



MEDICAL DIRECTIVE

ADJUSTMENT OF WARFARIN DOSE FOR INR VALUE (NYFHT-002)

DEFINITION

Review of INR value and potential modification of Warfarin dose in patients taking oral anticoagulation, using evidence-based approach.

PHYSICIAN'S ORDERS

Review and adjust Warfarin dose based on INR value and instruct patient/ caregiver regarding Warfarin dose and timing of next INR.

PERSONS AUTHORIZED TO CARRY OUT THIS DIRECTIVE

Qualified Registered Nurse, Nurse Practitioner or Clinical Pharmacist employed by the FHT who has completed the following:

- reviews and understands content of BC Health Services Guidelines as listed in References below
- attends INR Monitoring FHT Inservice
- completes INR written quiz and scores 100%

SITUATIONAL CIRCUMSTANCES REQUIRED

- Patient on oral anticoagulation therapy greater than one month duration, two consecutive INRs in the therapeutic range (and is deemed stable by the physician)
- Indication for warfarin, target INR and duration of therapy (if applicable) is recorded in patient's chart in the Cumulative Patient Profile

PROCESS

1. Physician will document in the patient's chart (in Cumulative Patient Profile) the indication for warfarin, target INR and duration of therapy (if applicable)
2. The nurse, nurse practitioner or pharmacist will assess INR value (with use of algorithm) and determine any adjustments to warfarin dose. Refer to Tables 1 & 2
3. If INR within therapeutic range: continue as specified in patient's chart. (An INR of 0.1 below or above the target INR is left to the discretion of the clinician to either repeat the INR or change Warfarin.)

4. If INR outside therapeutic range: assess - historical pattern for patient
 - degree of risk to patient
 - explanation for abnormal result
5. INR recheck schedule: 1-2 times per week with dose change until stable, and then refer to Table 3
6. Ensure patient is aware and notified of any dosage adjustment and next INR check by telephone or in person. Review Warfarin teaching if required. Ensure patient has received FHT Patient Information Sheet on Warfarin
7. Document the following information on the patient's INR flowsheet (paper or electronic EMR): date, INR value, dose of Warfarin, next INR and initials of practitioner communicating with patient
8. Notify the patient's physician if the following circumstances occur:
 - INR is 5.0 or greater,
 - patient exhibits new signs and symptoms of thromboembolism,
 - patient exhibits new signs and symptoms of bleeding/ hemorrhage,
 - patient status changes in any way that does or may affect the stability of anticoagulation

RISKS AND PREDICTABLE OUTCOMES

Risks

- clinically significant bleeding if over-anticoagulated
- clinically significant clotting if under-anticoagulated

Predictable Outcomes

- improved patient education regarding a high-risk ongoing therapy
- standardized evidence-based INR monitoring approach across the FHT will aim to maintain patients within the therapeutic range and minimize risks of over- and under-treatment with Warfarin
- improved patient satisfaction
- increased office efficiency

CONTRAINDICATIONS TO THE IMPLEMENTATION OF THE DIRECTIVE

- < 19 years old
- pregnancy
- surgery within past 7 days
- patient has significant co-morbidities, is identified by MD as being high-risk and requires MD monitoring of INR

QUALITY ASSURANCE

This directive will be reviewed yearly.

Clinicians carrying out this directive will be recertified yearly.

REFERENCES

1. BC Health Services Guidelines and Protocols Advisory Committee. Warfarin Therapy: Initiation and Maintenance. May 19, 2008
<http://www.health.gov.bc.ca/gpac/index.html>
2. BC Health Services Guidelines and Protocols Advisory Committee. Warfarin Therapy: Overanticoagulation Treatment. May 19, 2008
<http://www.health.gov.bc.ca/gpac/index.html>
3. Cameron K, Kwan D, Papoushek C. Toronto Western Family Health Centre. Warfarin Maintenance Dosing by Nurses and Pharmacists: Policy and Procedures, 2008
4. Way C, Dickson A, James L, Handfield-Jones R, Munton R, Graves E and Chan B. Warfarin Dosing Medical Directive, The Ottawa Hospital Academic Family Health Team, 2008.

TABLE 1. INR FOR CONDITIONS SUCH AS ATRIAL FIBRILLATION, VENOUS THROMBOEMBOLISM, PULMONARY EMBOLISM, MYOCARDIAL INFARCTION, VALVULAR HEART DISEASE. TARGET 2.0 – 3.0

INR	Adjustments to Weekly Dosage	Next INR Check
≤ 1.5	Consult Pharmacist or Physician Suggest to reload* x 0-2 doses & ↑ 5 – 20%	3 – 8 days
1.6 – 1.9	↑ 0 – 20%	1 week
2.0 – 3.0	Same	Routine [§]
3.1 – 3.5	↓ 0 – 20%	1 week
3.6 – 4.0	Hold 0 – 1 dose & ↓ 5 – 20%	3 – 8 days
> 4.0	Hold 1 – 2 doses & ↓ 10 – 20%	3 – 8 days
> 5.0	Consult Physician Immediately	

* Reloading dose = 1.5 – 2 x new average daily maintenance dose

§ See Routine Schedule Table (Table 3) for INRs that are within target range

TABLE 2. INR FOR CONDITIONS SUCH AS MECHANICAL PROSTHETIC HEART VALVE. TARGET 2.5 – 3.5

INR	Adjustments to Weekly Dosage	Next INR Check
≤ 2.0	Consult Pharmacist or Physician Suggest to reload* x 0-2 doses & ↑ 5 – 20%	3 – 8 days
2.1 – 2.4	↑ 0 – 20%	1 week
2.5 – 3.5	Same	Routine [§]
3.6 – 4.0	↓ 0 – 20%	1 week
4.1 – 4.5	Hold 0 – 1 dose & ↓ 5 – 20%	3 – 8 days
> 4.5	Hold 1 – 2 doses & ↓ 10 – 20%	3 – 8 days
> 5.0	Consult Physician Immediately	

* Reloading dose = 1.5 – 2 x new average daily maintenance dose

§ See Routine Schedule Table (Table 3) for INRs that are within target range

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

Table 3. Routine Schedule for Checking INRs that are within Target Range

Number of Consecutive INRs within Target Range	Repeat INR in
1	1 week
2	2 weeks
3	3 weeks
≥ 4	4 weeks

