

CADTH RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

Frequency of Prothrombin Time and International Normalized Ratio Testing: Guidelines

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About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

Research Question

What are the evidence-based guidelines on testing frequency for prothrombin time and international normalized ratio (PT/INR) testing?

Key Findings

Two evidence-based guidelines were identified regarding the testing frequency for PT/INR testing.

Methods

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases and a focused Internet search. Methodological filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses and guidelines. The search was limited to English language documents published between January 1, 2013 and January 9, 2018. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Patients on anticoagulation therapy
Intervention	Prothrombin time and international normalized ratio (PT/INR) testing (point-of-care or laboratory-based)
Comparators	Alternative frequencies of testing; No comparator
Outcomes	Evidence-based guidelines
Study Designs	Health technology assessments, systematic reviews, meta-analyses, evidence-based guidelines

Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by evidence-based guidelines.

Two evidence-based guidelines were identified regarding the testing frequency for PT/INR testing. No relevant health technology assessments, systematic reviews, or meta-analyses were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

Two evidence-based guidelines¹⁻² were identified regarding the testing frequency for prothrombin time and international normalized ratio (PT/INR) testing. One guideline,¹ published by the National Institute for Health and Care Excellence (NICE), contained guidance and recommendations on two point-of-care coagulometers for patients with atrial fibrillation and heart valve disease. This guideline¹ recommends daily (or every other day) measuring of INR status until it is within the therapeutic range on two consecutive occasions. After this target is met, the guideline¹ recommends measuring INR twice weekly for one to two weeks. If INR values remain stable, the guideline¹ states that the testing frequency could be reduced to as little as once every 12 weeks. Importantly, the guideline¹ also suggests that INR testing should be done more frequently for patients at risk of overcoagulation or bleeding, or in patients that have problems adhering to treatment.

The second guideline² contains recommendations for the management of outpatient anticoagulation. The recommendations made in this publication² were mostly based on the American College of Chest Physicians (ACCP) evidence-based clinical practice guidelines, which were published in 2012. For patients on warfarin, this guideline² recommends INR measurement at baseline, followed by measurement after two or three doses. Twice weekly testing is then recommended until INR is within the therapeutic range. Once a therapeutic range is reached, the guideline² states that INR testing can be reduced to weekly, every other week, and then monthly (if a therapeutic range value is maintained). Finally, the guideline² suggests that clinicians can consider moving INR testing up to every 12 weeks in patients who are stable and that the frequency of INR monitoring should be increased if a value outside of the therapeutic range is observed.

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-Analyses

No literature identified.

Guidelines and Recommendations

1. Atrial fibrillation and heart valve disease: self-monitoring coagulation status using point-of-care coagulometers (the CoaguChek XS system and the INRatio2 PT/INR monitor) [Internet]. London: National Institute for Health and Care Excellence; 2017 [cited 2018 Jan 16]. (NICE Diagnostics guidance; no. 14). Available from: <https://www.nice.org.uk/guidance/dg14>.
See: 3.13 The summary states that the INR should be measured, page 8-9
2. Wigle P, Hein B, Bloomfield HE, Tubb M, Doherty M. Updated guidelines on outpatient anticoagulation. *Am Fam Physician*. 2013 Apr 15;87(8):556-66.
[PubMed: PM23668445](#)

Appendix — Further Information

Previous CADTH Reports

3. Point-of-care INR testing compared with lab INR testing: what does the evidence say? [Internet]. Ottawa (ON): CADTH, 2015 [cited 2018 Jan. 16]. (CADTH Optimal use report). Available from: <https://www.cadth.ca/poc-inr-tool>
4. Guidance on the use of point-of-care testing of international normalized ratio for patients on oral anticoagulant therapy [Internet]. Ottawa (ON): CADTH; 2014 Jul [cited 2018 Jan 16]. (CADTH Optimal use report; vol.3 no.1c). Available from: https://www.cadth.ca/media/pdf/OP0515_POC%20INR_Recs_Report.pdf
5. Point-of-care testing of international normalized ratio for patients on oral anticoagulant therapy: systematic review and economic analysis [Internet]. Ottawa (ON): CADTH; 2014 Jul [cited 2018 Jan. 16]. (CADTH Optimal use report; vol.3 no. 1b). Available from: http://www.cadth.ca/media/pdf/OP0515_POC%20INR_Science_Report.pdf
6. Point-of-care testing of the international normalized ratio (INR) for patients taking warfarin or other vitamin K antagonists [Internet]. Ottawa (ON): CADTH, 2013 [cited 2018 Jan 16]. (CADTH Optimal use report). Available from: <https://www.cadth.ca/point-care-testing-international-normalized-ratio-inr-patients-taking-warfarin-or-other-vitamin-k>
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8. Point-of-care international normalized ratio testing versus plasma-based testing: comparative accuracy and reliability [Internet]. Ottawa (ON): CADTH; 2010 [cited 2018 Jan 16]. (CADTH Rapid response report). Available from: <https://www.cadth.ca/point-care-international-normalized-ratio-testing-versus-plasma-based-testing-comparative-accuracy-0>

Randomized Controlled Trials

9. Matchar DB, Love SR, Jacobson AK, Edson R, Uyeda L, Phibbs CS, et al. The impact of frequency of patient self-testing of prothrombin time on time in target range within VA Cooperative Study #481: The Home INR Study (THINRS), a randomized, controlled trial. *J Thromb Thrombolysis*. 2015 Jul;40(1):17-25.
[PubMed: PM25209313](https://pubmed.ncbi.nlm.nih.gov/25209313/)

Clinical Practice Guidelines – Unspecified Methodology

10. Patient self-testing for monitoring of prothrombin time international normalized ratio (INR) in patients on warfarin anticoagulation therapy [Internet]. Washington (DC): Veterans Health Administration; 2017. (VHA Directive) Available from: https://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=5399
See: 7. PATIENT CLINICAL ELIGIBILITY CRITERIA, page 8-9

11. Warfarin therapy management [Internet]. Victoria (BC): Guidelines & Protocols Advisory Committee; 2015 [cited 2018 Jan 16]. Available from: https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/bc-guidelines/warfarinmgmt_2015_full.pdf
See: INR Target and Frequency of Monitoring, page 3-4
12. Hawes EM, Viera AJ. Anticoagulation: monitoring of patients receiving anticoagulation. *FP Essent.* 2014 Jul;422:24-30.
[PubMed: PM25033003](#)

Review Articles

13. Barcellona D, Fenu L, Marongiu F. Point-of-care testing INR: an overview. *Clin Chem Lab Med.* 2017 May 1;55(6):800-5.
[PubMed: PM27754958](#)
14. Moffat KA, Lewis CW. Laboratory monitoring of oral vitamin K anticoagulation. *Semin Thromb Hemost.* 2017 Apr;43(3):245-52.
[PubMed: PM27677177](#)
15. Pozzi M, Mitchell J, Henaine AM, Hanna N, Safi O, Henaine R. International normalized ratio self-testing and self-management: improving patient outcomes. *Vasc Health Risk Manag* [Internet]. 2016 [cited 2018 Jan 16];12:387-92. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5066985>
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[PubMed: PM25440399](#)
17. Levy JH, Szlam F, Wolberg AS, Winkler A. Clinical use of the activated partial thromboplastin time and prothrombin time for screening: a review of the literature and current guidelines for testing. *Clin Lab Med.* 2014 Sep;34(3):453-77.
[PubMed: PM25168937](#)