



Maternal serum screening

Remarks in the Editor's Preface regarding maternal serum screening¹ may create a false impression about the way physicians counsel patients about a positive screening result. It is not true that "for every fetus with Down's syndrome that is detected by the test, about 70 pregnant women will be told incorrectly that their fetus has the condition." In most practices, women about to have the test are informed that it will only let the physician know if the fetus is *at higher risk* for Down's syndrome or neural tube defects. For those whose screening results are positive, further tests are always needed, since only 5% will have an affected infant.²

A constructive way to view maternal serum screening is to consider it one of the ways to inform decisions regarding amniocentesis. In this context, screening actually has a better yield than the age criterion, which discovers about 1 in 250 cases at age 35 (0.4%).² The likelihood that amniocentesis will reveal an abnormal fetus is much higher (5%) in women offered the procedure on the basis of positive screening results than in women selected on the basis of age alone.²

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References

1. Hoey J. Editor's preface. *CMAJ* 1998;159(6):637.
2. Nezarati M, Mak-Tam E, Summers A, Wyatt PR. Trends in prenatal diagnosis and detection rates for autosomal aneuploidy in Ontario, Canada. *Eur J Hum Genet* 1998;6:5103.

Vivek Goel and associates provide a useful analysis of the effect of maternal serum screening on parental anxiety.¹ Their discussion counters the commonly held belief that the procedure may cause anxiety and therefore is more trouble than it's worth. However, the use of the terms "false positive" and "false negative" to describe what is essentially a statement of the probability of the condition of interest (Down's syndrome or neural tube defects) being present is not only misleading but may contribute to the very anxiety that we seek to prevent.

The cut-off or threshold values used to define a positive or negative result are simply conventions, and they too are probabilistic. If we think of the test results as ambiguous, as they often are, the real issue for parents is reduced to a question of values and tolerance of ambiguity. The use of the terms "false negative" and "false positive" should await a test of much greater sensitivity and specificity.

In the meantime, explaining to parents the benefits and limitations of the test ought to allow them to make value judgements on the basis of more realistic information. This in turn should facilitate a greater sense of control and possibly further reduce anxiety.

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Reference

1. Goel V, Glazier R, Summers A, Holzapfel S. Psychological outcomes following maternal serum screening: a cohort study. *CMAJ* 1998; 159(6):651-6.

[Vivek Goel and associates respond:]

Michael Klein raises an important issue about how the results of maternal serum screening tests are communicated. The results are calculated with an algorithm that predicts the risk of Down's syndrome or neural tube defects. As Klein notes, specified cut-off values are used to determine whether a particular level of risk is con-

sidered positive or negative. Communicating the actual risk may indeed be of more relevance than presenting a binary result. This issue is not unique to maternal serum screening: it applies in all situations where a continuous variable is used, such as measurement of blood pressure or cholesterol level.

However, although it may be preferable for patients to choose follow-up amniocentesis on the basis of actual risk, this is impractical in an organized screening program. Such a program requires a fixed cut-off point for referral for diagnostic ("gold standard") assessment. A screening test that is less than perfect will lead to some patients being referred for assessment who do not have the disease or condition (so-called false positives) and some who do have the disease being missed (so-called false negatives). Of course, if the test were perfect, it would be a diagnostic test rather than a screening test. We disagree with Klein that the terms "false positive" and "false negative" should be avoided. Although these terms may not be ideal, they do indicate the concept of screening with a cut-off value. This is not without precedent, as we have had a national policy of offering amniocentesis to women over 35 years (those who are "positive" by age screening) for several decades.

We agree that better prenatal markers are required, and several new ones are on the horizon. No screening test is perfect, however, and each will have the cost of missing cases of Down's syndrome so that the total number of diag-



nostic tests (amniocentesis procedures) and *their* attendant costs can be reduced.

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Canada's Gulf war veterans

Recent articles in *CMAJ*¹ and *JAMA*² discussed a Canadian report about the health of Gulf war veterans, which attributed their medical symptoms to stress.

Canadian veterans and physicians should determine whether the Gulf War Illness Advisory Committee, which produced this report, had expert representation in neurology or clinical neuropsychology, or from physicians who deal with occupational exposure. Specifically, they should review data on clinical neuropsychology testing, which is used to search for subtle organic neuropathology in young patients who complain of memory problems or have trouble finding words when no overt explanation is found during standard neurologic assessment. This testing is pivotal, but to date data on only 20 US veterans with memory problems have been published.³

Deficits in semantic fluency, finger dexterity and other areas are indicative of organic pathology. A congressional inquiry that deals specifically with clinical neuropsychological testing is needed for US veterans of the Gulf war who have memory problems. Canadian physicians should petition their representatives for similar action if they want to help prevent an injustice.

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References

1. Robb N. New clinics will help soldiers deal with aftereffects of overseas service. *CMAJ* 1998; 159(2):168.
2. Lashof JC, Cassells JS. Illness among Gulf war veterans: risk factors, realities, and future research. *JAMA* 1998;280(11):1010-1.
3. Axelrod B, Milner I. Neuropsychological findings in a sample of Operation Desert Storm Veterans. *J Neuropsych Clin Neurosci* 1997;9:23-8.