

Outcomes of screening mammography among women aged 40 to 43

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Selection criteria

All women age 40 – 43

resident in Ontario on January 1, 1995

- OHIP (medicare) beneficiaries:

-all permanent residents + refugees

- no premium / deductible for beneficiaries

No history of breast cancer prior to this date

Breast screening program recruits from age 50.

Canadian Task Force on Preventive Health Care:

Insufficient evidence to recommend for or against screening younger women.

Study design: case—cohort

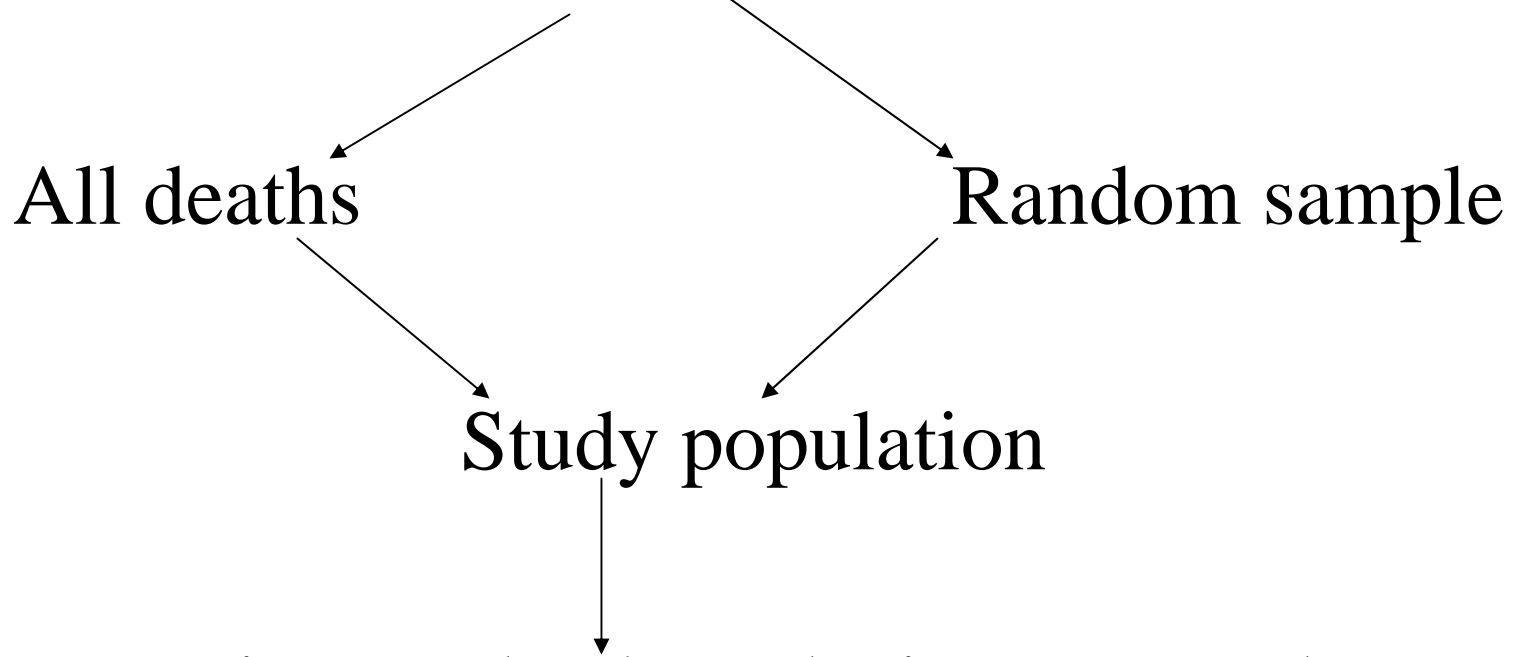
Entire underlying population at risk

All deaths

Random sample

Study population

Time to death analysis, corrected s.e.



Ascertainment of cases (deaths)

Multiple hits:

Ontario Cancer Registry

(Registrar General of Ontario)

Hospital database

OHIP (medicare) eligibility roster

Ascertainment of breast cancer

ICD-9 174xx

registered by Ontario Cancer Registry
diagnosis date between

January 1, 1995 and December 31, 2002.

4,043 / 370,130

Intended to be invasive only, however DCIS is misclassified as invasive
Not an issue for primary analysis because 'cases' are 'deaths'

Sampling subcohort from entire population

Random sample

20,000 / 387,130

(there is no method of calculating sample size requirements for case-cohort design)

Case-cohort study population

Random sample, alive	19,677	
<i>(Random sample, breast ca alive)</i>		<i>(174)</i>
<i>(Breast cancer cases, alive)</i>		<i>(3,262)</i>
Deaths	5,913	
<i>(Deaths, breast cancer cases)</i>		<i>(607)</i>
Case-cohort population	<u>25,590</u>	
<i>(Total breast cancer cases)</i>		<i>(<u>4,043</u>)</i>
Underlying population	<u>387,130</u>	

Bilateral mammography utilization among underlying population

Bilateral mammography is an insured service
available to any woman of any age on request of
physician

47.1% one or more

eligible bilateral mammograms

(no breast procedure or breast visit during preceding 11 months)

by December 31, 2002.

Exposure and primary outcome

Exposure:

Periodic bilateral mammography

(no breast imaging or biopsy or procedure or physician visit with breast code within 11 months)

January 1, 1995 to December 31, 2002

Primary outcome:

Death (all causes)

January 1, 1995 to December 31, 2004

Ascertainment of periodic screening (2 or more episodes = periodic) among study population

OHIP (medicare) billing claims

Original reports photocopied and coded

No breast imaging / biopsy / surgery / medical visit with
breast code within 11 months preceding

Not more than 16 months following preceding screening
mammogram

Ascertainment of periodic screening (2 or more episodes = periodic) among study population

2.1% of subcohort (random sample)

14.4% of cases (women who died)

25.2% of women who developed breast cancer

15.5% of women who developed breast cancer and died

Ascertainment of covariates

OHIP (medicare) eligibility roster:

Year of birth

Residence code as at January 1, 1995:

Neighbourhood income quintile (adjusted for region)

Urban / rural distinction

Hospital database:

January 1, 1990 – December 31, 1994

ICD-9 diagnosis codes >> comorbidity score

Secondary exposures and outcomes (not for primary analysis of death)

All breast biopsies and surgeries regardless of pathology
(Hospital database > institution, dates, codes for
abstraction / photocopy operative and pathology reports)

Family history of breast cancer
(women with breast cancer and / or breast surgery
chart abstraction)

Radiation therapy, chemotherapy, hormone therapy
for women with breast cancer

Case—cohort mortality analysis (all cause) (multivariate, s.e. corrected for design)

Periodic screening mammography	<u>2.09</u> (1.92, 2.27)
Year of birth (per year 1951 >> 1954)	<u>0.94</u> (0.92, 0.96)
Urban residence (vs rural)	<u>0.88</u> (0.82, 0.96)
Neighbourhood income quintile (per 1 quintile increase, low to high)	<u>0.91</u> (0.90, 0.93)
Comorbidity score (per 1 unit increase)	<u>1.70</u> (1.66, 1.74)

**Case—cohort mortality analysis (all cause)
(multivariate, s.e. corrected for design)
among women diagnosed with breast cancer**

Periodic screening mammography	<u>0.64 (0.49, 0.82)</u>
Year of birth (per year 1951 >> 1954)	1.03 (0.92, 1.11)
Urban residence (vs rural)	0.97 (0.74, 1.26)
Neighbourhood income quintile (per 1 quintile increase, low to high)	<u>0.94 (0.88, 0.99)</u>
Comorbidity score (per 1 unit increase)	0.93 (0.66, 1.31)