Anticoagulation Guidelines

|  |  |
| --- | --- |
| **Indication** | **Duration of Anticoagulation Therapy (AACP Recommendation)** |
| **First Episode of DVT of the leg or PE** | 1st episode of proximal DVT or PE 2/2 Surgery or reversible risk factor: 3 months warfarin; INR 2.5 (2-3); reversible = ie. trauma, surgery, cancer, or being confined to bed for a prolonged period |
|  | 1st episode of distal DVT 2/2 surgery or reversible risk factor: 3 months warfarin; INR 2.5 (2-3) |
|  | 1st episode of idiopathic proximal DVT or PE: low-moderate bleeding risk- extended use; high bleeding risk-3months warfarin; INR 2.5 (2-3) |
| **Cancer** | Active cancer and PE: LMWH>Warfarin, extended use (depending on bleeding risk); INR 2.5 (2-3) |
| **Antiphospholipid Ab** | Antiphospholipid antibody and history of arterial or venous thrombosis; extended use warfarin; INR 2.5 (2-3) |
| **Second Episode** | 2 unprovoked DVT or PE: low-moderate bleeding risk-extended warfarin tx; high bleeding risk-3months wafarin; INR 2.5 (2-3) |
| **Atrial fibrillation or flutter** |  |
| CHADS2 Score >1 (intermediate to high risk of stroke) | Indefinite tx; INR 2.5 (2-3) |
| Elective cardioversion | 3 weeks before if scheduled and 4 weeks after conversion; INR 2.5 (2-3) |
| **Mitral stenosis** | Indefinite tx, INR 2.5 (2-3) |
| **After stent placement or high risk of stroke** | Bare-metal stent (1 month), Drug eluting stent (3-6months) as part of triple therapy (ASA + Clopidogrel); After triple therapy, continue warfarin + antiplatelet agent until 12 months after stent placement. Then continue warfarin alone |
| **Coronary heart disease** |  |
| High risk pts with MI and no stent | 3 months wafarin with low-dose ASA |
| High risk pts with MI after stent | Bare-metal stent: triple therapy with warfarin, low-dose aspirin, and clopidogrel in month 1; combination of warfarin with single antiplatelet agent in months 2 and 3  Drug-eluting stent: triple therapy with warfarin, low-dose aspirin, and clopidogrel for 3-6 months |
| **Valvular heart disease** |  |
| Rheumatic mitral valve disease (1A if with atrial fibrillation or a history of systemic embolism; 1A if history of atrial thrombus; 2C if normal sinus rhythm and atrial diameter > 55 mm) | Long term; INR 2.5 (2-3) |
| Mechanical prosthetic heart valves | Long term; INR 2-3 if in aortic position; 2.5-3.5 if in mitral position |
| Bioprosthetic valves in mitral position | 3 months; INR 2.5 (2-3) |
| **Prevention of VTE for orthopedic surgery (elective total hip or knee replacement and hip fracture surgery** | 10-14 days minimum; 35 days for major ortho surgery, LMWH>Wafarin for total hip or knee arthroplasty |
| (*Risk factors that increase a patient's bleeding risk include advanced age, active gastric or duodenal ulcer, recent gastrointestinal bleeding, history of stroke, myocardial infarction, diabetes, and several laboratory abnormalities (e.g., elevated creatinine level, low platelet count, low hematocrit level)*. | |

**WARFARIN:** Vit K antagonist, for the treatment of venous thromboembolism and for the prevention of stroke in persons with atrial fibrillation, atrial flutter, or valvular heart disease

* Start Warfarin the first day along with a heparin product or fondaparinux; continue both for at least 5 days until INR is therapeutic for 2 consecutive days
* Stop five days before major surgery and restart 12 to 24 hours postoperatively. Bridging with low-molecular-weight heparin or other agents is based on balancing the risk of thromboembolism with the risk of bleeding.
* Monitor with PT/INR. INR takes 2-3 days to respond to warfarin. Heparin or LMWH should be given with warfarin until INR is therapeutic for >24hours
* For most patients, start at 5mg daily of Warfarin
* Reversible with Vitamin K (FFP in emergencies)
* Patient Education:
  + Medication interactions: amiodarone, rifampin, metronidazole, bactrim, statins, **etc etc!**
  + Foods: Decrease Warfarin effects with leafy green vegetables; increased effect with alcohol
  + Consistency of diet is key!
  + Medical conditions: increased warfarin effects with diarrhea, heart failure, fever, hyperthyroidism, liver disease; Decreased effects with hypothyroidism
  + Genetic testing to determine patient response to warfarin is not currently recommended

**UNFRACTIONATED HEAPRIN**

* Watch out for HIT: Plt count decreases by at least 50% or <150,000, usually 5-14 days after starting heparin
* Monitored with aPTT
* Reversal agent: Protamine

**LOW MOLECULAR WEIGHT HEPARIN:** Dalteparin (Fragmin) and Enoxaprin (Lovenox)

* Only measure anti-factor Xa levels when degree of anticoagulation may be altered (obesity, pregnancy, kidney disease, older age)
* UFH vs LMWH: equally safe, UH better for pts at high risk for bleeding (shorter ½ life, better reversibility), and better for pts with CrCL <30

**FONDAPARINUX (Arixtra):** only for general surgical ppx in pts with contraindications to LMWH

-Longer half-life for fondaparinux is advantageous (daily dosing) and potentially troublesome (adverse effects and lack of reversibility)

**BRIDGING:** UFH, LMWH or Fondaprinux to Warfarin

**For treatment of VTE and PE:** Overlap parenteral anticoagulants with Warfarin for at least 5 days. Start Warfarin on Day 1 after the first dose of the parenteral agent. Do no discontinue parenteral anticoagulant until INR is therapeutic for 2 consecutive days

**When stopping Warfarin:**

* Most surgeries, stop Warfarin 5 days before surgery, restart 12-24 hours postop
* Restart LMWH 24 hours after procedure (but ok to wait 48-72 hours before resuming for pts at high risk of bleeding or undergoing major surgery)
* No need to bridge perioperatively in pts at low risk of VTE
* Bridge with UFH or LMWH for pts at high risk of VTE

**NEW KIDS ON THE BLOCK:**

* **Advantages:** do not require frequent monitoring and dose adjustments, less drug-drug, drug-food, and drug-disease interactions, doesn’t requiring bridging therapy
* **Disadvantages:** No long-term safety/effectiveness data, no antidote, no test for effectiveness or toxicity, renal dosing, BID dosing
* In patients with atrial fibrillation and at least one other risk factor for stroke, newer agents (rivaroxaban [Xarelto] and dabigatran [Pradaxa]) that do not require frequent laboratory monitoring are as effective as warfarin for prevention of stroke or systemic embolism and have comparable risks of major bleeding.
* Dabigatran and apixaban are indicated for the prevention of systemic embolism and stroke in persons with nonvalvular atrial fibrillation. Rivaroxaban is indicated for the prevention of deep venous thrombosis in patients undergoing knee or hip replacement surgery, for treatment of deep venous thrombosis and pulmonary embolism, for reducing the risk of recurrent deep venous thrombosis and pulmonary embolism after initial treatment, and for prevention of systemic embolism in patients with nonvalvular atrial fibrillation.

**Dabigatran (Pradaxa): Direct thrombin inhibitor,** for prevention of systemic embolism and stroke in pts with nonvalvular AFib

* 150mg BID
* Renal dosing
* No monitoring, dose adjustment, or bridging, no lab monitoring, but also no antidote/reversal (difficult when pt needs emergent therapy)
* Limited data in pts with hepatic impairment and obesity
* More Dyspepsia (11.3% vs 5.8%) and Major GI Bleeds (1.51% vs 1.02%) compared to warfarin

**Rivaroxaban (Xarelto): Direct Factor Xa inhibitor,** prevention of DVT in pts undergoing knee or hip replacement surgery, for tx of DVT and PE, for reducing risk of recurrent DVT and PE after initial tx, and for prevention of systemic embolism in pts with nonvalvular AFib

* Role of lab monitoring of anti- factor Xa levels not established
* ROCKET AF Trial: Rivaroxab noninferior to warfarin in preventing stroke of VTE in nonvalvular AFib
* 4 trials showing better prevention of VTE compared to enoxaparin in pts undergoing orthopedic surgery

**Apixaban (Eliquis): Direct Factor Xa inhibitor** prevention of systemic embolism and stroke in pts with nonvalvular AFib

**Patient resources:**

<http://familydoctor.org/familydoctor/en/diseases-conditions/hypercoagulation.html>

http://familydoctor.org/familydoctor/en/diseases-conditions/deep-vein-thrombosis.html

**References:**

Kearon C, Akl EA. Duration of anticoagulant therapy for deep vein thrombosis and pulmonary embolism. [Blood.](http://www.ncbi.nlm.nih.gov/pubmed/24497538) 2014 Mar 20;123(12):1794-801. doi: 10.1182/blood-2013-12-512681. Epub 2014 Feb 4.

Valentine K, Hull R. Therapeutic use of warfarin and other vitamin K antagonists. UpToDate. **Literature review current through:**Oct 2014. | **This topic last updated:**Oct 03, 2014.

Wells P, Forgie M, et al.Treatment of Venous Thromboembolism. *JAMA.*2014;311(7):717-728. doi:10.1001/jama.2014.65.

# Wigle P, Hein B, et al. Updated Guidelines on Outpatient Anticoagulation. *Am Fam Physician.* 2013 Apr 15;87(8):556-566.