Medical Directive

Anticoagulation Management

Effective
Revision Date:
Review

Lead Contact:	Appendix Attached: NO Title: N/A

Pharmacist :

Order/Delegated Procedure	Appendix Attached: NO Title: N/A

Primary responsibility of monitoring warfarin anticoagulation therapy by: Obtaining INR results through use of a lancing device and POC INR Monitor (CoaguChek) Adjustment of warfarin dosing regimen based on Warfarin Management Reference (maintenance dose adjustments and one time dose adjustments) Determining the frequency of INR monitoring Administration Vitamin K based on Warfarin Management Reference Authorization of new and refill warfarin prescriptions on behalf of the patient's primary physician Transition between oral anticoagulants

Recipient patients:	Appendix Attached: YES Title: Referral Form Authorizer Approval Form

Active patients of Coronation Family Physicians provider who has approved this directive by signing the Authorizer Approval Form All patients must be referred by their primary provider using the Cook's Pharmacy Referral Form

Authorized Implementers:	Appendix Attached: YES Title: Authorized Implementer Form

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Implementers will include all pharmacists employed by the Cooks family of Pharmacies that have received certification through U of W for Management of Oral Anticoagulation Therapy and have signed the Implementer Authorization Form

Indications:	Appendix Attached: NO Title: N/A

Including but not limited to:
Venous Thromboembolism (DVT, PE)
Atrial Fibrillation
Prosthetic Heart Valves
Thrombophilia
Secondary prevention of Myocardial Infarction
Recurrent Thromboembolic Events
Preparation for Cardioversion

Contradictions:	Appendix Attached: NO Title: N/A

Patient Refusal
Active Bleeding
Pregnancy
INR < 1.5 or > 5.0

Consent:	Appendix Attached: YES Title: Consent Form

Patient or substitute decision maker will provide written consent for warfarin management and collection of medical information using INR Online

Guidelines for Implementing the Order/Procedure	Appendix Attached: YES Title: Warfarin Management Reference

Anticoagulation Clinic will occur at Cook's Pharmacy Cambridge, Wednesday and Friday afternoon's between 1pm-4:30pm (subject to change due to store hours)
The Pharmacist will perform a POC INR test
If INR does not fall within prescribed therapeutic range:

1) Inquiries will be made into potential reasons
2) Possibility of serious bleeding or thromboembolic event will be assessed
3) Warfarin dose will be adjusted based on Warfarin Management Reference

The patient will be scheduled for a follow up appointment based on Warfarin Management Reference
If INR is not within range for 3 consecutive readings, the patient's primary physician will be contacted.
If the INR is >5.0, < 1.5 and has a mechanical heart valve, and/or is potentially experiencing a major bleed/thromboembolic event, the patient's primary physician will be contacted to discuss next steps.
If the primary physician is unavailable or a substitute provider cannot be found, the patient will be sent to seek emergency medical care.
Recommendations for management of supratherapeutic INR can be found within the Warfarin Management Reference.

Documentation and Communication:	Appendix Attached: NO Title: N/A

INR readings and dosing will be monitored by the pharmacist using anticoagulant management software (INR ONline)
The patient's EMR will be updated after each encounter on a rolling chart
The Pharmacist will provide updates to the patient's primary provider following encounters that may need attention
The Pharmacist will be responsible to contact the physician immediately (in person/by phone/via EMR) if the encounter requires emergent care
The patient's physician may request additional information on their patient's warfarin management at any time
If the primary provider is aware of or has initiated a medication that may interact with warfarin, communication will be sent to the Pharmacist to facilitate appropriate follow-up or direction may be given to the patient to follow up with the Pharmacist.

Review and Quality Monitoring Guidelines:	Appendix Attached: NO Title: N/A

Review of this Medical Directive will occur on a biannual basis and involve both the Authorizers and the Implementers. If at any time between routine reviews a participant becomes aware of new information that may have an impact on current clinical practice or there are other issues pertaining to this directive, a review and subsequent update may be made at that time.

The Pharmacist will engage the services of Oneworld Accuracy Program from HealthMetrx to provide a laboratory quality assurance program to ensure the continued standard of the CoaguChek Monitor

The Pharmacist will also review the following metrics on a quarterly basis to assure patient management is optimized:

1) Time in Therapeutic Range (TTR) by days
2) Missed appointments
3) Critical INRs
4) Major/Minor Bleeds

5) Thromboembolic events

References:

1) Goodman S. Taddle Creek FHT Anticoagulation Management Medical Directive. Apr 7, 2020. TCFHT-MD08_Anticoagulation-Management-2020-04-07.pdf (taddlecreekfht.ca)
2) Tennant T. INR Clinic Medical Directive. Jan 2021
3) Jobanputra P. Medial Directive for Cook's Pharmacy Anticoagulation Clinic. May 29, 2014
4) Anne Rose. UW Health, Warfarin Management - Adult - Ambulatory Clinical Practice Guideline. Oct 2015. Ambulatory_Warfarin_Guideline.pdf (uwhealth.org)

Appendix A : Authorizer Approval Form
Appendix B : Implementer Approval Form
Appendix C : Referral Form
Appendix D: Consent Form
Appendix E: Warfarin Management Reference

Appendix A

Authorizer Approval Form

Name:	Signature:	Date:

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Appendix B

Authorized Implementer Form

Name:	Signature:	Date:
Kyla Christie Cambridge		
Poshin Jobanputra Waterloo		
Darshak Patel Blockline		
Eric Hendersen New Hamburg		
Fayaz Ahmedali		

Cook's Pharmacy

Appendix C

Anticoagulation Clinic - Referral Form

Date:_____

Patient:

Last Name:	First Name:
OHIP:	DOB:

Physician:

	CPSO:

Indication:

- Venous Thromboembolism Treatment(DVT, PE)
- Recurrent Thromboembolic Events
- Atrial Fibrillation
  CHADS2 Score_____
- Mechanical Heart Valve
  Position:_____
- Tissue Heart Valve
- Thrombophilia
- Secondary prevention of Myocardial Infarction
- Preparation for Cardioversion
  Date:_____

Warfarin Initiation Date: _____

Target:

- 2.0-3.0
- 2.5-3.5
- Other_____

Anticipated Duration:

- 3 months
- 6 months
- 1 year
- Indefinite
- Other:_____

Maximum Interval between readings:

- 28 days
- 42 days
- Other _____

Warfarin Tablet Strength(s): _____

Current warfarin dose:

Sun	Mon	Tue	Wed	Thur	Fri	Sat

Recent INR Values:

Date	INR Result	Weekly Dose +/- Adjustments

Next INR Due Date:_____

Medication List:

Additional patient information:
(i.e. chemotherapy treatment, excessive alcohol use, cardiologist reports, comorbidities, previous bleeds etc.)

Cooks Pharmacy
102, 182 Pinebush Road
Cambridge ON, N1R 8J8

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Fax: 1-888-999-4831

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Appendix D

Consent to Permit Medical Directive and Disclose Health Information
for
Warfarin Management

I, _____ authorize the pharmacist at Cooks Pharmacy to

1. Obtain a blood sample by performing a finger stick with a lancet
2. Apply the blood sample to a test strip to acquire an INR reading
3. Adjust the dose of my warfarin dose as needed
4. Record/document the iNR test results and dosing adjustments using INR online
5. Disclose results and dose adjustments to physician as needed

I understand the purpose for disclosing this personal health information to the pharmacist. I understand that I can refuse to sign this consent.

Signature:	Date:
Witness:	Date:

Appendix E

Warfarin Management Reference

Warfarin Dosing Adjustment and Follow-up Algorithms

Target INR 2.5 (2.0-3.0), no bleeding

INR < 1.5	Increase weekly dose by 10-20% and consider extra dose *the primary provider will be contacted if the patient has a mechanical heart valve or has had an acute VTE within the previous 6 weeks	Repeat INR in 4-7 days
INR 1.5 to 1.9	Increase weekly dos by 5-10% If INR < 1.8, consider extra ½ dose If INR 1.8-1.9 consider maintaining current dose	Repeat INR in 7-14 days
INR 2.0-3.0	Maintain current dose	Monitor INR in: 4-7 days if 1 INR in range 2 weeks if 2 INRs are in range 3 weeks if 3 INRs are in range 4 weeks if 4 INRs are in range*
INR 3.1-3.5	Hold 0 to ½ dose and decrease weekly dose by 0-10% If INR is 3.1-3.2 consider maintaining current dose	Repeat INR in 7-14 days
INR 3.6-4.0	Hold 0-1 dose and decrease weekly dose by 0-15%	Repeat INR in 4-7 days
INR 4.0-4.9	Hold 1-2 doses and decrease weekly dose by 5-15%	Repeat INR in 4-7 days

*If INR 2.0-2.1 or 2.9-3.0, consider repeating INR in 2-3 weeks regardless of consecutive #s of INRs in range. For patients with many consecutive therapeutic INRs, the follow-up algorithm may be accelerated for a single out of range INR

Target INR 3.0 (2.5-3.5), no bleeding

INR < 1.5	Increase weekly dose by 10-20% and consider extra dose *the primary provider will be contacted if the patient has a mechanical heart valve or has had an acute VTE within the previous 6 weeks	Repeat INR in 4-7 days
INR 1.5 to 2.4	Increase weekly dos by 5-10% If INR < 2.3, consider extra ½ dose If INR 2.3-2.4 consider maintaining current dose	Repeat INR in 7-14 days
INR 2.5-3.5	Maintain current dose	Monitor INR in: 4-7 days if 1 INR in range 2 weeks if 2 INRs are in range 3 weeks if 3 INRs are in range 4 weeks if 4 INRs are in range**
INR 3.6-4.0	Hold 0 to ½ dose and decrease weekly dose by 0-10% If INR is 3.6-3.7 consider maintaining current dose	Repeat INR in 7-14 days
INR 4.1-4.5	Hold 0-1 dose and decrease weekly dose by 0-15%	Repeat INR in 4-7 days
INR 4.5-4.9	Hold 1-2 doses and decrease weekly dose by 5-15%	Repeat INR in 4-7 days

**If INR 2.5-2.6 or 3.4-3.5, consider repeating INR in 2-3 weeks regardless of consecutive #s of INRs in range. For patients with many consecutive therapeutic INRs, the follow-up algorithm may be accelerated for a single out of range INR

Potential reasons for non-therapeutic INR

1) Missed doses of warfarin
2) Extra doses of warfarin
3) Diet change - more or less green leafy vegetables (spinach, broccoli, lettuce etc.); poor appetite
4) Starting or stopping medications in the last 4 weeks
    a) Prescription medications
    b) Non-prescription medications
    c) Vitamins
    d) Dietary supplements
    e) Herbal medications/teas
5) Acute illness (eg. cold, diarrhea, vomiting etc)
6) More or less alcohol in the previous week
7) Changes in levels of activity

Exceptions to Dose Adjustments

1) INR is within 0.2 of the goal INR
2) One or more doses missed within the last week
3) One or more additional doses were taken within the last week
4) An interacting medication that has since been discontinued
5) An interacting medication has recently been started and an INR change is expected
6) A significant change in dietary intake of Vitamin K
7) A significant change in alcohol intake
8) Acute diarrhea within the last week
9) Warfarin currently on hold prior to medical procedure
10) Warfarin started or adjustments made within the last 5 days
11) Alternate reasons based on clinical judgment that have been recorded in the patient's file

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Important Interactions with Warfarin
(Medications, Foods, Herbs and Supplements)

- Starting, changing or stopping any drug, herbal product, or supplement can potentially affect the activity of warfarin. Monitoring frequency should be increased.
- 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. For a complete listing refer to the drug monograph.

Examples of Medications

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

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

Antiarrhythmics
- amiodarone
- propafenone

Antibiotics
- amoxicillin
- cephalosporins (some)
- isoniazid
- fluoroquinolones[2]
- macrolides[3]
- metronidazole
- sulfonamides
- telithromycin
- tetracyclines[4]

Anticonvulsants
- phenytoin (early on)
- sodium valproate

Antidepressants
- duloxetine
- venlafaxine
- SSRI
  - fluoxetine
  - fluvoxamine
  - paroxetine
  - sertraline
  - citalopram

Antifungals
- 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

Decreased effect warfarin: ↓ INR

Antibiotics
- rifampin

Antidepressants
- trazodone

Antiepileptics
- carbamazepine
- phenobarbitone
- primodone
- phenytoin (later on)

Other
- antithyroid agents
- cholestyramine

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

Foods, Herbs and Supplements

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

Alcohol (binges)[5]
Birch
Chitosan
Cranberry juice/extract (dose dependent)
Danshen
Dong Quai
Fish oil
Garlic supplements[6]
Glucosamine±chondroitin
Grapefruit
Mango
Papaya extract

Increased bleeding risk due to non-warfarin mechanisms

Alcohol (heavy drinkers)
Garlic supplements[6]

Decreased effect warfarin: ↓ INR

Alcohol (chronic)[5]
Coenzyme Q10
Ginseng (American, Asian)
Smoking
St. John's Wort
Vitamin C (high dose)
Vitamin K

Footnotes:
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, and 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.

Reference: Warfarin Therapy Management. British Columbia Guidelines and Protocols Advisory Board Committee, 2010

Management of Supratherapeutic INR

INR 5-8 No Significant Bleeding	Hold 1-2 doses of warfarin Contact primary provider for management plan Resume warfarin at a lower dose once INR is within therapeutic range Consider vitamin K 1-2.5mg po if at risk of bleeding	Recheck INR in 1-2 days
INR 8 or above No significant bleeding	Hold warfarin therapy Contact primary provider for management plan Arrange lab value comparison to verify reading and determine actual INR Administration of Vitamin K 2.5-5mg PO (a substantial reduction will be seen in INR in 24-48 hrs) Resume warfarin at a lower dose once INR is within range	Re check INR in 1-2 days
Serious Bleeding (regardless of INR)	Hold warfarin Send patient to Emergency (send letter to ER or with patient regarding circumstances) Inform primary physician of circumstances surrounding encounter Patient may need Vitamin K IV, FFP, prothrombin complex concentrate or recombinant factor VIIa	

Adapted from the Taddle Creek Family Health Team Anticoagulation Management Medical Directive, Appendix D and Centre for Family Medicine Medical Directive: Management of INR and dose adjustment for patients taking warfarin therapy Appendix II