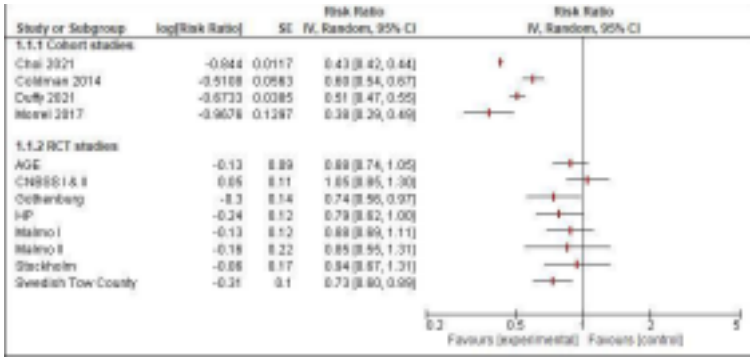
Science that should influence the Breast Screening Guidelines

1. **The incidence rates of breast cancer in women under the age of 50 in Canada have increased significantly** in the past 34 years; age-specific incidence rates of breast cancer among women in their 20s by 45.5%, in the 30s by 12.5%, and in the 40s by 9.1% in the past 34 years. This explains the importance of breast cancer in women the 40s (17% of all breast cancers diagnosed) and similar increases observed in the USA was one reason for changing the guidelines to screen women in the 40s https://doi.org/10.1200/JCO.23.00348
2. **Women aged 40–49 in jurisdictions that do not include women in the 40s in screening programs have significantly higher proportions of stages 2, 3 and 4 breast cancer** compared to their peers in screener jurisdictions. Women in their 40s have significantly higher proportions of stage 2 and 3 breast cancer compared with those in their 50s. Since 2011 when the CTF guidelines were changed to not include the women in the 40s, there has been a 10.3% increase in stage 4 breast cancer. https://www.mdpi.com/1718-7729/29/8/444
3. **Mammography screening programs for women ages 40-49 in Canada are associated with significantly higher 10-year net survival** for women diagnosed with breast cancer; women ages 40-49 living in provinces/territories that included women in the 40s in screening programs (despite having a similar breast cancer diagnosis rate) had a reduced breast cancer mortality and a higher net survival at 10 years compared to those living in provinces that only included women in programs starting at age 50. https://doi.org/10.1177/08465371241246422
4. **The treatment costs based on stage and molecular subtype of breast cancer have risen exponentially** due to the rapidly evolving breast cancer treatment, with stages 1, 3 and 4 (incurable) breast cancer costing C$ 39,263, C$ 97,668 and C$ 370,398 mean per patient respectively (2023C$). Breast cancers detected by screening are on average stage 1 while cancers that are found with symptoms are diagnosed at stage 2, 3 or 4. https://doi.org/10.3390/curroncol30090571
5. Using The OncoSim-Breast microsimulation model (Canadian Partnership Against Cancer) to simulate a cohort of 1.53 million Canadian women born in 1975 showed that compared to no screening, **screening mammography is associated with an absolute mortality reduction of 4.6 (biennial 50–74), 5.9 (biennial 40–74) and 7.9 (annual 40–74) fewer deaths per 1000 women**. The absolute rate of diagnosis of advanced cancers (Stage 2, 3 and 4) falls in favor of earlier stages as the number of lifetime screens increases. https://www.mdpi.com/1718-7729/30/11/686
6. **Using the OncoSim model, based on 2023 treatment standards, screening a cohort of women annually for breast cancer starting at age 40 to 74 saves the Canadian health care system $459.6M** over these women's lifetime with 3499 breast cancer deaths averted and 52367 life years gained. This translates into a savings of $1880 for every woman screened (Abstract 174) https://cslide.ctimeetingtech.com/breast24hybrid/attendee/confcal_1/presentation
7. **Women of race/ethnicity other than White have earlier peak age at diagnosis**, higher proportions of breast cancer diagnosed under age 50, and a peak age of death younger than White. (submitted manuscript to CMAJ, collaboration with Stats Canada)
8. **The provinces/territories have changed their policies** and are not following the CTFPHC guidelines. The provinces/ territories currently including women in their screening programs starting at 40 include BC, NS, PEI, and YT, and those starting at age 45 are AB and NWT. There are public commitments to lower the age to 40 in NB (expected to begin soon), SK (2025) and ON (Fall 2024). The others include NL whose screening manager has indicated NL will lower age to 40 and Quebec where INESSS is reviewing the evidence. Manitoba is the only remaining province that has stated it would wait for the CTF guideline.
9. **The Evidence review team for the CTF shows that using modern studies and observational trials, screening mammography is associated with a 40-60% reduction in breast cancer mortality, compared with the 27% reduction seen in the 40–60-year-old randomized trials.** The Forest plot image below illustrates the differences, including the flawed CNBSS.



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May 9, 2024