

## Underutilization of Warfarin Therapy in Elderly Patients with Atrial Fibrillation – Fear or False Sense of Security!

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### Abstract

**Background:** Under utilization of warfarin in elderly patients with atrial fibrillation (AF) has been recognized as a significant health care issue. This study examines the rate and reasons for warfarin underutilization in elderly patients with AF at the Kansas City Veterans Affairs Medical Center.

**Methods:** Retrospective study reviewing electronic medical records of all patients aged 65 and older with the diagnosis of atrial fibrillation. Patients on warfarin were excluded. Reasons for not using warfarin were extracted by reviewing the electronic medical record. Anticoagulation indications for these patients were determined based on the ACC/AHA/ESC 2006 Guidelines for the Management of Patients with Atrial Fibrillation.

**Results:** Warfarin was not used by 407 patients (25%) with known AF. Average age was 79±6.2 years. 60% of patients had persistent or permanent AF. Prevalence of risk factors for thromboembolism included hypertension (74%), heart failure or ejection fraction of <40% (21%), diabetes (27%) and coronary artery disease (48%). CHADS (2) scores were documented in the charts less than 1% of the times. Only 11 patients had CHADS (2) score of 0 and 70 had a score of 1. A class I or IIa indication for warfarin therapy was present in 298 (73%) of patients. Return to sinus rhythm (37%) was the most common reason for not using warfarin. In 30% of cases the reason not to use warfarin was not addressed. Other reasons not to use warfarin included fear of falls (7%), prior head or GI bleed (14%), patient refusal & noncompliance (12%). History of CVA or TIA was documented in 12% of patients.

**Conclusions:** Underutilization of warfarin in elderly patients with atrial fibrillation remains a common problem despite their high risk for thromboembolic events. A false sense of security about the paroxysmal nature of AF, lack of proper insight about stroke risk (CHADS (2)), and fear of bleeding are the most common reasons for non use of warfarin.

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## Introduction

### Background

Atrial fibrillation (AF) is the most common sustained arrhythmia in the elderly. Its prevalence increases with age. It is estimated to affect over 4 percent of the population above the age of 60.<sup>1,2</sup> Epidemiologic studies show AF to be responsible for approximately 15% of strokes and associated with decreased quality of life.<sup>3</sup> Underutilization of warfarin in elderly is a common problem ranging up to 30-60 %<sup>4,5,6,7,8,9,10,11,12</sup> and is associated with an increased risk of stroke resulting in disability and significant cost.<sup>13</sup> Physicians' overestimating the chance of bleeding is another factor contributing to the underuse of warfarin.<sup>14</sup> Elderly can require less warfarin to keep their INR in therapeutic range<sup>15,16</sup> and not paying attention to this may increase their chance of bleeding. Study shows that overall age is not a factor for increasing complications with warfarin<sup>17</sup> but a history of falls, a history of bleeding within the previous year and an inability to comply with therapy were rated as important barriers to use of warfarin by 64%, 55% and 53% of physicians.<sup>18</sup> Although neurologists and internists are more involved in the care of patients with stroke, they prescribe warfarin less frequently than cardiologists.<sup>19</sup> The Kansas City Veterans Affairs Hospital (KCVA) is a tertiary care center in the Midwest United States with large population of inpatients and outpatients. It is an academic teaching center affiliated with the University of Kansas School of Medicine. Pharmacists run an anticoagulation clinic and adjust the dose of warfarin for all patients as treated. Although under use of warfarin in atrial fibrillation is well recognized,<sup>4-12</sup> this study was designed to provide further insight for reasons of warfarin underutilization in the elderly. The electronic medical record of the VA hospital facilitated data base searches to identify subjects for this study.

### Methods and materials

All patients, 65 years of age or older with atrial fibrillation between 1996 and 2006 were included in this study. Patients who were taking warfarin were excluded. The electronic records of the remaining AF patients were reviewed individually.

Demographic data, reasons for stopping or not starting warfarin, and concomitant co-morbidities were extracted. Anticoagulation indications for these patients were assessed based on the ACC/AHA/ESC 2006 Guidelines for the Management of Patients with Atrial Fibrillation, this included class I indications based on CHADS2 scores, as well as class IIa indications including CAD, female gender, or age 65 to 74 years. The study and the waiver of consent were approved by the Institutional Review Board and the Human Subject Committee.

### Statistical Analysis

Categorical variables are expressed as frequencies and percentages. The chance that a patient with atrial fibrillation was not receiving warfarin was analyzed by contingency table. Chi square was used to compare discrete data. A P value less than 0.05 was considered significant.

### Results

One thousand six hundred and thirty five (n=1635) patients 65 or older had a diagnosis of atrial fibrillation. A total of 407 patients (25% of total) were not using warfarin and were included in the study. Their ages ranged from 65 to 93 year old with an average age of 79 + 6.2 years. Documentation of the type of AF was found in only 20% of charts, of them 40% of them had paroxysmal atrial fibrillation and the remainder had persistent or permanent AF. A diagnosis of CVA or TIA was present in 47 patients (12%), hypertension in 303 patients (74%), heart failure or impaired systolic LV function (LVEF <40%) in 85 patients (21%), diabetes in 111 patients (27%), and coronary artery disease in 195 patients (48%). Only 37 patients (9%) did not have a history of CVA, TIA, hypertension, DM, or CAD (Table- 1). Frequency of CVA/TIA was 7.1% in 65-69 age group and 11.7% in 85 years of age and higher.

### Discussion

In the elderly, atrial fibrillation is the single most important cause of stroke. The risk of stroke is increased at least 6-fold in subjects with atrial fibrillation<sup>22</sup> and attributable risk of atrial fibrilla-

tion for stroke approaches 30%. There are several medications that currently are used for reducing chance of thromboembolism in patients with atrial fibrillation. The most common of them are aspirin and warfarin which can decrease chance of stroke.<sup>23</sup> Previous studies showed warfarin was superior to aspirin in decreasing thromboembolic events.<sup>24,25</sup> Substitution of aspirin for warfarin may be considered in situations when there is contraindication to warfarin or in very low risk patients.<sup>20</sup> In our study, only 4 patients had allergy to warfarin, 39 patients refused taking warfarin, and non-compliance with warfarin was documented in 10 patients. All of these patients should have at least been considered for aspirin therapy.

There are some data that suggest an increased risk of intracranial hemorrhage<sup>24,26,27</sup> or mortality due to intracranial hemorrhage<sup>28</sup> in elderly patients on warfarin. In addition there is data that shows warfarin can decrease ischemic stroke<sup>24,29</sup>

and death.<sup>28,29,30</sup> This is probably because ischemic strokes related to atrial fibrillation tend to be more severe in comparison to other types of strokes.<sup>31</sup> In this study only 6 patients had some kind of CNS bleeding. At the same time, presence of CVA or TIA puts a patient in a high risk category for another stroke. Current guidelines emphasize the use of warfarin in this subset of patients.<sup>20</sup> Nevertheless, in our study, 47 patients with a prior diagnosis of CVA or TIA were not on warfarin.

Conversion of atrial fibrillation to sinus rhythm can happen in different situations including recurrent or paroxysmal atrial fibrillation which may be associated with established disease states. In this study, 77 patients (51%) were not taking warfarin because of being in sinus rhythm. A significant number of these patients (62/77) had a CHADS 2 score of more than 2. Presence of sinus rhythm during one of the follow up visits should not preclude physicians from offering continued anticoagulation therapy in patients of this age group who are

**Table 1**

Age distribution of patients with atrial fibrillation not on warfarin and concomitant co-morbidities.

Age Group	CAD Number of Patients/Percent within the same age group	CHF or LVEF <40% Number of Patients/Percent within the same age group	DM Number of Patients/Percent within the same age group	HTN Number of Patients/Percent within the same age group	CVA/TIA Number of Patients/Percent within the same age group
65-69	10 (35.7%)	4 (14.3%)	9 (32.1%)	24 (85.7%)	2 (7.1%)
70-74	27 (34.2%)	13 (16.5%)	29 (36.7%)	58 (73.4%)	7 (8.9%)
75-79	51 (54.3%)	21 (22.3%)	CABGx4/ MVR	71 (75.5%)	10 (10.6%)
80-84	69 (53.5%)	32 (24.8%)	25 (19.4%)	97 (75.2%)	19 (14.7%)
85 and above	38 (49.4%)	15 (19.5%)	16 (20.8%)	53 (68.8%)	9 (11.7%)
Total	195 (47.9%)	85 (20.9%)	111 (27.2%)	303 (74.4%)	47 (11.5%)

usually at high risk for systemic thromboembolism. The newest practice guidelines consider anti-thrombotic use as a Class-IIa indication in patients with any form of atrial fibrillation (paroxysmal or permanent).<sup>20</sup> Furthermore, data from AFFIRM and RACE trials indicate that the pharmacological or electrical cardioversion to sinus rhythm in patients with at-risk CHADS-2 scores, does not reduce the risk of stroke and is not an indication to discontinue anticoagulation.

Data from this study reveal that use of warfarin dramatically drops after 85 years of age. Previous studies have shown that the risk of thromboembolic disease continues to increase as age goes up, as is seen in this study as well. Warfarin has been shown to be safe in the elderly patients even in patients 90 years of age or older when INRs are kept at target range of 2.0-3.0.<sup>32</sup> Risk of falls was documented as the reason for not taking warfarin in 7.6% of patients who were not taking warfarin for atrial fibrillation. One study that reviewed 49

published anticoagulation trials of patients with atrial fibrillation found that intracranial hemorrhages were uncommon. In fact the calculated risk of subdural hematoma from falling, according to that study, is so small that a person with an average risk of stroke from AF (5 percent/year) would have to fall approximately 300 times in a year for the risk of anticoagulation to outweigh its benefits.<sup>33,34</sup>

The nationwide trend of the use of anticoagulation in AF patients is not quite clear at this point in time. Use of warfarin in patients with atrial fibrillation increased from 7% in 1980 to 32% in 1993.<sup>35</sup> A study on Medicare beneficiary patients revealed that warfarin use for elderly patients with atrial fibrillation increased from 24.5% in 1992 to 56.3% in 2002.<sup>36</sup> In our study, 75% of patients were using warfarin. But at least 10% of patients with atrial fibrillation who met class-I indication for warfarin use were not on that medication.

**Table 2**

Age distribution of patients with atrial fibrillation not on warfarin and concomitant co-morbidities.

Cause of stopping or not restarting warfarin	Number of Patients	Percent (total=407)
Sinus Rhythm @ follow up	150	36.9
Patients Refused	39	9.6
75-79	31	7.6
History of GI Bleeding	26	6.3
History of CNS Bleeding	6	1.4
History of Bleeding (Others)	15	3.7
Patient Noncompliance	10	2.5
Physicians Communication Problem	10	2.5
Contraindications	4	1
Unknown (Not documented)	108	26.5
Others	10	2.5

Despite several advantages of electronic medical record in the VA system and access of health care providers to the patient's health data in a short fraction of time, still 2.5% of subjects were not receiving warfarin due to communication errors. We could not find another study that looked at the same problem in subjects with atrial fibrillation. And it also shows that VA's electronic system has potential for improvements if it can alert health care providers for these errors.

## Study Limitations

This study was performed retrospectively by using medical records on patients with a documented diagnosis of atrial fibrillation. We did not examine the accuracy of the diagnosis. Incomplete documentation poses some limitations on data interpretation as well. We did not include INR values in this study which may reflect patient

compliance with the medication and follow up. Also we did not include aspirin in our record review since documentation of its use was expected to be significantly less accurate since most VA patients buy aspirin over the counter. Only 5 patients were female which represents a typical VA population. Gender does not change Class-I indication for warfarin use but has a small role in Class-IIa indications.<sup>20</sup>

## Conclusions

Underutilization of warfarin in elderly patients with atrial fibrillation remains a common problem despite their high risk for thromboembolic events. A false sense of security about the paroxysmal nature of atrial fibrillation, lack of proper insight about stroke risk (CHADS<sub>2</sub>), and fear of bleeding are the most common reasons for non use of warfarin.

**Table 3** Age distribution of CHADS(2) scores (number of subjects and percentage in each age group)

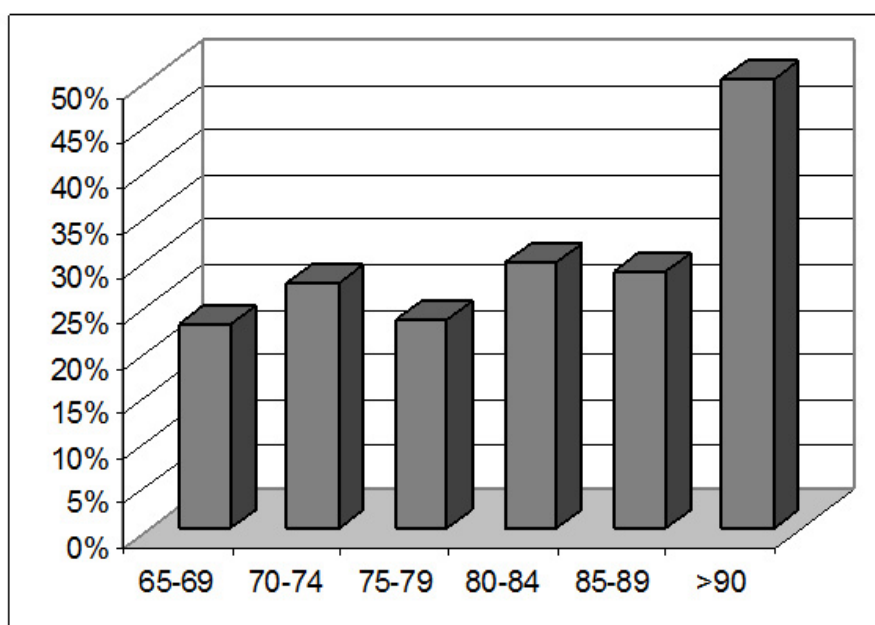
CHAD(2) Scores	0	1	2	3	4	5	6	Average score	Total number of patients
65-69	3 (10.7%)	13 (46.4%)	8 (28.6%)	4 (14.3%)	0	0	0	1.46	28
70-74	11 (13.9%)	37 (46.8%)	22 (27.8%)	5 (6.3%)	2 (2.5%)	2 (2.5%)	0	1.44	79
75-79	0	14 (14.9%)	33 (35.1%)	32 (34%)	12 (12.8%)	3 (3.2%)	0	2.54	94
80-84	0	15 (11.6%)	62 (48.1%)	34 (26.4%)	11 (8.5%)	6 (4.7%)	1 (0.8%)	2.49	129
85-89	0	12 (19%)	31 (49.2%)	12 (19%)	5 (7.9%)	3 (4.8%)	0	2.3	63
>89	0	2 (14.3%)	6 (42.9%)	3 (21.4%)	2 (14.3%)	1 (7.1%)	0	2.57	14
Total	14 (3.4%)	93 (22.9%)	162 (39.8%)	90 (22.1%)	32 (7.9%)	15 (3.7%)	1 (0.2%)	2.2	407



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**Figure 1:** The percentages of patients with atrial fibrillation not on warfarin per total number of patients with the same diagnosis at the same age.



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