**BRIDGING IN AFIB**

**What is the concept of “bridging?”**

Where you add a LWMH to warfarin to provide protection while you are waiting for INR to become therapeutic (ie. DVT) or when warfarin is temporarily interrupted for patients undergoing procedures.

**Why do you need to overlap? (**[Wittkowsky AK](http://www.ncbi.nlm.nih.gov/pubmed/?term=Wittkowsky%20AK%5BAuthor%5D&cauthor=true&cauthor_uid=15900262). Why warfarin and heparin need to overlap when treating acute venous thromboembolism. [Dis Mon.](http://www.ncbi.nlm.nih.gov/pubmed/15900262) 2005 Feb-Mar;51(2-3):112-5.)

|  |  |  |
| --- | --- | --- |
| Clotting Factors | Half Life | Comment |
| Protein C | 9 hrs | Short T1/2=rapid decline |
| Factor VII | 4-6 hrs | Short T1/2=rapid decline |
| Factor II (Prothrombin) | 42-72 hrs | 4-5 days for effective thrombosis protection |

When warfarin is given, you see rapid decline in Protein C (natural anticoagulant) and Factor VII. This decline in Protein C may cause a hypercoagulable state. While this has not been shown in clinical trials for Afib, it is one of the rationales for bridging in DVT/PE. Lower levels of Factor VII have not been shown to prevent thrombosis. Any early changes to the INR are a reflection of inhibition of Factor VII. **Factor II** inhibition **does** prevent thrombosis! Because the half-life of Factor II is so much longer, it takes about 4-5 days for this to occur.

**What are the current recommendations?**

2014 AHA/ACC/HRS Guidelines for the Management of Atrial Fibrillation (J Am Coll Cardiol 2014;64(21):2246-2280)

* Observational and trial data do not support use of routine bridging due to increased risk of bleed
* Bridging is reasonable in high risk subgroups:
* Mechanical heart valves (1C)
* CHA2DS2-VASc score ≥2 (limited data)

Perioperative Management of Antithrombotic Therapy Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines

(CHEST 2012; 141(2)(Suppl):e326S–e350S)

* Bridge in patients with a mechanical heart valve,  
  atrial fibrillation, or VTE at **high risk** for thromboembolism, interruption  
  of VKA therapy (Grade 2C)
* NO Bridge patients without a mechanical heart valve,  
  atrial fibrillation, or VTE at **low risk** for thromboembolism, interruption  
  of VKA therapy (Grade 2C)

|  |  |  |
| --- | --- | --- |
| Risk for thromboembolism during periprocedural period: | | |
| **HIGH RISK** | **MEDIUM RISK** | **LOW RISK** |
| CHADS2 >5 | CHADS2 3-4 | CHADS2 0-2 (and no prior stroke) |
| Stroke or TIA w/in 3 mo |  |  |
| Rheumatic valvular disease |  |  |

**Recent Trials**

Use and Outcomes with Bridging During Anticoagulation Interruptions in Patients with Afib (ORBIT AF)

(Circulation. 2015;131:488-94)

* Prospective, observational registry
* Bridging vs No Bridging
* Avg CHADS2=2.5
* Avg CHA2DS2-VASc =4
* 75 y/o
* Cardiovascular events: 1.62 (0.95-2.78); p=0.07
* Bleeding events: 1.94 (1.38-2.71)
* **NO DIFFERENCE IN REDUCING CV EVENTS, WITH INCREASED RISK OF BLEED**

Perioperative Bridging Anticoagulation in Patients with Atrial Fibrillation (BRIDGE) (N Engl J Med 2015;373:823-33)

* RCT, double-blind, placebo controlled
* Dalteparin 100 IU/kg BID or placebo
* Warfarin d/c’d 5 days prior to procedure
* CHADS2 score=2 (low risk)
* **BRIDGING IS NONINFERIOR TO BRIDGING WITH INCREASED RISK OF BLEED**

|  |  |  |  |
| --- | --- | --- | --- |
| Primary Outcome | No Bridging (%) | Bridging (%) | P Value |
| Atrial thromboembolism | 0.4 | 0.3 | 0.01 noninferiority  0.73 superiority |
| Stroke | 0.2 | 0.3 |  |
| TIA | 0.2 | 0 |  |
| Systemic embolism | 0 | 0 |  |
| Bleeding | 1.3 | 3.2 | 0.005 superiority |

**Bottom Line:**

Recent trials (BRIDGE and ORBIT AF) show that bridging is not necessary in a LOW risk afib patients. According to these trials, low risk is CHADS2 score of 2 and a CHA2DS2-VASc score of 4. Most guidelines and evidence do suggest that HIGH risk afib patients should be bridged. High risk has been defined more specifically in the CHEST 2012 Perioperative guidelines as a CHADS2 Score 5 or 6; recent (w/in 3 months) stroke or TIA, Rheumatic valvular heart disease and mechanical heart valves. In light of BRIDGE and ORBIT AF, the guidelines will probably need an update soon.