

Bridging: Who needs it? How to do it?

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Disclosure

- Nothing to Disclose

Objectives

- Identify the patients that need bridging
- Discuss dosing
- Discuss risk
- Discuss potential concerns

Who Needs Bridging?

Bridge

- **ALL Mechanical prosthetic valves with risk factors**
- **Mitral Valves**
- **Risk Factors**
 - AF
 - Previous thromboembolism
 - LV dysfunction
 - Hypercoagulable conditions
 - Older generation thrombogenic valves
 - Mechanical Tricuspid valves
 - More than 1 mechanical valve ⁽²⁾

No Bridge

- **AVR without risk factors (heparin usually not necessary) ⁽²⁾**
- **AF without mechanical valve or other risk factors (safe up to 1 week) High risk - or patients having series of procedures should be bridged ⁽¹⁾**

1. ACC/AHA 2006 Guidelines Atrial Fib JACC Vol 48, No4, August 15, 2006
2. 2008 AC AHA Update of 2006 Guidelines for Valvular HD JACC Vol 52, No 13 Sept 23, 2008.

Who Needs Bridging?

Pacemakers and Internal Cardiac Defibrillators (ICD)

No Formal Guidelines

- Jamula et al reviewed trials 2008
 - UFH (3 trial) showed higher rates of pocket hematoma compared to patients not bridged – 12% to 29% pocket hematoma
 - LMWH (1 trial) no bleeding
 - Oral anticoagulation (4 trials) – INR range day of procedure 1.5 to 6.9. Higher rates of bleeding with trial with high INR (24%). Other 3 trials pocket hematoma lower in oral anticoagulation than with bridging.

- Cardiology Today April 2010
- Jamula E. J Thromb Haemost. 2008;6:1615-1621

Who Needs Bridging?

Practical Guide based on research

Pacemakers and Internal Cardiac Defibrillators (ICD)

■ High Risk

- Consider bridging with LMWH resumed 48 to 72 hours after procedure
- OR continue oral anticoagulation maintain INR below 3 on day of procedure (range from 1.5 to 3)

■ Moderate to low risk

- Continue on reduced dose oral anticoagulation
- Or stop oral therapy with NO bridge

LMWH vs UFH

- Longer half life
- More predictable bioavailability >90%
- Predictable clearance – allows dosing of QD or BID
- Predictable antithrombotic response based on body weight
- Allows fixed dose treatment without lab monitoring

Bleeding Risk if Anticoagulation is Continued

Dependent upon

- Age
- Presence of other disease states
- Type of surgery
- Anticoagulant regimen and intensity
- Length of warfarin therapy
- The use of other drugs that affect hemostasis (heparin, aspirin, antiplatelet agents)
- The stability of anticoagulation
- Degree of anticoagulation as measured by the INR
- Prolonged, complex and major surgery

Low Risk

- Antithrombotic therapy should **NOT** be stopped for procedures with low risk of bleeding
- Surgery on the skin
- Dental cleaning
- Treatment of dental caries
- Eye surgery (cataracts, glaucoma)

How To Treat

LMWH

- CBC
- Check Creatinine
 - If Cr Cl >30 ml/min no dose adjustment
 - If Cr Cl < 30 ml/min 1 mg/kg **ONCE** daily
- Low body weight risk of bleeding ↑
 - Women <45 kg
 - Men <57 kg

How to Treat

- Stop warfarin 48 to 72 hours prior to procedure
- Repeat INR 48 h after stopping warfarin
- When INR is ≤ 2.0 begin LMWH
- LMWH 1 mg/kg sc bid (Q 12 hours)
- Hold LMWH morning of surgery (4 to 6 h prior to procedure)
- Restart LMWH and warfarin as early as possible post op
- Continue both and repeat INR 48 h later
- When INR ≥ 2.0 stop LMWH and continue warfarin

Caution

- Thrombocytopenia – if platelets $<100,000$ stop LMWH
- Use care with patients with uncontrolled hypertension

Summary

- Treat patients individually not as a population
- Check CBC and current cr. prior to initiation of LMWH
- Initiate LMWH when $\text{INR} \leq 2.0$ and
- Once INR is ≥ 2.0 stop LMWH