Quality in Practice Committee

Anticoagulation in General Practice/ Primary Care

Part 1: Warfarin

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This quality of care may be dependent on the appropriate allocation of resources to practices involved in its delivery. Resource allocation by the state is variable depending on geographical location and individual practice circumstances. There are constraints in following the guidelines where the resources are not available to action certain aspects of the guidelines. Therefore individual healthcare professionals will have to decide what is achievable within their resources particularly for vulnerable patient groups.

The guide does not however override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of individual patients in consultation with the patient and/or guardian or carer.

Guidelines are not policy documents. Feedback from local faculty and individual members on ease of implementation of these guidelines is welcomed.

EVIDENCE-BASED MEDICINE

Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.

In this document you will see that evidence and recommendations are graded according to levels of evidence (Level 1 – 5) and grades of recommendations (Grades A-C) respectively. This grading system is an adaptation of the revised Oxford Centre 2011 Levels of Evidence.

LEVELS OF EVIDENCE

Level 1: Evidence obtained from systematic review of randomised trials

Level 2: Evidence obtained from at least one randomised trial

Level 3: Evidence obtained from at least one non-randomised controlled cohort/follow-up study

Level 4: Evidence obtained from at least one case-series, case-control or historically controlled study

Level 5: Evidence obtained from mechanism-based reasoning

GRADES OF RECOMMENDATIONS

A Requires at least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation (Evidence levels 1, 2).

B Requires the availability of well-conducted clinical studies but no randomised clinical trials on the topic of recommendation (Evidence levels 3, 4).

C Requires evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities. Indicates an absence of directly applicable clinical studies of good quality (Evidence level 5).

ICGP QUALITY IN PRACTICE COMMITTEE 2014

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How to Use This Document

It is intended that this document will encourage reflection on the current anticoagulation prescribing system in your practice with consequent benefits for both practice personnel and patients. It has been developed to assist you in analysing your current anticoagulation prescribing methods and for ongoing review. It is not intended to be the definitive text on prescribing anticoagulants in primary care.

The document is divided into two parts – Part 1 Warfarin and Part 2 New/Novel Anticoagulants.

Introduction

It is estimated that approximately 950,000 people take warfarin in the UK and this number is set to increase rapidly in the next decade[1]. Warfarin is increasingly prescribed and monitored in the general practice setting. Warfarin acts as an anticoagulant by antagonising the effects of vitamin K and it takes 48 -72 hours for the anticoagulant effect to develop fully[2]. The main indications for warfarin are deep vein thrombosis, pulmonary embolism, atrial fibrillation in patients at risk of embolism and those with mechanical prosthetic heart valves. The prothrombin time reported as the international normalised ratio (INR) is used to monitor patients on warfarin therapy. Due to its narrow therapeutic index and high risk: benefit ratio careful consideration is needed prior to initiation of warfarin – balancing the risk of thromboembolism versus major haemorrhage.

Starting Warfarin in the Primary Care Setting

Warfarin is usually started in the hospital setting for patients requiring rapid induction due to acute thrombosis. In cases where rapid anticoagulation is not required warfarin is increasingly commenced in the primary care setting. The first consultation is often after the patient has been discharged from hospital or attended the medical out patients department. Contraindications should be checked and include haemorrhagic stroke, pregnancy and severe renal or hepatic impairment[2]. Caution should be exercised in patients with a history of peptic ulcer, recent surgery, recent ischaemic stroke, concomitant use of drugs that increase risk of bleeding, severe hypertension and bacterial endocarditis[2]. Social supports and ability to adhere to prescribing advice may also be an important factor when considering initiation.

Loading dose regime

The British Committee for Standards in Haematology guidelines (BCSH)[3] state that a slow loading regimen (2mg -5mg) is safe in patients who do not need rapid anticoagulation and achieves therapeutic anticoagulation in the majority of patients within 3-4 weeks (2C) This helps to reduce the risk of overcoagulation and bleeding. Ten milligrams is the usual starting dose in the hospital setting where rapid anticoagulation is often required. However there is no evidence to show that a ten milligram loading dose is superior to a five milligram loading dose (2B)[3]. Extra care (and therefore a lower starting dose) should be taken with patients that are at increased risk of side effects with warfarin especially if aged over 65 and underweight (<45 kgs) and those with congestive cardiac failure, mild to moderate renal failure or medications known to potentiate oral anticoagulation (Appendix 1).

The INR rises without clinical anticoagulant effect for the first two days of treatment. The dose should be gradually increased with INR every day or alternate days [2] until the target is reached for two consecutive values. Weekly INRs should follow until good control is established. During the maintenance phase it may take 4-5 days for dose changes to be reflected in the INR. INR should be repeated at 1-4 weekly intervals depending on stability of results[3]. If results remain stable for three months then repeat INR testing can be gradually extended up to every 12 weeks [4] (2B). The INR should be performed more frequently – 2-3 times a week if new medications, intercurrent illness or significant diet change (Appendix 1 and 2) are a factor. If a drug with known interaction with warfarin is prescribed then the INR should be checked after 3-5 days (2C)[3]. Even with intensive clinical support only 60% of INRs are within the therapeutic range at any one time[5]. Computer assisted dosing has been shown to be superior to manual dosing (1A)[3]

Check list for patient advice at initial consultation

- Ensure the patient understands the indication for warfarin, the target INR and the duration of treatment.
- Counsel on the importance of compliance with medication taken at the same time each day usually in the evening[6].
- Advise re; the importance of monitoring and achieving target INR and that the INR test is best checked in the morning[6].
- Clear written instructions should be given to patients on what dose to take and when the return visit for INR is scheduled.
- Advise re; interactions with food and medications including herbs and supplements. (Appendix 1 and 2)
- Patients should be advised to moderate their alcohol intake and that a large intake irregularly (e.g. at weekends) is most harmful to INR control [6].
- Female patients of child bearing age should be advised regarding contraceptive methods and the issue of teratogenicity should be addressed [2].
- For visually impaired or colour blind patients consider using one milligram brown tablets only and taking five or six as needed in order to avoid confusion with tablets of varying colours.
- Encourage use of Alert bracelets[6]
- Signs and symptoms of over anticoagulation and under anticoagulation need to be stressed.
- Advise on action if bleeding/adverse reaction occurs
- Give patient information leaflet

http://www.bcguidelines.ca/pdf/warfarin_management_patient_guide.pdf

Practice organisation

Clinical indications, duration of therapy, loading regime, dosage, prothrombin time target range and interval for repetition of INR should be clearly documented in notes (see Appendix 3).

Patients should have a baseline coagulation screen, urea and electrolytes, liver function tests and full blood count prior to commencement[5]. There is no indication for pharmacogenetic testing prior to initiation of warfarin therapy[5] (A). Testing for inherited forms of thrombophilia is not routinely indicated in patients with venous thromboembolism [7](A)

Indications and Targets

Atrial Fibrillation[5]

When a patient is diagnosed with Atrial Fibrillation their risk factors for developing a cardio-embolic stroke should be considered when deciding if anticoagulation is indicated. Patients at low risk of stroke may be treated with aspirin and warfarin is reserved for those at higher risk. The $CHADS_2$ score has been validated and is used widely (Congestive Heart Failure, Hypertension, Age_>75years, Diabetes Mellitus and prior Stroke or TIA). Stoke risk is calculated by assigning two points for prior history of ischaemic stroke or TIA and one each for age 75 years or over, congestive heart failure, hypertension and diabetes mellitus. Additional risk factors are used in the CHA_2DS_2-VASc score. Two points are assigned to prior history of ischaemic stroke or TIA and age over 75 years and one point is awarded for congestive heart failure, hypertension, age 65-74 years, diabetes mellitus, vascular disease and female sex.

The $CHADS_2$ or the CHA_2DS_2-VASc score should be used routinely to assess patients with atrial fibrillation (Level D). All patients with a $CHADS_2$ or CHA_2DS_2-VASc score of>/=1 should be considered for warfarin. (Level A). Patients at low risk (age<65years and lone AF) do not require antithrombotic therapy. This applies to male patients with CHA_2DS_2-VASc score =0 and female patients with CHA_2DS_2-VASc score=1 when the single point is allocated due to female sex (level B).

The European Cardiology Society[8] recommend the use of the HAS BLED score to assess risk of bleeding in patients with AF. One point is assigned to each of the following risk factors, hypertension, abnormal liver function, abnormal renal function, history of stoke, bleeding history or predisposition, labile INR, age>65years, alcohol abuse, drugs e.g. NSAIDs concomitantly. If the score is >/= 3 they are denoted as high risk of bleeding.

Tables 1 and 2 have been modified from current BCSH guidelines and give the indications for oral anticoagulation, target INR and associated grade of recommendation.

Common Indications for Oral Anticoagulation	Target INR (Range +/- 0.5)	Grade of Recommen-dation
Venous Thromboembolism	2.5	1A
Atrial fibrillation with a high risk of cardioembolic stroke	2.5	1A
Atrial fibrillation associated with mitral stenosis or regurgitation or history of systemic embolism or left atrial thrombus	2.5	1A
Cardioversion*	2.5	2C
Mechanical prosthetic heart valve**	3.5	2B
Bioprosthetic valves***	2.5	1B – 1C

Table 1 [3] *Common indications for oral anticoagulation, target INR and Grade of recommendation*

* Cardioversion target INR at least 2.5 but not greater than 3.0 for three weeks before and four weeks after (2C).

** Target INR for mechanical prosthetic valve varies from 2.5 to 3.5 depending on the type of valve and aortic or mitral valve location – the advice of the specialist fitting the valve should be followed.

*** Bioprosthetic valves may be used instead of mechanical valves in patients at high risk of bleeding. Advice of the specialist fitting the valve should be followed.

Note: warfarin is generally inferior to therapeutic low molecular weight heparin in patients with cancer associated VTE (1A).

Less Common Indications for Oral Anticoagulation[3]	Target INR (Range +/- 0.5)	Grade of Recommen-dation
Recurrence of venous thromboembolism whilst on warfarin	3.5	2C
Venous thromboembolism associated with antiphospholipid syndrome	2.5	1A
Cardiomyopathy	2.5	2C

Table 2 [3] *Less Common indications for oral anticoagulation, target INR and Grade of recommendation*

Duration of Therapy

DVT/PE

The recommended duration of therapy for a first episode of DVT or PE [3] is three months (1A). Reassess at three months for continuing risk factors and if present consider longterm anticoagulation. Continuing risk factors include the following:

- Idiopathic, premature or familial presentation.
- Thrombophilias.
- Malignancy.
- Chronic infection.
- Inflammatory bowel disease.
- Nephrotic syndrome.
- Thromboembolic pulmonary hypertension.

Valvular disease[5]

Longterm warfarin therapy in patients with mitral valve prolapse, mitral annular calcification or isolated aortic valve disease is only indicated if they have a history of systemic embolism or atrial fibrillation (Grade D). Patients with mechanical heart valves require longterm treatment (Grade D). Patients with Biprosthetic valves and other risk factors such as atrial fibrillation and low ventricular ejection fraction should be considered for longterm warfarin therapy. The addition of aspirin or dipyridamole should be considered in patients who have had a systemic embolism despite adequate warfarin therapy (A).

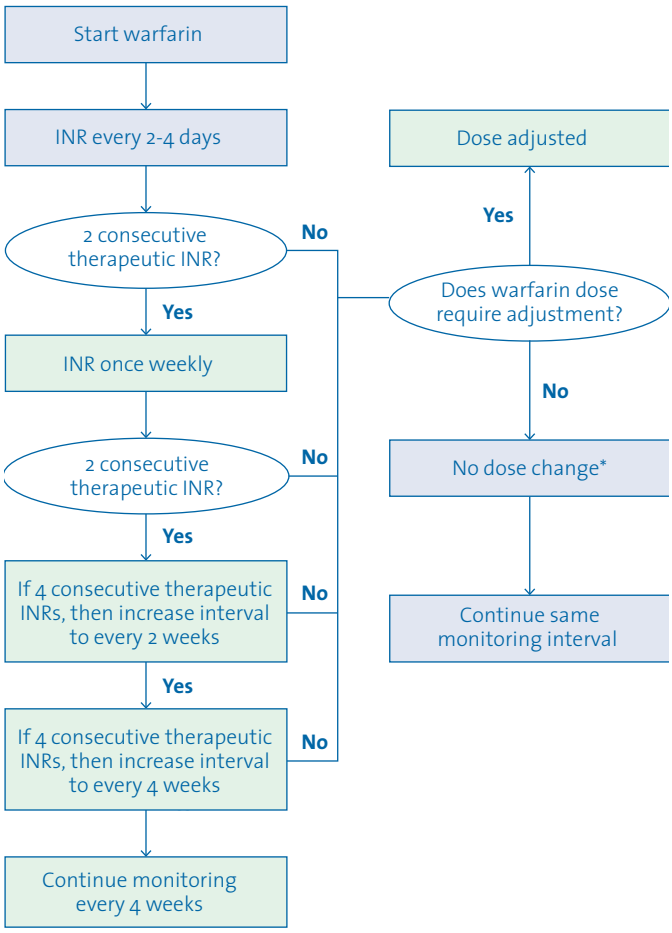
Stopping warfarin therapy

Warfarin can be discontinued suddenly when the duration of therapy is complete[3] (B). Patients should be warned re factors that will put them at increased risk of recurrence, namely immobilisation, surgery, trauma, pregnancy/puerperium.

Follow Up Visits

At follow up visits the following should be undertaken:

- Check compliance (ensure correct dosage is being taken and patient understands the colour coding dosage of warfarin).
- Enquire re concerns with medication.
- Enquire re adverse events.
- Dosage, INR and interval for repetition of INR should be clearly documented in notes and patient held booklet



Flowchart 1[6] INR Testing interval

Notes: Increase frequency of INR (every 2-4 days) if any of the following happens: non-therapeutic INR, intercurrent illness, any medication change (including herbal), or significant diet change.

* Some reasons for NOT changing the dose when the INR is not therapeutic:[14]

1. Patient noncompliant (forgot doses or took too many doses)
2. Inadequate number of days before previous dose change to take full effect
3. Binge alcohol use (will transiently elevate INR)

INR intervention

(Refer to flowchart above for timing of next INR)[6]

If INR ≤ 1.5 - Give one time top-up equal to 20% of weekly dose and increase weekly dose by 10-20%.

1.5 < INR < therapeutic range - No change in dose. If two consecutive INRs are low, increase the weekly dose by 10-20%.

INR in therapeutic range - No change.

INR > therapeutic range but < 5.0 - Lower weekly dose (10-20%) or consider omitting one single dose. Increase the frequency of INR monitoring and resume therapy at 10-20% lower weekly dose when INR therapeutic.

Note: If the INR is only minimally elevated (0.1 - 0.4 above upper limit of the therapeutic range), dose reduction may not be necessary.

Excessive Anticoagulation

The risk of bleeding increases significantly with an INR > 5.0.

Patients at increased risk of bleeding are those on their first year of warfarin therapy, aged over 70 years, uncontrolled hypertension, cardiac failure, renal or liver failure, thromboctyopaenia, platelet dysfunction, coagulation defect, underlying malignancy, excessive alcohol intake, cognitive or psychological impairment, history of falls, and those with a past history of gastrointestinal bleeding or stroke.

In the case of an elevated INR proceed as follows[3]:

- Consider the possibility of laboratory or coagulometer error.
- Check if there is an obvious cause for the fluctuation e.g. compliance, new medication including OTC, alcohol consumption, change in diet, intercurrent illness and correct this underlying cause first.
- If INR is >5 but it is <8 and no bleeding then stop warfarin for one to two doses and restart at a lower maintenance dose (1B).
- If the INR is >8.0 with no or minor bleeding stop warfarin, monitor INR daily and restart when INR <5. Oral Vitamin K at a dose of 1-5mgs should be administered (1B). The effect of a single dose of Vitamin K can be expected within 8-24 hours[6]. Vitamin K is not available in an oral formulation but the IV preparation can be given by mouth (unlicensed use[2])
- In the case of life threatening bleeding refer to hospital for IV Vitamin and for factor prothrombin complex concentrate (1B).

Head injury

All head injuries even those that appear relatively minor should be managed with extreme caution in patients on warfarin. The commonest cause of fatal or disabling bleeding in patients receiving anticoagulant therapy is intracranial or intraspinal bleeding. Any patients who have a head injury, headache (recent, severe), confusion, impaired consciousness or focal neurological signs and symptoms need urgent referral. A lower threashold for CT Scan should be used for patients on warfarin[3] (2C).

General Management Issues

Suspected non-adherance

If you suspect that a patient is encountering difficulty with adhering to their warfarin regime consider the following:

- Discuss understanding of dosage, importance of compliance.
- Consider liaison with local pharmacist.
- Suggest pill box.
- Suggest setting alarm or reminder on phone daily.
- Try 1mg tabs only if confusion with colours

Change in patient medication

It is difficult to predict how the INR will be affected by new medications as some patients have no reactions to medication change and some drugs (e.g. amiodarone) may not affect the INR for quite some time. However it is best to be proactive and anticipate INR changes when putting patients on new medications and arrange an early review. In the case of antibiotics clarithromycin is the commonest agent to affect INR. The best approach is to check what antibiotic the patient has had previously and how it affected the INR and adjust accordingly. It is not necessary to adjust dosage with all courses of antibiotics unless proven in the past to affect the INR or the INR is concurrently out of range. Appendix 1 contains a list of common drugs that interact with warfarin.

Pain relief for gout

It is better for patients with gout to be on prophylactic agents such as allopurinol for control rather than having to take non-steroidal anti-inflammatory drugs intermittently which interact with warfarin. Warfarin should be monitored carefully when a patient is commenced on allopurinol as it affects warfarin metabolism. Colchicine can be given to patients on warfarin[2] but its use is limited by toxicity at high doses.

Combination warfarin and antiplatelet therapy[3]

There are a number of clinical situations where both warfarin and antiplatelet agents may be indicated even though combination therapy leads to a marked increase in bleeding risk. In all cases the expected duration of therapy should be carefully recorded in the notes at the commencement of the prescription and reviewed when the indication for the agents is changed.

Patients on antiplatelet agents who develop an indication for warfarin

Patients on antiplatelet agents for peripheral arterial disease or previous ischaemic stoke should stop these agents if commenced on warfarin therapy (1B).

Patients on antiplatelet therapy as secondary prophylaxis with stable ischaemic heart disease should stop these agents while being treated with warfarin (2B).

- Patients on a single antiplatelet agent post acute coronary syndrome (ACS) should continue aspirin (if commenced on warfarin) until 12 months post ACS unless considered a high bleeding risk (2B).
- Patients on both aspirin and clopidogrel following an ACS or stent placement who develop an indication for warfarin therapy should be discussed with their cardiologist with a view to minimising the duration of triple therapy and the increased risk of bleeding (2C).
- When combined warfarin and single antiplatelet agent are indicated aspirin has a lower risk of bleeding than clopidogrel (2C).

Patients on warfarin who develop an indication for an antiplatelet agent[3]

Patients on warfarin who develop an acute ischaemic arterial event may have an indication for an antiplatelet agent.

- In the case of coronary artery stenting if a bare metal stent (rather than a drug eluting stent) is used triple therapy would only be needed for four weeks followed by aspirin and warfarin for 12 months (2B).
- Patients with acute coronary syndrome who do not have a stent should be considered for four weeks triple therapy followed by aspirin and warfarin for 11 months (2C).

Swelling and pain in legs after Deep Vein Thrombosis

Swelling in legs post Deep Vein Thrombosis (DVT) is very variable but gradual improvement should be seen after 1-3 months. Patients should be advised to elevate their legs and maintain mobility – in the case of the elderly this may just mean walking around the house. Graduated elastic compression stockings should be worn on the affected leg following proximal DVT for at least two years to reduce the incidence of post-phlebitic syndrome[7] (A).

Minor bleeding and bruising

If the patients INR is within therapeutic range and they have no other symptoms, advise the following course of action:

- Gum bleeding - apply pressure and see dentist. Tranexamic acid mouthwash may also be helpful [3]
- Nose bleeds – hold nose tightly just below bridge for 20 minutes – consider nasal packing - if in range no adjustment needed but if outside range decision on referral needed.
- Bleeding from varicose vein - apply pressure to area.
- Blood pr or haematuria must be investigated.

Elective surgery

Some invasive procedures such as joint injections, cataracts and certain endoscopy procedures do not require warfarin to be stopped [3]. However if a patient is awaiting elective surgery the surgical team should be contacted for advice as most surgery requires discontinuation of warfarin and use of heparin to prevent adverse events.

Dental extraction

The British Committee for Standards in Haematolog[9] key recommendations in relation to dental extraction are as follows:

1. The risk of significant bleeding in patients on oral anticoagulants with a stable INR in the range 2-4 (i.e.<4) is very small. The risk of thrombosis may be increased when anticoagulants are stopped therefore they should not be discontinued in the majority of patients requiring outpatient dental surgery including dental extraction (A).
2. A check INR is recommended 72 hours prior to dental surgery in patients who have a stable INR (Grade A).
3. A single dose of antibiotic used as prophylaxis prior to dental surgery in patients with an INR in the range 2-4 should not require any change in anticoagulant dose (Grade C).

Near patient testing

Many primary care centres/general practices now use point of care devices in their management of patients on warfarin. Precision and accuracy of point of care coagulometers were reviewed in a recent systematic review and found to be comparable to laboratory measures[10]. A recent systematic review and meta-analysis on self monitoring of oral anticoagulation[11] concluded that self monitoring (test result is managed by health care provider) and self management (patient interprets their own result and adjusts their dose accordingly) is a suitable option for suitable patients of all ages.

Low molecular weight heparins[2]

Low molecular weight heparins (dalteparin, enoxaparin and tinazaparin) are used for prophylaxis of DVT in the general practice setting. The standard regimen does not require anticoagulant monitoring. Low molecular weight heparin (LMWH) dose varies depending on agent used and indication. Dose calculation based on weight may be necessary particularly for patients underweight or overweight. For surgical patients higher doses are required for patients undergoing Orthopaedic as compared to general surgical procedures. Older patients and those with impaired renal or hepatic function are at higher risk of bleeding and lower doses are indicated. Heparin induced thrombocytopaenia may occur in patients on LMWH[7]. It is recommended that a platelet count is checked prior to commencement of therapy (Grade D)[7]. The risk of thrombocytopaenia is higher in surgical (particularly lower limb Orthopaedic and Cardiac Surgery) than medical or obstetrical patients[7]. LMWH are used in pregnancy for acute thromboprophylaxis (Grade C) and for those at risk are usually started in the first trimester of pregnancy (Grade D)[7].

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Appendix 1: Important Interactions with Warfarin (Medications, Foods, Herbs and Supplements)[6,12]

The following list includes only commonly used agents and only those with more than two case reports of clinically significant interaction and/or serious adverse effect. The BNF should be consulted when any medication is prescribed for a patient on warfarin

MEDICATIONS

Increased bleeding risk due to increased effect of warfarin: ↑ INR

Analgesics
- acetaminophen[1]
- aspirin (high dose)
- salicylates, topical
- tramadol

Antiarrhythmics
- amiodarone
- propafenone

Antibiotics e.g.
- amoxicillin
- cephalosporins (some)
- isoniazid
- fluoroquinolones[2]
- macrolides[3]
- metronidazole
- sulfonamides
- telithromycin
- tertracyclines[4]

Anticonvulsants e.g.
- phenytoin (early on)
- sodium valproate

Antidepressants e.g.
- duloxetine
- venlafaxine
- SSRI
  - fluoxetine
  - fluvoxamine
  - paroxetine
  - sertraline
  - citalopram

Antifungals e.g.
- Fluconazole
- Itraconazole
- ketoconazole
- miconazole (oral, vaginal)
- voriconazole

Antihyperlipidemics
- ezetimibe
- fenofibrate
- fluvastatin
- gemfibrozil
- rosuvastatin

Other
- allopurinol
- cimetidine
- corticosteroids (oral)
- proton pump inhibitors (PPI)
  - isolated case reports with all PPIs
- thyroid supplements

Increased bleeding risk due to non-warfarin mechanisms

Analgesics
- aspirin
- cox II inhibitors
- nonsteroidal anti-inflammatory drugs

Anticoagulants/Antiplatelet agents
- Antidepressants
  - selective serotonin reuptake inhibitors

Decreased effect warfarin ↓ INR

Antibiotics e.g.
- rifampicin

Antidepressant
- trazodone

Antiepileptics e.g.
- carbamazepine
- phenobarbitone
- primodone
- phenytoin (later on)

Other
- antithyroid agents
- cholestyramine

FOODS, HERBS AND SUPPLEMENTS

Increased bleeding risk due to increased effect of warfarin: ↑ INR

Alcohol (binges)
Birch
Chitosan
Cranberry Juice/extract (dose dependent)
Danshen
Dong Quai
Evening Primrose Oil
Fish Oil
Garlic Supplements
Ginkgo
Glucosamine ±chondroitin
Grapefruit
Licorice
Mango
Papaya extract
Willow

Increased bleeding risk due to non-warfarin mechanisms

Alcohol (heavy drinkers)
Garlic supplements

Decreased effect warfarin ↓ INR

Alcohol (chronic)
Alfalfa
Coenzyme Q10
Ginseng (American,Asian)
Smoking
St. John's Wort
Vitamin C (high dose)
Vitamin K

1. Randomized controlled trials suggest 2-4 g acetaminophen daily has a clinically significant effect on INR [Parra, 2007; Mahe, 2006].
2. Fluoroquinolones e.g. ciprofloxacin, Levofloxacin, moxifloxacin.
3. Macrolides include azithromycin, erythromycin, clarithromycin.
4. Tetracyclines including tetracycline and doxycycline.
5. Consuming small or moderate amounts of alcohol in patients with normal liver function is unlikely to have an effect.
6. Consuming foods with small amounts of garlic is unlikely to have an effect.

Appendix 2: Vitamin K Content of Selected Foods[6]

VERY HIGH (>500µg/100g serving)	HIGH (100–500µg/ 100g serving)	MEDIUM (25–100µg/100g serving)
Kale	Broccoli (raw)	Asparagus (cooked)
Parsley	Brussel sprouts (5)	Cabbage (cooked)
Seaweed	Cauliflower (cooked)	Celery (3 stalks raw)
Spinach	Chick peas (cooked)	Green beans (cooked)
Swiss Chard	Chinese cabbage (cooked)	Green onions (raw)
Turnip Greens	Endive (raw)	Green tomato (raw, whole)
Green Tea	Lentils (cooked)	Lettuce (1 cup raw)
	Mung beans (cooked)	Okra (cooked)
	Soybeans (cooked)	Watercress (raw)
	Beef liver	Green apple (1 small)
		Bok choy (cooked)
		Pistachio nuts
		Soybean oil (15ml)
		Rolled oats
		Wheat bran
		Wheat flour
		Wheat germ
		Chicken liver
		Pork liver
		Coffee (8 oz/235ml)

More information about Anticoagulants: vitamin K and your diet is available at the HealthLink BC web site: *www.healthlinkbc.ca/kbase/as/tb1790/how.htm*

For more information sources for patients taking warfarin and their families: *http://www.bcguidelines.ca/patient_guides.html*. See: Warfarin Resource Guide: Information Sources for Patients.

Source: *British Columbia Ministry of Health Services Guidelines and Protocols Advisory Committee*

Appendix 3: Warfarin Flow Chart

*(**Source:** Dr Ray O Connor)*

Date: _____ **Date of Birth:** _____

Name: _____ **Phone Number:** _____

Address: _____ **Indication for Warfarin:** _____

_____ **Duration of Treatment:** _____

_____ **Target INR Range:** _____

DATE	INR	CURRENT WARFARIN DOSE	NEW WARFARIN DOSE	REVIEW IN	PHONED