Rates of Oral Anticoagulation Use, While Improving Over Time, Remain Low Among Hospitalized Patients with Atrial Fibrillation

Authors: Sean D. Pokorney, MD, MBA; Christopher B. Granger, MD; Kevin J. Anstrom, PhD; Eva Kline-Rogers, NP; Mark J. Alberts, MD; Gerald V. Naccarelli, MD; Peter Berger, MD; John A. House, MS; Ujjwala Vijapurkar, PhD; Jennifer Davidson, DO; Bimal R. Shah, MD, MBA; Elaine M. Hylek, MD, MPH

QUANTUM AF

janssen | PHARMACEUTICAL COMPANIES OF Johnson & Johnson

Introduction

- Atrial fibrillation (AF) is the most common arrhythmia in the world[1]
- Incidence of stroke in AF is approximately 5% per year[2]
- Oral anticoagulants (OAC) reduce stroke risk in patients with AF by up to 65%[4]
- OAC use is recommended for patients with AF and a CHA_2DS_2-VASc score ≥2 by the AHA/ACC/HRS guidelines for management of AF[3]
- Outpatient analyses identified an underuse of OACs in patients with AF; only approximately half of AF patients with guideline indications for OAC being untreated[5]
- It has been previously shown that fewer than 50% of patients admitted to the hospital with a primary or secondary diagnosis of AF and risk factors for stroke are discharged on OAC[6]
- Oral anticoagulation underuse is a public health concern, as there are preventable strokes causing death and disability, and there is a need to assess treatment trends in OAC use over time
- **Objective: to explore the temporal trends of OAC use at discharge for patients hospitalized with AF and at risk for stroke**

Methods

- Quarterly data from the Premier Healthcare Database (representing 20% of hospital discharges across the U.S.) from Q1 2011 through Q2 2015 were included[7]
- Patients were classified as having AF only if they had a primary (14% of included patients) or secondary (86% of included patients) admission diagnosis of AF, including paroxysmal, persistent, or permanent (ICD-9 code 427.31)
- Inclusion criteria: patients with age ≥ 40 years, admitted between January 2010 and June 2015, with CHA_2DS_2-VASc score ≥2, and length of stay (LOS) >1 day
- Exclusion criteria: history of heart transplant or mechanical heart valve replacement; any bleed during admission; open heart, brain, or spinal surgery; and discharge status of left against medical advice, hospice, transfer to another acute care facility, or expired
- Primary outcome: trends over time in warfarin and non-vitamin K antagonist oral anticoagulant (NOAC) use (apixaban, dabigatran, edoxaban, or rivaroxaban) at discharge in hospitalized patients with AF
- The proportion of patients administered aspirin and/or P2Y12 antagonist antiplatelet agent (clopidogrel, prasugrel, ticagrelor) with or without OAC use was also evaluated

Results

Table 1: Baseline Patient Characteristics

	Patients Not on OAC		Patients on OAC	
	Q1 2011 n = 50239	Q2 2015 n = 45242	Q1 2011 n = 36830	Q2 2015 n = 46028
Age, years, median (25th, 75th)	80.0 (71.0, 86.0)	78.0 (69.0, 86.0)	77.0 (69.0, 84.0)	77.0 (68.0, 84.0)
Age				
< 55	1708 (3.4%)	1827 (4.0%)	1347 (3.7%)	1750 (3.8%)
55-64	4520 (9.0%)	4886 (10.8%)	3963 (10.8%)	5381 (11.7%)
65-74	10657 (21.2%)	11165 (24.7%)	9330 (25.3%)	12702 (27.6%)
75-84	17067 (34.0%)	14268 (31.5%)	14116 (38.3%)	16176 (35.1%)
≥ 85	16287 (32.4%)	13096 (28.9%)	8074 (21.9%)	10019 (21.8%)
Sex				
Female	28004 (55.7%)	23912 (52.9%)	19153 (52.0%)	23735 (51.6%)
Male	22235 (44.3%)	21330 (47.1%)	17677 (48.0%)	22293 (48.4%)
Race (Non-Caucasian)	10828 (21.6%)	7242 (16.0%)	7810 (21.2%)	7478 (16.2%)
Urban Setting	43450 (86.5%)	38309 (84.7%)	31911 (86.6%)	39720 (86.3%)
Teaching Hospital	19897 (39.6%)	17128 (37.9%)	15124 (41.1%)	18107 (39.3%)
Heart Failure	24818 (49.4%)	22149 (49.0%)	19912 (54.1%)	26322 (57.2%)
Hypertension	43682 (86.9%)	41018 (90.7%)	32185 (87.4%)	42186 (91.7%)
Diabetes	19273 (38.4%)	18519 (40.9%)	15551 (42.2%)	20749 (45.1%)
Vascular Disease/PAD	7694 (15.3%)	7650 (16.9%)	5605 (15.2%)	7751 (16.8%)
History of Stroke/TIA	9113 (18.1%)	9425 (20.8%)	6784 (18.4%)	9861 (21.4%)
Chronic Kidney Disease	15777 (31.4%)	15271 (33.8%)	10775 (29.3%)	15700 (34.1%)
Dementia	9305 (18.5%)	7643 (16.9%)	3762 (10.2%)	4748 (10.3%)
History of Falls	8361 (16.6%)	9341 (20.6%)	4185 (11.4%)	6780 (14.7%)
Length of Stay	4.0 (3.0, 7.0)	4.0 (3.0, 7.0)	4.0 (3.0, 7.0)	4.0 (3.0, 6.0)
CHA_2DS_2-VASc Score	4.0 (3.0, 5.0)	4.0 (3.0, 5.0)	4.0 (3.0, 5.0)	4.0 (3.0, 5.0)
Any Aspirin Use	25506 (50.8%)	21950 (48.5%)	14941 (40.6%)	17565 (38.2%)
Any P2Y12 Antagonist Use	141 (0.3%)	87 (0.2%)	55 (0.1%)	68 (0.1%)
Any Aspirin + P2Y12 Use	569 (1.1%)	758 (1.7%)	195 (0.5%)	301 (0.7%)

Figure 1: Geographic Distribution of Hospital Admissions for AF by Region within the Premier Healthcare Database

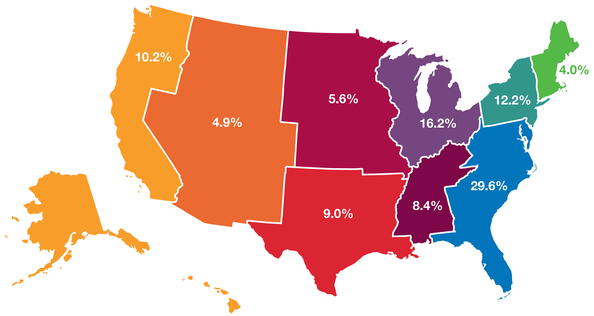


Figure 2: Temporal Trends in Percentage of Utilization of Oral Antithrombotics in Hospitalized Patients with Atrial Fibrillation

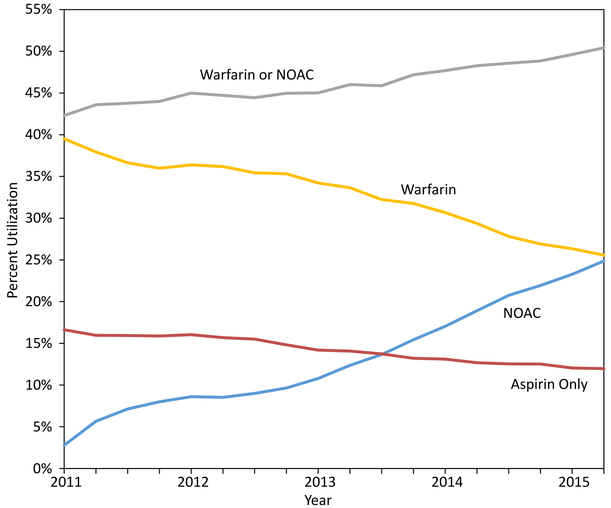


Figure 3: Percentage of Patients Treated with OAC by Hospital Characteristics

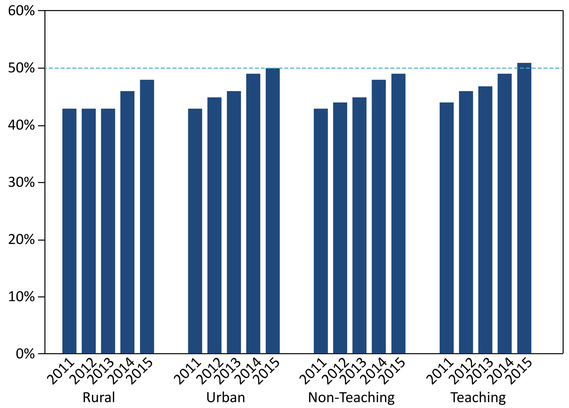
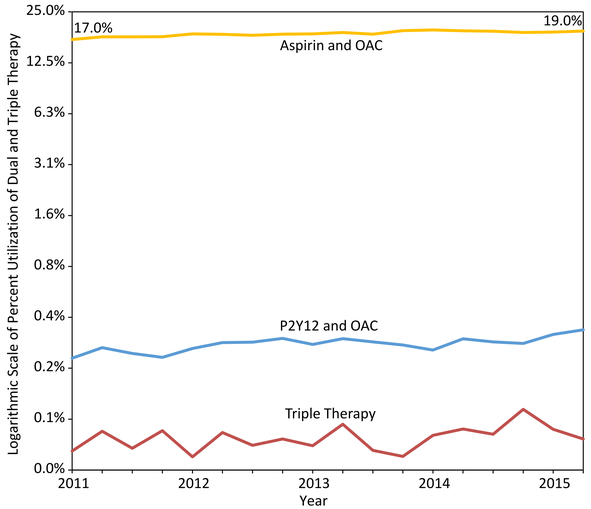


Figure 4: Trends in Antiplatelet Use in Combination with OAC



Limitations

- Given that the data were from an administrative database, we were not able to validate the clinical diagnosis of AF
- Unable to determine and incorporate patient refusal despite adequate education and understanding
- The data represent OAC inpatient use, and may not represent outpatient medication fills or adherence
- Long-term stroke prevention was not evaluated

Conclusions

- The proportion of AF patients treated with OAC for stroke prevention increased by 2% per year: from 42% in 2011 to 50% in 2015
- Nonetheless, as of 2015, only 1 in 2 patients at risk for stroke received OAC at discharge
- Patients not on OAC tended to be older and more likely to have had a history of falls or dementia
- Trends in OAC use were similar across a variety of hospital characteristics
- The use of aspirin in combination with OAC increased from 17% in 2011 to 19% in 2015, while the use of aspirin only decreased over the same period
- Further studies are needed to understand the reasons for the low rates of use of OACs in hospitalized AF patients at risk for stroke and to assess the prescribing trends over time
- Initiatives to increase guideline-directed stroke prevention in AF are needed
- Optimizing AF care during and after a hospitalization is an important goal to improve the care of patients and reduce stroke risk

References

1. Go AS, Mozaffarian D, Roger VL, et al. Heart disease and stroke statistics--2014 update: a report from the American Heart Association. *Circulation*. Jan 21 2014;129(3):e28-e292.
2. Wolf PA, Abbott RD, Kannel WB. Atrial fibrillation as an independent risk factor for stroke: the Framingham Study. *Stroke; a journal of cerebral circulation*. Aug 1991;22(8):983-988.
3. January CT, Wann LS, Alpert JS, et al. 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation. *Journal of the American College of Cardiology*. 2014;64(21):e1-e76.
4. Hart RG, Pearce LA, Aguilar MI. "Meta-analysis: antithrombotic therapy to prevent stroke in patients who have nonvalvular atrial fibrillation." *Annals of internal medicine* 146.12 (2007): 857-867.
5. Oldgren J, Healey JS, Ezekowitz M, Commerford P, Avezum A, Pais P, Zhu J, Jansky P, Sigamani A, Morillo CA, Liu L, Damasceno A, Grinvalds A, Nakamya J, Reilly PA, Keltai K, Van Gelder IC, Yusufali AH, Watanabe E, Wallentin L, Connolly SJ, Yusuf S; RE-LY Atrial Fibrillation Registry Investigators. Variations in cause and management of atrial fibrillation in a prospective registry of 15,400 emergency department patients in 46 countries: the RE-LY Atrial Fibrillation Registry. *Circulation*. 2014;129:1568-76.
6. Pokorney SD, Hylek EM, Fastenau J, Davidson J, Damaraju CV, Shah BR, James RA, House JA, Granger CB. Low Rates of Oral Anticoagulation Use Among Patients Hospitalized with Atrial Fibrillation and at High Risk for Stroke. *Circulation*. 2016;134:A17636.
7. https://www.premierinc.com/transforming-healthcare/healthcare-performance-improvement/premier-research-services/

Funding and Disclosures

This research was supported by Janssen Scientific Affairs, LLC.

SDP reports research grant support from Boston Scientific, Gilead, and FDA; consulting support from Boston Scientific and Medtronic. CBG reports research grant support from Armetheon, AstraZeneca, Boehringer-Ingelheim, Bristol Myers Squibb, Daiichi Sankyo, FDA, GlaxoSmithKline, Janssen Pharmaceuticals, The Medicines Company, Medtronic Foundation, Novartis, and Pfizer; consulting advisory board support from AstraZeneca, Bayer, Boehringer-Ingelheim, Boston Scientific, Bristol Myers Squibb, Daiichi Sankyo, Eli Lilly, Gilead, GlaxoSmithKline, Hoffman LaRouche, Janssen Pharmaceuticals, The Medicines Company, Medtronic Inc, NIH, Novartis, Pfizer, and Version. EKR reports consulting/advisory board support from Janssen. MJA reports speaking and/or consulting honoraria from Bristol Myers Squibb, Pfizer, Janssen, Daiichi Sankyo, Boehringer-Ingelheim. GVN reports consulting/advisory board support from Janssen. PB reports consulting/advisory board support from Janssen. JH reports significant salary from Premier Research. UV reports significant salary from Janssen Scientific Affairs, LLC. JD reports significant salary from Janssen Scientific Affairs, LLC. BRS reports significant salary from Premier Research. EMH reports consulting/advisory board support from Boehringer-Ingelheim, Bayer, Bristol Myers Squibb, Daiichi, Janssen, Medtronic, Pfizer, and Portola.

Acknowledgments

The authors wish to thank the QUANTUM AF Steering Committee for their contributions towards this research.

PRESENTED AT ACC.17; March 17-19, 2017; Washington, DC.