Warfarin (Management of overdose and routine monitoring)

Objective
To ensure patients on warfarin anticoagulation receive appropriate monitoring and effective control of anticoagulation parameters including prompt management of excessive anticoagulation

Guideline
Warfarin drug interactions are common. Ill health particularly affects anticoagulation and a stable patient may become rapidly unstable.
**ALWAYS** check an INR in an unwell patient on warfarin.
Each patient should have their own recommended INR range. The usual range is 2-3 except in patients with prosthetic heart valves.

Management of excessive anticoagulation and haemorrhage in a patient usually stable on warfarin
The risk of haemorrhage in warfarin therapy is considerable. The risk of bleeding rises with the INR level.

<table>
<thead>
<tr>
<th>INR 5.0 – 9.0</th>
<th>Stop warfarin therapy; consider reasons for elevated INR and patient-specific factors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding absent</td>
<td>If bleeding risk is high³, give vitamin K (1-2 mg orally or 0.5-1 mg intravenously).</td>
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<tr>
<td></td>
<td>Measure INR within 24 hours², resume warfarin at a reduced dose once INR is in therapeutic range.</td>
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<table>
<thead>
<tr>
<th>INR &gt;9</th>
<th>Where there is a low risk of bleeding, stop warfarin therapy, give 2.5-5 mg vitamin K orally or 1 mg intravenously. Measure INR in 24 hours, resume warfarin therapy at a reduced dose once INR &lt;5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding absent</td>
<td>Where there is a high risk of bleeding³ cease warfarin therapy, give 1 mg vitamin K intravenously. Transfer to hospital</td>
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<tr>
<td>or minor bleeding</td>
<td>Resume warfarin therapy at a reduced dose once INR &lt;5.</td>
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<tr>
<th>Any clinically significant bleeding in a patient on warfarin, regardless of INR</th>
<th>Stop warfarin</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Give 10 mg vitamin K intravenously</td>
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<td></td>
<td>Transfer to hospital</td>
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1. Bleeding risk increases exponentially from INR 5 to 9; INR ≥6 should be monitored closely.
2. Vitamin K effect on INR can be expected within 6-12 hours
3. Examples of patients in whom the bleeding risk would be expected to be high include those with active gastrointestinal disorders (eg. Peptic ulcer or inflammatory bowel disease), those receiving concomitant antiplatelet therapy, those who underwent a major surgical procedure within the preceding two weeks, and those with a low platelet count.
4. In all situations carefully reassess the need for ongoing warfarin therapy.

*Treatment Guide continued next page*
Find out why the stable patient is unstable

Are they unwell, has a new medication been started, have they started taking OTC products, are they confused about doses? Are they on antibiotics? Has their diet changed?
Inform doctor within 24 hours of any patients with over-anticoagulation.

Treatment Guide

Give Vitamin K 1-2.5 mg orally as per guideline
Give Vitamin K 10 mg IV slowly for warfarin induced major bleeding as per guideline

Phytomenadione/Vitamin K
The only vitamin K formulation available to titrate 1-2.5 mg is the injectable form. Give this orally except with major bleeding when it’s given IV slowly.

Routine Monitoring of Stable patients on Warfarin

Guideline

Each patient should have their recommended INR range recorded on their problem list.
Warfarin half-life is 36 hours - frequent dose adjustments are not beneficial

- If INR is within this range, no dose adjustment needed. Repeat INR 4 weeks. Unless: Check INR 3-5 days after starting antibiotics or any new medication or if unwell.
- If INR below recommended range, increase warfarin by 1 mg weekly and repeat INR 1 week. Unless: Check INR 3-5 days after starting antibiotics or any new medication or if unwell.
- If INR above recommended range by 0.5 or less, do not adjust dose. Repeat INR in 2 weeks. Unless: Check INR 3-5 days after starting antibiotics or any new medication or if unwell.
- If INR is above recommended range by more than 0.5 (but is less than 5), decrease Warfarin dosage by 1 mg per week and repeat INR one week. If above 5 – see guidelines above. Unless: Check INR 3-5 days after starting antibiotics or any new medication or if unwell.

ALWAYS

Check INR 3-5 days after starting antibiotics or any new medication or if unwell.
Remember to check why a stable patient becomes unstable.
If patient has 2 readings outside reference ranges, consult.
Treatment Guide
Warfarin adjustments as per guideline

Resources
- Vitamin K
- Warfarin

References
Medlab Clinical Notice: Warfarin Interactions and Overdose, Sept 2002
Management Guidelines for Common Medical Conditions, CDHB, 2009
http://www.healthpathways.org.nz/bluebook/index.htm (requires password for access)