

OHTAC Recommendation

Screening Mammography for Women Aged 40 to 49 Years at Average Risk for Breast Cancer

Presented to the Ontario Health Technology Advisory Committee in November, 2010

Updated January 2011

This recommendation summary has been prepared by the Medical Advisory Secretariat of the Ministry of Health and Long Term Care on behalf of the Ontario Health Technology Advisory Committee.

Issue Background

Breast cancer is a disease of aging with a four-fold higher incidence in women 50 to 69 years of age (500 per 100,000 women) compared to women 40 to 49 years of age (140 per 100,000 women). The estimated number of new breast cancer diagnoses in Ontario women 40 to 49 year of age is approximately 1,400 per year. There are approximately 1.02 million women in this age group in Ontario at present.

The MAS review assessed the effectiveness of screening (film) mammography in women 40 to 49 years of age. Included in this review were five published health technology assessments (HTAs), one Cochrane Review, both the Canadian Task Force on Preventive Health Care and the U.S. Preventive Services Task Force reports, and eight randomized clinical trials (RCTs).

The Canadian Task Force on Preventive Care, the National Cancer Institute of Canada, and the Canadian Cancer Society do not support population-based screening of women 40 to 49 years of age. Health technology assessments conducted in Alberta (2000) and most recently in Quebec (2005) have also not recommended expansion of their screening programs to include these younger women.

Consistent with Canadian reviews, and the conclusions of a 2002 publication by the International Agency for Research in Cancer (IARC), the cancer division of the World Health Organization, population-based mammography screening was also not recommended in health technology assessments conducted in France (2004), Australia (1997) and New Zealand (1999). The only organizations that have recommended screening for women from the age of 40 are in the United States. However, there are inconsistent recommendations between these organizations. Whereas population-based screening of 40 to 49 year olds is recommended by the U.S. Preventive Services Task Force (2002), the American Cancer Society, the American College of Radiology, the American College of Obstetrics and Gynecology, and the National Cancer Institute, it is not recommended by the National Institutes of Health, the American Association of Cancer Research, and the American Academy of Family Physicians.

Of the eight RCTs that included women randomized in their 40's, only two, the Canadian National Breast Screening Study (NBSS-1) and most recently the UK Age Trial, were specifically designed to address the issue of screening women in their 40s. All other studies provided results for women randomized in their 40's based on subset analyses. The majority of trials included mammography screening in the 1970's and 1980's. However, data compiled from the B.C. Cancer Agency, the International Agency for Research in Cancer, and the RCTs, particularly the Canadian NBSS-1, reveal no changes in sensitivity and specificity over a twenty year period, suggesting that the mammography technology on which this RCT evidence is derived is comparable to current state of the art mammography technology.

The Canadian NBSS-1 randomized 50,430 women 40 to 49 years of age across Canada to (i) screening mammography, physical exam, and the teaching of breast self-examination every 12 months for 4 years, or (ii) physical exam and teaching of breast self-examination upon entry to the study only with usual (community) care thereafter. There was an increased, though not statistically significant, risk of dying of breast cancer in the mammography arm at seven, ten and at sixteen years.

The remaining six RCTs compared mammography, with or without a physical breast exam, to usual care. Across these studies, women were 40 to 74 years of age at randomization, and the mammography screening interval was between 12 and 28 months.

OHTAC Findings

- Level 1 Canadian evidence that screening mammography in average risk women from the age of 40 to 49 years is not effective (relative to usual community care), and that the absence of a benefit was sustained over a maximum follow-up period of 16 years.
- All remaining RCTs reported on <50 year olds based on subset analyses. They provide additional evidence that there is no significant reduction in breast cancer mortality associated with mammography screening in 40 to 49 year olds.

Results of the most recently conducted RCT, the UK Age Trial, were published in December 2006. This trial included over 160,000 women aged 40 or 41 years of age randomized to either annual screening mammography or no mammography for approximately 7 years. The published results pertain to an average follow-up of 10 years, a period selected to allow for observation of effect from age 40 (or 41) to approximately 49 years of age. This study was specifically designed to capture the effects of screening from 40 to 49 years of age, and to not include any effects attributable to screening at 50 years of age and over.

The UK Age Trial results revealed a nonsignificant reduction in breast cancer mortality at 10 years of follow-up. Additional analyses included a meta-analysis whose findings were statistically significant at a 16% reduction of breast cancer mortality. However, this analysis combined the 10 year results of the UK Age Trial, which was specific to 40 and 41 year olds, with that of other RCTs for different follow-up periods, age groups, and the inclusion of the Edinburgh trial, all of which decrease the validity of its findings. A more appropriate meta-analysis would have been the combination of the UK trial results with that of other trials where results focused on women in their early 40s and followed for a similar period. When a similar analysis was conducted, the results were not significant.

A review of risks associated with starting screening at age 40 (rather than at 50 years) is suggestive of a possible increased risk of dying of radiation-induced breast cancer, the potential over-diagnosis and over-treatment of breast cancer as the screening procedure may be detecting less lethal cancers, the potential for missing cancers that are actually present (false negatives), and the increased psychological impact of false positive mammograms. Only approximately 2.25% of women with an abnormal mammogram in their 40s are diagnosed with breast cancer in their 40s.

OHTAC Recommendations (January 2007)

Based on the above evidence and findings with regard to mammography screening for average risk women 40 to 49 years of age, OHTAC recommends the following:

- Screening mammography in Ontario cannot be recommended for 40 to 49 year old average-risk women.
- Ontario should consider the addition of an identifier suffix to mammography in the Fee for Service Code, to determine the purposes for which mammography (i.e. diagnosis or screening) is being conducted for women 40 to 49 years of age.

In November 2010 OHTAC reviewed a recent publication of the Swedish study by Hellquist et al. entitled “ Effectiveness of Population-Based Service Screening with Mammography for Women Ages 40 to 49 Years”, (online publication only in *Cancer*, September 2010) with a view to update OHTAC recommendations of January 2007.

Following a review of this study, OHTAC recommendations from January 2007 will remain the same.