Utilization patterns of Direct Oral Anticoagulants in Medicare Beneficiaries with Cancer and Non-valvular Atrial Fibrillation

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BACKGROUND

- Individuals with cancer are at increased risk of atrial fibrillation (AF) and associated stroke and bleeding [1-2].
- Major clinical trials have shown non-inferiority or superiority of direct oral anticoagulants (DOACs) over warfarin to reduce the risk of stroke or thromboembolism while having decreased risk of bleeding [3].
- There are no specific recommendations for anticoagulation for individuals with non-valvular atrial fibrillation (NVAF) and cancer.
- National patterns of oral anticoagulant use and factors associated with its use are lacking in individuals with cancer and NVAF.

OBJECTIVES

To characterize use and patient characteristics associated with warfarin and DOACs among individuals with cancer and incident NVAF.

METHODS

- **Data:** SEER-Medicare linked database from 2010 to 2016.
- **Study Population:** Individuals who were diagnosed with primary cancer (breast, bladder, colorectal, esophagus, lung, ovary, kidney, pancreas, prostate, stomach, and uterus) and newly diagnosed with NVAF after cancer diagnosis.
- **Exposure:** Warfarin or DOACs (dabigatran, rivaroxaban, apixaban and edoxaban)
- **Statistical methods:** We assessed:
  - 1) time to initiation of any oral anticoagulant using Cox proportional hazards regression model.
  - 2) use of any DOACs or warfarin using logistic regression model.
- We included sociodemographic factors, cancer characteristics, comorbidities, comedications, CHA_2DS_2-VASc score, and HAS-BLED score in both models.

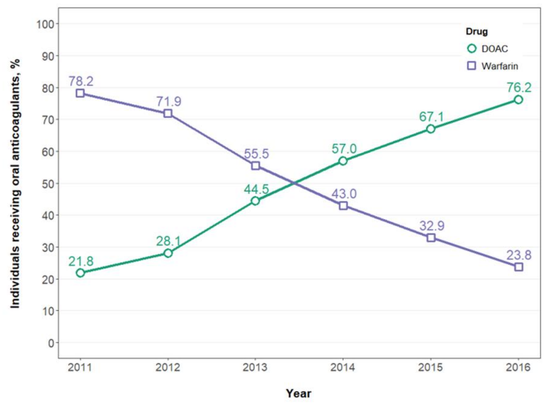
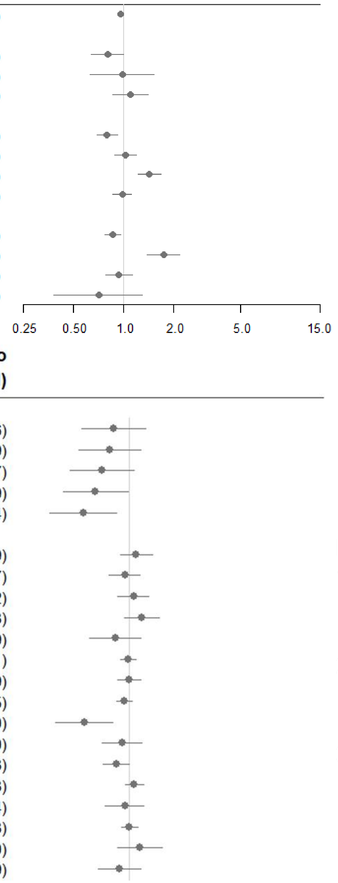


Figure 1. Trend of use of oral anticoagulants in individuals with cancer and NVAF

Figure 2. Patient Characteristics Associated with Initiation of Direct-Acting Oral Anticoagulants rather than Warfarin among Patients with Non-Valvular Atrial Fibrillation after Cancer Diagnosis

Sociodemographic characteristics	All patients N=8,046	DOAC rate,%	Odds ratio (95% CI)
Age (5 years)			0.96 (0.92, 0.999)
Race/ethnicity (ref: Non-Hispanic White)	7,102 (88.3)	56.0	
Black	475 (5.9)	48.6	0.80 (0.64, 0.998)
Hispanic	108 (1.3)	45.4	0.98 (0.63, 1.52)
Other	361 (4.5)	58.7	1.10 (0.86, 1.40)
Income (ref: Q1)	1,745 (21.7)	52.3	
Q2	1,942 (24.1)	49.6	0.79 (0.69, 0.92)
Q3	2,009 (25.0)	55.5	1.02 (0.88, 1.19)
Q4	2,135 (26.5)	63.1	1.43 (1.23, 1.67)
Medicaid eligibility	1,707 (21.2)	50.0	0.98 (0.86, 1.12)
Census region (ref: West)	3,472 (43.2)	56.5	
South	3,290 (40.9)	53.2	0.86 (0.77, 0.96)
Northeast	509 (6.3)	65.0	1.74 (1.39, 2.16)
Midwest	703 (8.7)	54.3	0.94 (0.78, 1.13)
Others	72 (0.9)	61.1	0.71 (0.38, 1.30)

Clinical characteristics	All patients N=8,046	DOAC rate, %	Odds ratio (95% CI)
CHA2DS2-VASc Score (ref: 1)	130 (1.6)	63.9	
2	707 (8.8)	63.5	0.81 (0.52, 1.26)
3	1,415 (17.6)	62.1	0.77 (0.50, 1.19)
4	1,820 (22.6)	58.2	0.69 (0.44, 1.07)
5	1,582 (19.7)	54.7	0.63 (0.40, 0.99)
>=6	2,392 (29.7)	47.3	0.53 (0.33, 0.84)
HAS-Bled score (ref: >= 6)	641 (8.0)	48.4	
5	991 (12.3)	52.0	1.11 (0.89, 1.39)
4	1,741 (21.6)	51.5	0.95 (0.76, 1.17)
3	2,591 (32.2)	56.4	1.07 (0.86, 1.32)
2	1,767 (22.0)	62.9	1.20 (0.94, 1.53)
1	315 (3.9)	55.6	0.83 (0.58, 1.19)
Anemia	3,135 (39.0)	52.4	0.99 (0.89, 1.11)
Asthma	942 (11.7)	54.5	1.01 (0.86, 1.19)
COPD	2,621 (33.8)	52.1	0.94 (0.84, 1.05)
Coronary revascularization	121 (1.5)	53.7	0.54 (0.36, 0.80)
Dementia	282 (3.5)	51.4	0.91 (0.69, 1.20)
Gout	661 (8.2)	53.1	0.84 (0.70, 1.003)
Hyperlipidemia	5,953 (74.0)	56.1	1.08 (0.95, 1.23)
Inflammatory arthritis	267 (3.3)	50.9	0.95 (0.72, 1.24)
Other Ischemic heart disease	3,161 (39.3)	53.1	1.01 (0.90, 1.13)
Other cerebrovascular disease	272 (3.4)	72.4	1.17 (0.86, 1.60)
Peptic ulcer disease	224 (2.8)	45.5	0.88 (0.65, 1.19)



Note: The results in the figure are from a multivariable logistic regression model that included sociodemographic, clinical, and cancer related characteristics as well as co-medications.

RESULTS

- Of 27,702 individuals, 8,046 (29.0%) initiated oral anticoagulants, of whom 4,469 (55.5%) initiated DOACs and 3,577 (44.5%) initiated warfarin.
- Overall, the use of oral anticoagulants increased from 27.3% in 2010 to 31.5% in 2016 (P<0.0001 for trend).
- Oral anticoagulant initiation was less likely among older individuals (HR 0.92, 95% CI 0.91-0.94 for each 5-year increase), and non-Hispanic black race (HR 0.81, CI 0.73-0.89 compared to non-Hispanic White race).
- Anticoagulant use was more likely among those with CHA2DS2-VASc score of 4 or more (e.g., HR 1.55, CI 1.27-1.90 for CHA_2DS_2-VASc score ≥6 vs. 1) or those with lower HAS-BLED scores.
- Compared to CHA_2DS_2-VASc score of 1, individuals with score of 5 (OR 0.60, 95%CI 0.39-0.94) or score of 6 or more (OR 0.63, CI 0.40-0.99) had lower likelihood of using DOACs than warfarin (Figure 2).

CONCLUSION

- Nearly seven out of ten individuals with cancer and NVAF did not receive oral anticoagulation in 2016 which may represent potential underuse of oral anticoagulants in this vulnerable population.
- Increasing DOAC use from 2010 to 2016 was offset by decreasing warfarin use.
- DOACs are used less than warfarin among those at higher risk of stroke.

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