

Coumadin

Medical Directive: INR management for patients with Atrial Fibrillation and Prosthetic Valves.

Approval Date:

Renewal Date:

Practitioner: RN (EC), RN, RPN

Clinical Criteria:

1. Patient on oral anticoagulant therapy
2. Routine monitoring of INR at one week to one month intervals
3. Routine risk review- medication regimen, OTC products, dietary parameters that may affect therapy (e.g. alcohol, green vegetable intake), compliance
4. No episodes of major bleeding within previous month (consult with physician)
5. Target INR range is 2-3 for patients with Atrial Fibrillation and 2.5-3.5 for those with prosthetic valves.

Contraindications:

1. Patient noncompliant with therapy and /or monitoring (refer to physician).
2. Major bleeding episode within the last month.
3. Pregnancy

Process:

1. INR within therapeutic range: Practitioner to call patient and, confirm dosage of coumadin and schedule for INR recheck with patient within 24 hours of receiving result
2. INR recheck schedule:
 - weekly until stable then increase to q2-4 weeks accordingly. Patients are considered stable if they have been within therapeutic range for 4 tests at 2 week intervals. The time interval between INR testing can then be increased to 3-4 weeks.

Dosage adjustment - maintenance therapy

Dosage adjustment is not required for minor fluctuations (i.e 1.8 -2.0, 3.0-3.2 for AF or 2.3-2.5, 3.5-3.7 for pros. valve) of INR as long as the results remain within the patient's target range. Fluctuations of INR beyond the patient's target range should always be investigated and corrected where possible. Consider causes such as a change in dosage of warfarin, patient compliance, medication profile, diet, and current illness. The patient should be followed using the Warfarin Record Sheet. The following scheme is recommended for dosage adjustment in patients with an INR target range between 2.0 – 3.0 in Table 1, 2.5-3.5 in Table 2.

Table 1

Dosage Adjustments for Patients on Warfarin Maintenance Therapy Target INR 2.0-3.0	
INR	Dosage Adjustment
<1.5	Increase weekly dose by 20% and give one time top-up additional amount equal to 20% of weekly dose
1.5-1.9	Increase weekly dose by 10%
2.0-3.0	No change
3.1-3.4	No change – recheck in one week. If persistent, decrease weekly dose by 10-20%
3.5-3.9	Hold x 1 day and retest in 10 days
4.0-5.0	Omit 1 dose; decrease weekly dose by 10-20% and recheck in 2-5 days
> 5.0	See Table 2 for Management of Elevated INR with no or minor bleeding

Table 2

Dosage Adjustments for Patients on Warfarin Maintenance Therapy Target INR 2.5-3.5	
INR	Dosage Adjustment
<1.5	Increase weekly dose by 20% and give one time top-up additional amount equal to 20% of weekly dose
1.5-2.4	Increase weekly dose by 10%
2.5-3.5	No change
3.6-4.0	No change – recheck in one week. If persistent, decrease weekly dose by 10-20%
4.1-5.0	Hold x 1 day and retest in 3 days; consider decreasing weekly dose by 10% and recheck x 3 days.
> 5.0	See Table 2 for Management of Elevated INR with no or minor bleeding

Table 3

Management of elevated INR with no or minor bleeding	
INR	Dosage Adjustment
5 – 9	Omit 1 to 2 doses Increase the frequency of INR monitoring (daily) Resume therapy at 10-20% lower dose when INR reaches patient's target range NP or RPN to come up with proposed plan but needs to be cleared by physician prior to implementation
>9	Call patient and inquire about bleeding and stop Warfarin immediately until further instruction Consult with physician for further instructions i.e. (frequency of monitoring, Vitamin K, and reduction in dose). Ensure patient is aware of next INR check


Note: The duration of action of a single dose of Coumadin is 2-5 days. Peak effect is within 72-96 hours.

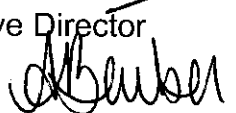
Signature:

Physician

Executive Director

RN(EC)





References:

1. Guidelines and Protocols Advisory Committee, (2004). Treatment of Patients Overanticoagulated with Warfarin. Retrieved February 22, 2005, from www.healthservices.gov.bc.ca/msp/protoguides
2. Guidelines and Protocols Advisory Committee, (2004). Initiation and Maintenance of Warfarin Therapy. Retrieved February 22, 2005, from www.healthservices.gov.bc.ca/msp/protoguides
3. Heck AM, DeWitt BA, Lukes AL. Potential interactions between alternative therapies and warfarin. *Am J Health Syst Pharm* 2000;57(13):1221-1227.
4. Hirsh, Jack, *Guidelines for Anti thrombotic Therapy: Summary of the American College of Chest Physicians Recommendations*. 1998 3rd ed., Hamilton: B.C. Decker, 1999.
5. M de Lemos M, Sunderji R. Herbal Interactions with Warfarin. *Drugs & Therapeutics Newsletter – Vancouver Hospital & Health Sciences Centre*. May, 1999.

Appendix 1. Drugs, Herbs and Supplements: Potential Interactions with Warfarin*

Warfarin Effect Increase↑	Warfarin Effect Decrease↓	Little or No Effect✱
Medication		
<p><u>Antibiotic/Antifungal</u> Azoles (flucanazole, itraconazole, miconazole, cotrimaxazole) Carbenicillin Cephalosporins Clarithromycin Erythromycin Isoniazid Metronidazole Quinolones Tetracycline Trimethoprim-Sulfa combinations (Septra)</p>	<p><u>Antibiotic</u> Dicloxacillin Naphcillin Rifampin</p>	<p><u>Antibiotic/Antifungal</u> Ketaconazole vancomycin</p>
<p><u>Analgesic/anti-inflammatory</u> Acetaminophen (high doses) Aspirin & someNSAIDs (including COX-2 inhibitors) Allopurinol Propoxyphene Sulfinpyrazone Zafirlukast</p>		
<p><u>Antiarrhythmic</u> Amiodorone Propaphenone Quinidine</p>		
<p><u>Miscellaneous</u> Anabolic steroids Chroral hydrate Cimetidine Clofibrate Disulfiram Heparins Omeprazole Phenytoin (transient effect) Simvastatin Tamoxifen Thyroxine</p>	<p><u>Miscellaneous</u> Barbiturates Carbamazepine Chlordiazepoxide Azathioprine Cyclosporine Etretnate Trazodone</p>	<p><u>Miscellaneous</u> Alcohol Antacids Atenolol Bumetadine Enoxacin Famotidine Fluoxetine Ketorolac Metoprolol Naproxen Nizatidine Psyllium Ranitidine</p>
Herbs		
Gingko Danshen	Ginseng Vitamin K containing herbs e.g alfalfa, green tea)	echinecea

*This list is not meant to be all-inclusive. For detailed listing, please see Reference 3 and 5.

Appendix 2. Vitamin K Content of Foods and Beverages*
Daily requirement 65 - 80 micrograms (µg)

Food Group (µg/100g)
Vitamin K content

Coriander or cilantro, cooked	1,510
Coriander, raw	310
Parsley, cooked	900
Parsley, raw	540
Brussel sprouts	438
Spinach, raw	400
Mint, raw	230
Broccoli, cooked	270
Cabbage, raw	145
Lettuce	120-210
Green beans	47
Peas, cooked	23
Celery, raw	12
Cauliflower, cooked	10
Other: Kidney beans, lima beans, corn, cucumber	> 10
egg plant, mushrooms, onion, pepper, potato, sweet potato, radish, tofu, tomato	
Fruits	
Apple with peel (green)	60
Apple without peel (raw)	0.4
Kiwifruit, raw	25
Other fruits	< 20
Dairy products	
Eggs	2
Nuts	
Pistachio	70
All other nuts	< 10
Meat, poultry, fish (without oil)	
Meat, poultry, fish (without oil)	< 5
Grain products (without oil)	
Grain products (without oil)	< 10
Desserts (most)	
Desserts (most)	< 15
Fats/dressings	
Soybean oil	193
Canola	141
Mayonnaise	81
Margarine, hard	51
Olive oil	49
Limit salad oil, canola oil, soybean oil to 2 tablespoons per day.	
Butter, gravy, sour cream, almond oil, corn oil, peanut oil, sesame seed oil, < 15	
sunflower oil, salad dressing (Italian)	

*Based on Provisional Table on the Vitamin K Content of Foods, United States Department of Agriculture, 1994.