Anticoagulation Quality Assessment and Risk Evaluation in Patients with Nonvalvular Atrial Fibrillation

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Background

- Atrial fibrillation (AF) can increase stroke risk by 5-fold.[1] Nonvalvular atrial fibrillation (NVAF) is AF in the absence of moderate-to-severe mitral stenosis or an artificial heart valve.[2]
- A CHA_2DS_2-VASc score is used to predict thromboembolism risk in NVAF patients; as the score increases, patients are at higher stroke risk. It contains seven parameters: age, sex, and histories of congestive heart failure, hypertension, diabetes mellitus, stroke, and vascular disease. Age ≥75 years and stroke are each worth 2 points.[2,3]
- According to a 2019 AHA/ACC/HRS guideline, direct-acting oral anticoagulants (DOACs), including dabigatran, rivaroxaban, apixaban, and edoxaban, are recommended over warfarin in NVAF patients with CHA_2DS_2-VASc scores ≥2 in men or ≥3 in women.[3]
- A CHA_2DS_2-VASc score <2 in men or <3 in women indicates that further risk assessments, such as individual bleeding risk, are necessary to determine the benefit and harm of initiating DOACs.[4]

Objective

- To identify appropriate anticoagulant (DOAC or warfarin) utilization based on NVAF guidelines using CHA_2DS_2-VASc score to assess stroke risk, which was calculated via claims information from a health maintenance organization (HMO) in western New York (WNY).

Methods

- This is a retrospective study of medical and pharmacy claims at a 300,000-life HMO covering 8 counties in WNY.
- Patients were included in the data set if they had an ICD-10 code for NVAF/likely NVAF from 3/1/2020 to 2/28/2021.
- Patients were excluded if they had an ICD-10 code for AF likely due to a valvular cause coded from 3/1/2019 to 2/28/2021.
- Claims information included patient age, gender, line of business, NVAF ICD-10 code, most recent antithrombotic medication date filled between 3/1/2021 and 6/28/2021, generic product identifier name and number, and ICD-10 codes corresponding with the other five CHA_2DS_2-VASc parameters coded from 3/2019 to 6/2021.
- Men and women have separate thresholds for anticoagulation therapy recommendations, therefore CHA_2DS_2-VASc scores were normalized.
- Microsoft Excel® was used to analyze data. Social Science Statistics online calculator was used to convert z-scores to p-values.[5]

Results

General Patient Characteristics

Patients in data set = 5611	n (%)
Demographics	
Female	2705 (48.2%)
Age <65	675 (12.0%)
Age 65-74	1574 (28.1%)
Age ≥75	3362 (59.9%)
Other CHA_2DS_2-VASc parameters	
Congestive heart failure (CHF)	1616 (28.8%)
Hypertension (HTN)	4951 (88.2%)
Diabetes mellitus (DIAB)	1844 (32.9%)
Prior stroke (Stroke)	1039 (18.5%)
Prior vascular disease (Vasc)	3296 (58.7%)
CHA_2DS_2-VASc score distribution	
0/1*	140 (2.5%)
1/2*	292 (5.2%)
≥2/3*	5179 (92.3%)

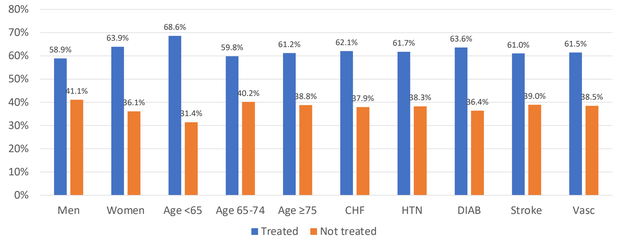
*Female gender is assigned 1 point in CHA_2DS_2-Vasc scoring; male gender is assigned 0 points. Males score (x) were grouped with females score (x+1) to normalize by other parameters.

Percent of Patients on Anticoagulant Therapy, Full Study Population

Parameter		% on DOAC/ warfarin	Between-group p-value
Sex	Male	56.1%	<0.001
	Female	62.2%	
Age	<65 years	49.0%	<0.001
	≥65 years	60.4%	

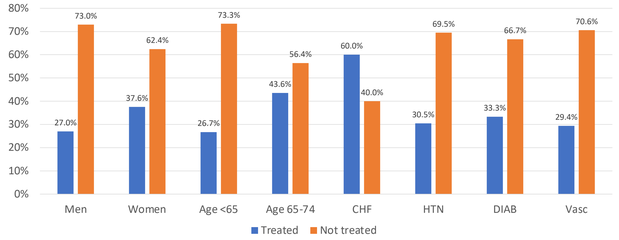
- Females and older patients were more likely to be on therapy.
- In addition, patients with hypertension (p<0.001), diabetes mellitus (p<0.001), vascular disease (p<0.001), and congestive heart failure (p=0.003) were more likely to be on anticoagulant therapy with either a DOAC or warfarin than their counterparts who did not have each respective disease state.

Characteristics of Treated vs Untreated Patients with CHA_2DS_2-VASc Scores of 2/3 or Higher



- In this population, women were more likely to be on anticoagulation therapy than men (p<0.001).
- Men 65 years of age and older were more likely to be on anticoagulation therapy compared to younger men (p=0.008).
- Patients with hypertension were more likely to be on anticoagulation therapy compared to patients without hypertension (p=0.032).
- Patients with diabetes were more likely to be on anticoagulation therapy than patients without diabetes (p=0.014).

Characteristics of Treated vs Untreated Patients with CHA_2DS_2-VASc Scores of 1/2 or Lower



- In this population, women were more likely to be on anticoagulation therapy compared to men (p=0.021).
- Women between 65 and 74 years of age were more likely to be on anticoagulant therapy than younger women (p<0.001; patients 75 years of age or older could not be in this subset based on scoring).

Limitations

- Bleeding risk (HAS-BLED, ATRIA, etc.) could not be calculated using the data that was pulled.
- Incomplete/incorrect coding would limit the accuracy of the data set.
- INR data was not available for patients on warfarin; therefore, it is uncertain if patients were on optimal anticoagulation therapy.

Conclusions

- Over a third of patients in the data set with high stroke risk based on CHA_2DS_2-VASc scores may not be on therapy that could substantially reduce their risk of stroke. Likewise, some patients in the data set may be receiving anticoagulation therapy that could be reasonably omitted per guidelines.
- Female patients, patients 65 years of age or older, and patients with hypertension or diabetes were more likely to be anticoagulated.
- Information from this study will help to guide the HMO on next steps both from a population standpoint (e.g., physician education on NVAF guidelines and optimal anticoagulation strategies) and an individual patient standpoint (e.g., medical therapy management outreach to patients, their caregivers, and their physicians).

References

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