The purpose of this medication chart is to provide information about the medications that can be used to reduce the risk of stroke and systemic embolism in patients with atrial fibrillation. Please consult clinical practice guidelines, assess the patient’s risk for stroke or systemic embolism and risk of bleeding, and utilize clinical judgment when selecting a medication.

<table>
<thead>
<tr>
<th>Name</th>
<th>Anticoagulants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin</td>
<td>- Antiplatelet, salicylate</td>
</tr>
<tr>
<td>Clopidogrel (Plavix®)</td>
<td>- Antiplatelet, thienopyridine</td>
</tr>
<tr>
<td>Warfarin (Coumadin®, Jantoven®)</td>
<td>- Vitamin K antagonist</td>
</tr>
<tr>
<td>Dabigatran (Pradaxa®)</td>
<td>- Direct thrombin inhibitor</td>
</tr>
<tr>
<td>Rivaroxaban (Xarelto®)</td>
<td>- Direct factor Xa inhibitor</td>
</tr>
<tr>
<td>Apixaban (Eliquis®)</td>
<td>- Direct factor Xa inhibitor</td>
</tr>
</tbody>
</table>

### Anticoagulants

**Name**
- Aspirin
- Clopidogrel (Plavix®)
- Warfarin (Coumadin®, Jantoven®)
- Dabigatran (Pradaxa®)
- Rivaroxaban (Xarelto®)
- Apixaban (Eliquis®)

**Class**
- Antiplatelet, salicylate
- Antiplatelet, thienopyridine
- Vitamin K antagonist
- Direct thrombin inhibitor
- Direct factor Xa inhibitor

**Mechanism of Action**
- Irreversibly inhibits COX-1 enzymes, which in turn decreases production of thromboxane A₂ and inhibits platelet aggregation
- Inhibits ADP-mediated platelet activation and aggregation by binding irreversibly to the P2Y₁₂ receptor on platelets
- Must be metabolized by CYP450 enzymes to produce an active metabolite that inhibits platelets
- Inhibits the synthesis of vitamin K-dependent clotting factors (II, VII, IX, and X), which inhibits clots from forming
- Also inhibits the synthesis of anticoagulant proteins C and S
- Inhibits the conversion of fibrinogen to fibrin, which prevents clots from forming
- Must be converted by esterases to active metabolite
- Blocks the active site of factor Xa, which inhibits the coagulation cascade and, thus, prevents clots from forming
- Selectively and reversibly blocks the active site of factor Xa, which inhibits the coagulation cascade and, thus, prevents clots from forming

**Contraindications**
- Hypersensitivity to salicylates or other NSAIDs
- Asthma
- Rhinitis
- Nasal polyps
- Inherited or acquired bleeding disorders
- Do not use in children <16 years of age for viral infections
- Black Box Warning
  - Diminished effectiveness in poor metabolizers due to impaired CYP2C19 function
- Other CIs
  - Active pathological bleeding, such as peptic ulcer or intracranial hemorrhage
  - Hypersensitivity reaction to clopidogrel
- Black Box Warning
  - Bleeding risk
- Other CIs
  - Pregnancy
  - Hemorrhagic tendencies or blood dyscrasias
  - Recent or contemplated surgery of the CNS or eye, or traumatic surgery resulting in large open surfaces
  - Bleeding tendencies
    - Active ulceration or overt bleeding of GI, GU, or respiratory tract
    - CNS hemorrhage
    - Cerebral aneurysms
    - Dissecting aorta
    - Pericarditis, pericardial effusions
    - Bacterial endocarditis
- Threatened abortion, eclampsia, and preeclampsia
- Unsuitable patients with conditions associated with potential high level of noncompliance
- Spinal puncture or other procedures with potential for uncontrollable bleeding
- Hypersensitivity to warfarin
- Major regional or lumbar block anesthesia
- Malignant hypertension
- Active pathological bleeding
  - Hypersensitivity reaction to dabigatran
- Increased risk of stroke when discontinuing in patients with nonvalvular atrial fibrillation
- Spinal/epidural hematoma
- Active pathological bleeding
  - Hypersensitivity reaction to rivaroxaban
- Increased risk of stroke when discontinuing without other anticoagulation
- Active pathological bleeding
- Severe hypersensitivity reaction to apixaban
<table>
<thead>
<tr>
<th></th>
<th>ASPIRIN</th>
<th>CLOPIDOGREL (PLAVIX®)</th>
<th>WARFARIN (COUMADIN®, JANTOVEN®)</th>
<th>DABIGATRAN (PRADAXA®)</th>
<th>RIVAROXABAN (XARELTO®)</th>
<th>APIXABAN (ELIQUI®)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NAME</strong></td>
<td><strong>ASPIRIN</strong></td>
<td><strong>CLOPIDOGREL (PLAVIX®)</strong></td>
<td><strong>WARFARIN (COUMADIN®, JANTOVEN®)</strong></td>
<td><strong>DABIGATRAN (PRADAXA®)</strong></td>
<td><strong>RIVAROXABAN (XARELTO®)</strong></td>
<td><strong>APIXABAN (ELIQUI®)</strong></td>
</tr>
<tr>
<td><strong>DOSESING</strong> (oral, unless otherwise indicated)</td>
<td>• 75-325 mg daily</td>
<td>• 75 mg daily</td>
<td>• Individualized dosing</td>
<td>• Only indicated in patients with nonvalvular atrial fibrillation</td>
<td>• Only indicated in patients with nonvalvular atrial fibrillation</td>
<td>• Only indicated in patients with nonvalvular atrial fibrillation</td>
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<tr>
<td></td>
<td>• With or without clopidogrel</td>
<td>• No adjustment for hepatic impairment</td>
<td>• Titrate warfarin to target INR of 2.5 (range of 2.0-3.0)</td>
<td>• CrCl &gt; 30 mL/min: 150 mg BID</td>
<td>• CrCl &gt; 50 mL/min: 20 mg daily with the evening meal</td>
<td>• 5 mg BID</td>
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<td>• Patients with valvular AF may have a different INR goal</td>
<td>• CrCl 15-30 mL/min: 75 mg BID</td>
<td>• CrCl 15-50 mL/min: 15 mg daily with the evening meal</td>
<td>• 2.5 mg BID in patients with ≥ 2 of the following:</td>
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<td>• CrCl &lt; 15 mL/min: no discontinuation</td>
<td>• CrCl &lt; 15 mL/min: avoid use</td>
<td>• Age ≥ 80 years old</td>
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<td>• Weight ≤ 60 kg</td>
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<td></td>
<td></td>
<td></td>
<td>• SG ≥ 1.5 mg/dL</td>
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<td></td>
<td>• Avoid in patients with severe hepatic impairment; no dosing recommendations provided for moderate hepatic impairment</td>
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<td></td>
<td></td>
<td>• Avoid no dosing recommendations for patients with CrCl &lt; 15 mL/min or on dialysis</td>
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<td></td>
<td></td>
<td>• Note: AHA/ASA recommends avoiding use with CrCl &lt; 25 mL/min</td>
</tr>
<tr>
<td><strong>MONITORING—Efficacy</strong></td>
<td>• No routine assessment of antiplatelet efficacy</td>
<td>• No routine assessment of antiplatelet efficacy</td>
<td>• PT/INR</td>
<td>• No routine assessment of anticoagulant efficacy</td>
<td>• No routine assessment of anticoagulant efficacy</td>
<td>• No routine assessment of anticoagulant efficacy</td>
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<td></td>
<td>• Hospitalex: daily until the INR stable, then 2-3 times weekly, then less often depending on INR</td>
<td>• To detect presence of dabigatran, consider using aPTT, ecarin clotting test (ECT); or thrombin time (TT)</td>
<td>• To detect presence of apixaban, PT, INR, aPTT, and anti-factor Xa, may be considered</td>
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<td>• Outpatients: every few days until INR stable, then extend follow-up intervals to every 1 to 4 weeks depending on INR; for patients with consistently stable INRs, longer follow-up may be considered</td>
<td>• To detect presence of rivaroxaban, PT or anti-factor Xa may be considered</td>
<td></td>
</tr>
<tr>
<td><strong>MONITORING—Safety</strong></td>
<td>• CBC</td>
<td>• CBC</td>
<td>• CBC, PT/INR</td>
<td>• Renal function (SCr)</td>
<td>• Renal function (SCr)</td>
<td>• Renal function (SCr)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Assess prior to starting dabigatran</td>
<td>• Assess prior to starting</td>
<td>• Assess prior to starting</td>
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<td></td>
<td></td>
<td></td>
<td>• Then assess as clinically indicated</td>
<td>• Then assess as clinically indicated</td>
<td>• Then assess as clinically indicated</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• CBC</td>
<td>• Hepatic function</td>
<td>• CBC</td>
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<tr>
<td><strong>REVERSAL</strong></td>
<td>• Platelet transfusion may restore clotting ability</td>
<td>• Platelet transfusion may restore clotting ability</td>
<td>• Vitamin K</td>
<td>• No specific antidote</td>
<td>• No specific antidote</td>
<td>• No specific antidote</td>
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<td>• Urgent reversal: prothrombin complex concentrate, fresh frozen plasma, or activated Factor VII</td>
<td>• Can be dialyzed</td>
<td>• Not dialyzable due to high protein binding</td>
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<td></td>
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<td>• Activated charcoal may be considered in overdose</td>
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<tr>
<td><strong>ADVERSE EFFECTS</strong></td>
<td>• Bleeding</td>
<td>• Bleeding</td>
<td>• Major</td>
<td>• Bleeding</td>
<td>• Bleeding</td>
<td>• Bleeding</td>
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<td></td>
<td></td>
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<td></td>
<td>• Pruritus</td>
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<td></td>
<td>• Thrombocytopenic purpura (rare)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Major</td>
<td>• Gastrointestinal effects (dysepsia and gastritis-like symptoms)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>• Hemorrhage</td>
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<td></td>
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<td></td>
<td>• Other</td>
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<td></td>
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<td></td>
<td>• Skin necrosis or gangrene</td>
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<td></td>
<td></td>
<td></td>
<td>• Systemic atheroemboli and cholesterol microemboli; “purple toes syndrome”</td>
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</tr>
</tbody>
</table>
**ANTICOAGULANTS**

<table>
<thead>
<tr>
<th>NAME</th>
<th>ASPIRIN</th>
<th>CLOPIDOGREL (PLAVIX&lt;sup&gt;®&lt;/sup&gt;)</th>
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<th>APIXABAN (ELIQUIS&lt;sup&gt;®&lt;/sup&gt;)</th>
</tr>
</thead>
</table>
| **ADVANTAGES** | • Inexpensive  
• Available over-the-counter | • Once daily oral dosing | • Long experience with medication; well-known risk-benefit profile  
• Demonstrated effectiveness  
• Once-a-day dosing  
• Long half-life  
• Reversible  
• Safer in renal failure compared to the other oral anticoagulants  
• Inexpensive drug cost | • No routine monitoring of anticoagulant efficacy  
• 150 mg dose superior to warfarin in reducing stroke and systemic embolism (RE-LY trial)  
• Short half-life; fast on and fast off (benefit when starting) | • No routine monitoring of anticoagulant efficacy  
• Once daily dosing  
• Short half-life; fast on and fast off (benefit when starting) | • No routine monitoring or anticoagulant efficacy | • Short half-life; fast on and fast off (benefit when starting) |
| **DISADVANTAGES** | • Poor CYP2C19 metabolizer genotypes  
• Drug interactions; specifically with proton pump inhibitors (avoid omeprazole and esomeprazole) | • Many drug interactions (but manageable if PT/INR monitored and warfarin dose adjusted appropriately)  
• Dietary interactions due to vitamin K content in food; patients need to maintain consistency with their vitamin K intake  
• Frequent lab monitoring  
• Narrow therapeutic window  
• Slow onset and offset  
• Possible need for bridging when patient has surgery/procedure | • No ability to monitor safety and efficacy  
• Drug interactions with P-gp inducers and inhibitors, especially inhibitors with reduced renal function  
• GI side effects  
• No reversal agent  
• Twice daily dosing  
• Capsule cannot be opened  
• Storage: once bottle opened, drug must be used within 4 months; must be stored in original bottle (no pill boxes)  
• Short half-life; fast on and fast off (problem for missed doses) | • No ability to monitor safety and efficacy  
• Drug interactions with combined P-gp and CYP450 3A4 inhibitors/inducers  
• No reversal agent  
• Increased risk of stroke when discontinued  
• Cost  
• Short half-life; fast on and fast off (problem for missed doses) | • No ability to monitor safety and efficacy  
• Drug interactions with strong CYP3A4 and P-gp inhibitors/inducers  
• No reversal agent  
• Increased risk of stroke when discontinued  
• Cost  
• Twice daily dosing  
• Dosing is a bit more complicated for some patients than with other agents  
• Short half-life; fast on and fast off (problem for missed doses) |
| **relative cost of the drug** | $ | $ | $$$ | $$$ | $$$ | $$$ |
| **patient assistance** | | | | | | | |
| **FDA postmarket drug safety information** | | | | | | | |
| **FDA medication guide** | | | | | | | |

**Notes:**
- a. No citation/recommended by developers of this resource.
- b. There is no FDA-approved dosing for atrial fibrillation.
- c. At the time of publication, the ecarin clotting test (ECT) was not available in most laboratories.

**References:**
1. UpToDate, Inc. Aspirin UpToDate information; 2012.
6. UpToDate, Inc. UpToDate (Lexi) drug information. Markham; 2012.
12. UpToDate.com, Apixaban: Drug information. Copyright 1978-2013 Lexicomp, Inc. All rights reserved.