

Organized breast cancer screening programs in Canada

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Organization is the key to success in cervical cancer screening,¹ and in many countries attempts are being made to apply this lesson to breast cancer screening.² However, organization is only one of the requirements for effective screening programs. The others include a valid and acceptable screening test, earlier and efficient diagnosis of the disease, minimal diagnosis of nonprogressive disease, effective therapy for the detected disease and, finally, good compliance of at-risk subjects with screening.³

How does breast cancer screening in Canada measure up to these requirements? This is an important question, not least because the effectiveness of screening mammography has recently been questioned, not just for women aged 40–49 years, which is a well-known controversial issue,⁴ but for women aged 50–69 years,⁵ namely, those targeted in organized breast cancer screening programs.

In this issue (page 1133) Dana Paquette and colleagues⁶ present data confirming that Canadian programs match, if not exceed, the internationally accepted guidelines for the validity of mammography, with the exception that the specificity in Canada appears to be slightly lower than the standard. However, in Europe (where these standards were largely set) it is accepted that there is a need to reduce unnecessary investigations to a level that would be considered inappropriate in Canada, where a missed cancer might have greater legal implications. Thus, it is almost certainly appropriate in Canada to try to achieve high sensitivity, even at the cost of lower specificity. When the 1996 Canadian programs are compared with the National Breast Screening Study (NBSS) of the 1980s,⁷ the detection rates are very similar, but specificity in 1996 was higher. The validity requirement seems, therefore, to be met, though it will be considered further in this article, but what about acceptability? Paquette and coworkers⁶ do not discuss this. We learned in the NBSS that mammography is slightly less acceptable to women than a careful physical examination of the breast, but how much this affects compliance in organized programs is unknown. In the NBSS 3% of women allocated to receive mammography had screening by physical examination but rejected mammography.

It is difficult to determine whether breast cancer screening in Canada is leading to earlier diagnosis of breast cancer and whether this process is more efficient than would be the case for opportunistic screening (screening outside the organized system). This is largely because the efficiency of the di-

agnostic process initiated by the detection of an abnormality on screening is often affected by factors outside the control of the screening centres. For example, a family physician could disagree with the finding of an important abnormality by the screening program, and a delay in referral for diagnosis might result. Alternatively, the physician might decide to refer the woman to a nonspecialized unit, where the physicians did not have sufficient skills to determine the type of abnormality detected. In this respect, Canadian programs are at a disadvantage compared with those in Europe, where almost invariably the diagnostic process is undertaken at specialized centres where staff can carry out the diagnostic process rapidly and efficiently. Furthermore, Paquette and colleagues⁶ provide no data on interval cancer rates after negative screens, which are necessary not only for an assessment of the sensitivity of mammography but also to provide assurance that diagnosis is being achieved sufficiently earlier.

Some breast cancers detected by modern mammography are noninvasive or minimal, with little chance of developing into more serious disease. The NBSS provides evidence that the diagnosis of noninvasive, or minimal, breast cancers does not result in a reduction in either the incidence of or mortality from breast cancer.⁸ The study reported by Paquette and coworkers⁶ does not address this issue. However, it is unlikely that any modern screening mammography program will be able to determine the contribution of noninvasive or minimally invasive breast cancers to a reduction in breast cancer mortality because of the absence of a suitable control group. The overdiagnosis of such lesions may be one of the consequences of screening mammography from which it is impossible to escape.

The success of screening is dependent on effective therapy. It is obvious that if effective treatment for the screen-detected cancers is not available, then screening itself will be ineffective. A review of Swedish randomized trials in 1993 showed that 70% of the breast cancer deaths destined to occur in the absence of screening were not prevented by screening, namely, treatment was not adequate.⁹ For the remaining 30% of patients, treatment of detected cases resulted in an improved outcome. But has even the 30% reduction been overestimated? Gøtzsche and Olsen have recently published a systematic review of the Swedish and other randomized trials of screening and have concluded that there is no reliable evidence that screening reduces breast cancer mortality.⁵ They reached this conclusion be-

cause they could not find published data to confirm that randomization produced comparable groups in the trials that showed a benefit. They were particularly concerned about reported age differences between the groups in the Swedish 2-county trial. Two of the authors of that report¹⁰ and several other commentators¹¹⁻¹⁵ disagreed with these conclusions. They pointed out that the differences noted by Gøtzsche and Olsen⁵ were small and that the differences in age distributions had been corrected by adjustment. However, Gøtzsche and Olsen still insist that the age differences could indicate other imbalances for which data were not available.¹⁶ Over and above this controversy, there is evidence that the outcome of the controls in the Swedish trial was inferior to that of the controls in the NBSS.^{8,17} This probably reflects differences in the populations regarding the extent to which modern therapy was available at the time the trials were initiated. The Swedish 2-county trial started in the 1970s, when adjuvant chemotherapy and tamoxifen were not available for stage II disease in rural Sweden, but they were available in the 1980s in urban Canada where the NBSS was performed. It is treatment that is almost certainly responsible for the declining breast cancer mortality in Canada,¹⁸ not screening. However, it seems probable that bias or imbalance after randomization cannot explain the beneficial effects of screening shown in most trials in women aged 50-69 years, though there is probably room for uncertainty over how much of a reduction in breast cancer mortality can be expected from organized screening programs when improved treatment is already leading to a decline in breast cancer mortality. Time will tell whether screening will accelerate the decline.¹⁹

Lastly, for a screening program to be effective, the at-risk group must be compliant with the screening intervention. It is this requirement that makes the results of the report by Paquette and colleagues⁶ so disappointing. It is generally accepted that compliance of 70% or more of at-risk subjects is required for an effective breast cancer screening program. Although the situation has probably improved, only for Saskatchewan and British Columbia had compliance reached 50% in 1996. Compliance was particularly disappointing for Alberta and Ontario, where the programs had been underway for long enough to expect more than about 11% coverage with organized biennial screening. Paquette and coworkers⁶ quote a national survey carried out in 1996 that suggested that 54% of women had had a mammogram in the previous 2 years. But most of these mammograms, at least in Alberta and Ontario, and certainly in Quebec, will have been outside the organized programs and, therefore, outside the quality control of the organized programs. We should be aware that for cervical cancer, screening that takes place outside the organized programs is inferior.²⁰

It is generally agreed that screening mammography

must be subject to adequate quality control. Perhaps it is time for the family physicians of Canada to ensure that their patients attend the organized breast cancer screening program in their area, where high quality will be guaranteed. Only then will we begin to reap the benefits of the considerable investment already made in breast cancer screening in Canada.

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