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### Appendix 1: PRISMA Checklist

<table>
<thead>
<tr>
<th>Section/topic</th>
<th>#</th>
<th>Checklist item</th>
<th>Reported on page #</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TITLE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>1</td>
<td>Identify the report as a systematic review, meta-analysis, or both.</td>
<td>10 (Modified overview and update)</td>
</tr>
<tr>
<td><strong>ABSTRACT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structured summary</td>
<td>2</td>
<td>Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.</td>
<td></td>
</tr>
<tr>
<td><strong>INTRODUCTION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td>3</td>
<td>Describe the rationale for the review in the context of what is already known.</td>
<td></td>
</tr>
<tr>
<td>Objectives</td>
<td>4</td>
<td>Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).</td>
<td></td>
</tr>
<tr>
<td><strong>METHODS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protocol and registration</td>
<td>5</td>
<td>Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.</td>
<td></td>
</tr>
<tr>
<td>Eligibility criteria</td>
<td>6</td>
<td>Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.</td>
<td></td>
</tr>
<tr>
<td>Information sources</td>
<td>7</td>
<td>Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.</td>
<td></td>
</tr>
<tr>
<td>Search</td>
<td>8</td>
<td>Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.</td>
<td></td>
</tr>
<tr>
<td>Study selection</td>
<td>9</td>
<td>State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).</td>
<td></td>
</tr>
<tr>
<td>Data collection process</td>
<td>10</td>
<td>Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.</td>
<td></td>
</tr>
<tr>
<td>Section/topic</td>
<td>#</td>
<td>Checklist item</td>
<td></td>
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<tr>
<td>-------------------------------</td>
<td>----</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Data items</td>
<td>11</td>
<td>List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.</td>
<td></td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>12</td>
<td>Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.</td>
<td></td>
</tr>
<tr>
<td>Summary measures</td>
<td>13</td>
<td>State the principal summary measures (e.g., risk ratio, difference in means).</td>
<td></td>
</tr>
<tr>
<td>Synthesis of results</td>
<td>14</td>
<td>Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., $I^2$) for each meta-analysis.</td>
<td></td>
</tr>
<tr>
<td>Risk of bias across studies</td>
<td>15</td>
<td>Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).</td>
<td></td>
</tr>
<tr>
<td>Additional analyses</td>
<td>16</td>
<td>Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.</td>
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</tr>
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</table>

**RESULTS**

<table>
<thead>
<tr>
<th>Section/topic</th>
<th>#</th>
<th>Checklist item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study selection</td>
<td>17</td>
<td>Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.</td>
</tr>
<tr>
<td>Study characteristics</td>
<td>18</td>
<td>For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.</td>
</tr>
<tr>
<td>Risk of bias within studies</td>
<td>19</td>
<td>Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).</td>
</tr>
<tr>
<td>Results of individual studies</td>
<td>20</td>
<td>For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.</td>
</tr>
<tr>
<td>Synthesis of results</td>
<td>21</td>
<td>Present results of each meta-analysis done, including confidence intervals and measures of consistency.</td>
</tr>
<tr>
<td>Risk of bias across studies</td>
<td>22</td>
<td>Present results of any assessment of risk of bias across studies (see Item 15).</td>
</tr>
<tr>
<td>Additional analysis</td>
<td>23</td>
<td>Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).</td>
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**DISCUSSION**

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<thead>
<tr>
<th>Section/topic</th>
<th>#</th>
<th>Checklist item</th>
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</thead>
<tbody>
<tr>
<td>Summary of evidence</td>
<td>24</td>
<td>Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).</td>
</tr>
<tr>
<td>Limitations</td>
<td>25</td>
<td>Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).</td>
</tr>
<tr>
<td>Conclusions</td>
<td>26</td>
<td>Provide a general interpretation of the results in the context of other evidence, and implications for future research.</td>
</tr>
<tr>
<td>FUNDING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding</td>
<td>27</td>
<td>Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.</td>
</tr>
</tbody>
</table>


For more information, visit: [www.prisma-statement.org](http://www.prisma-statement.org).

Page 2 of 2
Appendix 2 - Search Strategy (Updated Search)

Final Strategies  
2017 Jan 4

EFFECTIVENESS

MEDLINE

Database: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1946 to Present>
Search Strategy:

1  exp Breast Neoplasms/ (287642)
2  ((breast* or mamma or mammar*) adj3 (cancer* or carcinoid* or carcinoma* or carcinogen* or adenocarcinoma* or adeno-carcinoma* or malignan* or neoplasia* or neoplasm* or sarcoma* or tumour* or tumor*)).tw,kw. (331761)
3  exp Carcinoma, Intraductal, Noninfiltrating/ (10262)
4  intraductal carcinoma*.tw,kw. (922)
5  (ductal carcinoma in situ or DCIS).tw,kw. (7495)
6  or/1-5 [BREAST CANCER] (395424)
7  exp Breast Neoplasms/di, pc (47714)
8  exp Mass Screening/ (124871)
9  screen*.tw,kw. (660022)
10  "Early Detection of Cancer"/ (18397)
11  ((early or earlier or earliest) adj3 (detect* or diagnos* or identif* or recogni*)).tw,kw. (225345)
12  exp Self-Examination/ (2485)
13  ((self-exam* or self-detect* or self-screen*) adj5 (breast$1 or mamma or mammary or nipple$1)).tw,kw. (2050)
14  Physical Examination/ (40906)
15  (exam* adj5 (breast? or mamma or mammar* or nipple?)).tw,kw. (15055)
16  exp Breast Neoplasms/ra (16756)
17  exp Mammography/ (32349)
18  (mammograph* or mammogram*).tw,kw. (33182)
19  exp Magnetic Resonance Imaging/ (415717)
20  (fMRI or fMRIs or MRI or MRIs or NMRI or NMRIs or MR imaging or NMR imaging or magnetic resonance imag* or magnetic resonance tomograph* or MR tomograph*).tw,kw. (380636)
21  (chemical shift imaging or proton spin tomograph* or zeugmatograph*).tw,kw. (1076)
22  exp Breast Neoplasms/us (4023)
23  (ultrasound* or ultrason* or echograph* or echomammogra* or echo-mammogra* or echotomograph* or echo-tomograph* or sonograph*).tw,kw. (382288)
24  Imaging, Three-Dimensional/ (64456)
25  ((3D or "3-D") adj3 imag*).tw,kw. (17743)
26  ("3" or three) adj dimension* adj3 imag*).tw,kw. (15527)
27  tomosynthes*.tw,kw. (1236)
28  or/7-27 (1875233)
29 6 and 28 [BREAST CANCER SCREENING] (102429)
30 Male/ not (Female/ and Male/) (2788208)
31 29 not 30 [MALE-ONLY REMOVED] (100934)
32 exp Infant/ not (exp Adult/ and exp Infant/) (838449)
33 exp Child/ not (exp Adult/ and exp Child/) (1197384)
34 Adolescent/ not (exp Adult/ and Adolescent/) (595774)
35 or/32-34 (1865046)
36 31 not 35 [CHILD-ONLY REMOVED] (100454)
37 exp Animals/ not (exp Animals/ and Humans/) (4850259)
38 36 not 37 [ANIMAL-ONLY REMOVED] (98888)
39 (comment or editorial or news or newspaper article).pt. (1254980)
40 (letter not (letter and randomized controlled trial)).pt. (1008588)
41 38 not (39 or 40) [OPINION PIECES REMOVED] (91963)
42 (201410* or 201411* or 201412* or 2015* or 2016* or 2017*).dc. (3219115)
43 41 and 42 [UPDATE PERIOD] (13074)
44 (controlled clinical trial or randomized controlled trial or pragmatic clinical trial).pt. (600336)
45 clinical trials as topic.sh. (197690)
46 (randomized or randomly or RCT$1 or placebo*).tw. (882744)
47 ((singl* or doubl* or trebl* or tripl*) adj (mask* or blind* or dumm*)).tw. (167447)
48 trial.ti. (201433)
49 or/44-48 (1273229)
50 43 and 49 [RCTS] (1017)
51 remove duplicates from 50 [RCTS - DUPLICATES REMOVED] (738)

***************************
Cochrane Library

Search Name: CTFPHC - Breast Cancer Screening - All Modalities
Date Run: 04/01/17 17:35:49.798
Description: 2017 Jan 4 (OHRI) - Oct 2014-present - FINAL

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</tr>
<tr>
<td>#3</td>
<td>[mh &quot;Carcinoma, Intraductal, Noninfiltrating&quot;] 118</td>
</tr>
<tr>
<td>#4</td>
<td>(intraductal next carcinoma*):ti,ab,kw 181</td>
</tr>
<tr>
<td>#5</td>
<td>(&quot;ductal carcinoma in situ&quot; or DCIS):ti,ab,kw 302</td>
</tr>
<tr>
<td>#6</td>
<td>or #1-#5 22683</td>
</tr>
<tr>
<td>#7</td>
<td>[mh &quot;Breast Neoplasms&quot;,/DI,PC] 1459</td>
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<tr>
<td>#8</td>
<td>[mh &quot;Mass Screening&quot;] 5540</td>
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<tr>
<td>#9</td>
<td>screen*:ti,ab,kw 29461</td>
</tr>
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<td>#10</td>
<td>[mh &quot;Early Detection of Cancer&quot;] 898</td>
</tr>
<tr>
<td>#11</td>
<td>((early or earlier or earliest) near/3 (detect* or diagnos* or identif* or recogni*)):ti,ab,kw 5661</td>
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<tr>
<td>#12</td>
<td>[mh Self-Examination] 202</td>
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CENTRAL – 694 [RCTs]

HARMS

MEDLINE

Database: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1946 to Present>
Search Strategy:

1  exp Breast Neoplasms/ (287642)
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3  exp Carcinoma, Intraductal, Noninfiltrating/ (10262)
4  intraductal carcinoma*.tw, kw. (922)
5  (ductal carcinoma in situ or DCIS).tw, kw. (7495)
6  or/1-5 [BREAST CANCER] (395424)
7  exp Breast Neoplasms/di, pc (47714)
8  exp Mass Screening/ (124871)
9  screen*.tw, kw. (660022)
10  "Early Detection of Cancer"/ (18397)
11  ((early or earlier or earliest) adj3 (detect* or diagnos* or identif* or recogni*)).tw, kw. (225345)
12  exp Self-Examination/ (2485)
13  ((self-exam* or self-detect* or self-screen*) adj5 (breast$1 or mamma or mammary or nipple$1)).tw,kw. (2050)
14  Physical Examination/ (40906)
15  (exam* adj5 (breast? or mamma or mammar* or nipple?)).tw,kw. (15055)
16  exp Breast Neoplasms/ra (16756)
17  exp Mammography/ (32349)
18  (mammograph* or mammogram*).tw,kw. (33182)
19  exp Magnetic Resonance Imaging/ (415717)
20  (fMRI or fMRIs or MRI or MRIs or NMRI or NMRIs or MR imaging or NMR imaging or magnetic resonance imag* or magnetic resonance tomograph* or MR tomograph*).tw,kw. (380636)
21  (chemical shift imaging or proton spin tomograph* or zeugmatograph*).tw,kw. (1076)
22  exp Breast Neoplasms/us (4023)
23  (ultrasound* or ultrason* or echograph* or echomammogra* or echo-mammogra* or echotomograph* or echo-tomograph* or sonograph*).tw,kw. (382288)
24  Imaging, Three-Dimensional/ (64456)
25  ((3D or "3-D") adj3 imag*).tw,kw. (17743)
26  ("3" or three) adj dimension* adj3 imag*).tw,kw. (15527)
27  tomosynthes*.tw,kw. (1236)
28  or/7-27 (1875233)
29  6 and 28 [BREAST CANCER SCREENING] (102429)
30  Male/ not (Female/ and Male/) (2788208)
31  29 not 30 [MALE-ONLY REMOVED] (100934)
32  exp Infant/ not (exp Adult/ and exp Infant/) (838449)
33  exp Child/ not (exp Adult/ and exp Child/) (1197384)
34  Adolescent/ not (exp Adult/ and Adolescent/) (595774)
35  or/32-34 (1865046)
36  31 not 35 [CHILD-ONLY REMOVED] (100454)
37  exp Animals/ not (exp Animals/ and Humans/) (4850259)
38  36 not 37 [ANIMAL-ONLY REMOVED] (98888)
39  (comment or editorial or news or newspaper article).pt. (1254980)
40  (letter not (letter and randomized controlled trial)).pt. (1008588)
41  38 not (39 or 40) [OPINION PIECES REMOVED] (91963)
42  (201410* or 201411* or 201412* or 2015* or 2016* or 2017*).dc. (3219115)
43  41 and 42 [UPDATE PERIOD] (13074)
44  (controlled clinical trial or randomized controlled trial or pragmatic clinical trial).pt. (600336)
45  clinical trials as topic.sh. (197690)
46  (randomi#ed or randomly or RCT$1 or placebo*).tw. (882744)
47  ((singl* or doubl* or trebl* or tripl*) adj (mask* or blind* or dumm*)).tw. (167447)
48  trial.ti. (201433)
49  or/44-48 (1273229)
50  43 and 49 [RCTS] (1017)
51  remove duplicates from 50 [RCTS - DUPLICATES REMOVED] (738)
52  controlled clinical trial.pt. (98123)
53  Controlled Clinical Trial/ or Controlled Clinical Trials as Topic/ (103798)
54  (control* adj2 trial*).tw. (231865)
55  Non-Randomized Controlled Trials as Topic/ (135)
56  (nonrandom* or non-random* or quasi-random* or quasi-experiment*).tw. (49091)
57  (nRCT or nRCTs or non-RCT$1).tw. (605)
(pre- adj3 post-).tw. (65615)
(pretest adj3 posttest).tw. (4480)
Historically Controlled Study/ (111)
(control* adj2 stud$3).tw. (212253)
Control Groups/ (1833)
(control$ adj2 group$1).tw. (436609)
trial.ti. (201433)
or/52 (1085914)
43 and 65 [NON-RCTS] (1128)
66 not 50 [OVERLAP WITH RCT SET REMOVED] (496)
exp Cohort Studies/ (1803827)
cohort$1.tw. (470255)
Retrospective Studies/ (674584)
(followup or follow-up) adj (study or studies)).tw. (48662)
Observational study.pt. (35331)
(observati$2 adj (study or studies)).tw. (78822)
(population or population-based) adj (study or studies or analys$)).tw. (15420)
(multidimensional or multi-dimensional) adj (study or studies)).tw. (96)
Comparative Study.pt. (1958641)
(comparative or comparison) adj (study or studies)).tw. (101181)
exp Case-Control Studies/ (917378)
(case-control* or case-based or case-comparison) adj (study or studies)).tw. (95907)
(ecolog* adj (study or studies)).tw. (4768)
or/69-82 (4242593)
43 and 83 [OBSERVATIONAL STUDIES] (4241)
84 not (50 or 66) [OVERLAP WITH RCTS AND NON-RCTS REMOVED] (3507)
remove duplicates from 85 [OBSERVATIONAL STUDIES - DUPLICATES REMOVED] (2709)
exp Mass Screening/ae [Adverse Effects] (800)
"Early Detection of Cancer"/ae [Adverse Effects] (247)
exp Self-Examination/ae [Adverse Effects] (2)
exp Mammography/ae [Adverse Effects] (805)
exp Diagnostic Errors/ (118284)
misdiagnos*.tw,kw. (27228)
(miss$2 adj3 diagnos$).tw,kw. (4750)
(overdiagnos* or over diagnos*).tw,kw. (4548)
(false adj (negative* or positive*)).tw,kw. (73344)
(error* or false$2 or wrong$2) adj3 (alarm* or detect* or diagnos*).tw,kw. (22187)
exp Medical Overuse/ (5464)
over treat*.tw,kw. (3916)
(inappropriate* or unnecessar*) adj3 (followup or follow-up or procedur* or therap* or treatment*).tw,kw. (11197)
(inappropriate* or unnecessar* or safe or adverse or adversely or undesirabl* or unintend* or unintent* or unwanted or harm* or injurious* or risk or risks or reaction* or complication*).ti. (844248)
((adverse* or undesirable* or unintend* or unintent* or unwanted or harm* or toxic or injurious* or serious* or fatal) adj5 (affect or affected or affecting or affects or consequence* or effect* or react or reacts or reacted or reacting or reaction* or event* or outcome* or incident*)).tw,kw. (547440)
((adverse* or inappropriat* or unnecessar* or undesirabl* or unintend* or unintent* or unwanted or injurious* or serious*) adj5 (alarm* or anxiet* or anxious* or distress* or emotion* or feeling* or psycholog* or uncertaint*)).tw,kw.

iatrogen*.tw,kw. (29231)

43 and 104 [HARMS OF BREAST CANCER SCREENING] (2235)

106 105 and 51 [HARMS OF BREAST CANCER SCREENING - RCTS] (206)

107 105 and 68 [HARMS OF BREAST CANCER SCREENING - NON-RCTS] (120)

108 105 and 86 [HARMS OF BREAST CANCER SCREENING - OBSERVATIONAL STUDIES] (567)

109 or/106-108 [HARMS OF BREAST CANCER SCREENING - ALL STUDY DESIGNS] (893)

Cochrane Library

Search Name: CTFPHC - Breast Cancer Screening - All Modalities - Harms

Date Run: 04/01/17 17:41:41.934

Description: 2017 Jan 4 (OHRI) - Oct 2014-present - FINAL

ID | Search Hits
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#3 [mh "Carcinoma, Intraductal, Noninfiltrating"] | 118
#4 (intraductal next carcinoma*):ti,ab,kw | 181
#5 ("ductal carcinoma in situ" or DCIS):ti,ab,kw | 302
#6 (or #1-#5) | 22683
#7 [mh "Breast Neoplasms"/DI,PC] | 1459
#8 [mh "Mass Screening"] | 5540
#9 screen*:ti,ab,kw | 29461
#10 [mh "Early Detection of Cancer"] | 898
#11 ((early or earlier or earliest) near/3 (detect* or diagnos* or identif* or recogni*)):ti,ab,kw | 5661
#12 [mh Self-Examination] | 202
#13 ((self next (exam* or detect* or screen*)) near/5 (breast* or mamma or mammary or nipple*)):ti,ab,kw | 208
#14 [mh ^"Physical Examination"] | 913
#15 (exam* near/5 (breast* or mamma or mammar* or nipple*)):tw,kw. | 2
#16 [mh "Breast Neoplasms"/RA] | 380
#17 [mh Mammography] | 1033
#18 (mammograph* or mammogram*):ti,ab,kw | 1859
#19 [mh "Magnetic Resonance Imaging"] | 7076
#20 (fMRI or fMRIs or MRI or MRIs or NMRI or NMRIs or "MR imaging" or "NMR imaging" or ("magnetic resonance" next imaging) or ("magnetic resonance" next tomograph*) or (MR next tomograph*)):ti,ab,kw | 14833
#21 ("chemical shift imaging" or ("proton spin" next tomograph*) or zeugmatograph*):ti,ab,kw | 20
#22 [mh "Breast Neoplasms"/US] | 86
(ultrasound* or ultrason* or echograph* or echromammogra* or echo-mammogra* or echotomograph* or echo-tomograph* or sonograph*):ti,ab,kw 21358

[mh "Imaging, Three-Dimensional"] 1022

((3D or '3-D') near/3 imag*):ti,ab,kw 338

(((3 or three) next dimension*) near/3 imag*):ti,ab,kw 1420

tomosynthes*:ti,ab,kw 33

(or #7-#27) 70238

#6 and #28 3794

[mh "Mass Screening"/AE] 45

[mh "Early Detection of Cancer"/AE] 13

[mh Self-Examination/AE] 0

[mh Mammography/AE] 28

[mh "Diagnostic Errors"] 2916

misdiagnos*:ti,ab,kw 210

(miss* near/3 diagnos*):ti,ab,kw 92

(overdiagnos* or (over next diagnos*)):ti,ab,kw 190

(false next (negative* or positive*)):ti,ab,kw 2562

((error* or false* or wrong*) near/3 (alarm* or detect* or diagnos*)):ti,ab,kw 1187

[mh "Medical Overuse"] 138

overtreat*:ti,ab,kw 193

((inappropriate* or unnecessar*) near/3 (followup or "follow-up" or procedur* or therap* or treatment*)):ti,ab,kw 564

(inappropriate* or unnecessar* or safe or adverse or adversely or undesirabl* or unintend* or unintent* or unwanted or harm* or injurious* or risk or risks or reaction* or complication*):ti 38637

((adverse* or undesirabl* or unintend* or unintent* or unwanted or harm* or toxic or injurious* or serious* or fatal) near/5 (affect or affected or affecting or affects or consequence* or effect* or react or reacts or reacted or reacting or reaction* or event* or outcome* or incident*)):ti,ab,kw 122393

((adverse* or inappropriate* or unnecessar* or undesirabl* or unintend* or unintent* or unwanted or injurious* or serious*) near/5 (alarm* or anxiet* or anxious* or distress* or emotion* or feeling* or psycholog* or uncertain*)):ti,ab,kw 1201

iatrogen*:ti,ab,kw 691

(or #30-#46) 160469

#29 and #47 Publication Year from 2014 to 2017229

CENTRAL – 216 [RCTs]

BREAST SELF-EXAM – Missed Search Period

MEDLINE

Database: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1946 to Present>

Search Strategy:

1 exp Breast Neoplasms/ (287642)
((breast* or mamma or mammar*) adj3 (cancer* or carcinoid* or carcinoma* or carcinogen* or adenocarcinoma* or adeno-carcinoma* or malignan* or neoplasia* or neoplasm* or sarcoma* or tumour* or tumor*)).tw,kw.
exp Carcinoma, Intraductal, Noninfiltrating/ (10262)
intraductal carcinoma*.tw,kw. (922)
(ductal carcinoma in situ or DCIS).tw,kw. (7495)
or/1-5 [BREAST CANCER] (395424)
exp Self-Examination/ (2485)
((self-exam* or self-detect* or self-screen*) adj5 (breast$1 or mamma or mammary or nipple$1)).tw,kw. (2050)
or/7-8 (3569)
6 and 9 [BREAST SELF-EXAMINATION] (2287)
Male/ not (Female/ and Male/) (2788208)
10 not 11 (2280)
exp Infant/ not (exp Adult/ and exp Infant/) (838449)
exp Child/ not (exp Adult/ and exp Child/) (1197384)
Adolescent/ not (exp Adult/ and Adolescent/) (595774)
or/13-15 (1865046)
12 not 16 (2259)
exp Animals/ not (exp Animals/ and Humans/) (4850259)
17 not 18 [ANIMAL-ONLY REMOVED] (2259)
(comment or editorial or news or newspaper article).pt. (1254980)
(letter not (letter and randomized controlled trial)).pt. (1008588)
19 not (20 or 21) [OPINION PIECES REMOVED] (2114)
(201010* or 201011* or 201012* or 2011* or 2012* or 2013* or 201401* or 201402* or 201403*
or 201404* or 201405* or 201406* or 201407* or 201408* or 201409*).dc. (4562092)
22 and 23 [UPDATE PERIOD] (297)
(controlled clinical trial or randomized controlled trial or pragmatic clinical trial).pt. (600336)
clinical trials as topic.sh. (197690)
(randomized or randomly or RCT$1 or placebo*).tw. (882744)
((singl* or doubl* or trebl* or tripl*) adj (mask* or blind* or dumm*)).tw. (167447)
trial.ti. (201433)
25 or/25-29 (1273229)
30 and 31 [RCTS] (26)
remove duplicates from 31 [RCTS - DUPLICATES REMOVED] (24)
controlled clinical trial.pt. (98123)
Controlled Clinical Trial/ or Controlled Clinical Trials as Topic/ (103798)
(control* adj2 trial*).tw. (231865)
Non-Randomized Controlled Trials as Topic/ (135)
(nonrandom* or non-random* or quasi-random* or quasi-experiment*).tw. (49091)
(nRCT or nRCTs or non-RCT$1).tw. (605)
(pre- adj3 post-).tw. (65615)
(pretest adj3 posttest).tw. (4480)
Historically Controlled Study/ (111)
(control* adj2 stud$3).tw. (212253)
Control Groups/ (1833)
(control$ adj2 group$1).tw. (436609)
trial.ti. (201433)
or/33-45 (1085914)
24 and 46 [NON-RCTS] (19)
47 not 31 [OVERLAP WITH RCTS REMOVED] (11)
remove duplicates from 48 [NON-RCTS - DUPLICATES REMOVED] (10)
exp Cohort Studies/ (1803827)
cohort$.1.tw. (470255)
Retrospective Studies/ (674584)
(longitudinal or prospective or retrospective).tw. (1065169)
((followup or follow-up) adj (study or studies)).tw. (48662)
Observational study.pt. (35331)
(observation$.2 adj (study or studies)).tw. (78822)
((population or population-based) adj (study or studies or analys#s)).tw. (15420)
((multidimensional or multi-dimensional) adj (study or studies)).tw. (96)
Comparative Study.pt. (1958641)
((comparative or comparison) adj (study or studies)).tw. (101181)
exp Case-Control Studies/ (917378)
((case-control* or case-based or case-comparison) adj (study or studies)).tw. (95907)
or/50-62 [OBSERVATIONAL STUDIES] (4238905)
24 and 63 [OBSERVATIONAL STUDIES] (69)
64 not (31 or 47) [OVERLAP WITH RCTS AND NON-RCTS REMOVED] (59)
remove duplicates from 65 [OBSERVATIONAL STUDIES - DUPLICATES REMOVED] (53)
32 or 49 or 66 [ALL STUDY DESIGNS] (87)

***************
Cochrane Library

Search Name: CTFPHC - Breast Cancer Screening - Self-Examination
Date Run: 04/01/17 17:44:19.792
Description: 2017 Jan 4 - 2010-2014 - FINAL

ID Search Hits
#1 [mh "Breast Neoplasms"] 9949
#2 ((breast* or mamma or mammary or mamm*) near/3 (cancer* or carcinoid* or carcinoma* or carcinogen*
or adenocarcinoma* or adenocarcinoma* or malignant* or neoplasia* or neoplasm* or sarcoma* or tumour* or tumor*)):ti,ab,kw 22627
#3 [mh "Carcinoma, Intraductal, Noninfiltrating"] 118
#4 (intraductal next carcinoma*):ti,ab,kw 181
#5 (ductal carcinoma in situ or DCIS):ti,ab,kw 302
#6 {or #1-#5} 22683
#7 [mh Self-Examination] 202
#8 ((self next (exam* or detect* or screen*)) near/5 (breast* or mamma or mammary or nipple*)):ti,ab,kw 208
#9 #7 or #8 303
#10 #6 and #9 Publication Year from 2010 to 2014 23

CENTRAL – 23 [RCTs]
Appendix 3- Screening Forms (Updated Search)

Level 1 – Title and abstract screening
1. Does this record focus on breast cancer screening in a population screening context?
   - Yes/possibly
   - No*
   - Unclear/no abstract

*Reasons for selecting ‘no’:
1) Does not focus on breast cancer screening in a population screening context (If >20% of the population are high risk- then exclude. For now, include all studies which assess dense breasts populations).

High Risk: women with pre-existing or personal history of breast cancer, family history (in a first degree relative) of breast or ovarian cancer or other personal risk factors, such as abnormal breast pathology or BRCA1/BRCA2 genetic mutations, previously received radiation treatment to the chest (such as Hodgkin’s) for cancer.

2) Animal/in vivo studies

2) It focuses on breast cancer screening but it is clearly obvious that it is one of the following: CPG, SRs, Narrative literature review, commentary (without primary data), editorials (without primary data), protocol

*Those answered yes/unclear will be passed through to full-text screening.

Level 2 – Full-text screening
1. Is the full-text available?
   - Yes
   - No
   - abstract only
   - article not required due to known foreign language

2. Is the article published in English or French?
   - Yes
   - No

3. Is the article any of the following study designs?
   - RCTs (including cluster), or novel/extended analysis of RCT data.
   - Non-RCTs
   - Comparative cohort studies (including administrative database studies/registries)
   - Ecological studies
   **Example of studies to exclude:**
   - case-control,
   - cross-sectional studies,
case-series, controlled before-after, diagnostic test accuracy studies modelling studies.

Also exclude narrative reviews, systematic reviews/meta-analysis, commentaries & Editorials (without primary data), protocols, papers on study design

☐ Yes
☐ No
☐ Diagnostic Type Accuracy Study- of the interventions themselves, exclude kappa studies on observer agreement

4. Is the article focused on breast cancer screening (must mention inclusion of some sort of screening practice)?
Exclude: (i) studies where focus of the intervention is to randomize patients to programs to enforce/enhance screening. Ex: community health worker-led health literacy intervention; (ii) studies on treatment
☐ Yes
☐ No

5. Is it the population of interest?
☐ No- women <40 years (exclusively)
☐ No- women ≥ 40 years who are high –risk (based on family history and other personal risk factors- genetic mutations, abnormal pathology, previous history of cancer, etc).
☐ Yes- women ≥ 40 years who are ‘not at high risk’- i.e., average risk (or at least 80% of the population is not at high risk)
☐ Yes- women ≥ 40 years who have dense breasts (>75% of population)
☐ Unclear- mixed aged population who are ‘not at high risk’(at least 80% of the population) or who have dense breasts (<75% of the population)
☐ No- mixed aged population who are at ‘high risk’ (>20% of population) or dense breasts (>75%)

6. Does it include the intervention of interest?
Mammography (film, digital, tomosynthesis) with or without CBE/BSE
MRI with or without CBE/BSE
Ultrasound with or without CBE/BSE
CBE
BSE
☐ Yes
☐ No

7. Is the comparator: “no screening”, “usual care”?
☐ Yes
☐ No
Typically, these questions are nested. If an answer allows us to proceed in the inclusion criteria, the next question will appear. Those bolded would be those that would pass through to the following question. If question 7 is ‘Yes’, this article would be passed through to a post-hoc evaluation, ensuring it has outcomes of interest.
Appendix 4- Data Extraction- Overview of Reviews

Publication details: year of publication, language, publication status

Search details: databases searched and years searched

Selection criteria: Number of included studies, type of study design, population, sample sizes, quality of included studies (must align with the CTFPHC PICOTs)

Results of the systematic review: summarize qualitatively body of evidence

Results of the meta-analysis: pooled estimate, heterogeneity tests

Strengths of limitations of the review

AMSTAR quality
Appendix 5 - Assessing the Methodological Quality of Systematic Reviews (AMSTAR) (Overview of Reviews)

1. Was an 'a priori' design provided?
The research question and inclusion criteria should be established before the conduct of the review.

   Note: Need to refer to a protocol, ethics approval, or pre-determined/a priori published research objectives to score a “yes.”

2. Was there duplicate study selection and data extraction?
There should be at least two independent data extractors and a consensus procedure for disagreements should be in place.

   Note: 2 people do study selection, 2 people do data extraction, consensus process or one person checks the other’s work.

3. Was a comprehensive literature search performed?
At least two electronic sources should be searched. The report must include years and databases used (e.g., Central, EMBASE, and MEDLINE). Key words and/or MESH terms must be stated and where feasible the search strategy should be provided. All searches should be supplemented by consulting current contents, reviews, textbooks, specialized registers, or experts in the particular field of study, and by reviewing the references in the studies found.

   Note: If at least 2 sources + one supplementary strategy used, select “yes” (Cochrane register/Central counts as 2 sources; a grey literature search counts as supplementary).

4. Was the status of publication (i.e. grey literature) used as an inclusion criterion?
The authors should state that they searched for reports regardless of their publication type. The authors should state whether or not they excluded any reports (from the systematic review), based on their publication status, language etc.
Note: If review indicates that there was a search for “grey literature” or “unpublished literature,” indicate “yes.” SINGLE database, dissertations, conference proceedings, and trial registries are all considered grey for this purpose. If searching a source that contains both grey and non-grey, must specify that they were searching for grey/unpublished lit.

5. Was a list of studies (included and excluded) provided?
A list of included and excluded studies should be provided.

Note: Acceptable if the excluded studies are referenced. If there is an electronic link to the list but the link is dead, select “no.”

6. Were the characteristics of the included studies provided?
In an aggregated form such as a table, data from the original studies should be provided on the participants, interventions and outcomes. The ranges of characteristics in all the studies analyzed e.g., age, race, sex, relevant socioeconomic data, disease status, duration, severity, or other diseases should be reported.

Note: Acceptable if not in table format as long as they are described as above.

7. Was the scientific quality of the included studies assessed and documented?
‘A priori’ methods of assessment should be provided (e.g., for effectiveness studies if the author(s) chose to include only randomized, double-blind, placebo controlled studies, or allocation concealment as inclusion criteria); for other types of studies alternative items will be relevant.

Note: Can include use of a quality scoring tool or checklist, e.g., Jadad scale, risk of bias, sensitivity analysis, etc., or a description of quality items, with some kind of result for EACH study (“low” or “high” is fine, as long as it is clear which studies scored “low” and which scored “high”; a summary score/range for all studies is not acceptable).

8. Was the scientific quality of the included studies used appropriately in formulating conclusions?
The results of the methodological rigor and scientific quality should

Yes
No
Can't answer
Not applicable
be considered in the analysis and the conclusions of the review, and explicitly stated in formulating recommendations.

Note: Might say something such as “the results should be interpreted with caution due to poor quality of included studies.” Cannot score “yes” for this question if scored “no” for question 7.

9. Were the methods used to combine the findings of studies appropriate?
For the pooled results, a test should be done to ensure the studies were combinable, to assess their homogeneity (i.e., Chi-squared test for homogeneity, I2). If heterogeneity exists a random effects model should be used and/or the clinical appropriateness of combining should be taken into consideration (i.e., is it sensible to combine?).

Note: Indicate “yes” if they mention or describe heterogeneity, i.e., if they explain that they cannot pool because of heterogeneity/variability between interventions.

10. Was the likelihood of publication bias assessed?
An assessment of publication bias should include a combination of graphical aids (e.g., funnel plot, other available tests) and/or statistical tests (e.g., Egger regression test, Hedges-Olken).

Note: If no test values or funnel plot included, score “no”. Score “yes” if mentions that publication bias could not be assessed because there were fewer than 10 included studies.

11. Was the conflict of interest included?
Potential sources of support should be clearly acknowledged in both the systematic review and the included studies.

Note: To get a “yes,” must indicate source of funding or support for the systematic review AND for each of the included studies.

Appendix 6- Cochrane Risk of Bias Tool

1. **Selection bias domain**: Random sequence generation
   - Low risk
   - Unclear risk
   - High risk

   Support for judgement:

2. **Selection bias domain**: Allocation concealment
   - Low risk
   - Unclear risk
   - High risk

   Support for judgement:

3. **Performance bias domain**: Blinding of participants and personnel (for each outcome)
   - Low risk
   - Unclear risk
   - High risk

   Support for judgement:

4. **Detection bias domain**: Blinding of outcome assessment (for each outcome)
   - Low risk
   - Unclear risk
   - High risk

   Support for judgement:
5. **Attrition bias domain**: Incomplete outcome data (for each outcome)
   - Low risk
   - Unclear risk
   - High risk
   Support for judgement:

6. **Reporting bias domain**: Selective reporting
   - Low risk
   - Unclear risk
   - High risk
   Support for judgement:

7. **Other sources of bias**
   - Low risk
   - Unclear risk
   - High risk
   Support for judgement:
Appendix 7 - Newcastle-Ottawa Scale (Cohort Studies)

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability.

Selection

1) Representativeness of the exposed cohort
   a) truly representative of the average ________ (describe) in the community ★
   b) somewhat representative of the average ________ in the community ★
   c) selected group of users eg nurses, volunteers
   d) no description of the derivation of the cohort

2) Selection of the non-exposed cohort
   a) drawn from the same community as the exposed cohort ★
   b) drawn from a different source
   c) no description of the derivation of the non-exposed cohort

3) Ascertainment of exposure
   a) secure record (eg surgical records) ★
   b) structured interview ★
   c) written self-report
   d) no description

4) Demonstration that outcome of interest was not present at start of study
   a) yes ★
   b) no

Comparability

1) Comparability of cohorts on the basis of the design or analysis
   a) study controls for ________ (select the most important factor) ★
   b) study controls for any additional factor ★ (This criteria could be modified to indicate specific control for a second important factor.)
   * Age and Hormone replacement therapy use were considered.

Outcome

1) Assessment of outcome
   a) independent blind assessment ★
   b) record linkage ★
   c) self report
   d) no description

2) Was follow-up long enough for outcomes to occur
   a) yes (select an adequate follow up period for outcome of interest) ★
   b) no

3) Adequacy of follow up of cohorts
   a) complete follow up - all subjects accounted for ★
   b) subjects lost to follow up unlikely to introduce bias - small number lost - >______% (select an adequate %) follow up, or description provided of those lost ★
   c) follow up rate <______% (select an adequate %) and no description of those lost
   d) no statement
4) Did the authors adjust for lead time bias in the analysis (or was follow-up long enough to reduce lead time bias)?
   a) yes*
   b) no
Appendix 9 – List of Excluded Studies (Full Text) (Updated Search)

Full Text Unavailable


Full Text Unavailable


Abstract Only

RefID: 844. Autier, P., Boniol, M., Smans, M., and Boyle, P.. Randomized trials on mammography screening and the left-to-right nature design. Journal of clinical oncology Conference Abstract 2014. 32 (15 Suppl 1) -. 


Foreign Language (Not published in English or French)


RefID:583. Gummersbach, Elisabeth, in der Schmitten, Jurgen, Mortsiefer, Achim, Abholz, Heinz Harald, Wegscheider, Karl, and Pentzek, Michael. Willingness to participate in mammography screening: a randomized controlled questionnaire study of responses to two patient information leaflets with different factual content. Deutsches Arzteblatt international 2015. 112 (S) 61-68


Not Considered to be Study Design of Interest


international du cancer 2015. 136 (6) 1411-1421.


RefID:3167. Blanch, Jordi, Sala, Maria, Ibanez, Josefa, Domingo, Laia, Fernandez, Belen, Otegi, Arantza, Barata, Teresa, Zubizarreta, Raquel, Ferrer, Joana, Castells, Xavier, Rue, Montserrat, Salas, Dolores, and INCA Study Group. Impact of risk factors on different interval cancer subtypes in a population-based breast cancer screening programme. PloS one 2014. 9 (10) e110207-.


RefID:3120. Castells, Xavier, Domingo, Laia, Corominas, Josep Maria, Tora-Rocamora, Isabel, Quintana, Maria Jesus, Bare, Marisa, Vidal, Carmen, Natal, Carmen, Sanchez, Mar, Saladie, Francina, Ferrer, Joana, Vernet, Mar, Servitja, Sonia, Rodriguez-Arana, Ana, Roman, Marta, Espinas, Josep Alfons, and Sala, Maria. Breast cancer risk after diagnosis by screening mammography of nonproliferative or proliferative benign breast disease: a study from a population-based screening program. Breast cancer research and treatment 2015. 149 (1) 237-244.

RefID:2953. Chen, Qianqian, Ma, Qingjie, Chen, Minglong, Chen, Bin, Wen, Qiang, Jia, Bing, Wang, Fan, Sun, Butong, and Gao, Shi. An exploratory study on 99mTc-RGD-BBN peptide scintimammography in the assessment of breast malignant lesions compared to 99mTc-3P4-RGD2. PloS one 2015. 10 (4) e0123401-.


RefID:491. Choi, Eunji, Lee, Yoon Young, Yoon, Hyo Joong, Lee, Sangeun, Suh, Mina, Park, Boyoung, Jun, Jae Kwan, Kim, Yeol, and Choi, Kui Son. Relationship between Cancer Worry and Stages of Adoption for Breast Cancer Screening among Korean Women. PloS one 2015. 10 (7) e0132351-.


RefID:5060. Foerster, V. Tomosynthesis (3D Mammography) for Breast Cancer Screening [Issues in emerging health technologies, Issue 135]. Ottawa: Canadian Agency for Drugs and Technologies in Health. 2015.


RefID:25. Fourkala, Evangelia Ourania, Blyuss, Oleg, Field, Helen, Gunu, Richard, Ryan, Andy, Barth, Julian, Jacobs, Ian, Zaikin, Alexey, D awnay, Anne, and Menon, Usha. Corrigendum to "Sex hormone measurements using mass spectrometry and sensitive extraction radioimmunoassay and risk of estrogen receptor negative and positive breast cancer: Case control study in UK Collaborative Cancer Trial of Ovarian Cancer Screening (UKCTOCS)" [Steroids 110 (2016) 62-69]. Steroids 2016. 113 ( ) 113-.

for sentinel node biopsy?. Cancer medicine 2016. 5 (6) 1031-1036.


intervention in improving appointment adherence in underserved women. Implementation science : IS 2015. 10 () 143-


RefID:697. Incollingo, Beth Fand. Controversial findings on the value of mammography to be ‘dissected at Miami Breast Cancer Conference. The American journal of managed care 2014. 20 (5 Spec No.) E7-.


RefID:1005. Keller, B. M., Chen, J., Daye, D., Conant, E. F., and Kontos, D.. Preliminary evaluation of the publicly available Laboratory for Breast Radiodensity Assessment (LIBRA) software tool: Comparison of fully automated area and volumetric density measures in a case-control study with digital mammography. Breast cancer researchArticle 2015. 17 (1 no pagination) -.


RefID:2990. Lee, Han Byeol, Kang, Un Beom, Moon, Hyeong Gon, Lee, Jiwoo, Lee, Kyung Min, Yi, Minju, Park, Yong Sun, Lee, Jong Won, Yu, Jong Han, Choi, Seung Ho, Cho, Sang Heon, Lee, Cheolju, Han, Wonshik, and Noh, Dong Young. Development and Validation of a Novel Plasma Protein Signature for Breast Cancer Diagnosis by Using Multiple Reaction Monitoring-based Mass Spectrometry. Anticancer research 2015. 35 (11) 6271-6279.


RefID:2645. Mazor, Roei D., Savir, Avital, Gheorghiu, David, Weinstein, Yuliana, Abadi-Korek, Ifat, and Shabshin, Nogah. The inter-observer variability of breast density scoring between mammography technologists and breast

RefID:3015. McCarthy, Anne Marie, Keller, Brad, Kontos, Despina, Boghossian, Leigh, McGuire, Erin, Bristol, Mirar, Chen, Jinbo, Domchek, Susan, and Armstrong, Katrina. The use of the Gail model, body mass index and SNPs to predict breast cancer among women with abnormal (BI-RADS 4) mammograms. Breast cancer research : BCR 2015. 17 (1) 1-


RefID:1202. Miller, A. B. and Fletcher, S. W.. Annual mammography screening did not reduce long-term breast cancer mortality in women 40 to 59 years of age. Annals of internal medicineNote 2014. 160 (10) JC7-. 


2012.


RefID:2947. Nguyen, Tuong Linh, Aung, Ye Kyaw, Evans, Christopher Francis, Yoon-Ho, Choi, Jenkins, Mark Anthony, Sung, Joohon, Hopper, John Llewelyn, and Song, Yun Mi. Mammographic density defined by higher than conventional brightness threshold better predicts breast cancer risk for full-field digital mammograms. Breast cancer research : BCR 2015. 17 () 142-.


RefID:4002. Obaji, Nc, Elom, Ha, Agwu, Um, Nwigwe, Cg, Ezeonu, Po, and Umeora, Ouj. Awareness and Practice of Breast Self-Examination among Market Women in Abakaliki, South East Nigeria. Annals of medical and health sciences research 2013. 3 (1) 7-12.


the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology 2016.


RefID:922. Shiono, Y. N., Zheng, Y. F., Kikuya, M., Kawai, M., Ishida, T., Kuriyama, S., and Ohuchi, N.. Participants' understanding of a randomized controlled trial (RCT) through informed consent procedures in the RCT for breast cancer screening, J-START. Trials 2014. 15 (7) 375-.


RefID: 2943. Szynglarewicz, Bartlomiej, Kasprzak, Piotr, Halon, Agnieszka, and Matkowski, Rafal. Preoperatively diagnosed ductal cancers in situ of the breast presenting as even small masses are of high risk for the invasive cancer foci in postoperative specimen. World journal of surgical oncology 2015. 13 (): 218-.


RefID: 2510. Taghipour, Sharareh, Caudrelier, Laurent N., Miller, Anthony B., and Harvey, Bart. Using Simulation to Model and Validate Invasive Breast Cancer Progression in Women in the Study and Control Groups of the Canadian National Breast Screening Studies I and II. Medical decision making : an international journal of the Society for Medical Decision Making 2016. () -.


RefID: 1204. . Time for a randomised clinical trial evaluating breast conserving surgery compared to mastectomy in ipsilateral multifocal breast cancer (MFBC)?. Breast.26 (pp 149 150), 2016. Date of Publication: April 01, 2016.Letter 2016. () -.

RefID:582. Winkel, Rikke Rass, von Euler-Chelpin, My, Nielsen, Mads, Diao, Pengfei, Nielsen, Michael Bachmann, Uldall, Wei Yao, and Vejborg, Ilse. Inter-observer agreement according to three methods of evaluating mammographic density and parenchymal pattern in a case control study: impact on relative risk of breast cancer. BMC cancer 2015. 15 () 274-.

RefID:2549. Winkel, Rikke Rass, von Euler-Chelpin, My, Nielsen, Mads, Petersen, Kersten, Lilholm, Martin, Nielsen, Michael Bachmann, Lyng, Elsebeth, Uldall, Wei Yao, and Vejborg, Ilse. Mammographic density and structural features can individually and jointly contribute to breast cancer risk assessment in mammography screening: a case-control study. BMC cancer 2016. 16 () 414-.

RefID:446. Women at low risk for breast cancer recurrence can avoid chemotherapy: Initial trial findings support current practices. Cancer 2016. 122 (3) 337-338.


Not Considered to be Study Design of Interest-Specific to Diagnostic Accuracy Studies


RefID:972. Additional US or DBT after digital mammography: Which one is the best combination?. Acta Radiologica.57 (1) (pp 13 18), 2016.Date of Publication: January 2016.Article 2016. () -.


RefID:2839. Jung, Na Young, Yoo, Ie Ryung, Kang, Bong Joo, Kim, Sung Hun, Chae, Byung Joo, and Seo, Ye Young. Clinical significance of FDG-PET/CT at the postoperative surveillance in the breast cancer patients. Breast cancer (Tokyo, Japan) 2016. 23 (1) 141-148.


RefID:3047. Kim, Mi Young, Choi, Nami, Yang, Jung Hyun, Yoo, Young Bum, and Park, Kyoung Sik. False positive or negative results of shear-wave elastography in differentiating benign from malignant breast masses: analysis of clinical and ultrasonographic characteristics. Acta radiologica (Stockholm, Sweden : 1987) 2015. 56 (10) 1155-1162.


RefID:605. Luczynska, Elzbieta, Heinze-Paluchowska, Sylwia, Hendrick, Edward, Dyczek, Sonia, Rys, Janusz,


RefID:647. Mariscotti, Giovanna, Durando, Manuela, Robella, Mattia, Angelino, Francesca, Regini, Elisa, Campanino, Pier Paolo, Belletti, Marco, Osano, Silvia, Bergamasco, Laura, Fonio, Paolo, and Gandini, Giovanni. Mammotome() and EnCor (): comparison of two systems for stereotactic vacuum-assisted core biopsy in the characterisation of suspicious mammographic microcalcifications alone. La Radiologia medica 2015. 120 (4) 369-376.


RefID:1119. Osman, A. M. and Shebrya, N. H.. Value of diffusion weighted imaging (DWI) and apparent diffusion


RefID:843. Renz, D. M., Durmus, T., B. Comparison of gadoteric acid and gadobutrol for detection as well as morphologic and dynamic characterization of lesions on breast dynamic contrast-enhanced magnetic resonance imaging. Investigative radiology 2014. 49 (7) 474-484.


RefID:2867. Tan, James, Joblin, Lesley, and Davenport, Emily. Accuracy of frozen sections for breast cancer sentinel lymph node biopsies within a peripheral New Zealand hospital. The New Zealand medical journal 2016. 129 (1431) 46-50.


RefID:2999. Zhao, Hong, Zou, Liwei, Geng, Xiaoping, and Zheng, Suisheng. Limitations of mammography in the diagnosis of breast diseases compared with ultrasonography: a single-center retrospective analysis of 274 cases. European Journal of Medical Research. 2015. 20 () 49-.


Citation Does Not Focus on Breast Cancer Screening


RefID: 2819. Hoen, N., Pral, L., and Golfier, F.. [Value of intraoperative frozen section of sentinel lymph node in


RefID:678. Phillips, Lindsay, Hendren, Samantha, Humiston, Sharon, Winters, Paul, and Fiscella, Kevin. Improving breast and colon cancer screening rates: a comparison of letters, automated phone calls, or both. Journal of the
American Board of Family Medicine: JABFM 2015. 28 (1) 46-54.


for Cancer Research, cosponsored by the American Society of Preventive Oncology 2013. 22 (1) 167-174.


Not a Population of Interest- Population (40+) >20% High Risk


**Intervention Not of Interest**


**Comparator Not of Interest**


RefID:2802. Castells, Xavier, Tora-Rocamora, Isabel, Posso, Margarita, Roman, Marta, Vernet-Tomas, Maria, Rodriguez-Aran, Ana, Domingo, Laia, Vidal, Carmen, Bare, Marisa, Ferrer, Joana, Quintana, Maria Jesus, Sanchez, Mar, Natal, Carmen, Espinas, Josep A., Saladie, Francina, Sala, Maria, and BELE Study Group. Risk of Breast
Cancer in Women with False-Positive Results according to Mammographic Features. Radiology 2016. 280 (2) 379-386.


RefID:2803. Yen, Amy Ming-Fang, Tsau, Huei Shian, Fann, Jean Ching-Yuan, Chen, Sam Li-Sheng, Chiu, Sherry Yueh-Hsia, Lee, Yi Chia, Pan, Shin Liang, Chiu, Han Mo, Kuo, Wen Horng, Chang, King Jen, Wu, Yi Ying, Chuang, Shu Lin, Hsu, Chen Yang, Chang, Dun Cheng, Koong, Shing Lang, Wu, Chien Yuan, Chia, Shu Lih, Chen, Mei Ju, Chen, Hsiu Hsi, and Chiou, Shu Ti. Population-Based Breast Cancer Screening With Risk-Based and Universal Mammography Screening Compared With Clinical Breast Examination: A Propensity Score Analysis of 1429890 Taiwanese Women. JAMA oncology 2016. 2 (7) 915-92
### Appendix 10- Data Extraction Table (Updated Search)

**Study Characteristics (as reported) of studies included in search update (2010 for BSE; 2014 for all other modalities)**

*TThree publications identified in update, in which some address more than one RCT.*

<table>
<thead>
<tr>
<th>Breast-Cancer Mortality</th>
<th>Mammography vs. Usual Care/No Screening</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1) Trial Name;</strong></td>
<td><strong>1) Definition of Results</strong></td>
</tr>
<tr>
<td><strong>2) Author;</strong></td>
<td><strong>1) Type of Mammography;</strong></td>
</tr>
<tr>
<td><strong>3) Study Design;</strong></td>
<td><strong>2) # of views;</strong></td>
</tr>
<tr>
<td><strong>4) Years of study;</strong></td>
<td><strong>3) # of readers;</strong></td>
</tr>
<tr>
<td><strong>5) End of follow-up;</strong></td>
<td><strong>4) screening interval;</strong></td>
</tr>
<tr>
<td><strong>6) Country</strong></td>
<td><strong>5) # of screening rounds;</strong></td>
</tr>
<tr>
<td><strong>1) Malmo I;</strong></td>
<td><strong>6) # of screens attended,</strong></td>
</tr>
<tr>
<td><strong>2) Nystrom 2016;</strong></td>
<td><strong>7) Attendance rate</strong></td>
</tr>
<tr>
<td><strong>3) RCT;</strong></td>
<td><strong>Results</strong></td>
</tr>
<tr>
<td><strong>4) 1976-NR;</strong></td>
<td><strong>Comments</strong></td>
</tr>
<tr>
<td><strong>5) NR;</strong></td>
<td><strong>1) Comments about comparator;</strong></td>
</tr>
<tr>
<td><strong>6) Sweden</strong></td>
<td><strong>2) Notes to consider;</strong></td>
</tr>
<tr>
<td>1) 45-70;</td>
<td><strong>3) Other mortality outcomes not</strong></td>
</tr>
<tr>
<td>2) Mean: 30 years;</td>
<td><strong>relevant for our purposes</strong></td>
</tr>
<tr>
<td>3) 42,283;</td>
<td></td>
</tr>
<tr>
<td>4) INT: 21,088;</td>
<td></td>
</tr>
<tr>
<td>CONT: 21,195</td>
<td></td>
</tr>
<tr>
<td>1) Film;</td>
<td><strong>1) Breast Cancer as underlying</strong></td>
</tr>
<tr>
<td>2) Two. Starting at</td>
<td>cause of death according to the</td>
</tr>
<tr>
<td>round 3, single or</td>
<td>Swedish Cause of Death</td>
</tr>
<tr>
<td>two view according</td>
<td>Registry;</td>
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<tr>
<td>to parenchymal pattern;</td>
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</tr>
<tr>
<td>3) 2 readers;</td>
<td><strong>2) Short-Case Accrual</strong></td>
</tr>
<tr>
<td>4) 18-24 months;</td>
<td><strong>45-54:</strong></td>
</tr>
<tr>
<td>5) Born 1908-1917;</td>
<td># of deaths: INT: 70/8673; CONT: 72/8311; RR: 0.94 (0.66-1.3)</td>
</tr>
<tr>
<td>6; Born 1918: 7;</td>
<td></td>
</tr>
<tr>
<td>Born 1919-1932: 8;</td>
<td><strong>50-59:</strong></td>
</tr>
<tr>
<td>6) NR;</td>
<td># of deaths: INT: 76/9285; CONT: 80/9322; RR: 1 (0.73-1.4)</td>
</tr>
<tr>
<td>7) 73% (1st round:</td>
<td><strong>55-64:</strong></td>
</tr>
<tr>
<td>74%)</td>
<td># of deaths: INT: 53/8194; CONT: 66/8679; RR: 0.94 (0.62-1.4)</td>
</tr>
<tr>
<td><strong>60-70:</strong></td>
<td><strong>45-70 (adjusted for age):</strong></td>
</tr>
<tr>
<td># of deaths: INT: 32/7816; CONT: 48/7806; RR: 0.73 (0.44-1.2)</td>
<td># of deaths: INT: 130/21088; CONT: 147/21195; RR: 0.88 (0.70-1.1)</td>
</tr>
</tbody>
</table>
| **45-70 (adjusted for age & including BC deaths not in registry):** # of deaths: INT: 146/21088; CONT: 157/21195; RR: 0.93 (0.74-1.2) | 1) Usual Care & No Screening combination: women in the control group, born 1908-1922, were never invited to screening, while women born 1923-1932 were first invited to screening in 1992-19930-although since SC accrual equivalent to no screening.; 2) N/A; 3) Weighted cumulative BC mortality per 100,00 women; Numbers needed to invite to screen to
<table>
<thead>
<tr>
<th>Location</th>
<th>Age Range</th>
<th>Study Type</th>
<th>Intervention</th>
<th>Control</th>
<th>Duration</th>
<th>Readers</th>
<th>Cause of Death</th>
<th># of Deaths</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Malmo II; 2) Nystrom 2016; 3) RCT; 4) 1978-NR; 5) NR; 6) Sweden</td>
<td>43-49</td>
<td>1) Film;</td>
<td>1) Breast Cancer as underlying cause of death according to the Swedish Cause of Death Registry; 2) Short-Case Accrual</td>
<td>Usual Care</td>
<td>43-49 (adjusted for age): # of deaths: INT: 38/NR; CONT: 38/NR; RR: 0.85 (0.54-1.3)</td>
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<td>43-49</td>
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<td></td>
<td>43-49 (adjusted for age &amp; including BC deaths not in registry): # of deaths: INT: 40/NR; CONT: 38/NR; RR: 0.89 (0.57-1.4)</td>
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<tr>
<td>1) Stockholm; 2) Nystrom 2016; 3) Quasi- RCT; 4) 1981-NR; 5) NR; 6) Sweden</td>
<td>39-65</td>
<td>1) NR;</td>
<td>1) Breast Cancer as underlying cause of death according to the Swedish Cause of Death Registry; 2) Short-Case Accrual</td>
<td>Usual Care</td>
<td>40-49: # of deaths: INT: 29/14303; CONT: 11/8021; RR: 1.5 (0.76-3.0)</td>
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<td>40-49</td>
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<td></td>
<td>45-54: # of deaths: INT: 23/14088; CONT: 14/7409; RR: 0.88 (0.45-1.7)</td>
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<td>50-59: # of deaths: INT: 30/15946; CONT: 26/8421; RR: 0.61 (0.36-1.03)</td>
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<tr>
<td></td>
<td>55-65: # of deaths: INT: 47/17357; CONT: 27/8990; RR: 0.91 (0.56-1.5)</td>
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<td></td>
<td>40-65 (adjusted for age): # of deaths: INT: 84/NR; CONT: 48/NR; RR: 0.94 (0.66-1.3)</td>
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<tr>
<td></td>
<td>40-65 (adjusted for age &amp; including BC deaths not in registry): # of deaths: INT: 95/NR; CONT: 56/NR; RR: 0.91 (0.66-1.3)</td>
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</tr>
<tr>
<td>1) Gothenburg; 1) 39-59; 1) Film;</td>
<td>39-59</td>
<td>1) Film;</td>
<td>1) Breast Cancer</td>
<td>Usual Care</td>
<td>40-49:</td>
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<td></td>
<td>40-49:</td>
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</tr>
</tbody>
</table>

Prevent a BC death.

1) Usual Care- The first screening round of the control group took place between 1991 and 1994—although since SC accrual equivalent to no screening. 2) N/A; 3) Weighted cumulative BC mortality per 100,000 women; Numbers needed to invite to screen to prevent a BC death.
| 1) UK Age; 2) Moss 2015; 3) RCT; 4) 1991-2006; 5) Dec 31, 2011; 6) UK |
| 1) 39-41 (invited for screening after 40); 2) Median: 17.7 years (IQR: 16.8-18.8); 3) 160,921; 4) INT: 53,914; CONT: 107,007 |
| 1) NR; 2) 1st round: two & Subsequent rounds: one (unless otherwise indicated); 3) NR; 4) 12 months (During NHSBSP-every 3 years); 5) NR; 6) Mean # of |
| 1) Defined as deaths with breast cancer coded as the underlying cause of death on the death certificate; 2) Short case and Long-case accrual (separate) |
| 40+ (Short-case): # of deaths: INT: 182/53883; CONT: 412/106953; RR: 0.88 (0.74-1.04); Absolute Risk reduction per 1000 women: 0.47 (-0.14 to 1.09) |
| 40+ (0-10 years after randomization) (Short-case): # of deaths: INT: 83/53883; CONT: 219/106953; RR: 0.75 (0.59-0.97); Absolute Risk reduction per 1000 women: 0.51 (0.08 to 0.94) |

Women in the control group, born from 1923 to 1932 were invited to their first screening round between 1987 and April 1988, and women in the control group born between 1933 and 1944 were invited to their first screening round between February and April 1990-although since SC accrual equivalent to no screening; 2) N/A; 3) Weighted cumulative BC mortality per 100,00 women; Numbers needed to invite to screen to prevent a BC death.

| 2) Nystrom 2016; 3) Quasi-RCT; 4) 1982-NR; 5) NR; 6) Sweden |
| 2) Mean: 24 years; 3) 50,200; 4) INT: 21,000; CONT: 29,200 |
| 2) 1st round: two & 2nd round: one-two (depending on breast density); 3) 1st-3rd round: 1 reader; 4th-5th rounds: 2 readers; 4) 18 months; 5) Born 1923-1932: 4; Born 1933-1944: 5 |
| 6) Mean # of |
| as underlying cause of death according to the Swedish Cause of Death Registry; 2) Short-Case Accrual |
| # of deaths: INT: 30/10888; CONT: 62/13203; RR: 0.59 (0.38-0.90) |
| 45-54: # of deaths: INT: 37/10039; CONT: 65/13518; RR: 0.76 (0.50-1.2) |
| 50-59: # of deaths: INT: 45/10112; CONT: 80/15997; RR: 0.89 (0.60-1.3) |
| 40-59 (adjusted for age): # of deaths: INT: 75/21000; CONT: 142/29200; RR: 0.74 (0.56-0.98) |
| 40-59 (adjusted for age & including BC deaths not in registry): # of deaths: INT: 77/21000; CONT: 149/29200; RR: 0.73 (0.55-0.96) |

Women in the control group, born from 1923 to 1932 were invited to their first screening round between 1987 and April 1988, and women in the control group born between 1933 and 1944 were invited to their first screening round between February and April 1990-although since SC accrual equivalent to no screening; 2) N/A; 3) Weighted cumulative BC mortality per 100,000 women; Numbers needed to invite to screen to prevent a BC death.

| 1) US Age; 2) Moss 2015; 3) RCT; 4) 1991-2006; 5) Dec 31, 2011; 6) UK |
| 1) 39-41 (invited for screening after 40); 2) Median: 17.7 years (IQR: 16.8-18.8); 3) 160,921; 4) INT: 53,914; CONT: 107,007 |
| 1) NR; 2) 1st round: two & Subsequent rounds: one (unless otherwise indicated); 3) NR; 4) 12 months (During NHSBSP-every 3 years); 5) NR; 6) Mean # of |
| 40+ (Short-case): # of deaths: INT: 182/53883; CONT: 412/106953; RR: 0.88 (0.74-1.04); Absolute Risk reduction per 1000 women: 0.47 (-0.14 to 1.09) |
| 40+ (0-10 years after randomization) (Short-case): # of deaths: INT: 83/53883; CONT: 219/106953; RR: 0.75 (0.59-0.97); Absolute Risk reduction per 1000 women: 0.51 (0.08 to 0.94) |
| 40+ (10+ years after randomization) (Short-case): |
| Screens attended: 4.8 (SD: 3.3) | 7) 81% (at least 1 routine screen) | Estimates provided | \begin{tabular}{l}
40+ (0-4 years after randomization) (Long case): \\
\# of deaths: INT: 99/53883; CONT: 193/106953; RR: 1.02 (0.80-1.30); \\
Absolute Risk reduction per 1000 women: -0.03 (-0.47 to 0.41) \\
\text{Absolute Risk reduction per 1000 women years: 0.03 (-0.02 to 0.08)} \\
40+ (5-9 years after randomization) (Long case): \\
\# of deaths: INT: 27/NR; CONT: 69/NR; RR: 0.78 (0.50-1.21); \\
Absolute Risk reduction per 1000 women: 0.14 (-0.10 to 0.39) \\
Absolute Risk reduction per 1000 women years: 0.03 (-0.02 to 0.08) \\
40+ (15+ years after randomization) (Long case): \\
\# of deaths: INT: 61/NR; CONT: 109/NR; RR: 1.11 (0.81-1.52); \\
Absolute Risk reduction per 1000 women: -0.12 (-0.47 to 0.24) \\
Absolute Risk reduction per 1000 women years: -0.04 (-0.17 to 0.08) \\
40+ (0-17 years after randomization) (Long case): \\
\# of deaths: INT: 242/NR; CONT: 515/NR; RR: 0.93 (0.80-1.09); \\
Absolute Risk reduction per 1000 women: 0.32 (-0.38 to 1.02) \\
Absolute Risk reduction per 1000 women years: 0.02 (-0.02 to 0.06)
\end{tabular} |
### All-Cause Mortality

<table>
<thead>
<tr>
<th>Mammography vs. Usual Care/No Screening</th>
<th>1) UK Age; 2) Moss 2015; 3) RCT; 4) 1991-2006; 5) Dec 31, 2011; 6) UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 39-41 (invited for screening after 40); 2) Median: 17.7 years (IQR: 16.8-18.8); 3) 160,921; 4) INT: 53,914; CONT: 107,007</td>
<td>1) NR; 2) 1st round: two &amp; Subsequent rounds: one (unless otherwise indicated); 3) NR; 4) 12 months (During NHSBSP-every 3 years); 5) NR; 6) Mean # of screens attended: 4.8 (SD: 3.3); 7) 81% (at least 1 routine screen)</td>
</tr>
<tr>
<td>40+: # of deaths: INT: 2127/53883; CONT: 4320/106953; RR: 0.98 (0.93-1.03)</td>
<td>1) Usual Care-invited for screening at age 50 yrs; 2) N/A; 3) N/A</td>
</tr>
</tbody>
</table>

### Overdiagnosis

<table>
<thead>
<tr>
<th>Mammography + CBE vs. Usual Care</th>
<th>1) CNBSS 1&amp; 2 2) Baines 2016; 3) RCT; 4) 1980-1988; 5) Dec 31, 2005; 6) Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) 40-59 (CNBSS 1: 40-49; CNBSS2: 50-59); 2) Longest follow-up: 25 years; 3) 89,835 (CNBSS1: 50,430; CNBSS2: 39,405); 4) NR</td>
<td>1) NR; 2) NR; 3) NR; 4) 12 months; 5) NR 6) NR 7) CNBSS 1&amp;2-1st screen: 100% CNBSS1: subsequent screens: INT: 89-86%; CONT: 95-93% CNBSS2: subsequent screens: INT: 90-87%; CONT: 89-85%</td>
</tr>
<tr>
<td>40-49 (Invasive cancer only) [Short-Case]: Cum. # of cancer detected: INT: 284; CONT: 225; Difference: 59; Denominator: 213 Estimated Overdiagnosis: 28% 40-49-1 yr post screening (Invasive cancer only) (Long-Case): Cum. # of cancer detected: INT: 327; CONT: 262; Difference: 65; Denominator: 213 Estimated Overdiagnosis: 31% 40-49-2 yr post screening (Invasive cancer only) (Long-Case): Cum. # of cancer detected: INT: 379; CONT: 308; Difference: 71; Denominator: 213 Estimated Overdiagnosis: 33% 40-49-3 yr post screening (Invasive cancer</td>
<td>1) CNBSS1-CBE/Usual Care (single CBE followed by usual care. This constituted a comparison of screening to virtually no screening); CBNSS2-CBE alone; 2) Revised estimates from Miller 2014. Previous publication was confounded by subsequent screening in the</td>
</tr>
<tr>
<td>Time Period</td>
<td>Screening Strategy</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>40-49 yrs post screening (Invasive cancer only) (Long-Case)</td>
<td>INT: 435; CONT: 363</td>
</tr>
<tr>
<td>40-49 yrs post screening (Invasive cancer only) (Long-Case)</td>
<td>INT: 487; CONT: 421</td>
</tr>
<tr>
<td>40-49 yrs post screening (Invasive cancer only) (Long-Case)</td>
<td>INT: 544; CONT: 476</td>
</tr>
<tr>
<td>40-49 yrs post screening (Invasive cancer only) (Long-Case)</td>
<td>INT: 912; CONT: 817</td>
</tr>
<tr>
<td>40-49 yrs post screening (Invasive cancer only) (Long-Case)</td>
<td>INT: 1386; CONT: 1311</td>
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<tr>
<td>40-49 yrs post screening (Invasive cancer only) (Long-Case)</td>
<td>INT: 1725; CONT: 1622</td>
</tr>
<tr>
<td>40-49 yrs post screening (Invasive cancer &amp; In situ) (Short-Case)</td>
<td>INT: 326; CONT: 234;</td>
</tr>
<tr>
<td>Yr post screening</td>
<td>Cum. # of cancer detected INT</td>
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<td>-------------------</td>
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</tr>
<tr>
<td>1 yr</td>
<td>371</td>
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<tr>
<td>2 yr</td>
<td>424</td>
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<td>3 yr</td>
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<td>4 yr</td>
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<td>10 yr</td>
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<td>Age Range</td>
<td>Screening Frequency</td>
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<tr>
<td>40-49</td>
<td>15 yr post screening (Invasive cancer &amp; In situ) (Long-Case)</td>
</tr>
<tr>
<td>40-49</td>
<td>20 yr post screening (Invasive cancer &amp; In situ) (Long-Case)</td>
</tr>
<tr>
<td>50-59</td>
<td>(Invasive cancer only) (Short-Case)</td>
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<tr>
<td>50-59</td>
<td>1 yr post screening (Invasive cancer only) (Long-Case)</td>
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<tr>
<td>50-59</td>
<td>2 yr post screening (Invasive cancer only) (Long-Case)</td>
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<tr>
<td>50-59</td>
<td>3 yr post screening (Invasive cancer only) (Long-Case)</td>
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<tr>
<td>50-59</td>
<td>4 yr post screening (Invasive cancer only) (Long-Case)</td>
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<tr>
<td>50-59- 5 yr post screening (Invasive cancer only) (Long-Case):</td>
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</tr>
<tr>
<td>Cum. # of cancer detected: INT: 514; CONT: 468;</td>
<td>Difference: 46; Denominator: 282</td>
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</table>

<table>
<thead>
<tr>
<th>50-59- 10 yr post screening (Invasive cancer only) (Long-Case):</th>
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</thead>
<tbody>
<tr>
<td>Cum. # of cancer detected: INT: 572; CONT: 529;</td>
<td>Difference: 43; Denominator: 271</td>
<td>Estimated Overdiagnosis: 16%</td>
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</table>

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<th>50-59- 15 yr post screening (Invasive cancer only) (Long-Case):</th>
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<tbody>
<tr>
<td>Cum. # of cancer detected: INT: 899; CONT: 891;</td>
<td>Difference: 8; Denominator: 271</td>
<td>Estimated Overdiagnosis: 3%</td>
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<thead>
<tr>
<th>50-59 (Invasive cancer &amp; In situ) (Short-Case):</th>
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</tr>
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<tbody>
<tr>
<td>Cum. # of cancer detected: INT: 377; CONT: 262;</td>
<td>Difference: 115; Denominator: 312</td>
<td>Estimated Overdiagnosis: 37%</td>
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</table>

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<thead>
<tr>
<th>50-59- 1 yr post screening (Invasive cancer &amp; In situ) (Long-Case):</th>
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</thead>
<tbody>
<tr>
<td>Cum. # of cancer detected: INT: 424; CONT: 262;</td>
<td>Difference: 162; Denominator: 271</td>
<td>Estimated Overdiagnosis: 37%</td>
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</tr>
<tr>
<td>Year post Screening</td>
<td>Cum. # of cancer detected</td>
<td>Difference</td>
<td>Denominator</td>
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</tr>
<tr>
<td>2 yr</td>
<td>INT: 454; CONT: 349</td>
<td>105</td>
<td>312</td>
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<tr>
<td>3 yr</td>
<td>INT: 499; CONT: 406</td>
<td>93</td>
<td>312</td>
</tr>
<tr>
<td>4 yr</td>
<td>INT: 557; CONT: 475</td>
<td>82</td>
<td>312</td>
</tr>
<tr>
<td>5 yr</td>
<td>INT: 615; CONT: 536</td>
<td>79</td>
<td>312</td>
</tr>
<tr>
<td>10 yr</td>
<td>INT: 942; CONT: 898</td>
<td>44</td>
<td>312</td>
</tr>
<tr>
<td>15 yr</td>
<td>INT: 1338; CONT: 1293</td>
<td>45</td>
<td>312</td>
</tr>
</tbody>
</table>
| Estimated Overdiagnosis: 14%  
50-59- 20 yr post screening (Invasive cancer & In situ) (Long-Case):  
Cum. # of cancer detected: INT: 1568; CONT: 1518;  
Difference: 50; Denominator: 312  
Estimated Overdiagnosis: 16% |
Appendix 11- Mammography +/- Clinical Breast Exam for Breast-Cancer Mortality (Short-Case Accrual) Forest Plots for Sub-Group Analyses

**EVIDENCE SET 1b**

**Part A- Forest Plot – Breast Cancer Mortality (Short-Case Accrual) (Stratified by CBE use)**
EVIDENCE SET 1c
Part A- Forest Plot – Breast Cancer Mortality (Short-Case Accrual) (Stratified by Screening Modality)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study</th>
<th>Age (at entry)</th>
<th>Mean Follow-up (yrs)</th>
<th>Log [RR]</th>
<th>SE</th>
<th>Weight</th>
<th>Risk Ratio [95%CI]</th>
<th>Risk Ratio (RR) IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miller 2014</td>
<td>CNBSS 1 &amp; 2</td>
<td>40-59</td>
<td>21.9</td>
<td>-0.05</td>
<td>0.11</td>
<td>15.3%</td>
<td>1.05 [0.85, 1.30]</td>
<td></td>
</tr>
<tr>
<td>Nyström 2016</td>
<td>Gothenburg</td>
<td>40-59</td>
<td>24.0</td>
<td>-0.30</td>
<td>0.14</td>
<td>9.3%</td>
<td>0.74 [0.56, 0.98]</td>
<td></td>
</tr>
<tr>
<td>Nyström 2016</td>
<td>Malmö I</td>
<td>45-70</td>
<td>30.0</td>
<td>-0.13</td>
<td>0.12</td>
<td>13.7%</td>
<td>0.88 [0.70, 1.10]</td>
<td></td>
</tr>
<tr>
<td>Nyström 2016</td>
<td>Malmö II</td>
<td>43-49</td>
<td>22.0</td>
<td>-0.16</td>
<td>0.22</td>
<td>4.0%</td>
<td>0.85 [0.65, 1.32]</td>
<td></td>
</tr>
<tr>
<td>Nyström 2016</td>
<td>Stockholm</td>
<td>40-65</td>
<td>25.0</td>
<td>-0.08</td>
<td>0.17</td>
<td>6.5%</td>
<td>0.94 [0.67, 1.32]</td>
<td></td>
</tr>
<tr>
<td>Shapiro 1988</td>
<td>HIP</td>
<td>40-84</td>
<td>18.0</td>
<td>-0.24</td>
<td>0.12</td>
<td>12.9%</td>
<td>0.79 [0.63, 1.00]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>61.6%</td>
<td>0.88 [0.79, 0.98]</td>
</tr>
</tbody>
</table>

Heterogeneity: Tau² = 0.00; Chi² = 5.11, df = 5 (P = 0.40); I² = 2%
Test for overall effect: Z = 2.28 (P = 0.02)

Not Reported

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study</th>
<th>Age (at entry)</th>
<th>Mean Follow-up (yrs)</th>
<th>Log [RR]</th>
<th>SE</th>
<th>Weight</th>
<th>Risk Ratio [95%CI]</th>
<th>Risk Ratio (RR) IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moss 2015</td>
<td>ACE</td>
<td>39-41</td>
<td>17.7</td>
<td>-0.13</td>
<td>0.09</td>
<td>22.2%</td>
<td>0.88 [0.74, 1.04]</td>
<td></td>
</tr>
<tr>
<td>Tabar 2011</td>
<td>Swedish Two County</td>
<td>40-74</td>
<td>29.0</td>
<td>-0.31</td>
<td>0.10</td>
<td>18.2%</td>
<td>0.73 [0.69, 0.90]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36.4%</td>
<td>0.81 [0.67, 0.97]</td>
</tr>
</tbody>
</table>

Heterogeneity: Tau² = 0.01; Chi² = 1.88, df = 1 (P = 0.17); I² = 47%
Test for overall effect: Z = 2.28 (P = 0.02)
Test for subgroup differences: Chi² = 0.52, df = 1 (P = 0.43); I² = 0%

*Median, †Time since randomization; * Adjusted for age; ** Adjusted for clustering

Mammography +/- CBE Usual Care
### EVIDENCE SET 1d
#### Part A - Forest Plot—Breast Cancer Mortality (Short-Case Accrual) (Stratified by Screening Interval)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study</th>
<th>Age (at entry)</th>
<th>Mean Follow-up (yrs)</th>
<th>log RR</th>
<th>SE</th>
<th>Weight</th>
<th>Risk Ratio (RR)</th>
<th>IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 12 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miller 2014</td>
<td>CNSSS 1 &amp; 2</td>
<td>49-59</td>
<td>21.9</td>
<td>0.03</td>
<td>0.11</td>
<td>15.3%</td>
<td>2.05 [0.85, 1.30]</td>
<td></td>
</tr>
<tr>
<td>Moss 2015</td>
<td>AGE</td>
<td>59-61</td>
<td>17.7</td>
<td>-0.13</td>
<td>0.09</td>
<td>22.2%</td>
<td>0.80 [0.74, 1.04]</td>
<td></td>
</tr>
<tr>
<td>Shapiro 1988</td>
<td>HP</td>
<td>49-64</td>
<td>18.9</td>
<td>-0.24</td>
<td>0.12</td>
<td>12.0%</td>
<td>0.79 [0.63, 1.00]</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.68 [0.60, 1.05]</td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: Tau² = 0.01, Chi² = 3.28, df = 2 (P = 0.19); I² = 39%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 1.33 (P = 0.18)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 13-24 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nyström 2016</td>
<td>Gothenburg</td>
<td>49-59</td>
<td>24.0</td>
<td>-0.30</td>
<td>0.14</td>
<td>9.3%</td>
<td>0.74 [0.55, 0.98]</td>
<td></td>
</tr>
<tr>
<td>Nyström 2015</td>
<td>Malmo I</td>
<td>45-70</td>
<td>30.0</td>
<td>-0.13</td>
<td>0.12</td>
<td>13.7%</td>
<td>0.88 [0.70, 1.10]</td>
<td></td>
</tr>
<tr>
<td>Nyström 2015</td>
<td>Malmo II</td>
<td>43-49</td>
<td>22.0</td>
<td>-0.16</td>
<td>0.22</td>
<td>4.0%</td>
<td>0.85 [0.65, 1.12]</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.83 [0.60, 0.97]</td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: Tau² = 0.00, Chi² = 0.91, df = 2 (P = 0.83); I² = 0%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Test for overall effect: Z = 2.30 (P = 0.02)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 24 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nyström 2010</td>
<td>Stockholm</td>
<td>49-65</td>
<td>25.0</td>
<td>-0.96</td>
<td>0.17</td>
<td>6.5%</td>
<td>0.94 [0.67, 1.32]</td>
<td></td>
</tr>
<tr>
<td>Tabar 2011</td>
<td>Swedish Two County</td>
<td>49-74</td>
<td>29.6</td>
<td>-0.31</td>
<td>0.10</td>
<td>16.2%</td>
<td>0.73 [0.65, 0.90]**</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.80 [0.63, 1.01]</td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: Tau² = 0.01, Chi² = 1.65, df = 1 (P = 0.21); I² = 35%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 1.87 (P = 0.06)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for subgroup differences: Chi² = 1.01, df = 2 (P = 0.60); I² = 0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Median, "Time since randomization," Adjusted for age, " Adjusted for clustering"
Appendix 12- Mammography +/- Clinical Breast Exam for Breast-Cancer Mortality (Long-Case Accrual) Forest Plots for Sub-Group Analyses

EVIDENCE SET 2b
Part A- Forest Plot- Breast Cancer Mortality (Long-Case Accrual) (Stratified by use of CBE)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study</th>
<th>Age (at entry)</th>
<th>Mean Follow-up (yrs)</th>
<th>log (RR)</th>
<th>SE</th>
<th>Weight</th>
<th>Risk Ratio [95%CI]</th>
<th>Risk Ratio (RR) IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>(+) CBE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Habberme 1980</td>
<td>HIP</td>
<td>40-64</td>
<td>14.0</td>
<td>-0.25</td>
<td>0.10</td>
<td>16.9%</td>
<td>0.78 [0.64, 0.96]</td>
<td></td>
</tr>
<tr>
<td>Miller 2014</td>
<td>CNBSS 1 &amp; 2</td>
<td>40-69</td>
<td>21.9</td>
<td>-0.01</td>
<td>0.06</td>
<td>21.9%</td>
<td>0.99 [0.88, 1.12]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>38.8%</td>
<td>0.89 [0.71, 1.12]</td>
</tr>
<tr>
<td>Heterogeneity: Tau² = 0.02, Chi² = 3.85, df = 1 (P = 0.05), I² = 74%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 0.97 (P = 0.33)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| (-) CBE   |       |                |                      |         |    |        |                   |                                  |
| Bustram 2003 | Gothenburg | 40-59          | 13.8                 | -0.29   | 0.13| 14.0%  | 0.75 [0.58, 0.97] |                                   |
| Moss 2015 | AGE | 39-41          | 17.7*                | -0.07   | 0.08| 19.9%  | 0.93 [0.80, 1.09] |                                   |
| Tabor 1995 | Kopperberg | 40-74          | 12.5                 | -0.51   | 0.14| 13.4%  | 0.60 [0.46, 0.79]* |                                   |
| Tabor 1995 | Osteroland | 40-74          | 12.5                 | -0.25   | 0.13| 13.9%  | 0.78 [0.60, 1.01]* |                                   |
| Subtotal (95% CI) |          |                |                      |         |    |        | 61.2%            | 0.77 [0.64, 0.93]                |
| Heterogeneity: Tau² = 0.02, Chi² = 8.22, df = 3 (P = 0.04), I² = 64% |
| Test for overall effect: Z = 2.67 (P = 0.008) |
| Test for subgroup differences: Chi² = 0.91, df = 1 (P = 0.34), I² = 0% |

*Median; * Adjusted for age and clustering

Diagram: Forest plot showing the effect of mammography +/- clinical breast exam on breast cancer mortality.
EVIDENCE SET 2c
Part A - Forest Plot – Breast Cancer Mortality (Long-Case Accrual) (Stratified by Screening Modality)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study</th>
<th>Age (at entry)</th>
<th>Mean Follow-up (yrs)</th>
<th>log RR</th>
<th>SE</th>
<th>Weight</th>
<th>Risk Ratio (95% CI)</th>
<th>Risk Ratio (RR) IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Film Mammography</td>
<td>Gothenburg</td>
<td>40-59</td>
<td>13.8</td>
<td>-0.29</td>
<td>0.13</td>
<td>14.0%</td>
<td>0.75 [0.58, 0.97]</td>
<td></td>
</tr>
<tr>
<td>Burström 2003</td>
<td>HIP</td>
<td>40-64</td>
<td>14.0</td>
<td>-0.25</td>
<td>0.10</td>
<td>16.9%</td>
<td>0.78 [0.64, 0.96]</td>
<td></td>
</tr>
<tr>
<td>Habermann 1986</td>
<td>CNBSS 1 &amp; 2</td>
<td>40-69</td>
<td>21.9</td>
<td>-0.01</td>
<td>0.06</td>
<td>21.9%</td>
<td>0.99 [0.88, 1.12]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subtotal (95% CI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>52.8%</td>
<td>0.85 [0.70, 1.03]</td>
</tr>
</tbody>
</table>

Heterogeneity: \( \tau^2 = 0.02 \), \( \chi^2 = 6.19, \) df = 2 (\( P = 0.05 \)); \( P = 68\%

Test for overall effect: \( Z = 1.62 \) (\( P = 0.11 \))

Not Reported

| Moss 2015       | AGE            | 39-41          | 17.7*                | -0.07  | 0.06| 19.9%  | 0.93 [0.80, 1.08]  |                                    |
| Taber 1995 Kopperberg | 40-74          | 12.5           | -0.51                | 0.14   |    | 13.4%  | 0.60 [0.46, 0.78]* |                                    |
| Taber 1995 Osterpolland | 40-74          | 12.5           | -0.25                | 0.13   |    | 13.9%  | 0.78 [0.60, 1.01]* |                                    |
|                 | Subtotal (95% CI) |               |                      |        |     |        | 47.2%              | 0.77 [0.60, 1.00]                  |

Heterogeneity: \( \tau^2 = 0.04 \), \( \chi^2 = 7.81, \) df = 2 (\( P = 0.02 \)); \( P = 74\%

Test for overall effect: \( Z = 1.97 \) (\( P = 0.05 \))

Test for subgroup differences: \( \chi^2 = 0.37, \) df = 1 (\( P = 0.54 \)); \( P = 0\%

*Median: *Adjusted for age and clustering
EVIDENCE SET 2d
Part A- Forest Plot – Breast Cancer Mortality (Long-Case Accrual) (Stratified by Screening Interval)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study</th>
<th>Age (at entry)</th>
<th>Mean Follow-up (yrs)</th>
<th>log [RR]</th>
<th>SE</th>
<th>Weight</th>
<th>Risk Ratio [95% CI]</th>
<th>Risk Ratio (RR) IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>S12 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Habberma 1986</td>
<td>HP</td>
<td>40.64</td>
<td>14.0</td>
<td>-0.25</td>
<td>0.10</td>
<td>16.9%</td>
<td>0.78 [0.64, 0.98]</td>
<td></td>
</tr>
<tr>
<td>Miller 2014</td>
<td>CNBSS 1 &amp; 2</td>
<td>40.69</td>
<td>21.9</td>
<td>-0.01</td>
<td>0.06</td>
<td>21.9%</td>
<td>0.99 [0.88, 1.22]</td>
<td></td>
</tr>
<tr>
<td>Moss 2015</td>
<td>AGE</td>
<td>39-41</td>
<td>17.7*</td>
<td>-0.07</td>
<td>0.08</td>
<td>19.9%</td>
<td>0.93 [0.80, 1.09]</td>
<td></td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>68.7%</td>
<td>0.92 [0.81, 1.04]</td>
<td></td>
</tr>
<tr>
<td>Heterogeneity: Tau² = 0.01; Chi² = 3.85, df = 2 (P = 0.15), I² = 48%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 1.39 (P = 0.16)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13-24 months

<table>
<thead>
<tr>
<th>Study</th>
<th>Age (at entry)</th>
<th>Mean Follow-up (yrs)</th>
<th>log [RR]</th>
<th>SE</th>
<th>Weight</th>
<th>Risk Ratio [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burstam 2003 Gothenburg</td>
<td>40-59</td>
<td>13.8</td>
<td>-0.29</td>
<td>0.13</td>
<td>14.0%</td>
<td>0.75 [0.58, 0.97]</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14.0%</td>
</tr>
<tr>
<td>Heterogeneity: Not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 2.19 (P = 0.03)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

>24 months

<table>
<thead>
<tr>
<th>Study</th>
<th>Age (at entry)</th>
<th>Mean Follow-up (yrs)</th>
<th>log [RR]</th>
<th>SE</th>
<th>Weight</th>
<th>Risk Ratio [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tabar 1995 Kopparberg</td>
<td>40.74</td>
<td>12.5</td>
<td>-0.51</td>
<td>0.14</td>
<td>13.4%</td>
<td>0.60 [0.46, 0.79]*</td>
</tr>
<tr>
<td>Tabar 1995 Osteroyland</td>
<td>40.74</td>
<td>12.5</td>
<td>-0.25</td>
<td>0.13</td>
<td>13.9%</td>
<td>0.78 [0.60, 1.01]*</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27.3%</td>
</tr>
<tr>
<td>Heterogeneity: Tau² = 0.02; Chi² = 1.88, df = 1 (P = 0.17), I² = 47%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 2.87 (P = 0.004)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test for subgroup differences: Chi² = 4.91, df = 2 (P = 0.09), I² = 59.3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Median, *Adjusted for age and clustering

Mammography +/- CBE Usual Care
Appendix 13- Mammography +/- Clinical Breast Exam for All-Cause Mortality - Forest Plots for Sub-Group Analyses

EVIDENCE SET 3b

Part A- Forest Plot – All-Cause Mortality (Stratified by CBE)
EVIDENCE SET 3c
Part A- Forest Plot – All-Cause Mortality (Stratified by Screening Modality)

![Forest Plot Image](image-url)
### EVIDENCE SET 3d

**Part A: Forest Plot – All-Cause Mortality (Stratified by Screening Interval)**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study</th>
<th>Age (at entry)</th>
<th>Mean Follow-up (yrs)</th>
<th>log (RR)</th>
<th>SE</th>
<th>Weight</th>
<th>Risk Ratio [95% CI]</th>
<th>Risk Ratio (RR) IV, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>≤12 months</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Azee and Pronk 1986</td>
<td>HIP</td>
<td>40.59</td>
<td>10.6</td>
<td>-0.01</td>
<td>0.03</td>
<td>4.7%</td>
<td>0.99 [0.92, 1.06]</td>
<td></td>
</tr>
<tr>
<td>Miller 2014</td>
<td>CEBSS 1 &amp; 2</td>
<td>40.59</td>
<td>25.6</td>
<td>0.02</td>
<td>0.02</td>
<td>11.4%</td>
<td>1.02 [0.99, 1.06]</td>
<td></td>
</tr>
<tr>
<td>Moss 2015</td>
<td>AGE</td>
<td>39.41</td>
<td>17.7</td>
<td>-0.02</td>
<td>0.03</td>
<td>6.7%</td>
<td>0.98 [0.93, 1.03]</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22.8%</td>
<td>1.00 [0.97, 1.03]</td>
</tr>
<tr>
<td>Heterogeneity:</td>
<td>Tau^2 = 0.60, Chi^2 = 1.67, df = 2 (P = 0.43), I^2 = 0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Test for overall effect: Z = 0.13 (P = 0.90)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>13-24 months</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nystrom 2002</td>
<td>Gothenburg</td>
<td>40.59</td>
<td>13.2</td>
<td>-0.06</td>
<td>0.03</td>
<td>4.3%</td>
<td>0.94 [0.88, 1.00]</td>
<td></td>
</tr>
<tr>
<td>Nystrom 2002</td>
<td>Malmo I</td>
<td>45.70</td>
<td>19.2</td>
<td>-0.01</td>
<td>0.01</td>
<td>42.8%</td>
<td>0.99 [0.97, 1.01]</td>
<td></td>
</tr>
<tr>
<td>Nystrom 2002</td>
<td>Malmo II</td>
<td>43.49</td>
<td>9.1</td>
<td>0.03</td>
<td>0.08</td>
<td>0.9%</td>
<td>1.03 [0.99, 1.20]</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>47.9%</td>
<td>0.98 [0.95, 1.01]</td>
</tr>
<tr>
<td>Heterogeneity:</td>
<td>Tau^2 = 0.60, Chi^2 = 2.63, df = 2 (P = 0.27), I^2 = 24%</td>
<td></td>
<td></td>
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<tr>
<td>Test for overall effect: Z = 1.12 (P = 0.26)</td>
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<tr>
<td><strong>&gt;24 months</strong></td>
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<td></td>
</tr>
<tr>
<td>Nystrom 2002</td>
<td>Ostergotland</td>
<td>40.74</td>
<td>17.2</td>
<td>-0.02</td>
<td>0.02</td>
<td>18.6%</td>
<td>0.98 [0.95, 1.01]</td>
<td></td>
</tr>
<tr>
<td>Nystrom 2002</td>
<td>Stockholm</td>
<td>40.64</td>
<td>14.7</td>
<td>-0.01</td>
<td>0.02</td>
<td>10.7%</td>
<td>0.99 [0.95, 1.03]</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>29.3%</td>
<td>0.98 [0.96, 1.01]</td>
</tr>
<tr>
<td>Heterogeneity:</td>
<td>Tau^2 = 0.60, Chi^2 = 0.15, df = 1 (P = 0.69), I^2 = 0%</td>
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</tr>
<tr>
<td>Test for overall effect: Z = 1.32 (P = 0.19)</td>
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</tr>
<tr>
<td>Test for subgroup differences: Chi^2 = 1.26, df = 2 (P = 0.53), I^2 = 0%</td>
<td></td>
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</tbody>
</table>

**Median**
## False Positive Recalls and False Positive Biopsies — Mammography vs Usual Care

<table>
<thead>
<tr>
<th>Study (Review)</th>
<th>Country; Source of data</th>
<th>Details</th>
<th>False Positive Recalls</th>
<th>False Positive Biopsies</th>
</tr>
</thead>
</table>
| Hubbard (40) (USPSTF 2016) | US; Breast Cancer Surveillance Consortium (BSCS) | Data from 7 BCSC centres from 1994-2006 | **Cumulative FP recall rate after 10 years (%; 95%CI)** for annual and biennial screening, respectively:  
  - Ages 40-49: 61.3% (59.4-63.1%) and 41.6% (40.6-42.5%)  
  - Ages 50-59: 61.3% (58.0-64.75%) and 42.05 (40.4-43.7%) | **Cumulative probability of FP biopsies after 10 years (% and 95% CI), for annual and biennial rates, respectively:**  
  - Ages 40-49: 7.0% (6.1-7.8%) and 4.8% (4.4-5.2%)  
  - Ages 50-59, 9.4% (7.4-11.5%) and 6.4% (5.6-7.2) |
| Kerlikowske et al., 2013 (41) (USPSTF 2016 [recall]; USPSTF 2016 and ACS 2014 [biopsies]) | US; BCSC | Data 7 BCSC centres from 1994-2008 | **Cumulative probability of FP mammogram**, women aged 40-74, first stratified by age, then by frequency of screening, then by breast density category:  
  - Ages 40-49: Generally, highest for annual screening interval, followed by biennial, with triennial having the lowest FP rate  
  - Fatty and scattered breast density had lower FP rates compared to heterogeneous and extreme  
  
  - Ages 50-74: Above patterns are also observed  
  - Women aged 40-49 generally had higher rates of FP compared to 50-74. | **FP biopsy rate data stratified by age, then by screening interval, and then by breast density:**  
  - Similar overall patterns as was seen in FP recall  
  - For ages 40-49, the screening interval with the highest FP biopsy rate was annual, followed by biennial, then triennial  
  - Heterogeneous and extreme breast density had higher rates of FP biopsies compared to fatty and scattered.  
  - Higher FP biopsy rates were observed for 40-49 compared to 50-74 |
| Unpublished data (USPSTF 2016) | US; BCSC | 6 BCSC centres from 2003-2011 | **FP rate per 1,000 women screened** (95%CI)  
  - Ages 40-49: 121.2 (105.6-138.7)  
  - Ages 50-59: 93.2 (82.8-104.7)  
  - Ages 60-69: 80.8 (72.9-89.4)  
  - Ages 70-79: 69.6 (62.6-77.3)  
  - Ages 80-89: 65.2 (58.8-72.2)  
  - p-value (compared all groups) <0.001 | Unclear whether the data provided for biopsies were specific to patients who had FP results |
<table>
<thead>
<tr>
<th>Study (Review)</th>
<th>Country; Source of data</th>
<th>Details</th>
<th>False Positive Recalls</th>
<th>False Positive Biopsies</th>
</tr>
</thead>
</table>
| Elmore et al., 1998 (42) (USPSTF 2016, CTFPHC 2011 [recall]; USPSTF 2016 [biopsies]) | US; Not specified | Data from 11 breast cancer screening centres from 1983-1995 | Higher rates of FP for the 9-18 mo:  
- In contrast, ages 60-69 and 70-79 had higher rates of FP in the 19-30 months.  
The p-values for all comparisons were not statistically significant(1).  
By screening interval, 11-14 mo vs 23-26 mo:  
- All age categories had higher rates of FP for 11-14 mo except for 60-69.  
  p-values for all comparisons not statistically significant  
For breast density:  
- All age categories generally had higher FP rates for heterogeneous and extreme breast density compared to fatty-scattered,  
- Except 70-79, where extreme breast density had a lower FP rate compared to fatty-scattered.  
  p-values for all comparisons were statistically significant.  
For race:  
- General pattern: for all categories higher FP rate for Whites, followed by Hispanics, Blacks, and then Asians.  
- The ‘Other’ category generally had a high FP rate comparable to the ‘Whites’ category.  
  All comparisons were statistically significant except 60-69  |

| Overall cumulative risk of a FP (% and 95%CI) after 10 screening mammograms:  
- 49% (40.3-64.1%).  
- Ages 40-49: 56% (39.5-75.8%)  
- Ages 50-59: 47% (37.8-63.0%)  |

| Hofvind et al., 2004 (43) (CTFPHC 2011) | Norway; Norwegian Breast Cancer Screening | No additional information reported | For women aged 50-51 who participated in 3 biennial screening rounds, the **FP recall rate during period of 20 years** was 20.8%  |

| Overall rate was 19% (9.8-41.2%) for at least one FP biopsy.  |

| 20 year cumulative FP biopsy rate (% and 95% CI)  
- Ages 50-59: 4.1% (3.9-4.3%)  |
<table>
<thead>
<tr>
<th>Study (Review)</th>
<th>Country; Source of data</th>
<th>Details</th>
<th>False Positive Recalls</th>
<th>False Positive Biopsies</th>
</tr>
</thead>
<tbody>
<tr>
<td>as reported in USPSTF 2009; not reported in USPSTF 2016 – recall</td>
<td>Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roman et al., 2013 (47) (ACS 2014)</td>
<td>Sweden; Mammography RCT</td>
<td>FP rate of 1.26% in the mammography group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malmo (ACS 2014)</td>
<td>Sweden; Mammography RCT</td>
<td>355 FPs out of 100,000 woman-years for the mammography group</td>
<td></td>
<td>NR</td>
</tr>
<tr>
<td>Stockholm (ACS 2014)</td>
<td>Nordic; Mammography RCT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schonberg et al., 2009 (46) (ACS 2014)</td>
<td>US; Not specified</td>
<td>Cohort study</td>
<td>Women 80 years and older FP rate in the screened group was 10.64%</td>
<td>FP biopsy rate of 1.84%</td>
</tr>
</tbody>
</table>
### False Positive Recalls and False Positive Biopsies – Clinical Breast Exam vs Usual Care

<table>
<thead>
<tr>
<th>Study (Review)</th>
<th>Country; Source of data</th>
<th>Details</th>
<th>False PositiveRecalls</th>
<th>False PositiveBiopsies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abuidris et al., 2013 (56) (ACS 2014)</td>
<td>Sudan; RCT</td>
<td>No additional information</td>
<td><strong>FP rate</strong> of 0.9% for receiving CBE once compared to no screening.</td>
<td>NR</td>
</tr>
<tr>
<td>Sankarana-Rayanan et al., 2011 (57) (ACS 2014)</td>
<td>India; RCT</td>
<td>No additional information</td>
<td><strong>FP rate</strong> of 5.7% for receiving CBE (every 3 years) compared to no screening (5.5-5.9%)</td>
<td>NR</td>
</tr>
<tr>
<td>Pisani et al., 2006 (CTPFHC 2011 as reported in USPSTF 2009 [but not USPSTF 2016])</td>
<td>Unknown; RCT</td>
<td>No additional information</td>
<td>No results reported in systematic review</td>
<td>NR</td>
</tr>
</tbody>
</table>

### False Positive Biopsies (Unnecessary Biopsies) – Breast Self Exam vs No Screening

<table>
<thead>
<tr>
<th>Study (Review)</th>
<th>Country; Source of data</th>
<th>Details</th>
<th>False PositiveRecalls</th>
<th>False PositiveBiopsies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semiglazov et al., 2003 (CTFPHC 2011)</td>
<td>Russia; Cluster RCT</td>
<td>No additional information</td>
<td>NR</td>
<td><strong>Benign biopsy rate</strong> of RR 2.05 (1.80-2.33)</td>
</tr>
<tr>
<td>Thomas et al., 2002 (CTFPHC 2011)</td>
<td>China; Cluster RCT</td>
<td>No additional information</td>
<td>NR</td>
<td><strong>Benign biopsy rate</strong> of RR 1.57 (1.48-1.68)</td>
</tr>
</tbody>
</table>
## Appendix 15. List of potentially relevant, unpublished RCTs

<table>
<thead>
<tr>
<th>Trial Identifier</th>
<th>Study Title</th>
<th>Estimated Study Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCT02306265</td>
<td>Assessment of Diagnostic Accuracy and Performance of Digital Breast Tomosynthesis Compared to Mammography (ADAPT)</td>
<td>July 2017</td>
</tr>
<tr>
<td>NCT02777164</td>
<td>Evaluation of a Three Dimensional Functional Metabolic Imaging and Risk Assessment System for Classifying Women at High Risk of Breast Cancer</td>
<td>August 2017</td>
</tr>
<tr>
<td>NCT02155075</td>
<td>Evaluation of REAL IMAGING'S 3D Functional Metabolic Imaging and Risk Assessment (&quot;3D MIRA&quot;) System in Women at High Risk for Breast Cancer</td>
<td>August 2017</td>
</tr>
<tr>
<td>NCT02386176</td>
<td>The Assessment of the Role of Automated Breast Ultrasound (ABUS) in Screening Women With Dense Breasts for Early Detection of Breast Cancer</td>
<td>November 2017</td>
</tr>
<tr>
<td>NCT01091545</td>
<td>Malmö Breast Tomosynthesis Screening Trial (MBTST)</td>
<td>December 2017</td>
</tr>
<tr>
<td>NCT02066142</td>
<td>Tomosynthesis (TS) Versus Ultrasonography (US) in Women With Dense Breast (ASTOUND)</td>
<td>July 2018</td>
</tr>
<tr>
<td>NCT02698202</td>
<td>Screening for Breast Cancer With Digital Breast Tomosynthesis</td>
<td>December 2018</td>
</tr>
<tr>
<td>NCT02033486</td>
<td>Digital Breast Tomosynthesis Guided Tomographic Optical Breast Imaging (TOBI)</td>
<td>January 2019</td>
</tr>
<tr>
<td>NCT02616432</td>
<td>Tomosynthesis Mammography Imaging Screening Trial (TMISTLead-in)</td>
<td>November 2019</td>
</tr>
<tr>
<td>NCT02933489</td>
<td>Abbreviated Breast MRI and Digital Tomosynthesis Mammography in Screening Women With Dense Breasts</td>
<td>December 2019</td>
</tr>
<tr>
<td>NCT01315015</td>
<td>Breast Cancer Screening With MRI in Women Aged 50-75 Years With Extremely Dense Breast Tissue: the DENSE Trial</td>
<td>December 2019</td>
</tr>
<tr>
<td>NCT02590315</td>
<td>Tomosynthesis Versus Digital Mammography in a Population-based Screening Program (ProteusDonna)</td>
<td>December 2019</td>
</tr>
<tr>
<td>NCT02835625</td>
<td>The Tomosynthesis Trial in Bergen (TOBE)</td>
<td>January 2022</td>
</tr>
<tr>
<td>NCT02643966</td>
<td>Assessment of Periodic Screening of Women With Denser Breast Using WBUS and DBT (DBTUST)</td>
<td>December 2022</td>
</tr>
<tr>
<td>ISRCTN33292440</td>
<td>Nationwide cluster-randomised trial of extending the NHS breast screening age range in England</td>
<td>December 2026</td>
</tr>
<tr>
<td>NCT02210546</td>
<td>Contrast-enhanced MR Imaging as a Breast Cancer Screening in Women at Intermediate Risk (MRIB)</td>
<td>Unknown</td>
</tr>
<tr>
<td>NCT00971087</td>
<td>Multicenter Hologic Tomosynthesis Study</td>
<td>Unknown</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>ACTRN12616000533493</td>
<td>Efficacy of contrast enhanced spectral mammography versus standard of care imaging tests (tomosynthesis and ultrasound) in women with mammographically dense breast tissue recalled for investigation of abnormalities detected on routine screening mammograms</td>
<td>Unknown</td>
</tr>
<tr>
<td>CTRI/2016/04/006865</td>
<td>Early detection of breast cancer by self examination, clinical examination and fine needle aspiration cytology in rural women -a population based study</td>
<td>Unknown</td>
</tr>
</tbody>
</table>
Appendix 16: Evaluation of Subgroup analyses (GRADE Criteria)

Based on GRADE criteria (BMJ 2010; JAMA 2014)

Subgroup variables:
- Age, ethnicity, SES, geographic location, breast density, screening interval, advancements in screening technology (film, digital, etc), type of control (no screening vs usual care)

Additional guiding points: should be skeptical when evidence at very high risk of bias; subgroup effects exist along a continuum, not a ‘accept or reject’ situation.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Explanation</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is the subgroup variable a characteristic specified at baseline?</td>
<td>More credible when variables defined at time of randomization. The credibility of subgroup hypotheses based on post-randomization characteristics is severely compromised, and can be rejected simply on this criterion.</td>
<td>Yes. All based on assessments at baseline (or prespecified, such as screening interval).</td>
</tr>
<tr>
<td>2. Is the subgroup difference suggested by comparisons within rather than between studies.</td>
<td>Between-study comparisons are limited because a number of competing explanations can explain the results. Within-trial subgroup differences are stronger. Most subgroup analyses from systematic reviews are limited by between-study comparisons.</td>
<td>No (all except age- The AGE trial only contributed 39-41 age group data ‘between’, whereas other studies provided data for multiple age groups- ‘within’). ‘Yes’ answer based on a mix of between and within study comparisons and results are consistent across studies</td>
</tr>
<tr>
<td>Question</td>
<td>Comment</td>
<td>Answer</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
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<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3. Does statistical analysis suggest that chance is an unlikely explanation for the subgroup difference?</td>
<td>Need to look at degree of overlap of confidence intervals between subgroups. Would also apply if confidence intervals are substantially overlapping when point estimates differ. Check test of interaction.</td>
<td>No. Substantial overlap of subgroups. Test for subgroup differences are not statistically significant.</td>
</tr>
<tr>
<td>4. Did the hypothesis precede rather than follow the analysis and include a hypothesized direction that was subsequently confirmed?</td>
<td>Credibility of post hoc hypotheses is questionable. Multiple comparisons issue. Specification of direction of effect a priori. Failure to correctly identify the direction of subgroup effect will weaken the inference.</td>
<td>Yes, but direction was not prespecified.</td>
</tr>
<tr>
<td>5. Was the subgroup hypothesis one of a small number tested?</td>
<td>Strength of inference for confirmation of any hypothesis will decrease in a large number of hypotheses are tested.</td>
<td>No, a moderate number of subgroup hypotheses were pre-specified.</td>
</tr>
<tr>
<td>6. Is the subgroup difference consistent across studies?</td>
<td>Replication in other studies increases credibility.</td>
<td>No subgroup difference; consistent results across studies.</td>
</tr>
<tr>
<td>7. Does external evidence (biological or sociological rationale) support the hypothesized subgroup difference?</td>
<td>Does additional, external evidence exist to support the subgroup claim? Would need to be strong. Are the subgroup differences challenged by current biological (or other) understanding?</td>
<td>Is there other, relevant evidence that would lead one to believe that there might be subgroup differences for age? All others – no evidence exists (unknown)</td>
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</table>
## Appendix 17: False Positive Calculations

### Per 1,000 women screened

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<tbody>
<tr>
<td></td>
<td>Treated data as cross-sectional.</td>
<td>Treated data as cross-sectional.</td>
<td>Treated data as cross-sectional.</td>
<td>Treated data as cross-sectional.</td>
<td>Treated data as cross-sectional.</td>
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<td>Treated data as cross-sectional.</td>
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<tr>
<td>(2011-2012)</td>
<td>Initial + Subsequent (weighted average)</td>
<td>Initial + Subsequent (weighted average)</td>
<td>Initial + Subsequent (weighted average)</td>
<td>Initial + Subsequent (weighted average)</td>
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<td><strong>K (LC)</strong></td>
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<td>(2011-2012)</td>
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### Per one breast cancer death prevented

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<tr>
<th></th>
<th>NNS</th>
<th>FP Mam.</th>
<th>Un. biopsies</th>
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<td>2,108</td>
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<td><strong>Un. biopsies</strong></td>
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<td>180</td>
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### NNS

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<th>Per one breast cancer death prevented</th>
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<tr>
<td>FP Mam.</td>
<td>327, 660, 442, 134, 64, 148, 73, 148, 73, 86, 92, 92</td>
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<tr>
<td>Un. biopsies</td>
<td>36, 90, 64, 19, 6, 28, 9, 28, 9, 10, 14, 14</td>
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<tr>
<td><strong>CTFPHC 2011</strong></td>
<td>Used method from CTFPHC 2011 [initial + 3(Subsequent)]</td>
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<td><strong>Per 1,000 women screened</strong></td>
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<td>FP Mam.</td>
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<tr>
<td>Un. biopsies</td>
<td>NR</td>
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<td><strong>Per one breast cancer death prevented</strong></td>
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<tr>
<td>NNS</td>
<td>NR</td>
</tr>
<tr>
<td>FP Mam.</td>
<td>NR</td>
</tr>
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<td>Un. biopsies</td>
<td>NR</td>
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<tr>
<td>Method</td>
<td>Initial + Subsequent (weighted average)</td>
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<td>-----------------</td>
<td>----------------------------------------</td>
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<tr>
<td>A (SC) (2011-2012) Used method from CTFPHC 2011 [initial + 3(subsequent)]</td>
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<tr>
<td>B (LC) (2011-2012) Used method from CTFPHC 2011 [initial + 4(subsequent)]</td>
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</tr>
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<td>D (2005-2006) Treated data as cross-sectional. Subsequent screen data</td>
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<td>F (SC) (2011-2012) Treated data as cross-sectional. Subsequent screen data</td>
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<tr>
<td>G (LC) (2011-2012) Treated data as cross-sectional. Initial screen data</td>
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<tr>
<td>H (LC) Treated data as cross-sectional. Subsequent screen data</td>
<td></td>
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<tr>
<td>I (2005-2006) Treated data as cross-sectional. Initial + Subsequent (weighted average)</td>
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<tr>
<td>J (SC) (2011-2012) Treated data as cross-sectional. Initial + Subsequent (weighted average)</td>
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**Per 1,000 women screened**

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**Per one breast cancer death prevented**

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## Appendix 18: Organized Breast Cancer Screening Programs

<table>
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<tr>
<th>Trial</th>
<th>Canada</th>
<th>UK</th>
<th>USA</th>
<th>Sweden</th>
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<tr>
<td>CNBSS 1&amp;2</td>
<td>AGE</td>
<td>HIP</td>
<td>Malmo I, Malmo II, Stockholm, Gothenburg, Swedish Two Counties</td>
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<tbody>
<tr>
<td>Age at Entry</td>
<td>40-59</td>
<td>39-41</td>
<td>40-64</td>
<td>39-74</td>
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<tr>
<td>Screening Duration</td>
<td>5 years</td>
<td>8 years</td>
<td>3 years</td>
<td>4-12 years</td>
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<tr>
<td>Longest Follow-up</td>
<td>21.9 yrs (mean)</td>
<td>17.7 yrs (median)</td>
<td>18 yrs (mean)</td>
<td>22-30 yrs (mean)</td>
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<table>
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<td>50-70</td>
<td>NR</td>
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<td>Technology surveyed in 2007-2008</td>
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<td>% of population covered in 1995</td>
<td>(50-69): &lt;25%</td>
<td>100%</td>
<td>25-50%</td>
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*Reported as 47.3% in previous iteration of report.*

In 2014 (50-69): 54.1%
In 2013 (50-69): 53.9%
In 2010 (50-69): 53.2%
In 2009 (50-69): 52.1%
In 2008 (50-69): 45.9%

NR: not reported.

References: