<table>
<thead>
<tr>
<th>Direct Oral Anticoagulants (DOACs) - Updated: JAN 2016</th>
<th>Always refer to most current prescribing recommendations!</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dabigatran</strong>&lt;br&gt; Pradaxa®&lt;br&gt; Boehringer Ingelheim&lt;br&gt; Direct Thrombin Inhibitor&lt;br&gt; HalfLife: 12-17h&lt;br&gt; Tmax: 1.5-2h</td>
<td></td>
</tr>
<tr>
<td><strong>Inhibitor</strong>&lt;br&gt; Sankyo, Inc&lt;br&gt; Daiichi</td>
<td></td>
</tr>
<tr>
<td><strong>Edoxaban</strong>&lt;br&gt; Savaysa®&lt;br&gt; Daiichi&lt;br&gt; Sankyo, Inc&lt;br&gt; Factor Xa Inhibitor&lt;br&gt; HalfLife: 10-14h&lt;br&gt; Tmax: 1-2h</td>
<td></td>
</tr>
<tr>
<td><strong>Rivaroxaban</strong>&lt;br&gt; Xarelto®&lt;br&gt; Janssen Pharm/J&amp;J/Bayer&lt;br&gt; Factor Xa Inhibitor&lt;br&gt; HalfLife: 5-9h&lt;br&gt; Tmax: 2-4h</td>
<td></td>
</tr>
<tr>
<td><strong>Apixaban</strong>&lt;br&gt; Eliquis®&lt;br&gt; BMS&lt;br&gt; Factor Xa Inhibitor&lt;br&gt; HalfLife: 9-14h&lt;br&gt; Tmax: 1-3h</td>
<td></td>
</tr>
</tbody>
</table>

### FDA-approved indication
- NVAF
- VTE Trt and Risk Reduction of Recurrence
- DVT prophyaxis: Hip and Knee
- DVT prophyaxis: Thrombosis and Risk Reduction of Recurrence
- NVAF
- VTE Trt: VTE and ↓ Risk
- NVAF
- VTE Trt: VTE and ↓ Risk
- NVAF: If CrCl < 30 mL/min, avoid use
- NVAF: If CrCl < 30 mL/min, avoid use
- NVAF: If CrCl < 30 mL/min, avoid use
- NVAF: If CrCl < 30 mL/min, avoid use
- NVAF: If CrCl < 30 mL/min, avoid use

### Dose (ORAL)
- 150 mg twice daily
- 10mg once daily (Hip 35 d, Knee 12 d)
- 20mg once daily with evening meal
- 15 mg twice daily for 21 days then 20mg daily for treatment period with food
- 20mg daily with food
- 10mg once daily (Hip 35 d, Knee 12 d)
- 5mg twice daily (H=35d, K=12d)
- 10mg twice daily for 7 d, then 5mg twice daily
- 2.5mg twice daily
- 5mg twice daily
- 2.5mg twice daily with two of the following: age > 79, body wt < 61 kg, Cr > 1.4
- 2.5 mg twice daily with strong dual inhibitors of CYP3A4 and P-gp
- 2.5 mg twice daily
- 2.5mg twice daily

### Dose modifications
- Assess renal function during therapy to adjust dose, especially if concurrent P-gp inhibitors
- If CrCl < 15 mL/min or if on dialysis, no recommendation
- VTE: If CrCl < 30, no recommendations, if < 50, avoid
- AF: If CrCl 15-30 mL/min, 75 mg twice daily
- Assess renal function during therapy to adjust dose, especially if concurrent P-gp inhibitors
- If CrCl < 15 mL/min or if on dialysis, no recommendation
- VTE: If CrCl < 30, no recommendations, if < 50, avoid

### Key education
- Take with/without food
- Take with full glass water
- Do not open, cut, chew, or crush capsules (no tube feeds)
- Store in original container or blister pack only (desiccant cap)
- Once bottle opened, use pills in 120 days
- Do not stop without MD order
- If dose forgotten, take as soon as possible same day at least 6 hr before next dose
- Take with/without food
- Take with full glass water
- Do not open, cut, chew, or crush capsules (no tube feeds)
- Store in original container or blister pack only (desiccant cap)
- Once bottle opened, use pills in 120 days
- Do not stop without MD order
- If dose forgotten, take as soon as possible same day at least 6 hr before next dose
- 

### Drug:drug interactions
- P-gp inducers: rifampin, maybe others
- P-gp inhibitors: ketoconazole, amiodarone, verapamil, quinidine, dronedarone, clarithromycin
- P-gp inhibitors: ketoconazole, itraconazole, rifonavir, clarithromycin, erythromycin, fluconazole, conivaptan
- P-gp inhibitors: rifampin, carbamazepine, phenytoin, St. John’s wort
- P-gp inhibitors: ketoconazole, itraconazole, rifonavir, clarithromycin, erythromycin, fluconazole, conivaptan
- P-gp inducers: rifampin, carbamazepine, phenytoin, St. John’s wort
- P-gp inhibitors: ketoconazole, itraconazole, rifonavir, clarithromycin, erythromycin, fluconazole, conivaptan
- P-gp inhibitors: ketoconazole, itraconazole, rifonavir, clarithromycin, erythromycin, fluconazole, conivaptan

### Use in Pregnancy/Lactation
- Cat C
- Cat C
- Unknown if excreted in milk, decide to d/c breastfeeding or drug
- Unknown if excreted in milk, decide to d/c breastfeeding or drug use
- Unknown if excreted in milk, decide to d/c breastfeeding or drug

### Reversal Agent (Emerg Trt)
- Praxbind
- Praxbind
- (Clinical Support, activated charcoal may decre absorption)
- (Clinical Support, activated charcoal may decre absorption)
- none

### Additional information
- Always refer to most current prescribing recommendations!
- Avoid 2 if CrCl 30-50 mL/min, consider 75mg twice daily 3 and CrCl < 30, AVOID
- If a dose missed, take as soon as possible same day at least 6 hr before next dose
- If a dose missed, take as soon as possible same day at least 6 hr before next dose
- If a dose missed, take as soon as possible same day at least 6 hr before next dose
- If a dose missed, take as soon as possible same day at least 6 hr before next dose
- If a dose missed, take as soon as possible same day at least 6 hr before next dose

### Notes
- Avoid concomitant use of combined Pgp & strong CYP3A4 inhibitors, Sitagliptin 15-50 & concomitant P-gp and weak or mod CYP3A4 inhibitors, use only if benefit justifies risk
- Avoid concomitant use of combined Pgp & strong CYP3A4 inhibitors, Sitagliptin 15-50 & concomitant P-gp and weak or mod CYP3A4 inhibitors, use only if benefit justifies risk
- Avoid concomitant strong dual inhibitors of CYP3A4 and P-gp if already at 2.5mg twice daily
- Avoid concomitant strong dual inhibitors of CYP3A4 and P-gp if already at 2.5mg twice daily
- Avoid strong inducers
- Avoid strong inducers
- Avoid concomitant strong dual inhibitors of CYP3A4 and P-gp if already at 2.5mg twice daily
- Avoid concomitant strong dual inhibitors of CYP3A4 and P-gp if already at 2.5mg twice daily
- Avoid concomitant strong dual inhibitors of CYP3A4 and P-gp if already at 2.5mg twice daily
- Avoid concomitant strong dual inhibitors of CYP3A4 and P-gp if already at 2.5mg twice daily
- Avoid concomitant strong dual inhibitors of CYP3A4 and P-gp if already at 2.5mg twice daily
- Avoid concomitant strong dual inhibitors of CYP3A4 and P-gp if already at 2.5mg twice daily

### Additional information
- Always refer to most current prescribing recommendations!
### Transitions of Care

<table>
<thead>
<tr>
<th>Dabigatran</th>
<th>Rivaroxaban</th>
<th>Apixaban</th>
<th>Edoxaban</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>From Warfarin to a DOAC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d/c warfarin, start when INR less than 2</td>
<td>d/c warfarin, start when INR less than 3 (per PI)</td>
<td>d/c warfarin, start when INR below 2</td>
<td>d/c warfarin, start when INR below 2.5</td>
</tr>
<tr>
<td><strong>From a DOAC to Warfarin</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warfarin start depends on CrCl</td>
<td>Can affect INR, INR values not useful to determine dose</td>
<td>Affects INR, INR values not useful for dose</td>
<td></td>
</tr>
<tr>
<td>If CrCl ≥ 50, start warf 3 d before</td>
<td>If continuous anticoag required, d/c and begin both parenteral and warfarin at same time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If CrCl 30-50, start warf 2 d before</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If CrCl 15-30, start warf 1 d before</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If CrCl &lt; 15, no recommendation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>From a DOAC to a Different DOAC or from LMWH/Fondaparinux to a DOAC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start new DOAC 0-2 h prior to the next scheduled administration of the original anticoagulant and then d/c original</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>From IV UFH to a DOAC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop heparin infusion and begin administration of the DOAC at the time of the UFH discontinuation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>From SC UFH to a DOAC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stop SC UFH and initiate the DOAC approx 4-5 h after last dose of SC UFH</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Interruptions of Care

- **See specific drug recommendations**

Each of the DOACs has some proportion of renal elimination, therefore patients with renal impairment or over age 75 may be a higher risk of bleeding.

Renal elimination based on CrCl and therefore number of days variable.

---

### References:

- Center for Drug Policy, Partners Healthcare, Oct 2015, Non-Vitamin K Oral Anticoagulants (NOACs)
- European Heart J; 2012:33, 2719-2747 - ESC Guidelines
- MGH Excellence Every Day - Anticoagulation Portal (google: mgh eed)