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Management of warfarin for invasive procedures

Patient at low risk of thrombosis:

1. Stop warfarin 5 days before procedure.
2. Check INR the day before procedure. If INR > 1.5 consider giving vitamin K 1.25 mg po.
3. Resume warfarin immediately after procedure.
4. Peri-procedural heparin not necessary.

Patient at intermediate-high risk of thrombosis:

1. Stop warfarin 4-5 days before procedure.
2. Start LMWH* (e.g. enoxaparin 1 mg/kg sq q 12 hr or dalteparin 100-120 U/kg sq q 12 hr) 24-48 hrs after stopping warfarin (we usually recommend starting LMWH the 2nd morning after the last pre-op warfarin dose).
3. Consider checking INR the day before procedure.
4. D/C LMWH the evening before procedure (i.e. last dose \geq 12 hrs before procedure).
5. Resume warfarin immediately after procedure (i.e. same day as procedure).
6. Restart LMWH when safe from standpoint of procedure.
7. D/C LMWH one day after INR enters therapeutic range.

Patients at low risk of **bleeding** complications from invasive procedures

Many dental procedures and some skin and eye surgical procedures have a low risk of bleeding, even in the patient therapeutically anticoagulated with warfarin. In addition, if bleeding does occur, it is usually minor and can be controlled with local measures. Therefore, these types of procedures can often be safely performed without interrupting warfarin therapy. Anticoagulation management decisions should be made in conjunction with the dentist or surgeon. See [Dental Procedures](#) link from the Anticoagulation Service homepage for additional details.

Thrombosis-risk stratification of patients

Low risk of thrombosis:

1. **Atrial fibrillation** with no significant structural heart disease and no history of intracardiac clot or cardioembolism.
2. **Dilated cardiomyopathy** with NSR and no history of intracardiac clot or cardioembolism.
3. **St. Jude AVR** with *all* of the following: NSR(Normal Sinus Rhythm), nl LV fxn, and no history of intracardiac cardioembolism.

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4. **Venous thromboembolism** and receiving warfarin for ≥ 3 months since last acute episode. Note: Consider prophylactic doses of LMWH (e.g. enoxaparin 40 mg sq q QD) after procedure until INR therapeutic.
5. **Pulmonary hypertension** that is not thromboembolic in etiology.

*Assumes serum Cr < 2.0 or Cr clearance > 30 cc/mL. If more severe renal insufficiency, consider reducing LMWH dose and/or frequency, monitoring anti-Xa levels, or using unfractionated heparin instead.

Intermediate-high risk of thrombosis:

1. **Atrial fibrillation** with any of the following: significant LV dysfunction, history of intracardiac clot or cardioembolism, mitral stenosis, marked LA enlargement, or spontaneous echo contrast.
2. **Mechanical prosthetic cardiac valve:** any mechanical valve in any position other than St. Jude AVR. Note: If pt with St. Jude AVR has LV dysfunction, atrial fibrillation, or a history of intracardiac clot or cardioembolism, manage as a high risk pt.
3. **Mitral Stenosis** requiring warfarin therapy.
4. **Dilated cardiomyopathy** with atrial fibrillation or history of intracardiac clot or cardioembolism.
5. **Intracardiac thrombus**
6. **Arterial thromboembolism (including stroke)** and receiving warfarin for < 3 months since last acute episode or considered at high risk of recurrence.
7. **Venous thromboembolism** and receiving warfarin for < 3 months since last acute episode. Note: If patient's risk of recurrent thrombosis is considered low, use of LMWH before procedure may not be necessary.