

## CLINICAL INQUIRIES

# Are major bleeding events from falls more likely in patients on warfarin?

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### EVIDENCE-BASED ANSWER

There is no evidence of increased risk for major bleeding as a result of falls in hospitalized patients taking warfarin (strength of recommendation [SOR]: **B**, based on retrospective cohort studies). In the average patient taking warfarin for atrial

fibrillation, the risk of intracranial hemorrhage from a fall is much smaller than the benefit gained from reducing risk of stroke (SOR: **A**, based on decision analysis of systematic reviews with sensitivity analysis).

### CLINICAL COMMENTARY

**Major bleeding infrequent in fall patients with a therapeutic INR; more common with higher INR**

Decisions to initiate or withhold anticoagulation can be difficult to make, but this Clinical Inquiry should simplify matters. Clearly, for patients with atrial fibrillation, the risk of stroke while not taking warfarin is greater than the risk of major bleeding from a fall while on it. Also, major bleeding from a fall occurs infrequently in patients with a therapeutic internal normalized ratio (INR). However, bleeding is more common in patients with a supratherapeutic INR, so remain alert to possible

uncontrolled anticoagulation either from medication interactions or from impaired cognition.

This Clinical Inquiry should also help physicians considering an inferior vena cava filter instead of warfarin. Complications with inferior vena cava filters include death (0.82%), filter migration (3%–69%), and penetration (9%–24%) or obstruction (6%–30%) of the inferior vena cava.<sup>6</sup>

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### ■ Evidence summary

Increased risk of falling is often given as a reason for not recommending anticoagulation for atrial fibrillation in frail or elderly patients. However, no studies directly address the risk for major bleeding in anticoagulated patients who fall.

One retrospective study of 2633 falls in 1861 hospital inpatients compared the rate of major hemorrhage between those taking anticoagulation therapy with those not taking it.<sup>1</sup> Major hemorrhage was defined as bruising or cuts requiring immediate attention from a physician. The rate of major hemorrhage was 6.2% for patients taking warfarin and 11.3%

for patients receiving no therapy. Patients with INR=2–3 had a major hemorrhage rate of 6.9% compared with 10.1% for those with INR <1.3. Criteria for using warfarin were not reported; there may have been selection bias in favor of prescribing warfarin for patients judged less likely to fall.

A smaller study of 400 consecutive falls among 264 post-stroke patients in a rehab hospital found no difference in minor injury rates (19% vs 18%, NS); no major hemorrhagic complications were seen following 131 falls in the anticoagulation group (93 patients) and 269 falls in the group not on anticoagulation (175

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patients).<sup>2</sup> Patients on anticoagulation had an average protime of 16.1 seconds (INR was not reported). The calculated risk of major hemorrhage in an anticoagulated patient from a single fall was 2.3% or less. The study was limited because most falls were from a seated position or partially controlled by an attendant; few patients fell from a standing position.

Another study presented a Markov decision analysis (comparison of risk estimates in separate disease states) evaluating whether risk from falls should influence choice of anticoagulation therapy in elderly patients with atrial fibrillation.<sup>3</sup> Risk of intracranial bleeding from falls was calculated from prospective cohort studies and retrospective case series from anticoagulation clinics, and stroke reduction benefit from anticoagulation was taken from a meta-analysis of 5 randomized controlled trials. Sensitivity analyses were performed to test the results of the decision analysis. The calculated risk of subdural hematoma from falling was such that a patient with a 5% annual stroke risk from atrial fibrillation would need to fall 295 times in a year for the fall risk to outweigh the stroke reduction benefit of warfarin.

### Recommendations from others

Guidelines from the American Heart Association and the American College of Chest Physicians do not include fall risk in the decision to use anticoagulation.<sup>4</sup>

Guidelines from the Institute for Clinical Systems Improvement note that patients with 3 falls in the previous year or with recurrent, injurious falls were excluded from trials evaluating efficacy and safety of anticoagulation in patients with nonvalvular atrial fibrillation.<sup>5</sup>

### REFERENCES

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### FAST TRACK

**In the average patient, the risk of intracranial hemorrhage from a fall is much smaller than the benefit gained from reduced risk of stroke**