



Medical Directive

Title: Warfarin Dose Adjustment Based on INR Monitoring

Number: C-FHT03

Activation Date:

Review due by:

Sponsoring/Contact Person(s):

(Name, position, contact particulars)

Kathleen Whittaker, Executive Director

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<p>Order and/or Delegated Procedure:</p> <p>The clinical pharmacist (RPh) may provide verbal or written order(s) for adjusting the dose of warfarin based on INR (international normalized ratio) monitoring. Verbal orders include verbal communication to the patient and/or caregiver over the telephone specifying the prescribed warfarin dose or a verbal prescription to the patient's pharmacy. Written orders include providing a written prescription in person or by fax.</p>	<p>Appendix Attached: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Title:</p>
<p>Recipient Patients:</p> <p>1) All patients 18 years and older and; 2) Rostered to Caroline Family Health Team (C-FHT) physicians who have signed the attached authorizer approval form (Appendix 1) and; 3) Require warfarin therapy previously initiated by a physician.</p>	<p>Appendix Attached: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Title: Appendix 1: Authorizer Approval Form</p>
<p>Authorized Implementers:</p> <p>C-FHT Clinical Pharmacist (RPh) (Appendix 2)</p>	<p>Appendix Attached: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Title: Appendix 2: Implementer Approval Form</p>
<p>Indications:</p> <p>Patients receiving warfarin for the following indications:</p> <ol style="list-style-type: none"> 1) Primary and secondary prevention of venous thromboembolism 2) Prevention of systemic arterial embolism in patients with tissue or mechanical prosthetic heart valves, valvular heart disease, cardiomyopathy, or atrial fibrillation 3) Prevention and recurrent systemic embolism in patients with atrial fibrillation 4) Prevention of acute myocardial infarction in patients with peripheral arterial disease 5) Prevention of stroke, recurrent infarction, and death in patients with myocardial infarction 6) Treatment of venous thrombosis, pulmonary embolism, antiphospholipid antibody syndrome or thrombophilic conditions 	<p>Appendix Attached: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Title:</p>
<p>Contraindications:</p> <ol style="list-style-type: none"> 1) Patients actively bleeding or at high risk of bleeding (i.e. high-risk surgery) 2) Patient identified by physician who would not be a candidate for INR management under this medical directive 3) Patients under 18 years old 	
<p>Consent:</p>	<p>Appendix Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No Title: Appendix 1: Authorizer Approval Form</p>

- 1) Patients of C-FHT
- 2) C-FHT physician approval list (Appendix 2)

Guidelines for Implementing the Order/Procedure:

Appendix Attached: Yes No
 Title: Appendix 3: Warfarin dose adjustment nomogram
 Appendix 4: Management of INR by Health Care Professional

- 1) RPh may interview patients in person or by telephone to review factors that may impact INR results including but not limited to diet, medications, adherence, alcohol use, and other medical conditions.
- 2) RPh may adjust warfarin dosage according to individual patient INR laboratory results. Adjustments may be based on warfarin dose adjustment nomogram (Appendix 3) and considering the patient's unique circumstances
- 3) RPh will consult with the patient's family physician or the on-call physician if the patient's INR is > 4.9 for further instructions to manage the patient (Appendix 4)
- 4) RPh may provide a verbal order such as verbal communication to the patient and/or caregiver over the telephone specifying the prescribed warfarin dose or a verbal prescription to the patient's pharmacy
- 5) RPh may provide a written prescription in person or by fax as per the expanded scope regulations for pharmacists to adapt prescriptions
- 6) RPh will communicate plan of INR testing with patient and/or caregiver
- 7) RPh will document warfarin plan in the patient's medical record either as a progress note and/or within the INR patient flow sheet

Documentation and Quality Monitoring Guidelines:

Appendix Attached: Yes No
 Title: Appendix 5: INR Patient Flow Sheet
 Appendix 6: Recommended Format for Written Prescriptions (Expanded Scope of Practice for Pharmacists)

- 1) Documentation in patient's medical record either as a progress note and/or within INR patient flow sheet (Appendix 5) to include: current date, current INR result, patient's current warfarin regimen, next INR laboratory investigation, date patient and/or caregiver notified, name of implementer.
- 2) Standard documentation is recommended for written prescriptions (Appendix 6)

Review and Quality Monitoring Guidelines:

Appendix Attached: Yes No
 Title:

- 1) Annual routine review by at least one member of medical directive authorizer, one member of implementer and Executive Director.
- 2) Any staff member who identifies any inappropriate, untoward or unanticipated outcomes resulting from this medical directive implementation will immediately notify the most responsible physician and his/her program manager. The program manager, in collaboration with the sponsoring physician, will immediately trigger an ad hoc review

Approving Physician(s)/Authorizer(s):



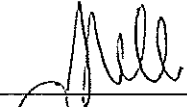
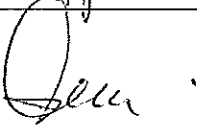
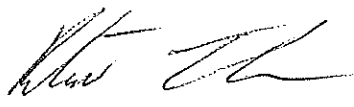

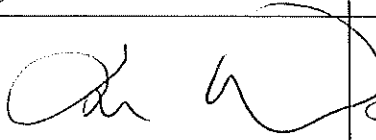

Appendix Attached: Yes No
 Title: Appendix 1: Authorizer Approval Form

C-FHT Authorizer Approval Form (Appendix 1)

Appendix 1: Authorizer Approval Form

Title: Warfarin Dose Adjustment Based on INR Monitoring


Number: C-FHT03

Name of Authorizer	Signature	Date
Dr. Lori Chalklin		2/26/16
Dr. Stephen Duncan		8/2/16
Dr. Alicia Gallacio		09/02/16
Dr. Dana Pinte		09/06/16
Dr. Robert Tohn		Feb 8, 2016
Dr. David Wallik		FEB 8, 2016
Dr. Kim Walsh		2/7/16
Dr. Chris Williams		FEB 8, 2016

Appendix 2: Implementer Approval Form

Title: Warfarin Dose Adjustment Based on INR Monitoring

Number: C-FHT03

Name of Implementer	Signature	Date
Michael Pe, RPh		02/09/2016

Appendix 3: Warfarin Dose Adjustment Nomogram

Title: Warfarin Dose Adjustment Based on INR Monitoring

Number: C-FHT03

The following nomogram is meant to serve as a clinical guide and deviation may occur based on clinical judgment depending on various patient specific factors.

Interpretation of INR requires many considerations including:

- Trend and time of last INR
- Duration of current dose
- Changes in medications, diet, or lifestyle
- Compliance/adherence
- Symptoms of bruising/bleeding
- Symptoms of stroke/VTE

It is important to establish transient versus permanent causes for out-of-range INRs. Transient causes may include missed/extra doses, noncompliance, recent course of antibiotics, diarrhea or gastroenteritis, and increase in alcohol consumption. Permanent causes may include lifestyle or dietary changes and changes in chronic medications. Transient causes may require a temporary dose correction such as holding or giving an extra dose without a change in the weekly warfarin dose. Permanent causes may require a change in the weekly dose of warfarin.

The following nomogram may be used to adjust the maintenance dose of warfarin:

INR Target 2-3	Action	INR Target 2.5 – 3.5
< 1.5	↑ total weekly dose by 10-20% +/- Consider extra one time dose	< 2.0
1.5 – 1.9	Option 1: Do not adjust dose if previous INRs normal* OR Option 2: If previous INR also subtherapeutic, ↑ total weekly dose by 5-10%	2.0 – 2.4
2 – 3	No change (INR within target range)	2.5 – 3.5
3.1 – 3.5	Option 1: Do not adjust if previous INR normal* OR Option 2: If previous INR also suprathereapeutic, ↓ total weekly dose by 5-10%	3.6 – 4
3.6 – 4.9	Hold 1 dose + ↓ total weekly dose by 10-20%	4.1 – 4.9
5 – 9	Hold 2 doses + ↓ total weekly dose by 10-20%	5 – 9
> 9	Urgent evaluation May need Vitamin K (phytoniadione) for reversal	> 9

*Do not adjust warfarin dose based on 1 unexplained out-of-range INR that is within +/- 0.5 from target range for patients with previously stable INRs that are within target. Stable patients are defined as those with at least 3 months of consistent INR results that do not need adjustment to warfarin dosing.

Appendix 4: Management of INR by Health Care Professional


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INR Target 2-3	Health Care Professional	INR Target 2.5 – 3.5
< 2	Pharmacist (RPh)	< 2.5
2 – 3	Registered Nurse (RN)	2.5 – 3.5
3.1 – 4.9	Pharmacist (RPh)	3.6 – 4.9
5 – 9	Pharmacist (RPh) in collaboration with Physician (MD)	5 – 9
> 9	Physician (MD)	> 9

Appendix 5: INR Patient Flow Sheet

Title: *Warfarin Dose Adjustment Based on INR Monitoring*
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WARFARIN PATIENT RECORD SHEET

Surname Of Patient: _____		First Name Of Patient: _____		PHN: _____
INDICATIONS: <input type="checkbox"/> atrial fibrillation <input type="checkbox"/> DVT/PE <input type="checkbox"/> thrombophilia <input type="checkbox"/> prosthetic heart valve <input type="checkbox"/> intracardiac thrombus <input type="checkbox"/> other: _____		Please complete and indicate 1st and 2nd preference for contact <input type="checkbox"/> Work <input type="checkbox"/> Home <input type="checkbox"/> Cell <input type="checkbox"/> Fax <input type="checkbox"/> Email		
Target INR Range: <input type="checkbox"/> 2.0 - 3.0 <input type="checkbox"/> 2.5 - 3.5 <input type="checkbox"/> other: _____ Duration: <input type="checkbox"/> 3 mos <input type="checkbox"/> lifelong <input type="checkbox"/> reassess when: _____				
Oral Anti-Coagulant: <input type="checkbox"/> Warfarin <input type="checkbox"/> Other: _____				
Tablet Strengths: <input type="checkbox"/> 1 mg - pink <input type="checkbox"/> 2.5 mg - green <input type="checkbox"/> 4 mg - blue <input type="checkbox"/> 6 mg - teal <input type="checkbox"/> 10 mg - white <input type="checkbox"/> 2 mg - lavender <input type="checkbox"/> 3 mg - tan <input type="checkbox"/> 5 mg - peach <input type="checkbox"/> 7 mg - yellow				

OTHER INFORMATION

NAME OF SPECIALIST	ADDRESS	CITY
NAME OF SPECIALIST	ADDRESS	CITY
NAME OF SPECIALIST	ADDRESS	CITY

Date	INR	F-C	Dosage Instruction	Daily Dose	Weekly Dose	Next INR	MD Initials	Patient Notified/Date	Nurse Initials
		<input type="checkbox"/>							
		<input type="checkbox"/>							
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Appendix 6: Recommended Format for Written Prescriptions (Expanded Scope of Practice for Pharmacists)

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An adaptation of a previously issued prescription must ensure the following information is recorded on the written prescription as follows:

- The name and address of the person for whom the drug is prescribed;
- The name, strength and quantity or amount of the prescribed drug;
- The direction for use of the drug, including dose, frequency, route of administration, and any special instructions respecting the use of the drug;
- The name, address, telephone number and College registration number of the pharmacist;
- The signature of the pharmacist
- The date the prescription was issued;
- The number of refills that the pharmacist has authorized, if applicable;
- A reference to the original prescription that the member adapted, including the name and contact details of the original prescriber

Dr. Authorizer, MD Caroline Family Health Team 3305 Harvester Road, Units 15-20 Burlington, ON L7N 3N2 (905)632-8007	
Date: _____	
R_x for:	Patient name Patient address Date of Birth Patient phone number
Warfarin 1mg Tablet Take by mouth as directed Quantity: 90 tablets Refills: 3	
Adapted from original prescription written by Dr. Authorizer, MD	
<i>Pharmacist Signature</i> Pharmacist, RPh OCP#: 123456	