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## Perioperative Bridging Anticoagulation Unhelpful for Invasive Procedures

### Clinical Question

Does bridging anticoagulation during invasive procedures improve outcomes in patients with atrial fibrillation who take warfarin (Coumadin)?

### Bottom Line

Bridging anticoagulation worsens outcomes for patients with atrial fibrillation who undergo an elective invasive procedure, resulting in more episodes of major bleeding and no difference in the rate of stroke or venous thromboembolism. Most of the patients in the study had a CHADS<sub>2</sub> score of 1 (23%), 2 (40%), 3 (24%), or 4 (10%). The patients were largely undergoing minor surgical procedures with low bleeding risk, and patients at very high risk of thromboembolism or stroke were not represented in this study. (Level of Evidence = 1b)

### Synopsis

The evidence for bridging anticoagulation is looking increasingly questionable, with a recent registry-based study finding worse outcomes with bridging (<http://www.essentialevidenceplus.com/content/poem/170602>; login required). This study provides the best evidence to date. A total of 1,884 adults with chronic atrial fibrillation and at least one CHADS<sub>2</sub> risk factor (i.e., congestive heart failure; hypertension; age of 75 years or

older; diabetes mellitus; or previous stroke or transient ischemic attack) were randomized to bridging anticoagulation with dalteparin (Fragmin) or to placebo. Patients with a mechanical heart valve, recent stroke or embolism, impaired renal function, or thrombocytopenia were excluded, as were patients undergoing cardiac, intracranial, or intraspinal surgery. All participants had received warfarin for at least three months and had an international normalized ratio (INR) between 2.0 and 3.0. The protocol for bridging was as follows: (1) stop warfarin five days before the procedure, (2) start dalteparin or placebo three days before the procedure, (3) stop the study drug one day before the procedure, (4) restart warfarin 12 to 36 hours after the procedure, and (5) restart the study drug 12 to 72 hours after the procedure (based on bleeding risk) and continue it until the INR is therapeutic. The mean age of patients was 72 years, and the mean CHADS<sub>2</sub> score was 2.3 (range = 1 to 6).

Basically, the bridging group had their time without anticoagulation minimized, whereas the placebo group was without anticoagulation for approximately 10 days (two to three days before the procedure and a mean of eight days after). Most of the procedures were classified as low bleeding risk. At 30 days, the risk of arterial thromboembolism did not differ between groups (two strokes and two transient ischemic attacks in the placebo group, and three strokes in the bridging group). The risk of major bleeding was significantly higher in the bridging group (3.2% vs. 1.3%;  $P = .01$ ; number needed to treat to harm [NNTH] = 53). There was no difference between groups in the likelihood of death, myocardial infarction, deep venous thrombosis, or pulmonary embolism. Minor bleeding was also more common in the bridging group (20.9% vs. 12.0%;  $P < .001$ ; NNTH = 11).

**Study design:** Randomized controlled trial (double-blinded)

**Funding source:** Government

**Setting:** Inpatient (any location)

**Reference:** Douketis JD, Spyropoulos AC, Kaatz S, et al.; BRIDGE Investigators. Perioperative bridging anticoagulation in patients with atrial fibrillation. *N Engl J Med*. 2015;373(9):823-833.

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