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Mammography screening: mortality rate reduction and screening interval

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The ultimate aim of mammography screening of asymptomatic women is early detection to prevent or delay mortality from breast cancer. Breast cancer is the most frequently diagnosed cancer in Canadian women, accounting for about 30% of all new cancer cases each year. In year 2000, an estimated 1650 new cases of breast cancer will be diagnosed in Alberta, and 430 women will die of the disease.

The Alberta Clinical Practice Guidelines Program, in updating its clinical practice guidelines (CPG) on breast cancer screening, requested a review to assess the current scientific evidence on:

- the effective time interval for mammography screening in asymptomatic women aged 50 to 69 years;
- the effective screening interval in asymptomatic women aged 40 to 49 years; and
- the mortality rate reduction of mammography screening in asymptomatic women aged 40 to 49 years.

Evidence from eight randomized controlled trials (RCTs) launched between 1963 and 1983 consistently showed a reduction in breast cancer mortality in screened women aged 40 to 74 years (screening intervals of 12 to 33 months). The trials were designed to determine the efficacy of mammography screening alone or in combination with clinical breast examination, but not the appropriate screening intervals for different age groups. Only one of the trials, the Canadian National Breast Screening Study, specifically studied the efficacy of mammography screening in younger women (aged 40 to 49 years), but failed to show any reduction in mortality.

Two uncontrolled, retrospective studies attempted to determine the appropriate screening intervals for the different age groups. These study designs were weak and would fail to exclude chance or bias as alternative explanations for their findings. Methodologically sound studies have not assessed the appropriate screening intervals for asymptomatic women aged 50 to 69 years or for women aged 40 to 49 years.

Generally, mortality reduction is lower in younger women than in older women, and the interval between initiating screening and observing reduced mortality is longer for younger women. A 10-year multicenter RCT started in the UK in 1991 and aims to address the efficacy of commencing annual mammography screening in asymptomatic women at the age of 40 and 41 years. However, it will not answer the question about appropriate screening intervals in this age group.

The report concludes that the Alberta CPG, *Guidelines for the Early Detection of Breast Cancer* (April 1999) is consistent with the scientific evidence published to date. The screening intervals recommended by the Alberta CPG reflect those recommended by other international guidelines and national screening programs. However, the guidelines vary in relation to the age at which screening should begin or the frequency of screens in the different age groups. They appear to mirror different ways of interpreting the evidence and the perspectives of the agencies or organizations that produce the guidelines.

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