

understand it, usual care in Canada consists of having blood taken at a laboratory remote from the physician's office, with the physician being responsible for dosing and arranging follow-up. This differs from the preferred UK model of primary care management, in which the INR is determined in the physician's office through point-of-care testing, with dosing undertaken by a practice nurse using computerized decision-support software, with minimal clinical input from the physician. There is a robust body of evidence to demonstrate the greater clinical effectiveness of this model of care (the "Birmingham model") over specialist-run hospital-based clinics.<sup>2</sup>

It is difficult to interpret the results as stated by Wilson and associates,<sup>1</sup> i.e., INR within the therapeutic range  $\pm 0.2$  INR units. This so-called extended range is fairly meaningless, especially on its own, so comparison with previous results is impossible. We have demonstrated that at least 2 outcome parameters should be expressed.<sup>3</sup> This problem negates the statement that "The care provided in both arms of this study would be regarded as high quality"<sup>1</sup> compared with that reported in other studies.

One other striking feature of this study is the degree of overtesting. If anticoagulation control was as good as the authors describe, why were patients tested 11 to 13 times over a 3-month period? The average number of tests in the United Kingdom is 6 to 8 over a full year.<sup>2</sup>

The serious flaws in this paper mean

that its conclusions are less than robust, and we should be concerned that policy-makers will take its headline message — "family physicians bad" — at face value. I would be grateful if the authors would acknowledge that family physicians can deliver high-quality care, albeit not within the current model of service delivery.

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Competing interests: None declared.

The article about anticoagulant management by Jo-Anne Wilson and associates<sup>1</sup> raises some larger questions about how we deploy system resources and utilize health care personnel. It is perhaps not surprising that dedicated anticoagulation clinics did marginally better than family physicians in providing anticoagulation services.

The same may also be true of clinical outcomes at other specialized clinics.

However, we must also acknowledge just how well family physicians have done in addressing these clinical matters in an accessible, convenient, comfortable and inexpensive fashion. The value of family physicians (and other skilled generalists) clearly rests in the evidenced-based provision of a broad range of services, often during the same visit, with specialty support as needed. The public values such service and repeatedly identifies the family physician as the health care provider of choice.

We need to be clear about the possible paths before us: multiple specialty facilities, adequately resourced and therefore probably expensive, with a consequent reduction in the range of care provided by family physicians, or a recommitment to primary care and generalist physicians so that they can carry out services for which they have been perfectly well trained. Hopefully, such care will be delivered in an interdisciplinary fashion, with appropriate, clearly defined specialty involvement that has been conceived with attention to the role and resources of primary care.

Anticoagulation is but one example of activities that might be "decanted" away from family physicians, so we had better define our preferred model of care, and soon. We need to decide where and how the excellent, cost-effective and accessible care that we all want can best be delivered and how best to support its providers. The consequences of not doing so are concerning to me as a family physician and must be equally or more concerning to those who fund and use the system.

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**[Four of the authors respond:]**

David Massel has identified an error in our paper<sup>1</sup> regarding the proportion of patients with high-risk INR values. Forty-nine percent of the patients receiving family physician care but only 30% of those managed in oral anticoagulant clinics had one or more INR values that were either less than 1.5 or greater than 5.0 (absolute difference -19%, 95% confidence interval -31% to -6.0%,  $p = 0.005$ ). Patient satisfaction questionnaires were compared by means of nonparametric techniques, and all satisfaction measures significantly favoured management in an oral anticoagulant clinic.

For the primary outcome measure in our study, we compared the proportion of time that patients were within 0.2 units of the target INR range. We felt that this expanded range was clinically more relevant and allowed us to account for minor INR variations that would not be expected to trigger a change in warfarin dose or put a patient at increased risk of adverse outcomes. However, we also reported the proportion of time spent within the actual target INR range as a secondary outcome. This analysis reaffirmed the high quality of INR management in both the oral anticoagulant clinic and family physician arms of the study; in both arms the proportions of time spent in the target INR range were remarkably similar to those reported by David Fitzmaurice and his colleagues,<sup>2</sup> who used computerized decision-support software. The higher frequency of INR tests in our study (than the values reported by Fitzmaurice and colleagues<sup>2</sup>) probably relates to the fact that most participants in our study were newly started on oral anticoagulants, rather than stable patients on long-term anticoagulant therapy.

With regard to Patrick Potter's specific questions, we did not collect information regarding the mechanism for INR management in family physicians'

offices, nor was a formal cost analysis performed.

We concur with Garey Mazowita's comments, but our conclusions regarding the policy implications of our study differ from those of Massel and Fitzmaurice. Although specialized oral anticoagulant clinics provided statistically significantly better INR management than family physicians, the difference was modest, less than the minimally clinically important difference designated for our study, and the quality of care provided in both arms was very high. Whether the educational session and stabilizing of oral anticoagulant dosing in specialized clinics influenced the quality of INR management after randomization is uncertain. Our results contrast with those of previous uncontrolled trials demonstrating that specialized oral anticoagulant clinics resulted in substantively better INR management and improved patient outcomes.<sup>3,4</sup> Further research is required to determine if the differences in INR management between the 2 groups in our study would translate into clinically important outcomes. In the interim, decisions about which model of oral anticoagulation care is preferable in an individual centre may depend more upon local factors than upon definitive scientific evidence.

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Competing interests: None declared.

**Correction**

In an article about the quality of oral anticoagulant management by anticoagulation clinics and by family physicians<sup>1</sup> the proportion of patients with high-risk values for international normalized ratio in the family physician group was reported incorrectly. On page 295, column 2, line 18, and in Table 2, row 2, the proportion should be 49% (rather than 40%). The corresponding 95% confidence interval (39% to 59%) was reported correctly.

**Reference**

1. Wilson SJA, Wells PS, Kovacs MJ, Lewis GM, Martin J, Burton E, et al. Comparing the quality of oral anticoagulant management by anticoagulation clinics and by family physicians: a randomized controlled trial. *CMAJ* 2003;169(4):293-8.