Anticoagulation management in remote primary care

Shauna L. Nast   Martin J. Tierney   Ray McIlwain, MD, CCFP, FCFP

ABSTRACT

OBJECTIVE To examine anticoagulation management at the Bella Coola Medical Clinic in British Columbia.

DESIGN Charts of all patients in the Bella Coola Valley receiving warfarin were assessed. Data were analyzed using Microsoft Excel.

SETTING Bella Coola Medical Clinic on the remote central coast of British Columbia.

PARTICIPANTS Twenty-one patients at the Bella Coola Medical Clinic who were receiving warfarin.

MAIN OUTCOME MEASURES All international normalized ratio (INR) tests over the preceding 12 months were examined for results, time elapsed since previous test, and interval until next scheduled test.

RESULTS An in-range INR rate of 60% is considered acceptable for anticoagulation services. The clinic had performed 406 INR tests on these 21 patients over the last 12 months. We found that 53% of all INR results fell strictly within the recommended therapeutic range. The relative success of anticoagulation management in Bella Coola probably results from several factors. For instance, physicians usually responded to out-of-range INR results with close monitoring: in 71% of cases, follow-up tests were scheduled within 1 week. On average, patients attended 77% of these visits on schedule; 58% of all out-of-range INR results were followed up with retesting within 1 week.

CONCLUSION Our results suggest that primary care physicians can manage anticoagulation adequately, even in remote settings.

EDITOR'S KEY POINTS

- Earlier studies have shown that primary care providers' management of international normalized ratios (INRs) among patients receiving warfarin was less effective than management by specialized anticoagulation clinics. Several recent studies in primary care settings have shown, however, comparable results to those in specialist clinics in cities.
- This study demonstrated that INRs could be managed adequately in a very remote community on the BC coast because of a simple management program.
- Bella Coola Clinic arranged for same-day test results, close monitoring of patients with out-of-range INR results, good patient compliance with testing, and tracking sheets in patients' charts.

Anticoagulation therapy is an important part of caring for patients at elevated risk of clot formation.[1] In primary care, the most common indications for anticoagulation are atrial fibrillation, deep venous thrombosis, and prosthetic valves.

Maintaining patients' level of anticoagulation (measured as the international normalized ratio, or INR) within the recommended therapeutic range is necessary to ensure its effectiveness while reducing risk of bleeding. This issue is becoming more important because growing numbers of patients are receiving anticoagulation therapy.[2]

Many patients receiving warfarin are monitored for proper anticoagulation by family physicians. Some experts have expressed concern that primary care management of anticoagulation is inadequate. For instance, Samsa et al[3] found that results in only 34% to 47% of INR tests conducted by family practices fell strictly within the therapeutic range, whereas practices with access to specialized anticoagulation services attained rates of 55% to 60%. An in-range INR rate of 60% is considered acceptable for anticoagulation services.[4]

This conclusion has been countered by Upshur et al,[5] who found that three primary care centres in Toronto without access to specialized anticoagulation services had strictly in-range INR rates of 56% to 61%. Another Canadian study[6] found that specialized anticoagulation clinics were only modestly more effective than primary care services at managing patients' anticoagulation.

The Bella Coola Medical Clinic is in Bella Coola, a town of approximately 2300 on the remote central west coast of British Columbia. A recent study[7] identified Bella Coola as the third most isolated physician-staffed community in the province. Three full-time physicians are responsible for managing their patients' anticoagulation. In this study, we examined anticoagulation management at the Bella Coola Medical Clinic.

Ms Nast *is a second-year medical student at the University of British Columbia in Vancouver.* **Mr Tierney** *is a research assistant with the Department of Medical Genetics at the University of British Columbia.* **Dr McIlwain** *practises family medicine in Bella Coola, BC.*

METHODS

Testing INR levels is done in-house by the laboratory at the Bella Coola Medical Clinic. Physicians receive results later the same day and communicate their treatment decisions to patients either directly or through clinic staff. Usual practice for managing patients whose INR levels are elevated depends upon the degree of elevation, but in all cases patients are retested within 1 week, and their warfarin doses are reduced.

As the number of patients receiving warfarin increased, physicians in Bella Coola made a conscious decision to develop an anticoagulation monitoring system. Each patient's chart now contains a front tracking sheet listing date, INR, dose, and next test date.

For this study, a list of all patients in the Bella Coola Valley currently receiving warfarin was generated by computer. We reviewed patients' charts for age, sex, Native* status, indication for warfarin, and INR tests performed within the last 12 months. Results of INR tests, time elapsed since previous test, and time interval until next scheduled test were examined. According to current guidelines for warfarin management, INR results were classified as either therapeutic, subtherapeutic, or supratherapeutic.[8] Data were analyzed using Microsoft Excel.

RESULTS

Twenty-one patients at the Bella Coola Medical Clinic were receiving warfarin at the time this study was conducted. Eight of these patients were Native. The most common indication for warfarin therapy was atrial fibrillation. About 72% of patients were older than 64; 48% were 75 or older.

The clinic had done 406 INR tests on these patients over the last 12 months. Our most important finding was that 53% of all INRs fell strictly within the recommended therapeutic range (**Table 1**).

*Native is used throughout this article to refer to the indigenous and aboriginal inhabitants of Canada and their descendants.

Table 1. Anticoagulation test results at the Bella Coola Medical Clinic from June 2002 to June 2003

INTERNATIONAL NORMALIZED RATIO (N=406)	%
Subtherapeutic	30
Therapeutic	53
Supratherapeutic	16

Fifty-eight percent of out-of-range INRs were followed up with retesting at the clinic within 1 week (**Table 2**). On average, patients who were scheduled to be retested within a week attended 77% of their appointments on schedule.

Table 2. Retesting of patients with out-of-range INR results at the Bella Coola Medical Clinic

TIME AFTER RESULT	PERCENTAGE OF OUT-OF-RANGE INRS	
	SCHEDULED TO BE RETESTED (N=181)	RETESTED (N=184)
≤1 wk	71	58
8-14 d	19	18
>2 wk	10	23*

INR—international normalized ratio
*This value is greater than the percentage of patients scheduled to be retested in more than 2 weeks because some patients who were scheduled to be retested in less than 2 weeks were not actually retested for more than 2 weeks

DISCUSSION

The Bella Coola Medical Clinic, one of the most isolated physician-staffed health facilities in British Columbia, has an in-range INR rate of 53%. Given that 60% has been cited as an acceptable benchmark for specialized anticoagulation clinics and that such clinics report in-range INR rates of 55% to 60%, the outcomes at Bella Coola indicate that even remote primary care centres are capable of managing anticoagulation adequately.

These results are likely owing to several factors. Physicians usually responded to out-of-range INR results with close monitoring. In 71% of cases, follow-up INR tests were scheduled within 1 week when results fell out of range. Patients' compliance with the testing schedule was high. On average, patients attended 77% of their visits on schedule, such that 58% of all out-of-range INRs were followed up with retesting within 1 week—a rate superior to that reported by the specialized service

in the study by Samsa et al.[3] The accessibility of the clinic (within walking distance for most patients) and the continuity of medical care in Bella Coola could be partially responsible for patients' adherence.

Other factors that could have a role in Bella Coola's relative success in managing patient anticoagulation include the speed at which INR test results are obtained thanks to same-day reporting by the clinic laboratory, the use of a tracking sheet in patients' charts to remind physicians of their anticoagulation history, and clinic staff's follow up of missed appointments.

No statistically significant difference was found between Native and non-Native patients in any area of this study. If our sample size had been larger, however, we might have detected among Natives slightly fewer in-range INR values and a younger patient group.

CONCLUSION

Our results suggest that primary care physicians can manage anticoagulation adequately, even in remote settings. This is particularly reassuring for communities that are too isolated to access specialized anticoagulation services. Same-day test results, close monitoring of patients with out-of-range INRs, good patient compliance with the testing schedule, and a tracking sheet in patients' charts for following patients' anticoagulation history could have contributed to the clinic's success in managing anticoagulation therapy.

Contributors
Ms Nast *and* **Mr Tierney** *compiled the data and prepared this article.* **Dr McIlwain** *suggested the topic and provided advice and support.*

Competing interests

None declared

Correspondence to: **Dr Ray McIlwain**, *Bella Coola General Hospital, Box 220 McKay St, Bella Coola, BC V0T 1C0*

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