Royal United Hospitals Bath
NHS Foundation Trust

Anticoagulation Guidelines for Primary Care

Haematology Department

Managing Patients with a High INR on Warfarin in Primary Care

Presentation – what you should cover:

- **Assess and screen for signs of active non-resolving bleeding**:

1. Check the patient's pulse and sitting and standing blood pressure for evidence of haemodynamic compromise.
2. Check for any vomiting blood or passing altered or fresh rectal blood.
3. Check for evidence of intracranial bleeding. Ask about recent head trauma with an episode of amnesia, loss of consciousness, post traumatic seizure, or more than one episode of vomiting. Check Glasgow Coma Score (GCS) and assess focal neurological signs.
4. Check for any other red flag symptom which may indicate active bleeding.

<u>If significant life threatening bleeding (gastrointestinal or intracranial), shock or head injury refer to medical take/ED. All patients who sustain a head injury whilst taking warfarin require a CT head within 8 hours (within 1 hour if reduced GCS focal neurological signs, post-traumatic seizure, or more than one episode of vomiting) of the injury, even if clinical features are absent. Reversal should be given whilst the CT head is pending if necessary</u>

- If result was generated on a POCT (point of care testing) device, then a venous INR sample should also be taken, if possible.

- **Clarify dose of warfarin patient has been taking – check for compliance:** Some patients may overmedicate in error. **NB**: Patients who may be at high risk of overmedicating and need to continue with warfarin should be considered for a dossette box.

- **Assess for any underlying medical problems:** e.g. liver disease or cancer that may result in impaired synthesis of clotting factors (alternative anticoagulation may be more appropriate).

- **Check drug history:** Ask about prescribed drugs, over the counter drugs and herbal supplements. The cytochrome P450 enzyme metabolises warfarin, so P450 inhibitors can cause the INR to increase. Common inhibitors of warfarin metabolism include clarithromycin, erythromycin and amiodarone – for a comprehensive list see the British National Formulary (BNF).
- **Check alcohol history:** Patients taking warfarin should be discouraged from binge drinking as excessive alcohol inhibits warfarin breakdown and can affect liver function.
- **Ask about changes to diet**: Patients may become more sensitive to warfarin if reducing their intake of vitamin K rich foods such as leafy green vegetables. Check consumption of fruit grapefruit and cranberry juice which can inhibit warfarin metabolism.

What you should do:

- If active non-resolving bleeding, refer to secondary care.
- If not actively bleeding manage in the community (see table below) and ensure a repeat INR (venous sample) is checked the following day.
- If the INR continues to be high despite efforts to identify a precipitating cause, refer to RUH Anticoagulation Team (Tel: 01225 825504 / Email: ruh-tr.AnticoagulationTeam@nhs.net) or consider switching to a direct oral anticoagulant (DOAC).

INR range/presence of bleeding?	Action required
Major Bleeding	Stop warfarin, give **5mg Vitamin K (give the injection (Konakion MM adult or paediatric) ORALLY or IV)**, refer to ED
INR > 3.0 and < 6.0 (target INR 2.5) INR > 4.0 and < 6.0 (target INR 3.5) No bleeding	1: Stop warfarin 2: Restart warfarin when *INR < 5.0*
INR > 6.0 and < 8.0 No bleeding or minor bleeding	1: Stop warfarin reassess regularly 2: Restart when *INR < 5.0*
INR > 8.0 No bleeding or minor bleeding	1: Stop warfarin 2: Restart warfarin when *INR < 5.0* 3: If other risk factors for bleeding give **2mg Vitamin K injection (Konakion MM adult or paediatric) ORALLY**. 4: Check for drug interactions (some antibiotics), alcohol intake, recent febrile illness etc. 5: Recheck clotting at 24 hours or sooner if there is clinical deterioration

Vitamin K (phytomenadione) - INR >8.0, no bleeding or minor bleeding:

Product	Strength	Dose:
Konakion MM (Vitamin K injection)	10mg/ml 1ml ampoules	2mg **ORALLY** equivalent to 0.2ml (give via a 1ml oral syringe)
Konakion MM Paediatric (Vitamin K injection)	2mg/ml 0.2ml ampoules	2mg **ORALLY** equivalent to 0.2ml (give via a 1ml oral syringe)

Vitamin K (phytomenadione) - major bleeding:

Product	Strength	Dose:
Konakion MM (Vitamin K injection)	10mg/ml 1ml ampoules	5mg **ORALLY or IV** equivalent to 0.5ml (give via a 1ml oral syringe for oral dosing)
Konakion MM Paediatric (Vitamin K injection)	2mg/ml 0.2ml ampoules	5mg **ORALLY or IV** equivalent to 0.5ml (give via a 1ml oral syringe for oral dosing)

Supplies of Injectable Vitamin K Prevention of high INR:

- Each GP practice should carry stock of Konakion MM injection (as part of the Locally Enhanced Service).
- Community Pharmacies with Emergency Supplies also carry stock of Konakion MM Injection (See below):

Sources of oral vitamin K (BaNES CCG):

Name and Address	Contact pharmacist	Contact phone no	Hours of opening:		
			Mon-Fri	Sat	Sun
Boots the Chemist City Centre 1 Newark Street, Southgate Bath BA1 1AT	Claire Hookway	01225 464402	8am-7pm	8am-7pm	11am-5pm
Clement Pharmacy 7 The Street, Radstock Bath BA3 3PL	Roger Mansell	01761 434687	8.30am-12.30pm & 1.30pm-6pm	8.30am-1.30pm	CLOSED
Lloyds Pharmacy 54 High Street, Keynsham Bristol BS31 1DX	Priyesh Shah	0117 9863678	8.30am-5.30pm	8.30 am - 6.00 pm	CLOSED
Sainsburys Pharmacy Green Park Station Green Park Road Bath BA1 2DR	Kobi Addai	01225 332046	8am-9pm	8am-8pm	11am-5pm
Co-op Pharmacy Broadmead Lane Keynsham BS31 1ST	Paul Seath	0117 9862089	7am-11pm	8am-10pm	10am-4pm

Other information:

- Oral vitamin K is almost completely absorbed, making it as effective as intravenous (IV) vitamin K with the delay in action hardly influenced by the absorption time.
- Vitamin K tablets contain 10 mg phytomenadione which will completely reverse anticoagulation. When partial correction is required it may be necessary to give IV vitamin K or alternatively give the IV preparation orally· Allergic reactions following IV administration are rare with new preparations of vitamin K. If the INR is still too high at 24 hours the dose of vitamin K may need to be repeated. Subcutaneous absorption of vitamin K is erratic and not recommended.

Prevention of high INR in future:

- When a patient on warfarin is being prescribed any new medication that may interact with warfarin, reduce dose of warfarin if P450 inhibitor. Recheck INR three to five days later.
- Educate patients regarding alcohol and dietary interactions with warfarin.
- Encourage patients to consult a doctor before major dietary changes.
- Advise patients to avoid cranberry and grapefruit juice.
- Consider use of alternative anticoagulation (i.e. DOACs) or use of dossette box if appropriate.
- Ensure annual review with GP (or relevant healthcare professional) to assess anticoagulation control and management.

References:

- Keeling D, Baglin T, Tait C, et al. Guidelines on oral anticoagulation with warfarin – fourth edition. Br J Haematol 2011; 154:311-24
- Medicines and Healthcare Products Regulatory Agency. Warfarin: changes to product safety information. 2009:11. www.mhra.gov.uk/safety-public-assessment-reports/CON079304
- National Institute for Health and Care Excellence. Head injury. (Clinical guideline CG176.) 2014. www.nice.org.uk/guidance/cg176
- Reddy et al, High INR on warfarin. BMJ 2015;350:h1282 doi 10.1136/bmj.h1282

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Document Control Information

Consultation Schedule

Name and Title of Individual	Date Consulted
Sophie Didcott – Anticoagulation Nurse	10.07.2018
Dr Mark Robinson – Consultant Haematologist	10.07.2018
Rachel Phillips – Anticoagulation Nurse	10.07.2018
Dr Josephine Crowe – Consultant Haematologist	10.07.2018

The following people have submitted responses to the consultation process:

Name and Title of Individual	Date Responded
Sophie Didcott – Anticoagulation Nurse	10.07.2018
Dr Mark Robinson – Consultant Haematologist	10.07.2018
Rachel Phillips – Anticoagulation Nurse	10.07.2018
Dr Josephine Crowe – Consultant Haematologist	10.07.2018

Name of Committee/s (if applicable)	Date of Committee

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Please review the following information to support the ratification of the below named document.

Name of Guideline: _____

Name of author: _____

Job Title: _____

I, the above named author, confirm that:

- The Guideline presented for ratification describes best practise known to me at the time of the development of the guideline.
- I will bring to the attention of my clinical director or line manger any information which may affect the validity of this Guideline as soon as this becomes known to me;
- I have undertaken appropriate consultation on this Guideline and have considered all responses.
- I acknowledge that the policy will be kept under review, and that I may be asked to refine the guideline. If no interim changes are required it will then be formally reviewed on its documented review date.

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To the person approving this Guideline:

Please ensure this page has been completed correctly, then print, sign and **post this page only** to: Director's Office, Wolfson Centre (D1), Royal United Hospital

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