

## **Impact of Pre-Injury Warfarin Use Among Medicare Beneficiaries With Head Trauma**

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**Introduction:** The effect of warfarin on outcomes of head injured patients remains controversial. Yet more than 2 million Americans, many of them elderly, are started on warfarin annually. Meanwhile, with the aging US population, elderly Americans are becoming an increasingly large proportion of head injured patients. We studied a national cohort of Medicare beneficiaries with head injuries to determine the effects of pre-injury warfarin on outcomes.

**Methods:** A retrospective review of a 5% random sample of Medicare claims data (2009-2010) was performed for enrollees with at least 1 year of Medicare eligibility. Head injury cases were identified using ICD-9 codes for intracranial hemorrhage with or without accompanying skull fractures. Using Part D prescription drug claims, warfarin exposure was defined as  $\geq 2$  warfarin prescriptions filled within 60 days prior to injury. Characteristics and outcomes (mortality, length of stay (LOS), ICU LOS) between warfarin users and patients not on warfarin (non-users) were compared using univariate tests of association. Multivariable models adjusting for patient characteristics, concomitant torso injuries/long-bone fractures, and need for ICU care were conducted to measure the independent effect of warfarin on in-hospital mortality.

**Results:** We identified 3,420 head injured patients, 6.6% of whom were treated with warfarin. Warfarin users were more likely to be female (74.2% vs. 65.6%,  $p < 0.01$ ), and older (median age 83, IQR 78-88 vs 82, IQR 75-87,  $p = 0.04$ ) than non-users. Warfarin users had higher in-hospital mortality compared to non-users (16.9 vs. 10.2%,  $p < 0.01$ ). Warfarin users had 1.9 times the odds (95% CI 1.3-2.7) of dying in the hospital compared to non-users when adjusting for confounders. Warfarin use did not predict ICU admission, ICU LOS, or overall LOS among survivors ( $n = 3055, 89\%$ ).

**Conclusion:** Anticoagulation with warfarin increases risk of mortality after head injury nearly two fold in Medicare beneficiaries even after adjusting for other risk factors. As new, more difficult to reverse, agents are introduced for chronic anticoagulation this problem may be exacerbated. Physicians should exercise caution when initiating chronic anticoagulation in patients over the age of 65.