Stroke Risk Similar for CHF Patients on Traditional Medicare and Medicare Advantage

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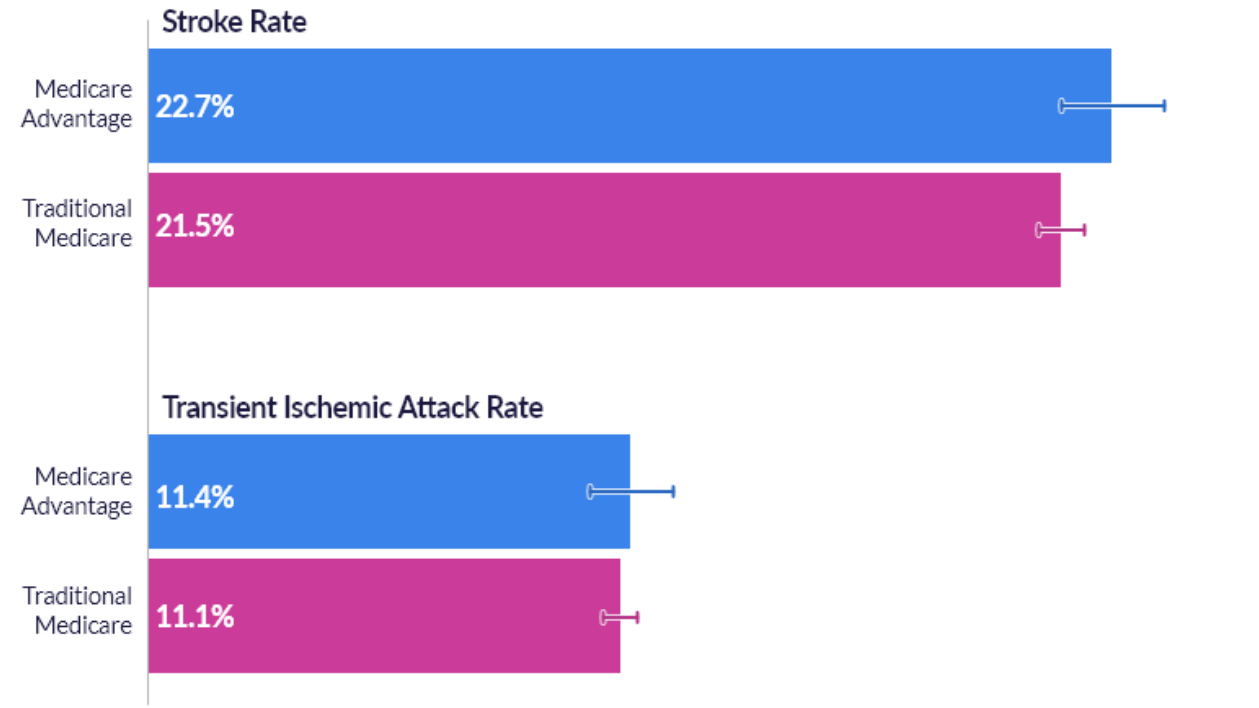
Key Findings:

- Congestive heart failure patients' 10-year-risk of stroke or transient ischemic attack (TIA) is similar for patients covered by traditional Medicare or Medicare Advantage.

As noted in previous studies, patients eligible for Medicare in the U.S. have the option to choose health insurance administered by commercial health insurers through Medicare Advantage or remain on the traditional, government-administered Medicare. To better understand whether there are differences in health outcomes between patients on Medicare Advantage (MA) and traditional Medicare (TM), we compared the rates of stroke and transient ischemic attack (TIA) in congestive heart failure patients covered by MA or TM.

Stroke and TIA are considered potential complications of congestive heart failure (CHF).[1] Patients diagnosed with CHF are at an increased risk of stroke or TIA—as much as 10 times the risk of the general population.[2] We studied 116,352 CHF patients with MA coverage and 349,056 CHF patients with TM coverage. All patients studied were initially diagnosed with CHF after starting their Medicare coverage. We evaluated the rate of stroke and TIA for both populations for as long as they retained that coverage type, up to 10 years after initial CHF diagnosis. We found that the rates of stroke and TIA at 10 years were similar for both MA and TM patients, as shown in Figure 1. Within 10 years after initial CHF diagnosis, 22.7% of patients with MA and 21.5% of patients with TM were diagnosed with a stroke. Rates of TIA were lower—11.1% of patients with TM and 11.4% of patients with MA were diagnosed with a TIA within the 10 years following their CHF diagnosis.

Incidence of Stroke and Transient Ischemic Attack in Patients with Congestive Heart Failure by Coverage Type



116,352 Medicare Advantage encounters
349,056 Traditional Medicare encounters

"Incidence of Stroke and Transient Ischemic Attack in Patients with Congestive Heart Failure by Coverage Type," 2023. EpicResearch.org

Figure 1. Cumulative incidence rate of stroke and TIA 10 years after initial CHF diagnosis for Medicare Advantage and traditional Medicare patients.

To further investigate these findings, we used a Cox proportional hazards model that adjusted for race and ethnicity, sex, rurality, social vulnerability, comorbidities, and whether the patient was prescribed cardiovascular medications. The model similarly found no statistically significant difference in risk of stroke or TIA for patients on MA or TM.

These data come from Cosmos, a HIPAA-defined Limited Data Set of more than 220 million patients from 221 Epic organizations including 1,260 hospitals and over 27,100 clinics, serving patients in all 50 states and Lebanon. This study was completed by two teams that worked independently, each composed of a clinician and research scientists. The two teams came to similar conclusions. Graphics by Brian Olson.

References

1. Barkhudaryan A, Doehner W, Scherbakov N. Ischemic Stroke and Heart Failure: Facts and Numbers. An Update. *J Clin Med*. 2021;10(5):1146. Published 2021 Mar 9. doi:10.3390/jcm10051146
2. Pullicino P.M., Halperin J.L., Thompson J.L. Stroke in patients with heart failure and reduced left ventricular ejection fraction. Neurology. 2000;54:288–294. doi: 10.1212/WNL.54.2.288.

Data Definitions

Term	Definition
Study period	All time

Study population	Patients whose first documentation of congestive heart failure (CHF) occurred on their initial period of Medicare coverage as identified as a diagnosis with ICD-10-CM code I50*.
Confounders for Cox Analysis (matching 1:3)	Sex (matching and adjustment factor) State (matching factor) Age of CHF onset (matching factor) Race RUCA decile SVI decile **Diabetes** (Type I or II) at CHF onset **Hyperlipidemia** at CHF onset **Hypertension** at CHF onset **Other heart disease** at CHF onset **Medication Lines**
Congestive Heart Failure	Any diagnosis of ICD-10-CM code I50*
Stroke	Any diagnosis of ICD-10-CM code I60*, I61*, or I63*
TIA	Any diagnosis of ICD-10-CM code G45.9
Diabetes	Any diagnosis of ICD-10-CM code E10* or E11* prior to or on the same day as the CHF onset date
Hyperlipidemia	Any diagnosis of ICD-10-CM code E78* prior to or on the same day as the CHF onset date
Hypertension	Any diagnosis of ICD-10-CM codes I10* - I16* prior to or on the same day as the CHF onset date
Other Heart Disease	Any diagnosis of ICD-10-CM codes I05*-I09* or I20*-I52* or I5A*, excluding I50*, prior to or on the same day as the CHF onset date
Medication Lines	The portion of the patient's coverage in which they had inpatient or prescribed medications in the following categories. This is cumulative, so a patient who received no medication for the first quarter of their coverage after CHF onset, then two medications for the rest would count as receiving 1.5 medication lines (0.75 + 0.75). Hydralazine: Simple Generic Name: HYDRALAZINE HCL Ace Inhibitors: Pharmaceutical Subclass: ACE Inhibitors Angiotensin II Receptor Blockers (ARBs) Beta Blockers: Simple generic name: BISOPROLOL/HYDROCHLOROTHIAZIDE METOPROLOL SU/HYDROCHLOROTHIAZ METOPROLOL/HYDROCHLOROTHIAZIDE NADOLOL/BENDROFLUMETHIAZIDE PROPRANOLOL/HYDROCHLOROTHIAZID ATENOLOL/CHLORTHALIDONE NEBIVOLOL HCL/VALSARTAN TIMOLOL/HYDROCHLOROTHIAZIDE Pharmaceutical Class: ALPHA/BETA-ADRENERGIC BLOCKING AGENTS BETA-ADRENERGIC BLOCKING AGENTS Diuretics: RxNorm:

5487
2409
1808
62349
4603
38413
Simple generic name:
ACETAZOLAMIDE
ACETAZOLAMIDE SODIUM
METHAZOLAMIDE
BUMETANIDE
ETHACRYNIC ACID
ETHACRYNATE SODIUM
FUROSEMIDE
TORSEMIDE
AMILORIDE HCL
SPIRONOLACTONE
TRIAMTERENE
BENDROFLUMETHIAZIDE
CHLOROTHIAZIDE
CHLOROTHIAZIDE SODIUM
CHLORTHALIDONE
HYDROCHLOROTHIAZIDE
INDAPAMIDE
METHYCLOTHIAZIDE
METOLAZONE
POLYTHIAZIDE
HYDROFLUMETHIAZIDE
TRICHLORMETHIAZIDE
NADOLOL/BENDROFLUMETHIAZIDE
EPLERENONE
SPIRONOLACTONE, MICRONIZED
Pharmaceutical Subclass:
Diuretic - Thiazides and Related, and Combinations
Diuretic - Thiazides and Related
Diuretic - Thiazide and Related-Potassium Combinations
Diuretic - Potassium Sparing-Thiazide and Related Combinations
Diuretic - Aldosterone Receptor Antagonist, Non-selective
Diuretic - Aldosterone Receptor Antagonist, Selective
Diuretic - Carbonic Anhydrase Inhibitors
Diuretic - Loop
Diuretic - Loop and Combinations
Diuretic - Loop and Potassium Combinations
Diuretic - Potassium Sparing
Diuretic - Potassium Sparing (Single Agent), All
Diuretic - Potassium Sparing Diuretics and Combinations
Diuretic - Potassium Sparing in Combination
Diuretic - Potassium Sparing, Aldosterone
Receptor Antagonists, All
Blood Thinners:
Simple generic name of:
ARGATROBAN
DABIGATRAN ETEXILATE MESYLATE

	DALTEPARIN SODIUM,PORCINE ENOXAPARIN SODIUM FONDAPARINUX SODIUM LEPIRUDIN,RECOMBINANT TINZAPARIN SODIUM,PORCINE WARFARIN SODIUM ARGATROBAN IN 0.9 % SOD CHLOR ARGATROBAN IN NACL,ISO-OSMOTIC

Table 1: Incidence of Stroke and Transient Ischemic Attack in Patients with Congestive Heart Failure by Coverage Type

Series	Incidence Rate	95% CI Low	95% CI High
TM TIA Rate	11.1%	10.8%	11.5%
MA TIA Rate	11.4%	10.4%	12.4%
TM Stroke Rate	21.5%	21.0%	22.1%
MA Stroke Rate	22.7%	21.6%	24.0%