

assay conditions were modified, another cutoff point would have to be determined. A change in the specific activity of the labelled anti-human immunoglobulins, which can occur from one lot to another, would also lead to variation in the cutoff point, even if all other assay conditions remained constant.

On purely statistical grounds, it should be noted that the optimal cutoff points and the discriminative ability were determined from the same cohort of patients. Such a design tends to overestimate the performance of the marker. If the experiment were repeated in another cohort according to the predetermined cutoff points, a lower discriminative performance would be expected because the cutoff points would not be optimal for the new cohort. Furthermore, the 95% confidence intervals for sensitivity (not reported) were large (65% to 95% for IgA anti-gliadin antibody). Therefore, the results should be confirmed prospectively in another cohort (with the predetermined cutoff points) before anti-gliadin antibody testing is used to decide whether duodenal biopsy is appropriate for patients with suspected celiac disease. If the true sensitivity is only 70%, a large proportion of affected patients would be denied a diagnostic test and appropriate therapy.

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Received by email

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

**W**e appreciate the opportunity to clarify a poorly worded sentence in our methods section. The optical density obtained with goat anti-human IgG or IgA antibodies without serum from a patient does in-



deed serve as a blank, not a negative control. Both positive and negative controls were routinely performed for each ELISA assay, with sera from patients with and without biopsy-proven celiac disease respectively. Furthermore, serum from a borderline serologically positive patient was also used, to verify inter-assay variability.

The optimal cutoff points were established previously by pilot studies in a similar pediatric population at our institution. Our paper describes a cohort of 176 children studied prospectively between 1992 and 1995 to test the discriminative ability of those cutoff limits.

Clearly if another laboratory used our assay and altered the conditions in any way (e.g., use of another manufacturer's ELISA plates, antibodies or substrate), new cutoff points would have to be established and validated for the population under study. We routinely check the variation in results obtained whenever the lot of immunoglobulins is changed and even when a new batch of buffers is prepared. Moreover, we stress that our results pertain to children. The cutoff points we established might not apply to adults.

The sensitivity of our ELISA (as presented in Table 2) was 93%, not 70%. Furthermore, clinicians normally consider the negative predictive value of a screening test when decid-

ing to terminate investigations in a particular patient. In our study, the negative predictive value for IgA and IgG antigliadin antibodies was 98%. Nevertheless, duodenal biopsy should always be performed when there is a strong suspicion of celiac disease. No laboratory test is 100% accurate.

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## BC's physician-patient ratio

Lynda Buske's article, "Physician supply: A change in direction?" (*Can Med Assoc J* 1997;157[3]:348), was interesting. However, because elderly patients make more visits to the doctor, it might be useful to rework the data to show the number of doctors relative to older patients — say those older than 60 years. In the case of British Columbia, we might find that there has not been an increase in the number of physicians relative to the number of elderly patients and

that the province did not have more than its share of physicians.

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**[The author responds:]**

I calculated the proportion of the population over age 60 as of July 1, 1996.<sup>1</sup> BC's proportion stood at 16.8%, which is close to the national average of 16.4% and lower than the proportion in 4 other provinces. Interprovincial migration statistics<sup>2</sup> (see *Can Med Assoc J* 1997;157[10]:1492) indicate that BC has traditionally recorded higher net gains of active physicians than other provinces. From 1990 to 1995, BC's average annual gain was 118 active physicians who had moved from other provinces or territories, which represents a net gain of 707 physicians for the period.

**Lynda Buske, BSc**

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**References**

1. *Health reports*. Ottawa: Statistics Canada; Autumn 1997.
2. Canadian Institute for Health Information. *Southam medical database: international and interprovincial migration of physicians, Canada, 1970 to 1995*. Ottawa: The Institute; 1997.

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