Adherence and Persistence in the Use of Warfarin After Hospital Discharge Among Patients With Heart Failure and Atrial Fibrillation

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ABSTRACT

Background: Postdischarge adherence and long-term persistence in the use of warfarin among patients with heart failure and atrial fibrillation without contraindications have not been fully described.

Methods and Results: We identified patients with heart failure and atrial fibrillation who were ≥65 years old, eligible for warfarin, and discharged home from hospitals in the Get With the Guidelines—Heart Failure registry from January 1, 2006, to December 31, 2009. We used linked Medicare prescription drug event data to measure adherence and persistence. The main outcome measures were rates of prescription at discharge, outpatient dispensing, discontinuation, and adherence as measured by the medication possession ratio. We hypothesized that adherence to warfarin would differ according to whether patients received the prescription at discharge. Among 2,691 eligible patients, 1,856 (69.0%) were prescribed warfarin at discharge. Patients prescribed warfarin at discharge had significantly higher prescription fill rates within 90 days (84.5% vs 12.3%; $P < .001$) and 1 year (91.6% vs 16.8%; $P < .001$) and significantly higher medication possession ratios (0.78 vs 0.63; $P < .001$). Among both previous nonusers and existing users, fill rates at 90 days and 1 year and possession ratios were significantly higher among those prescribed warfarin at discharge.

Conclusions: One-third of eligible patients with heart failure and atrial fibrillation were not prescribed warfarin at discharge from a heart failure hospitalization, and few started therapy as outpatients. In contrast, most patients who were prescribed warfarin at discharge filled the prescription within 90 days and remained on therapy at 1 year. (*J Cardiac Fail 2014;20:23—30*)

Key Words: Atrial fibrillation, heart failure, medication adherence, warfarin.

The combined impact of heart failure and atrial fibrillation on quality of life presents a major public health issue owing to greater risk for thromboembolic events.[1,2] Heart failure increases the risk of stroke in atrial fibrillation, and practice guidelines for patients with both heart failure and atrial fibrillation generally recommend anticoagulation therapy for patients without contraindications.[3—5] Furthermore, prescription of warfarin at hospital discharge for patients with heart failure and atrial fibrillation and without contraindications is included among the 2005 American College of Cardiology/American Heart Association (AHA) clinical performance measures for adults with heart failure.[6]

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Despite the well demonstrated benefit of warfarin therapy, more than one-third of eligible patients with heart failure and atrial fibrillation are not discharged with a prescription for warfarin.[7] Moreover, a substantial proportion of patients with atrial fibrillation do not adhere to warfarin therapy as prescribed. In the general population of patients with atrial fibrillation, more than one-fourth of patients discontinue warfarin within 1 year from initiation.[8]

Adherence to anticoagulation therapy among patients with heart failure and atrial fibrillation, who have higher thromboembolic risk, is not well described. Adherence to warfarin may be particularly challenging in patients with heart failure, many of whom have comorbid conditions and complex medication regimens. Using clinical registry data linked with Medicare claims, we sought to describe the transitional and long-term adherence to anticoagulation therapy among Medicare beneficiaries with heart failure and atrial fibrillation.

Methods

Data Sources

We obtained clinical data from the AHA's Get With the Guidelines—Heart Failure (GWTG-HF) registry and Medicare claims data from the Centers for Medicare & Medicaid Services. The GWTG-HF program was implemented voluntarily by hospitals and succeeded the OPTIMIZE-HF registry.[9] Patients were eligible for the registry if they were hospitalized with heart failure as the primary cause of admission or developed significant heart failure symptoms during a hospitalization for which heart failure was not the reason for admission. Patients are identified in the registry with *International Classification of Diseases, Ninth Revision, Clinical Modification* codes 402.x1, 404.x1, 404.x3, and 428.x. The database contains demographic characteristics, medical history, results of admission laboratory tests and examinations, and discharge medications. Outcome Sciences (Cambridge, Massachusetts) is the data collection coordination center for the Get With the Guidelines programs. The Duke Clinical Research Institute (Durham, North Carolina) serves as the data analysis center and has an agreement to analyze the aggregate deidentified data for research purposes.

The Medicare data include inpatient claims, prescription drug events, and corresponding denominator files for 2006 through 2009. The inpatient files contain hospitalization claims covered under Medicare Part A. The denominator files include date of death and information about program eligibility and enrollment. With the introduction of the Medicare Part D prescription drug benefit in 2006, the Centers for Medicare & Medicaid Services began to collect outpatient prescription drug information on millions of enrollees. The prescription drug event data from Medicare Part D files contain the generic names of prescription drugs, days' supply, and information about program enrollment and benefit phases.

We linked data from the GWTG-HF registry to the research-identifiable inpatient claims data with the use of indirect identifiers—admission date, discharge date, sex, and age or date of birth.[10] Combinations of these identifiers are almost always unique, enabling identification of registry hospitalizations in the Medicare claims data. For patients with multiple linked hospitalizations in the registry, we selected the first hospitalization for analysis. The Institutional Review Board of the Duke University Health System approved the study.

Study Cohort

We identified 8,240 Medicare beneficiaries ≥65 years old who had a GWTG-HF hospitalization linked to Medicare claims; were discharged home alive from January 1, 2006, to December 31, 2009; were enrolled in fee-for-service Medicare at discharge; had atrial fibrillation indicated in their medical history; and had admission vital signs recorded in the registry. Data from the registry contain demographic characteristics, medical history, results of admission laboratory tests and examinations, and discharge medications, including warfarin. To establish previous medication use, we required patients to have ≥90 days of continuous enrollment in Medicare Part D before the index hospitalization. We included both previous nonusers and existing users of warfarin therapy. Previous nonusers had no claim for warfarin in the 90 days before the index hospitalization and were not on warfarin therapy at admission. Existing users had a claim for warfarin in the 90 days before the index hospitalization or were on warfarin at admission. Reasons for contraindication to anticoagulation are collected in the registry and include allergy to or complication from warfarin, risk for bleeding or previous discontinuation due to bleeding or patient or family refusal, and serious side effects to medication. We excluded patients who had documented contraindications, intolerance, or other documented reasons for not prescribing anticoagulation therapy, and patients for whom documentation of anticoagulation therapy at discharge was missing.

Adherence and Persistence

To measure adherence and persistence, we obtained post-discharge prescription claims for warfarin from Medicare Part D claims during 1 year after discharge from the index hospitalization. We defined the initial outpatient dispensing date as the date of the first prescription claim. We calculated the days to the first outpatient prescription claim from the index discharge date. We measured outpatient dispensing rates as the cumulative incidence of the first filled outpatient prescription for warfarin within 90 days or 1 year after discharge from the index hospitalization. We defined discontinuation of therapy as the first 90-day gap in the days' supply of warfarin. The discontinuation date was the date of the end of supply before the 90-day gap. Patients who filled a prescription for warfarin within 90 days after discharge were eligible for the discontinuation analysis. Because we required 90 days without supply to establish discontinuation and had post-discharge claims within 1 year of discharge from the index hospitalization, we could detect discontinuation up to 270 days after discharge. The latest date of discontinuation was approximately October 1, 2009.

The medication possession ratio measures the proportion of time that the patient had access to the medication. It is defined as the sum of the days' supply of warfarin divided by the number of days alive during 1 year of follow-up. The medication possession ratio is defined from the time of the first prescription claim, which was before the index hospitalization for existing users and at discharge from the index hospitalization for new users. For patients with a warfarin claim before the index hospitalization, we added the remaining days' supply at the time of the index admission to the numerator. For patients with a warfarin claim that straddled a subsequent inpatient stay, we included the days of the hospital stay in the numerator, assuming the hospital