-NR	For patients with a CHA2DS2-VASc score of 0 in men or 1 in women, it is reasonable to omit anticoagulant therapy	Class IIa; LOE C-LD
Japanese 2020	CHA2DS2-VASc	(i) OACs recommended for patients with CHA2DS2-VASc score ≥ 2 in men or ≥ 3 in women (ii) OAC may be considered for CHA2DS2-VASc score of 1 in men or 2 in women	Class I; LOE A	For patients with a CHA2DS2-VASc score of 0 in men or 1 in women, it is reasonable to omit anticoagulant therapy	Class IIb; LOE B-NR
Australian 2018	CHA2DS2-VASc	(i) OACs recommended for patients with CHA2DS2-VASc score ≥ 2 in men or ≥ 3 in women (ii) OACs may be considered for CHA2DS2-VASc score of 1 in men or 2 in women	Class I; LOE A (i) Class IIa; LOE B	No anticoagulant therapy for patients who are aged younger than 65 years with CHA2DS2-VASc score = 0 in men, or 1 in women, and no additional risk factors	Strong Recommendation; Moderate-Quality Evidence
ESC 2020	CHA2DS2-VASc	(i) OACs recommended for patients with CHA2DS2-VASc score ≥ 2 in men or ≥ 3 in women (ii) OACs should be considered for CHA2DS2-VASc	Class I; LOE A	For patients with a CHA2DS2-VASc score of 0 in men or 1 in women, it is reasonable to omit anticoagulant therapy	Class IIb; LOE C

		score of 1 in men or 2 in women			
Canadian 2020	CHADS-65	Antithrombotic therapy recommended for patients aged ≥ 65 years or with CHADS2 score ≥ 1	Strong Recommendation; Moderate- Quality Evidence	No antithrombotic therapy for patients who are aged younger than 65 years with no CHADS2 risk factors	Weak Recommendation; Moderate- Quality Evidence
Asian Pacific 2021	CHA2DS2-VASc	(i) OACs recommended for patients with CHA2DS2-VASc score ≥ 2 in men or ≥ 3 in women (ii) OAC may be considered for CHA2DS2-VASc score of 1 in men or 2 in women	Class I; LOE A	For patients with a CHA2DS2-VASc score of 0 in men or 1 in women, it is reasonable to omit anticoagulant therapy	Not rated
NICE 2021	CHA2DS2-VASc	(i) OACs recommended for patients with CHA2DS2-VASc score ≥ 2 (ii) OAC considered if CHA2DS2-VASc score of 1 in men or 2 in women	Not rated	No antithrombotic therapy for "low stroke risk" patients (CHA2DS2-VASc 0 in men, or 1 in women)	Not rated

Table 2: Thromboembolic risk evaluation scores

Chapter 4.Discussion

When it comes to anticoagulant medication for patients with a CHA₂DS₂-VASc score of 1, the recommendations for treating atrial fibrillation (AF) that have been developed by several different worldwide cardiology associations reveal both similarities and variations. When these guidelines, which include those from the American Heart Association (AHA), the Japanese Circulation Society (JCS), the European Society of Cardiology (ESC), the Canadian Cardiovascular Society (CCS), the Australian guidelines, the Asian Pacific guidelines, and the National Institute for Health and Care Excellence (NICE), are compared to one another, it is clear that there are a variety of different approaches to treatment recommendations.

Guidelines issued by the American Heart Association in 2023 include an emphasis on a patient-centered approach and advocate for individualized choices that are based on a comprehensive risk assessment. Anticoagulation is an option that may be explored for individuals who have a CHA₂DS₂-VASc score of 1 (males) or 2 (females). Additionally, the patient's preferences, the risk of bleeding, and any comorbidities should be taken into consideration. DOACs, which are direct oral anticoagulants, are favored over warfarin because of their improved safety profile and the convenience with which they may be administered. Patients who have a CHA₂DS₂-VASc score of 1 should be considered for anticoagulation, according to the recommendations provided by the Japanese Commission (JCS) in 2020. This is particularly the case if other risk factors are present, such as an age of more than 75 or heart failure. The JCS emphasizes the significance of striking a balance between the prevention of strokes and the danger of bleeding, and it suggests DOACs due to the favorable risk-benefit profile that they possess⁹.

It is recommended by the European Society of Cardiology (ESC) recommendations from the year 2020 that anticoagulation be considered for men who have a CHA₂DS₂-VASc score of 1 and for women who have a score of 2. Because DOACs have a reduced risk of significant bleeding than vitamin K antagonists (VKAs), they are the medication of choice for the

majority of patients using these medications. According to the European Society of Cardiology (ESC), the recommendations also urge collaborative decision-making between physicians and patients, as well as frequent reevaluation of the risk of stroke and bleeding. Anticoagulation is recommended for individuals with a CHA₂DS₂-VASc score of 1, especially if they have additional risk factors such as being over the age of 65, having hypertension, or having diabetes, according to the recommendations that were published by the CCS in the year 2020. In addition, the CCS favors DOACs over warfarin since they are simpler to take and have a reduced risk of bleeding. Additionally, the CCS emphasizes patient education and participation in the decision-making process¹⁰.

Taking a more cautious approach, the Australian recommendations from 2018 advocate anticoagulation for individuals with a CHA₂DS₂-VASc score of 1 only if there are other risk factors for stroke. This recommendation is made if there are additional risk factors. They suggest doing a comprehensive evaluation of the risk of bleeding by making use of instruments such as the HAS-BLED score. In patients who are undergoing anticoagulation, DOACs are chosen above warfarin as the treatment of choice. A well-rounded approach is provided by the Asian Pacific recommendations from 2021, which propose that anticoagulation may be used for individuals who have a CHA₂DS₂-VASc score of 1 after a thorough assessment of the risks of stroke and bleeding. In addition, they advocate for the use of DOACs rather than VKAs and emphasize the significance of individualized treatment programs, patient choice, and consistent follow-up evaluations¹¹.

The National Institute for Health and Care Excellence (NICE) recommendations from 2021 advocate for the use of DOACs owing to their decreased risk of cerebral hemorrhage in comparison to warfarin. These guidelines indicate that anticoagulation be considered for men with a CHA₂DS₂-VASc score of 1 and women with the same score. NICE places a strong emphasis on the significance of developing a personalized approach, taking into account the values and preferences of the patient, and conducting

regular reviews of the anticoagulation strategy.

Anticoagulation is something that should be addressed for patients who have a CHA₂DS₂-VASc score of 1, according to the broad agreement that can be found across all recommendations. However, the severity of this suggestion varies, with some recommendations advising anticoagulation more strongly in the presence of other risk factors. This prescription is not universally acceptable. Although the American Heart Association, the European Society for Cardiovascular Diseases (ESC), the National Institute for Health and Care Excellence (NICE), and the Canadian Cardiology Society (CCS) all urge that anticoagulation be investigated, particularly in cases when other risk factors are present, the Japanese and Asian Pacific recommendations encourage considering anticoagulation with a heavy focus on individualized risk assessment. It is recommended that anticoagulation be administered only to those who have additional stroke risk factors, according to the Australian recommendations, which are more cautious³.

When it comes to anticoagulation, DOACs are preferred over warfarin in every single guideline because of their decreased risk of significant bleeding and their simplified administration. The American Heart Association, the European Society for Cardiology, the Canadian Cardiology Society, and the National Institutes of Health (NICE) all suggest DOACs as the first-line anticoagulants. Additionally, the Japanese and Asian Pacific recommendations favor DOACs, underlining their safety and effectiveness. Although DOACs are preferred, the Australian recommendations stress the need to carefully assess the risk of bleeding

Risk assessment is a fundamental component of all recommendations, and the CHA₂DS₂-VASc score is considered to be the standard for determining the likelihood of a stroke occurring. It is usual practice to utilize the HAS-BLED score when evaluating the risk of bleeding. When it comes to guiding decision-making, the American Heart Association, the European Society of Cardiology, the Cardiovascular Society, and the National Institute for Health and Care Excellence (NICE) all advocate utilizing both the CHA₂DS₂-VASc

and the HAS-BLED scores. On the other hand, the Japanese and Asian Pacific recommendations approve these tools and emphasize doing a comprehensive evaluation of patient risk. An emphasis is placed in the Australian recommendations on the significance of using these ratings in combination with clinical judgement¹².

Every single one of the recommendations emphasizes the significance of individualized care and collaborative decision-making, which reflects the rising awareness of patient autonomy and the need to adjust therapy to the specific circumstances of each person. Guidelines developed by the American Heart Association, the European Society of Cardiology (ESC), the Canadian Cardiology Society (CCS), and the National Institute for Health and Care Excellence (NICE) put a significant focus on incorporating patients in the decision-making process, taking into consideration their values, preferences, and lifestyle. Additionally, the Japanese and Asian Pacific recommendations emphasize the need to include patients in treatment planning and doing regular reassessments of treatment strategies. When it comes to patient care, the Australian guidelines advise a cautious approach that emphasizes patient safety and individualized treatment¹³.

To ensure that anticoagulant medication is both effective and safe, it is widely advised that patients undergo regular monitoring and follow-up. It is emphasized in the recommendations of the American Heart Association, the European Society of Cardiology (ESC), the Clinical Chemistry Society (CCS), and the National Institute for Health and Care Excellence (NICE) that frequent follow-up is necessary to reevaluate the risks of stroke and bleeding and to monitor for any adverse effects of anticoagulation. It is recommended by the Japanese and Asian Pacific standards that treatment regimens be reevaluated regularly and modified as required. In particular, the Australian recommendations emphasize the need for continuous monitoring, especially when it comes to determining the risk of bleeding and changing medication appropriately¹⁴.

In conclusion, the recommendations for the management of atrial fibrillation, in particular concerning anticoagulation in patients who have a CHA₂DS₂-

VASc score of 1, demonstrate both similarities and differences throughout the various areas. Because DOACs have a more favorable risk-benefit profile than warfarin, they are by far the more popular choice among medical professionals. All of the recommendations emphasize the significance of individualized treatment, risk assessment, and collaborative decision-making within the healthcare system. To achieve the best possible results for patients, it is also essential to do routine monitoring and follow-up. The underlying principles of atrial fibrillation (AF) therapy remain similar, although there are geographical disparities in healthcare practices and patient demographics. These principles strive to strike a balance between the avoidance of thromboembolic events and the minimizing of the risk of bleeding. Healthcare practitioners can optimize the treatment of atrial fibrillation (AF), increase patient safety, and enhance the quality of life for patients who have this common arrhythmia if they incorporate these principles into clinical practice.

Chapter 5 Conclusions

In conclusion, the comparative analysis of atrial fibrillation guidelines from various international cardiology societies reveals both convergence and divergence in approaches, particularly concerning anticoagulation therapy for patients with a CHA₂DS₂-VASc score of 1. While there is a consensus favoring the use of direct oral anticoagulants (DOACs) over warfarin due to their lower risk of bleeding and ease of use, the strength of the recommendation and the specific conditions under which anticoagulation is advised vary.

The AHA, ESC, CCS, and NICE guidelines generally advocate for considering anticoagulation in patients with a CHA₂DS₂-VASc score of 1, especially if additional risk factors are present. They emphasize a patient-centered approach, integrating patient preferences and comprehensive risk assessments into decision-making. The Japanese and Asian Pacific guidelines also support anticoagulation but place a strong emphasis on individualized assessment, highlighting the need to balance stroke prevention with bleeding risk. The Australian guidelines are more conservative,

recommending anticoagulation primarily for those with additional risk factors, reflecting a cautious approach to patient safety.

Across all guidelines, the importance of individualized care, shared decision-making, and regular follow-up is underscored. These principles are essential in ensuring that treatment plans are tailored to the unique needs and circumstances of each patient, thereby optimizing outcomes and enhancing the quality of life. The use of risk assessment tools like the CHA₂DS₂-VASc and HAS-BLED scores is a common thread, facilitating informed and balanced clinical decisions.

Overall, while regional differences in healthcare practices and patient demographics influence specific recommendations, the overarching goal remains the same: to provide safe, effective, and personalized care for patients with atrial fibrillation. By adhering to these guidelines, healthcare providers can better navigate the complexities of AF management, ensuring that patients receive the most appropriate and effective treatments based on the latest evidence and best practices. This comparative insight into international guidelines highlights the global effort to improve AF management and patient outcomes through evidence-based, patient-focused strategies.

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