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EVALUATION OF BREAST CANCER SCREENING IN BELGIUM

APPENDIX



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LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
AAPC	Average annual percent changes
ABUS	Automated breast ultrasound
ACR	American College of Radiology
ACS	American Cancer Society
AMCP	Academy of Managed Care Pharmacy
ASR	Age-standardized rate
ADH	Atypical ductal hyperplasia
AHRQ	Agency for Healthcare Research and Quality
ALH	Atypical lobular hyperplasia
AMSTAR	A MeaSurement Tool to Assess systematic Reviews
ATC	Anatomical therapeutic chemical
aOR	Adjusted odds ratio
BC	Breast cancer
BCR	Belgian Cancer Registry
BCSC	Breast Cancer Surveillance Consortium
BFM	Budget of financial means
BI-RADS	Breast Imaging Reporting and Data System
BMI	Body mass index
BRCA	Breast cancer gene
BSS	BreastScreen Singapore
BruPrev	Brussels screening organisation
CA$	Canadian Dollar
CBPL	Commissie voor de bescherming van de persoonlijke levenssfeer
CBA	Cost-benefit analysis
CBE	Clinical breast examination
CCA	Cost-consequence analysis
CCRef	Walloon screening organisation (‘Centre de coordination et de Référence’)
CCS	Charlson Comorbidity Score
CE	Cost-effectiveness
CEA	Cost-effectiveness analysis
CEAC	Cost-effectiveness acceptability curve
CEM	Contrast-enhanced mammography
CESM	Contrast-Enhanced Spectral Mammography

CHEERS	Consolidated Health Economic Evaluation Reporting Standards
CHP	Cyto-histopathology
CI	Confidence interval
CIR	Cumulative indidence rate
CMA	Cost-minimisation analysis
CMS	Centers for Medicare & Medicaid Services
CNBSS	Canadian National Breast Screening Studies
COI	Conflict of interest
CPAP	Canadian Patnership against Cancer
CPVP	Commission de la protection de la vie privée
cStage	Clinical stage
CT	Computerized tomography scan
cTNM	Clinical tumour node metastasis staging
CUA	Cost-utility analysis
CvKO	Flemish screening organisation (‘Centrum voor Kankeropsporing’)
DBT	Digital breast tomosynthesis
DD	Screning follow-up database
DCIS	Ductal carcinoma in situ
DENSE	Dense Tissue and Early Breast Neoplasm Screening trial
DKK	Danish Krone
DM	Digital mammo
EBSP	Edinburgh Randomised Breast Screening Project
ECIBC	European Commission Initiative on Breast Cancer
EQ-5D	EuroQOL five dimensions questionnaire
ER	Oestrogen receptor
ESP	European standard population
EU	European Union
EU-27	27 member states of the European Union (EU)
EUnetHTA	European network for Health Technology Assessment
EUNICE	European Network for Information on Cancer
EUSOMA	European Society of Breast Cancer Specialists
FaDia	Fatal diameter
FDA	Food and Drug Administration
FFDM	Full-field digital mammography
FN	False negative

FOD VVVL – SPF SPSCAE	Federal Public Service Health, Food Chain Safety and Environment (‘Federale overheidsdienst Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu’/’Service public fédéral Santé publique, Sécurité de la Chaîne Alimentaire et Environnement’)
FP	False positive
FU	Follow-up
FUD	First follow-up date
GDG	Guidelines Development Group
GP	General practitioner
GRADE	Grading of Recommendations, Assessment, Development, and Evaluations
HER2	Human epidermal growth factor receptor 2
HIP	Health Insurance Plan
HQO	Health Quality Ontario
HR	Hazard ratio
HRQoL	Health-related quality of life
HTA	Health technology assessment
IBC	Invasive breast cancer
ICD(-0)	International Classification of Diseases (for Oncology)
ICER	Incremental Cost-Effectiveness Ratio
ICMD	International Consortium on Mammographic Density
ICTRP	International Clinical Trials Registry Platform
ID	Incidence data breast cancer
IDR	Incidence density ratio
IE	Incremental effect
IKNL	Integraal Kankercentrum Nederland
IMA – AIM	Intermutualistic Agency (‘Intermutualistisch Agentschap’/‘Agence Intermutualiste’)
INAHTA	International Network of Agencies for Health Technology Assessment
INSZ - NISS	Social security number (‘Identificatienummer van de Sociale Zekerheid’ – ‘Numéro d'Identification de la Sécurité Sociale’)
IRR	Incidence rate ratio
IQR	Interquartile range
IQWiG	Institute for Quality and Efficiency in Health Care
ISPOR	The Professional Society for Health Economics and Outcomes Research
JBI	Joanna Briggs Institute
J-START	Japan Strategic Anti-cancer Randomised Trial

KCE	Belgian Health Care Knowledge Centre
KSZ-BCSS	Crossroads Bank for Social Security ('Kruispuntbank van de Sociale Zekerheid' – 'Banque Carrefour de la Sécurité Sociale')
LCIS	Lobular carcinoma in situ
LYG	Life year(s) gained
LYS	Life year(s) saved
MEA	Managed Entry Agreement
MeSH	Medical Subjects Headings
MISCAN	MIcro-simulation SCreening ANalysis
MRI	Magnetic resonance imaging
MyPeBS	My Personal Breast Cancer Screening trial
NA	Not available/not applicable
NBCF	National Breast Cancer Foundation
NCR	Netherlands Cancer Registry
ND	Not described
NHMRC	National Health and Medical Research Council
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NIHDI	National Institute for Health and Disability Insurance (RIZIV – INAMI)
NOK	Norwegian Krone
NPC	National Pharmaceutical Council
NR	Not reported
NRDO	National Registry of Diseases Office
NRSI	Nonrandomized study of intervention
NUH PASS	National University Hospital Patient Affordability Simulation System
OECD	Organisation for Economic Co-operation and Development
OR	Odds ratio
PET	Positron emission tomography
PICO	Population, interventions, comparator, outcomes
PPV	Positive predictive value
PR	Prevalence ratio
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
pStage	Pathological stage
pTNM	Patological tumour node metastasis staging
QA	Quality assurance

QALY	Quality-adjusted life year
QoL	Quality of Life
QUADAS	Quality of primary diagnostic accuracy studies
RCT	Randomised controlled trial
RE Tomo	Reggio Emilia Tomosynthesis trial
RESR	Revised European Standardized Rate
RIZIV – INAMI	National Institute for Health and Disability Insurance (‘Rijksinstituut voor Ziekte- en Invaliditeitsverzekering’/’Institut National d’Assurance Maladie-Invalidité’) (NIHDI)
RoB	Risk of bias
ROBINS	Risk of bias in non-randomised studies of interventions
RQ	Research question
RR	Relative risk, risk ratio
RT	Radiotherapy
SA	Sensitivity analysis
SCL-90	Symptom Checklist-90
SD	Screening database
SEER	Surveillance, Epidemiology, and End Results Program
SGP	Singaporean Dollar
SiMRiSc	Simulation Model on Radiation Risk and Breast Cancer Screening
SM	Synthesis mammography
SMR	Standardised mortality ratio
SPECT	Single-photon emission computed tomography
SR	Systematic review
STAI-6	Spielberger State-Trait Anxiety Inventory state scale
STATbel	Directorate General Statistics – Statistics Belgium
TNM	Tumour node metastasis staging
TOSYMA	Tomosynthesis plus synthesised mammography trial
TP	True positive
TTO	Time trade-off
UICC	Union for International Cancer Control
UKCCCR	United Kingdom Co-ordinating Committee on Cancer Research
US$	United States Dollar
USPSTF	U.S. Preventive services Task Force
VABB	Vacuum-assisted breast biopsy
VAS	Visual analogue scale

VIKZ	Flemish Institute for Care Quality (‘Vlaams Instituut voor Kwaliteit van Zorg’)
WHO	World Health Organization
WISDOM	Women Informed to Screen Depending on Measures of Risk
WTP	Willingness to pay
YOLS	Years of life saved

APPENDICES

APPENDIX 1. ADDITIONAL INFORMATION ON OUT OF SCOPE TOPICS

Box 1 – The DENSE2 trial

The DENSE2 trial, which is performed within the frame of the Dutch national screening programme, is the continuation of the DENSE trial, which indicated that a combination of full MRI and mammography in women with extremely dense breast tissue is able to detect tumours earlier than mammography only.[354] However, the implementation of full MRI in the Dutch screening programme would have led to considerable costs and capacity problems, necessitating the evaluation of cheaper and more accessible alternatives. In the DENSE2 study women between 49 and 72 years with dense breasts and a negative mammography screening result are randomly assigned to either the control (biennial mammography screening), intervention arm A (supplemental abbreviated MRI) or intervention arm B (supplemental contrast-enhanced mammography). The first results of the DENSE2 trial can be expected in 2031.[355]

Box 2 – The MyPeBS and WISDOM trials

The **MyPeBS RCT**, which runs in Belgium, Spain, France, Israel, Italy, and the UK, aims to examine the (cost-)effectiveness of personalized, risk-stratified screening in women between 40 and 70 years old. The control group is screened according the national screening guidelines, whereas women assigned to the intervention arm are divided in four risk groups based on a risk evaluation (including a salivatory test): (1) the low risk group is invited for a mammography every four years, (2) the moderate risk group every two years, (3) the high risk group every year and (4) the very high risk group is invited for an annual mammography supplemented with an annual MRI up to 60 years of age. The primary outcome of the study is the incidence of stage II or higher breast cancer in each group at four years of follow-up.[5] The recruitment finished in July 2023 with first results being expected by the end of 2027.

Recently, the first results of the USA-based **WISDOM** (Women Informed to Screen Depending on Measures of Risk) **trial** with over 28 000 participants were presented.[300, 356] Based on a risk assessment using the Breast Cancer Surveillance Consortium (BCSC) risk calculator and genetic testing, women in the personalized screening group were also divided in four risk groups with a tailored screening strategy: (1) 26% of women was classified as having a low risk and was advised to delay screening until 50 years of age, (2) 62% was classified as having an average risk and was recommended screening every two years, (3) 8% was classified as having an elevated risk and was recommended annual screening, and (4) 2% was classified as having a high risk and was recommended screening twice per year, alternating mammography and MRI. With no increase in the rate of stage IIB or higher cancers (i.e. one of the co-primary outcomes), the first results after a median follow-up of 5.1 years indicate non-inferiority in this outcome compared to population-based annual screening. However, despite fewer mammographies, the rate of breast biopsies (i.e. the second co-primary outcome) was not lower in the personalized screening group and the rates of ductal carcinoma in situ were nearly identical.[356] As the control group was invited for an annual mammography, translation of the results to the Belgian context will not be straightforward. In addition, because the trial used a pragmatic design, screening occurred outside of the study, leading to significant nonadherence in both groups.[357]

APPENDIX 2. PRINCIPLES OF SCREENING

	Summary of consolidated screening principles
Disease or condition principles	**1 Epidemiology of the disease or condition** The epidemiology of the disease or condition should be adequately understood, and the disease or condition should be an important health problem (e.g., high or increasing incidence or prevalence, or causes substantial morbidity or mortality).
	2 Natural history of disease or condition The natural history of the disease or condition should be adequately understood, the disease or condition is well-defined, and there should be a detectable preclinical phase.
	3 Target population for screening The target population for screening should be clearly defined (e.g., with an appropriate target age range), identifiable and able to be reached.
Test or intervention principles	**4 Screening test performance characteristics** Screening test performance characteristics should be appropriate for the purpose, with all key components specific to the test (rather than the screening program) being accurate (e.g., in terms of sensitivity, specificity and positive predictive value) and reliable or reproducible. The test should be acceptable to the target population, and it should be possible to perform or administer it safely, affordably and efficiently.
	5 Interpretation of screening test results Screening test results should be clearly interpretable and determinate (e.g., with known distribution of test values and well-defined and agreed cut-off points) to allow identification of the screening participants who should (and should not) be offered diagnostic testing and other postscreening care.
	6 Postscreening test options There should be an agreed-on course of action for screening participants with positive screening test results that involves diagnostic testing, treatment or intervention, and follow-up care that will modify the natural history and clinical pathway for the disease or condition; that is available, accessible and acceptable to those affected; and that results in improved outcomes (e.g., increased functioning or quality of life, decreased cause-specific mortality). The burden of testing on all participants should be understood and acceptable, and the effect of false-positive and false-negative tests should be minimal.
Program or system principles	**7 Screening program infrastructure** There should be adequate existing infrastructure (e.g. financial resources, health human resources, information technology, facilities, equipment and test technology), or a clear plan to develop adequate infrastructure, that is appropriate to the setting to allow for timely access to all components of the screening program*
	8 Screening program coordination and integration All components of the screening program* should be coordinated and, where possible, integrated with the broader health care system (including a formal system to inform, counsel, refer and manage the treatment of screening participants) to optimize care continuity and ensure no screening participant is neglected.
	9 Screening program acceptability and ethics All components of the screening program* should be clinically, socially and ethically acceptable to screening participants, health professionals and society, and there should be effective methods for providing screening participants with informed choice, promoting their autonomy and protecting their rights.
	10 Screening program benefits and harms The expected range and magnitude of benefits (e.g., increased functioning or quality of life, decreased cause-specific mortality) and harms (e.g., overdiagnosis and overtreatment) for screening participants and society should be clearly defined and acceptable and supported by existing high-quality scientific evidence (of addressed by

	Summary of consolidated screening principles
	ongoing studies) that indicates that the overall benefit of the screening program outweighs its potential harms.
	11 Economic evaluation of screening program An economic evaluation (e.g. cost-effectiveness analysis, cost-benefit analysis and cost-utility analysis) of the screening program, using a health system or societal perspective, should be conducted (or clear plan to conduct an economic evaluation) to assess the full costs and effects of implementing, operating and sustaining the screening program while clearly considering the opportunity costs and effects of allocating resources to other potential nonscreening alternatives (e.g. primary prevention, improved treatments and other clinical services) for managing the disease of condition.
	12 Screening program quality and performance management The screening program should have clear goals or objectives that are explicitly linked to program planning, monitoring, evaluating and reporting activities, with dedicated information systems and funding, to ensure ongoing quality control and achievement of performance targets.

**Components of a screening program include recruitment, testing, information access, diagnosis, referral, treatment, follow-up, patient education and support, staff training and program management and evaluation. Source: Dobrow et al., 2018*[36]

APPENDIX 3. HOW TO ESTIMATE OVERDIAGNOSIS?

Overdiagnosis can be estimated by two main approaches: the excess incidence approach and the lead time approach.[64]

In the **excess incidence approach**, cumulative incidence of cancer in a screened cohort is compared to that of a non-screened cohort after an adequately long follow-up period.[64] During the initial years of screening, it is anticipated that the number of cancers detected in the screened cohort will exceed that in the control cohort, as cancers are identified at a pre-clinical stage. It is, however, assumed that these "excess" cancers, detected through screening, would eventually become symptomatic and be diagnosed in the control cohort at a later stage. Consequently, after an initial peak in diagnoses, a relative decline in new diagnoses is expected in the screened cohort when compared to the control cohort. The difference in cancer diagnoses between the screened and control cohorts at the end of the follow-up period provides an estimate of the number of overdiagnosed cancers. The duration of the follow-up must be sufficiently long to ensure that all cancers detectable by screening would have become symptomatic by the end of the period. This duration depends on the lead time of the screened cancer, defined as the interval between tumour detection via screening and the appearance of symptoms that would have led to clinical diagnosis.[64]

Another way to estimate excess incidence is the **early- vs. late-stage approach**, which assumes that screening will increase diagnosis of early-stage cancers, which will be compensated later on by a decrease in late-stage cancers. Overdiagnosis is estimated by comparing the increased incidence of early-stage cancers with the decreased incidence of late-stage cancers; however, this method is considered more controversial.[64]

The **cumulative-incidence approach** using RCT data in which there are several years of follow-up after screening and in which the control group is never screened, is generally considered the most robust method to estimate overdiagnosis.[64, 123, 130, 134] Yet, it is important to note that this method also has its limitations, such as limited external validity and a dependence on appropriate length of follow-up time.[64, 130, 134]

Moreover, the requirements that the control group is never screened may not be realistic for breast cancer, as most of the RCTs on breast cancer screening had a screening at the end of the trial for the control group, or a national screening programme starting soon after the end of the trial.[88] This type of "**contamination**" may lead to an underestimation of overdiagnosis. Additionally, this

approach assumes that screening is conducted for only a limited period in the screened cohort, after which it is stopped. In real-world scenarios, ensuring these conditions is often challenging.

In the **lead time approach**, overdiagnosis is estimated by comparing cancer incidence in a screened and unscreened cohort, adjusted for lead time.[64] As the lead time of an individual tumour is unobservable, it must be modelled, which can be done in several ways.[64] The assumptions of the model will significantly influence the resulting estimates. This approach frequently underestimates overdiagnosis due to an implicit assumption in many models that all detected tumours continue to grow and will eventually become clinically relevant. Overdiagnosis is thus considered to occur only when the patient dies before the lead time concludes.[358] In other words, this calculation overlooks the possibility that some tumours may regress spontaneously or remain indolent, leading to an overestimation of the average lead time and a bias towards underestimating overdiagnosis.[359] Some recent lead-time models no longer assume that all tumours are progressive; however, the reliability of such models remains difficult to assess.[360]

APPENDIX 4. BREAST CANCER SCREENING IN A SELECTION OF HIGH-INCOME COUNTRIES

Table 66 – Breast cancer screening in a selection of high-income countries (status of March 2026)

	Eligible age categories	Screening interval	Modality	Start of screening programme	Breast cancer mortality among women (ASR (World) per 100 000 from Globocan, 2022)	Incidence of invasive breast cancer among women (ASR (World) per 100 000 from Globocan, 2022)
Belgium	50-69	Biennial	Mammography	2001 (Flanders) 2002 (Wallonia & Brussels)	14.2	104.4
Australia	Own initiative: 40-49 Invited: 50-74	Biennial	Mammography	1991	12.3	101.5
Canada*	Province-dependent: Start ages: 40/45/50 Stop ages: 74	Province- and age-dependent: ○ Annual ○ Biennial (predominant interval)	Mammography	Province-dependent: 1990-2008*	13.4	88.6
Denmark	50-69	Biennial	Mammography	1991 (national since 2009)	14.1	95.4
France	50-74	Biennial	Mammography & clinical examination	2004	15.8	105.4
Germany	45-75	Biennial	Mammography	2005	15.8	77.0
Italy	50-69 (Some regions: 45-74)**	Province- and age-dependent: ○ Annual (45-49) ○ Biennial (50-74)	Mammography	Region-dependent: 1990 - 2008	14.8	87.0

	Eligible age categories	Screening interval	Modality	Start of screening programme	Breast cancer mortality among women (ASR (World) per 100 000 from Globocan, 2022)	Incidence of invasive breast cancer among women (ASR (World) per 100 000 from Globocan, 2022)
Luxembourg	45-74	Biennial	Mammography	1992	15.1	99.7
The Netherlands	50-75	Biennial	Mammography	Pilots since 1973 (national since 1990)	14.5	101.6
Norway	50-69	Biennial	Mammography	County-dependent: 1996-2005	11.0	95.6
Spain	Region-dependent: • Start ages: 45/47/50 • Stop ages: 69/74	Biennial	Mammography	Region-dependent: 1990-2001	10.6	81.0
Sweden	40-74	Biennial	Mammography	1986 (national since 1997)	11.9	81.4
United Kingdom	Invited: 50-70 Own initiative: 70+	Triennial	Mammography	1988	14.0	94.0
United States of America	*No coordinated screening programme available. Clinical practice informed by national guidelines (e.g. USPSTF, ACS).*				12.2	95.9

**: In Canada, screening is a competency of the provinces. Nunavut is the only province not having a breast cancer screening programme. **: In some Italian regions, pilot studies are ongoing to test annual screening between 45 and 49 followed by biennial screening between 50 and 74 years. ACS: American Cancer Society, ASR: Age-standardized rate, USPST: United States Preventive Services Task Force.*
Data on breast cancer mortality and breast cancer incidence in each country as reported by Globocan (2022).[361] For other sources, see Appendix 4.1

Appendix 4.1. Sources of information

Australia:

- https://www.health.gov.au/our-work/breastscreen-australia-program/about-the-breastscreen-australia-program
- https://www.cancer.org.au/about-us/policy-and-advocacy/early-detection/breast-cancer

Canada:

- https://cancer.ca/en/cancer-information/find-cancer-early/get-screened-for-breast-cancer/how-do-i-find-a-breast-cancer-screening-program

Denmark:

- https://www.sst.dk/media/xdkfexwg/uk-pjece-brystkraeft.pdf
- https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/02/eu-country-cancer-profile-denmark-2025_198228f3/ffe5127e-en.pdf
- https://pmc.ncbi.nlm.nih.gov/articles/PMC5745763/

France:

- https://jefaismondepistage.cancer.fr/cancers-du-sein/comment-faire-ce-depistage/
- https://igas.gouv.fr/Organized-cancer-screening-in-France#:~:text=Since%202004%2C%20the%20organized%20breast,on%20training%20requirements%20for%20radiologists.

Germany

- https://www.bfs.de/SharedDocs/Pressemitteilungen/BfS/EN/2025/010.html#:~:text=The%20Mammography%20Screening%20Programme%20is,the%20benefits%20outweigh%20the%20risks.
- https://link.springer.com/article/10.1186/s12889-023-16589-5#:~:text=There%20is%20also%20a%20lack,based%20on%20health%20claims%20data.
- https://www.recht.bund.de/bgbl/1/2026/53/VO.html

Italy

- https://epiprev.it/documenti/downloadfile.php?fileid=85b9d619fe87c02116d834cfe069408fee3bce48
- https://pmc.ncbi.nlm.nih.gov/articles/PMC12188216/#:~:text=Set%2Dup%20of%20the%20screening,years%20comprises%20278%20000%20women.

Luxembourg

- https://m3s.gouvernement.lu/en/services-en-ligne/services-en-ligne-sante/programme-mammographie.html
- https://gouvernement.lu/en/actualites/toutes_actualites/communiques/2023/10-octobre/09-sante-octobre-rose.html#:~:text=Between%201992%20and%202022%2C%20the,of%20cancers%20have%20been%20detected.

The Netherlands

- Lin, Y., Sidorenkov, G., Wang, J., Greuter, M. J. W., Houssami, N., Dorrius, M. D., Siesling, S., de Munck, L., & de Bock, G. H. (2026). Impact of screening on late-stage breast cancer in the Netherlands: a population-based cohort study (2007-2016). Breast (Edinburgh, Scotland), 86, 104745. https://doi.org/10.1016/j.breast.2026.104745

- https://www.rivm.nl/bevolkingsonderzoek-borstkanker/professionals/achtergrond#:~:text=Het%20landelijk%20bevolkingsonderzoek%20borstkanker%20is,leeftijdgrens%20opgeschoven%20naar%2075%20jaar.

Norway

- https://www.fhi.no/en/ab/departments-and-centres/breast-cancer-screening/
- https://pmc.ncbi.nlm.nih.gov/articles/PMC4288930/#:~:text=MATERIALS%20AND%20METHODS-,Methods,solid%20tumors%2C%20including%20breast%20cancer.

Spain

- https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/02/eu-country-cancer-profile-spain-2025_eb5fe21f/1f6a5051-en.pdf

Sweden

- https://pmc.ncbi.nlm.nih.gov/articles/PMC3145837/?utm
- https://brostcancerforbundet.se/om-brostcancer/other-languages/english/

UK

- https://www.nhs.uk/tests-and-treatments/breast-screening-mammogram/who-breast-screening-is-for/
- https://view-health-screening-recommendations.service.gov.uk/breast-cancer/#:~:text=Breast%20screening%20started%20in%20the,significant%20benefit%20and%20should%20continue.

APPENDIX 5. BI-RADS CATEGORIES

Breast imaging studies are assigned one of seven BI-RADS assessment categories:

Table 67 – BI-RADS categories

Category	Definition
0	Incomplete - Additional imaging evaluation and/or comparison to prior mammograms (or other imaging tests) is needed.
1	Negative
2	Benign (non-cancerous) finding
3	Probably benign finding – Follow-up in a short time frame is suggested
4	Suspicious abnormality – Biopsy should be considered
5	Highly suggestive of malignancy – Appropriate action should be taken
6	Known biopsy-proven malignancy – Appropriate action should be taken

Source: D'Orsi et al., 2003.[75]

APPENDIX 6. PROCEDURES SCREENING PROCESS

The procedures for inviting the screen-eligible women and informing participants on their results are discussed below, based on personal communication with the screening organizations, the regional health authorities and publicly available information on their websites.

From invitation to participation

Prior to the distribution of invitations, the Belgian Cancer Registry (BCR) compiles a list of women who should be excluded from screening invitation based on administrative data (e.g. women with a history of bilateral mastectomy or a breast cancer diagnosis within the past 10 years) and sends these lists to the screening organizations. The exclusion criteria applied to the invitation lists are presented for each region separately in Appendix Table 68. It should be noted that the reimbursement of the screening mammography is not linked to having received an invitation or not. Eligibility for reimbursement is only determined by age, place of residence, having mandatory health insurance and there has to be more than one calendar year between two screening mammographies.

In Flanders, the invitation includes an invitation letter with a proposed appointment for the screening mammography as well as a brochure informing screening candidates on the benefits and harms of screening and the screening procedure. In general, when the time between sending the invitation and the proposed appointment for the mammography is more than 14 days, the invitations will first be sent digitally via eBox (maximum 5.5 weeks before the appointment) to the invitees in case they have an activated eBox. Women who did not open the digital invitation within 3 days will receive a paper-based invitation via post.[a] When the time between sending the invitation and the proposed appointment for the mammography is between 7 and 14 days, the invitations will be sent by post and digitally via eBox (if activated). If this time interval is less than 7 days, CvKO personally contacts the woman to inform her of the invitation.

In Brussels and Wallonia, a paper-based invitation with a flyer is sent via post to every eligible woman. In the invitation letter, women are informed that from the moment of receiving the invitation they can make an appointment for a screening mammography in one of the recognised centres. Starting from May 2026 in Wallonia and in two years' time in Brussels, the invitations will also be sent digitally first via eBox when possible with a highly similar cascade system as in Flanders. In contrast to Flanders, women residing in Wallonia who did not open their eBox invitation will receive a postal invitation 2 weeks after sending the digital invitation (currently 3 days in Flanders)[a].

Screening mammography & communication of results

Within the official screening programme, participants receive a biennial digital mammography as screening modality (see above for description of imaging technique). The images are examined independently by at least two radiologists from specifically recognised mammographic units: first by a radiologist from the mammography unit where the examination was performed, and subsequently by a second radiologist. In case the conclusions of the first and second reader differ, a third radiologist examines the images.

In Flanders, participants with a positive screening result are always informed using a paper-based letter via mail and digitally via e-Box (if activated). Negative results are communicated digitally via eBox if active or paper-based if not active. When the eBox message is not opened within 3 days, the results letter will be sent additionally by post.[a]

In Brussels, results can be consulted by the participant via the Brussels Health Network (Abrumet) and https://www.myhealth.belgium.be/. All results are also communicated digitally to the participant's

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[a] The time interval of 3 days is currently under evaluation by the Flemish health authorities and CvKO, and will be adapted based on their evaluation.

GP. Positive results are always communicated additionally to the participant and her GP via post. There is no postal mail of negative results.

In Wallonia, positive results are sent to the GP via post and in over 99% of cases also digitally. In about half of the cases, a copy of the positive results letter is also sent to a second physician. Negative results are only communicated digitally to GPs and second doctors in over 99% of the cases. Both positive and negative results are also communicated within the health network, which is accessible to the majority of participants.

Table 68 – Exclusion criteria invitations for organized screening programme

	Excluded from invitation	Period of exclusion
Brussels	Women with bilateral mastectomy	Permanent
	Women with diagnosed breast cancer	Temporary for 10 years after diagnosis
	Women with screening mammography in the previous year	Temporary until 2 years after last mammography
	Women who refused to be invited	Temporary until withdrawal of refusal
Flanders	Women with bilateral mastectomy	Permanent
	Women with diagnosed breast cancer	Temporary for 10 years after diagnosis
	Women with bilateral mammography outside the organized screening programme	Temporary until 2 years after last mammography
	Women with screening mammography in the previous year	Temporary until 2 years after last mammography
	Participation with prescription of physician before invitation was sent	Temporary until 2 years after last mammography
	Women who refused to be invited	Temporary until withdrawal of refusal
Wallonia	Women with bilateral mastectomy	Permanent
	Women with diagnosed breast cancer	Temporary for 10 years after diagnosis
	Women with bilateral mammography outside the organized screening programme	Temporary until 2 years after last mammography
	Women with screening mammography in the previous year	Temporary until 2 years after last mammography
	Women who refused to be invited	Temporary until withdrawal of refusal

APPENDIX 7. CLINICAL EFFECTIVENESS AND SAFETY

Appendix 7.1. PICO

Table 69 – Inclusion criteria for systematic literature review

Description	Inclusion	Exclusion
Population	Adult (age ≥ 40 years) women without suspected breast cancer and without a specifically increased risk of breast cancer	History of breast cancer or high-risk breast lesions (Ductal carcinoma in situ (DCIS), Lobular carcinoma in situ (LCIS), Atypical ductal hyperplasia (ADH), Atypical lobular hyperplasia (ALH)) Clinically significant genetic markers or syndromes associated with high risk for breast cancer (e.g. BRCA1 or BRCA2 gene mutations, Li-Fraumeni syndrome, Cowden syndrome, hereditary diffuse gastric cancer, or other familial breast cancer syndromes) Previous large doses of chest radiation (≥20 Gy)
Intervention	RQ1: Organised population screening for breast cancer with any mammography modality (i.e. film or digital mammography, digital breast tomosynthesis [3D mammography]) RQ2a: Annual population screening for breast cancer with any mammography modality (i.e. film or digital mammography, digital breast tomosynthesis [3D mammography]) RQ2b: Triennial population screening for breast cancer with any mammography modality (i.e. film or digital mammography, digital breast tomosynthesis [3D mammography]) RQ3: Organised population screening for breast cancer with any mammography modality (i.e. film or digital mammography, digital breast tomosynthesis [3D mammography]) in combination with ultrasound	Breast imaging or clinical examinations conducted for diagnosis or surveillance Screening strategies that do not include mammography
Comparator	RQ1: No screening at population level for breast cancer RQ2: Biennial population screening for breast cancer with any mammography modality (i.e. film or digital mammography, digital breast tomosynthesis [3D mammography])	Breast imaging or clinical examinations conducted for diagnosis or surveillance Screening with biomarkers

Description	Inclusion	Exclusion
	RQ3: Organised population screening for breast cancer with any mammography modality (i.e. film or digital mammography, digital breast tomosynthesis [3D mammography])	
Outcomes	All-cause mortality Breast cancer mortality Breast cancer stage at diagnosis (advanced stage) Overdiagnosis Interval cancers Consequences of false-positive screening results (e.g. biopsies with benign findings) Consequences of false-negative screening results Treatment-related morbidity Health-related quality of life	
Study design	Stage 1: Systematic reviews with or without meta-analysis Health Technology Assessments Stage 2: Randomised controlled trials (RCTs) performed in countries categorised as “Very high” on the Human Development Index (as defined by the United Nations Development Programme; based on 2022 data, published in 2024)	Narrative reviews, case reports, case series, editorials RCTs performed outside countries categorised as Observational studies performed outside Belgium
Language	Full text articles in English, Dutch, French or German	

APPENDIX 8. SEARCH STRATEGIES

Appendix 8.1. Search for systematic reviews – May 2024

Appendix 8.1.1. Medline

Date	May 28, 2024	
Database	Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to May 28, 2024>	
Search strategy		
1	exp *Breast neoplasms/	307072
2	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	290776
3	(mammary adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	15317
4	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).jw.	22091
5	(lobular adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	2267
6	((duct or ductal) adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	19013
7	(hboc adj3 syndrome?).ti,kf.	29
8	2 or 3 or 4 or 5 or 6 or 7	323303
9	1 or 8	393180
10	exp Mass Screening/	146283
11	(screening or screened or testing or tests or test or tested or profil*).ti,kf.	933285
12	10 or 11	996054
13	9 and 12	26028
14	((systematic review or systematic literature review or systematic scoping review or systematic narrative review or systematic qualitative review or systematic evidence review or systematic quantitative review or systematic meta-review or systematic critical review or systematic mixed studies review or systematic mapping review or systematic cochrane review or "systematic search and review" or systematic integrative review).ti. not comment.pt. not (protocol or protocols).ti. not medline.st.) or (Cochrane Database Syst Rev.ja. and review.pt.) or systematic review.pt.	310750
15	meta-analys*.ti.	203066
16	meta-analysis.pt.	201433
17	exp Technology Assessment, Biomedical/	12351
18	health technology assessment.ti,kf.	3040
19	HtA.ti,kf.	925
20	14 or 15 or 16 or 17 or 18 or 19	439863
21	13 and 20	632
22	limit 21 to yr="2014-2024"	431
23	remove duplicates from 22	430
24	guideline.ti.	20715
25	13 and 24	121
26	limit 25 to yr="2014-2024"	88
Comments		

Appendix 8.1.2. Cochrane

Date	29/05/2024 06:47:07	
Database	Cochrane	
Search strategy		
#1	[mh "Breast neoplasms"[mj]]	13401
#2	(breast* NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	33044
#3	(mammary NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	94
#4	(lobular NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	32
#5	(breast NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):SO	2526
#6	((duct or ductal) NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	685
#7	(hboc NEAR/3 syndrome?):ti	1
#8	#2 or #3 or #4 or #5 or #6 or #7	34213
#9	#1 or #8	36715
#10	[mh "Mass Screening"]	5992
#11	(screening or screened or testing or tests or test or tested or profil*):ti	49221
#12	#10 or #11	51245
#13	#9 AND #12	1594
#14	#13 with Cochrane Library publication date Between Jan 2014 and Dec 2024	1064
#15	#14 in Cochrane Reviews	2
Comments		

Appendix 8.1.3. Embase

Date	29 May 2024	
Database	Embase	
Search strategy		
#1	'breast tumor'/exp/mj	465477
#2	(breast* NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ti,kw	417264
#3	(mammary NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ti,kw	19098
#4	(breast* NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):jt	25543
#5	(lobular NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ti,kw	3411
#6	((duct OR ductal) NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ti,kw	27616
#7	(hboc NEAR/3 syndrome$):ti,kw	38
#8	#2 OR #3 OR #4 OR #5 OR #6 OR #7	461088

#9	#1 OR #8	540594
#10	'screening'/exp	855031
#11	screening:ti,kw OR screened:ti,kw OR testing:ti,kw OR tests:ti,kw OR test:ti,kw OR tested:ti,kw OR profil*:ti,kw	1235289
#12	#10 OR #11	1828594
#13	#9 AND #12	49176
#14	#13 AND ('meta-analysis'/exp OR 'meta-analysis' OR 'systematic review'/exp OR 'systematic review')	1515
#15	#14 AND [2014-2024]/py	1025
#16	#15 NOT [medline]/lim	427
#17	#16 NOT ('conference abstract'/it OR 'conference paper'/it OR 'conference review'/it)	249
Comments		

Appendix 8.2. Search for guidelines – May 2024

Appendix 8.2.1. Medline

Date	May 28, 2024	
Database	Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to May 28, 2024>	
Search strategy		
1	exp *Breast neoplasms/	307072
2	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	290776
3	(mammary adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	15317
4	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).jw.	22091
5	(lobular adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	2267
6	((duct or ductal) adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	19013
7	(hboc adj3 syndrome?).ti,kf.	29
8	2 or 3 or 4 or 5 or 6 or 7	323303
9	1 or 8	393180
10	exp Mass Screening/	146283
11	(screening or screened or testing or tests or test or tested or profil*).ti,kf.	933285
12	10 or 11	996054
13	9 and 12	26028
14	((systematic review or systematic literature review or systematic scoping review or systematic narrative review or systematic qualitative review or systematic evidence review or systematic quantitative review or systematic meta-review or systematic critical review or systematic mixed studies review or systematic mapping review or systematic cochrane review or "systematic search and review" or systematic integrative review).ti. not comment.pt. not (protocol or protocols).ti. not medline.st.) or (Cochrane Database Syst Rev.ja. and review.pt.) or systematic review.pt.	310750
15	meta-analys*.ti.	203066
16	meta-analysis.pt.	201433

17	exp Technology Assessment, Biomedical/	12351
18	health technology assessment.ti,kf.	3040
19	HtA.ti,kf.	925
20	14 or 15 or 16 or 17 or 18 or 19	439863
21	13 and 20	632
22	limit 21 to yr="2014-2024"	431
23	remove duplicates from 22	430
24	guideline.ti.	20715
25	13 and 24	121
26	limit 25 to yr="2014-2024"	88
Comments		
Date	March 24, 2026	
Database	Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to March 24, 2026>	
Search strategy		
1	exp *Breast neoplasms/	331465
2	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	326184
3	(mammary adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	15720
4	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).jw.	24451
5	(lobular adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	2550
6	((duct or ductal) adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	22137
7	(hboc adj3 syndrome?).ti,kf.	39
8	2 or 3 or 4 or 5 or 6 or 7	361959
9	1 or 8	434325
10	screening.ti,kf.	267926
11	screened.ti,kf.	2846
12	testing.ti,kf.	178408
13	tests.ti,kf.	123644
14	test.ti,kf.	258548
15	tested.ti,kf.	4995
16	profil*.ti,kf.	266730
17	10 or 11 or 12 or 13 or 14 or 15 or 16	1045545
18	diagnosis.ti,kf.	587346
19	detection.ti,kf.	442647
20	18 or 19	1015221
21	exp *Mass Screening/	81004
22	exp *population surveillance/	28232
23	21 or 22	108648
24	17 or 20 or 23	2035355
25	9 and 24	45078
26	guideline.ti.	24170

27	25 and 26	163
28	limit 27 to dt=20240524-20260325	13
Comments		

Appendix 8.3. Search for RCTs – July 2024

Appendix 8.3.1. Medline

Date	July Week 3 2024	
Database	Ovid MEDLINE(R) <1946 to July Week 3 2024>	
Search strategy		
1	exp Breast neoplasms/	355986
2	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ab,ti,kf.	364246
3	(mammary adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ab,ti,kf.	31013
4	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).jw.	18759
5	(lobular adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ab,ti,kf.	5235
6	((duct or ductal) adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ab,ti,kf.	39461
7	(hboc adj3 syndrome?).ab,ti,kf.	207
8	2 or 3 or 4 or 5 or 6 or 7	409607
9	1 or 8	470293
10	screening.tw,kw,kf.	611766
11	screened.kw,kf,tw.	200199
12	testing.tw,kw,kf.	624682
13	tests.tw,kw,kf.	758788
14	test.tw,kw,kf.	1607092
15	tested.tw,kw,kf.	1013800
16	profil*.tw,kw,kf.	876553
17	10 or 11 or 12 or 13 or 14 or 15 or 16	4548082
18	di.xs.	4306979
19	diagnosis.tw,kw,kf.	1700242
20	detection.kw,tw,kf.	952271
21	18 or 19 or 20	5623569
22	exp Mass Screening/	146943
23	exp population surveillance/	74929
24	22 or 23	218879
25	17 or 21 or 24	9033687
26	9 and 25	197857
27	limit 26 to yr="2023-2024"	13769
28	randomized controlled trial.pt.	616697
29	controlled clinical trial.pt.	95549
30	randomized.ti,ab.	609141
31	placebo.ti,ab.	232346
32	clinical trials as topic/	202789

33	randomly.ti,ab.	365801
34	trial?.ti.	357392
35	28 or 29 or 30 or 31 or 32 or 33 or 34	1471033
36	exp animal/ not humans/	5239816
37	35 not 36	1342350
38	27 and 37	869
Comments		

Appendix 8.3.2. Cochrane

Date	**31/07/2024 15:47:25**	
Database	Cochrane	
Search strategy		
#1	[mh "Breast neoplasms"]	20355
#2	(breast* NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti,ab	43958
#3	(mammary NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti,ab	237
#4	(breast* NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):SO	2556
#5	(lobular NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti,ab	232
#6	((duct or ductal) NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti,ab	2220
#7	(hboc NEAR/3 syndrome?):ti,ab	10
#8	#2 OR #3 OR #4 OR #5 OR #6 OR #7	45723
#9	#1 OR #8	47481
#10	[mh "Mass Screening"]	6040
#11	(screening or screened or testing or tests or test or tested or profil*):ti	50083
#12	#10 OR #11	52113
#13	#9 AND #12	2132
#14	#13 with Cochrane Library publication date Between Jan 2023 and Dec 2024	203
#15	#14 in Cochrane Reviews	3
#16	#14 in Trials	198
Comments		

Appendix 8.3.3. Embase

Date	31 Jul 2024	
Database	Embase	
Search strategy		
#1	'breast tumor'/exp	716112
#2	(breast* NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ab,ti,kw	619568
#3	(mammary NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ab,ti,kw	41834
#4	(breast* NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):jt	25771
#5	(lobular NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ab,ti,kw	10034
#6	((duct OR ductal) NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ab,ti,kw	74717
#7	(hboc NEAR/3 syndrome$):ab,ti,kw	501
#8	#2 OR #3 OR #4 OR #5 OR #6 OR #7	693050
#9	#1 OR #8	851190
#10	'screening'/exp	861908
#11	screening:ab,ti,kw OR screened:ab,ti,kw OR testing:ab,ti,kw OR tests:ab,ti,kw OR test:ab,ti,kw OR tested:ab,ti,kw OR profil*:ab,ti,kw	7468156
#12	#10 OR #11	7735730
#13	#9 AND #12	221945
#14	#13 AND [2023-2024]/py	23285
#15	#14 NOT [medline]/lim	12460
#16	#15 NOT ('conference abstract'/it OR 'conference paper'/it OR 'conference review'/it)	5189
#17	#16 AND (random*:ab,ti OR placebo*:de,ab,ti OR ((double NEXT/1 blind*):ab,ti))	456
Comments		

Appendix 8.4. Update for systematic reviews – December 2024

Appendix 8.4.1. Medline

Date	December 13, 2024	
Database	Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to December 13, 2024>	
Search strategy		
1	exp *Breast neoplasms/	314033
2	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	300727
3	(mammary adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	15450
4	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	300727
5	(lobular adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	2337
6	((duct or ductal) adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	19890
7	(hboc adj3 syndrome?).ti,kf.	35
8	2 or 3 or 4 or 5 or 6 or 7	330924
9	1 or 8	403567
10	screening.ti,kf.	244029
11	screened.ti,kf.	2673
12	testing.ti,kf.	163636
13	tests.ti,kf.	119141
14	test.ti,kf.	244413
15	tested.ti,kf.	4813
16	profil*.ti,kf.	238214
17	10 or 11 or 12 or 13 or 14 or 15 or 16	964303
18	diagnosis.ti,kf.	553114
19	detection.ti,kf.	402154
20	18 or 19	942451
21	exp *Mass Screening/	77018
22	exp *population surveillance/	27670
23	21 or 22	104104
24	17 or 20 or 23	1886356
25	9 and 24	41537
26	((systematic review or systematic literature review or systematic scoping review or systematic narrative review or systematic qualitative review or systematic evidence review or systematic quantitative review or systematic meta-review or systematic critical review or systematic mixed studies review or systematic mapping review or systematic cochrane review or "systematic search and review" or systematic integrative review).ti. not comment.pt. not (protocol or protocols).ti. not medline.st.) or (Cochrane Database Syst Rev.ja. and review.pt.) or systematic review.pt.	335890
27	meta-analys*.ti.	218746
28	meta-analysis.pt.	212396
29	exp Technology Assessment, Biomedical/	12583

30	health technology assessment.ti,kf.	3226
31	HtA.ti,kf.	990
32	26 or 27 or 28 or 29 or 30 or 31	468817
33	25 and 32	961
34	limit 33 to yr="2024"	95
35	remove duplicates from 34	92
Comments		

Appendix 8.4.2. Cochrane

Date	16/12/2024 17:55:23	
Database	Cochrane	
Search strategy		
#1	[mh "Breast neoplasms"[mj]]	13893
#2	(breast* NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	34508
#3	(mammary NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	94
#4	(lobular NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	38
#5	(breast NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):SO	2595
#6	((duct or ductal) NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	717
#7	(hboc NEAR/3 syndrome?):ti	1
#8	#2 or #3 or #4 or #5 or #6 or #7	35714
#9	#1 or #8	38306
#10	[mh "Mass Screening"]	6124
#11	(screening or screened or testing or tests or test or tested or profil*):ti	51312
#12	#10 or #11	53355
#13	#9 AND #12	1662
#14	#13 with Cochrane Library publication date Between May 2024 and Dec 2024	67
#15	#14 in Cochrane Reviews in Cochrane Reviews	1
Comments	No more SR in Update 2026	

Appendix 8.4.3. Embase

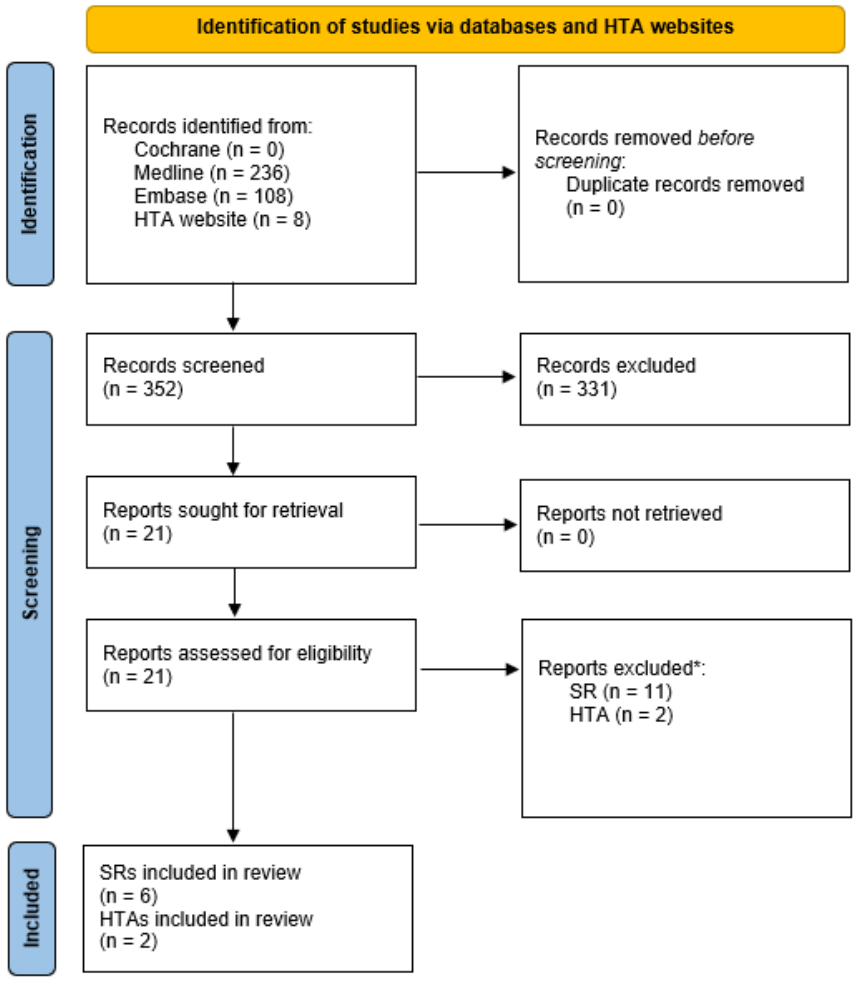
Date	16 Dec 2024	
Database	Embase	
Search strategy		
#1	'breast tumor'/exp/mj	477659
#2	(breast* NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ti,kw	429838
#3	(mammary NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ti,kw	19245
#4	(breast* NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):jt	26170

#5	(lobular NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ti,kw	3497
#6	((duct OR ductal) NEAR/3 (neoplasm* OR cancer* OR carcinoma* OR adenocarcinoma* OR tumour* OR tumor* OR malignan* OR sarcoma*)):ti,kw	28648
#7	(hboc NEAR/3 syndrome$):ti,kw	44
#8	#2 OR #3 OR #4 OR #5 OR #6 OR #7	474738
#9	#1 OR #8	554936
#10	'screening'/exp	877718
#11	screening:ti,kw OR screened:ti,kw OR testing:ti,kw OR tests:ti,kw OR test:ti,kw OR tested:ti,kw OR profil*:ti,kw	1272510
#12	#10 OR #11	1879890
#13	#9 AND #12	50624
#14	#13 AND ('meta-analysis'/exp OR 'meta-analysis' OR 'systematic review'/exp OR 'systematic review')	1582
#15	#14 AND [2024]/py	114
#16	#15 NOT [medline]/lim	37
#17	#16 NOT ('conference abstract'/it OR 'conference paper'/it OR 'conference review'/it)	28
Comments		

APPENDIX 9. SEARCH FOR AND SELECTION OF SYSTEMATIC REVIEWS

Appendix 9.1.1. Study flow for systematic reviews

Figure 62 – Selection of SRs - Study flow



Notes: **The reasons for exclusion are detailed in Table 70 and Table 71.*

Appendix 9.1.2. Excluded reviews after full text assessment

Table 70 – Excluded systematic reviews and reason for exclusion

Year	Publication	Reason for exclusion
2023	Flemban AF. Overdiagnosis Due to Screening Mammography for Breast Cancer among Women Aged 40 Years and Over: A Systematic Review and Meta-Analysis. J Pers Med. 2023;13(3).	Overall poor quality
2023	Ghorbani S, Rezapour A, Eisavi M, Barahman M, Bagheri Faradonbeh S. Cost-benefit Analysis of Breast Cancer Screening with Digital Mammography: A Systematic Review. Med J Islam Repub Iran. 2023;37:89.	Limited to cost-effectiveness assessment
2023	Tollens F, Baltzer PAT, Froelich MF, Kaiser CG. Economic evaluation of breast MRI in screening - a systematic review and basic approach to cost-effectiveness analyses. Front Oncol. 2023;13:1292268.	Limited to cost-effectiveness assessment
2023	Voss T, Krag M, Martiny F, Heleno B, Jørgensen KJ, Brandt Brodersen J. Quantification of overdiagnosis in randomised trials of cancer screening: an overview and re-analysis of systematic reviews. Cancer epidemiology. 2023;84:102352.	Search limited to one database
2022	Maes-Carballo M, Mignini L, Martín-Díaz M, Bueno-Cavanillas A, Khan KS. Clinical practice guidelines and consensus for the screening of breast cancer: A systematic appraisal of their quality and reporting. Eur J Cancer Care (Engl). 2022;31(2):e13540.	Assessment of guidelines
2022	Ren W, Chen M, Qiao Y, Zhao F. Global guidelines for breast cancer screening: A systematic review. Breast. 2022;64:85-99.	Overview of guidelines
2022	Zeng A, Brennan ME, Young S, Mathieu E, Houssami N. The Effect of Supplemental Imaging on Interval Cancer Rates in Mammography Screening: Systematic Review. Clin Breast Cancer. 2022;22(3):212-22.	Search limited to one database
2021	Mahmood S, Anjum MN, Farooq F, Gilani SA, Fatima M, Andlib S, et al. Comparison of Mammography and Ultrasonography for Early Detection of Breast Cancer - A Systematic Review. Pakistan Journal of Medical & Health Sciences. 2021;15(7):1450-5.	Overall poor quality
2021	Mühlberger N, Sroczynski G, Gogollari A, Jahn B, Pashayan N, Steyerberg E, et al. Cost effectiveness of breast cancer screening and prevention: a systematic review with a focus on risk-adapted strategies. Eur J Health Econ. 2021;22(8):1311-44.	Limited to cost-effectiveness assessment
2020	Jayasekera J, Mandelblatt JS. Systematic Review of the Cost Effectiveness of Breast Cancer Prevention, Screening, and Treatment Interventions. Journal of clinical oncology : official journal of the American Society of Clinical Oncology. 2020;38(4):332-50.	Limited to cost-effectiveness assessment
2020	Dibden A, Offman J, Duffy SW, Gabe R. Worldwide Review and Meta-Analysis of Cohort Studies Measuring the Effect of Mammography Screening Programmes on Incidence-Based Breast Cancer Mortality. Cancers. 2020;12(4).	Overall poor quality

Table 71 – Excluded health technology assessments & reasons for exclusion

Year	Publication	Reason for exclusion
2023	Haute Autorité de Santé (HAS). Évaluation de la performance et de la place de la mammographie par tomosynthèse dans le programme national de dépistage organisé du cancer du sein – Volet 2. 2023.	No match of research question
2021	Instance Nationale de l'Évaluation et de l'Accréditation en Santé (INEAS). Guide de pratique clinique le dépistage du cancer du sein. 2021.	Overall poor quality

Appendix 9.2. Quality appraisal

Appendix 9.2.1. Quality appraisal tools

Systematic reviews

Table 72 – AMSTAR-2 checklist

AMSTAR-2 checklist		
1. Did the research questions and inclusion criteria for the review include the components of PICO?		
For yes: ☐ Population ☐ Intervention ☐ Comparator group ☐ Outcome	Optional (recommended) ☐ Timeframe for follow-up	☐ Yes ☐ No
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?		
For partial yes: The authors state that they had a written protocol or guide that included ALL the following: ☐ Review question(s) ☐ Search strategy	For yes: As for partial yes, plus the protocol should be registered and should also have specified: ☐ Meta-analysis/synthesis plan, if appropriate, and ☐ Plan for investigating causes of heterogeneity	☐ Yes ☐ Partial yes ☐ No

AMSTAR-2 checklist		
☐ Inclusion/exclusion criteria ☐ Risk of bias assessment	☐ Justification for any deviations from the protocol	
3. Did the review authors explain their selection of the study designs for inclusion in the review?		
For yes, the review should satisfy ONE of the following: ☐ Explanation for including only RCTs ☐ OR explanation for including only NRSI ☐ OR explanation for including both RCTs and NRSI		☐ Yes ☐ No
4. Did the review authors use a comprehensive literature search strategy?		
For partial yes (all the following): ☐ Searched at least 2 databases (relevant to research question) ☐ Provided key word and/or search strategy ☐ Justified publication restrictions (e.g. language)	For yes, should also have (all the following): ☐ Searched the reference lists / bibliographies of included studies ☐ Searched trial/study registries ☐ Included/consulted content experts in the field ☐ Where relevant, searched for grey literature ☐ Conducted search within 24 months of completion of the review	☐ Yes ☐ Partial yes ☐ No
5. Did the review authors perform study selection in duplicate?		
For yes, either ONE of the following: ☐ At least two reviewers independently agreed on selection of eligible studies and achieved consensus on which studies to include ☐ OR two reviewers selected a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder selected by one reviewer.		☐ Yes ☐ No
6. Did the review authors perform data extraction in duplicate?		
For yes, either ONE of the following: ☐ At least two reviewers achieved consensus on which data to extract from included studies		☐ Yes ☐ No

AMSTAR-2 checklist		
☐ OR two reviewers extracted data from a sample of eligible studies and achieved good agreement (at least 80 percent), with the remainder extracted by one reviewer.		
7. Did the review authors provide a list of excluded studies and justify the exclusions?		
For Partial Yes ☐ Provided a list of all potentially relevant studies that were read in full-text form but excluded from the review	For yes, must also have: ☐ Justified the exclusion from the review of each potentially relevant study	☐ Yes ☐ Partial yes ☐ No
8. Did the review authors describe the included studies in adequate detail?		
For partial yes (ALL the following): ☐ Described populations ☐ Described interventions ☐ Described comparators ☐ Described outcomes ☐ Described research design	For yes, should also have ALL the following: ☐ Described population in detail ☐ Described intervention in detail (including doses where relevant) ☐ Described comparator in detail (including doses where relevant) ☐ Described study's setting ☐ Timeframe for follow-up	☐ Yes ☐ Partial yes ☐ No
9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?		
RCTs For Partial Yes, must have assessed RoB from ☐ Unconcealed allocation, and ☐ Lack of blinding of patients and assessors when assessing outcomes (unnecessary for objective outcomes such as all- cause mortality) NRSI For Partial Yes, must have assessed RoB: ☐ From confounding, and	For yes, must also have assessed RoB from: ☐ Allocation sequence that was not truly random, and ☐ Selection of the reported result from among multiple measurements or analyses of a specified outcome For Yes, must also have assessed RoB: ☐ Methods used to ascertain exposures and outcomes, and ☐ Selection of the reported result from among multiple measurements or analyses of a specified outcome	☐ Yes ☐ Partial yes ☐ No ☐ Includes only NRSI

AMSTAR-2 checklist		
☐ From selection bias		☐ Yes ☐ Partial Yes ☐ No ☐ Includes only RCTs
10. Did the review authors report on the sources of funding for the studies included in the review?		
For Yes ☐ Must have reported on the sources of funding for individual studies included in the review. Note: Reporting that the reviewers looked for this information but it was not reported by study authors also qualifies.		☐ Yes ☐ No
11. If meta-analyses were performed did the review authors use appropriate methods for statistical combination of results?		
RCTs For Yes: ☐ The authors justified combining the data in a meta-analysis ☐ AND they used an appropriate weighted technique to combine study results and adjusted for heterogeneity if present. ☐ AND investigated the causes of any heterogeneity		☐ Yes ☐ No ☐ No meta-analysis conducted
For NRSI For Yes: ☐ The authors justified combining the data in a meta-analysis ☐ AND they used an appropriate weighted technique to combine study results, adjusting for heterogeneity if present ☐ AND they statistically combined effect estimates from NRSI that were adjusted for confounding, rather than combining raw data, or justified combining raw data when adjusted effect estimates were not available ☐ AND they reported separate summary estimates for RCTs and NRSI separately when both were included in the review		☐ Yes ☐ No ☐ No meta-analysis conducted

AMSTAR-2 checklist	
12. If meta-analyses were performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	
For Yes: ☐ Included only low risk of bias RCTs ☐ OR, if the pooled estimate was based on RCTs and/or NRSI at variable RoB, the authors performed analyses to investigate possible impact of RoB on summary estimates of effect.	☐ Yes ☐ No ☐ No meta-analysis conducted
13. Did the review authors account for RoB in individual studies when interpreting/ discussing the results of the review?	
For Yes: ☐ Included only low risk of bias RCTs ☐ OR, if RCTs with moderate or high RoB, or NRSI were included the review provided a discussion of the likely impact of RoB on the results	☐ Yes ☐ No
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	
For Yes: ☐ There was no significant heterogeneity in the results ☐ OR if heterogeneity was present the authors performed an investigation of sources of any heterogeneity in the results and discussed the impact of this on the results of the review	☐ Yes ☐ No
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	
For Yes: ☐ Performed graphical or statistical tests for publication bias and discussed the likelihood and magnitude of impact of publication bias	☐ Yes ☐ No ☐ No meta-analysis conducted
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	
For Yes: ☐ The authors reported no competing interests OR	☐ Yes

AMSTAR-2 checklist	
☐ The authors described their funding sources and how they managed potential conflicts of interest	☐ No

Abbreviations: *RCT: randomised controlled trials; NRSI: non-randomised studies of interventions.*
Source: *Shea et al. AMSTAR-2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ. 2017.*[92]

RCTs

Table 73 – Cochrane Collaboration's tool for assessing risk of bias

Domain	Support for judgement	Review authors' judgement
Selection bias		
Random sequence generation	Describe the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups	Selection bias (biased allocation to interventions) due to inadequate generation of a randomised sequence
Allocation concealment	Describe the method used to conceal the allocation sequence in sufficient detail to determine whether intervention allocations could have been foreseen in advance of, or during, enrolment	Selection bias (biased allocation to interventions) due to inadequate concealment of allocations prior to assignment
Performance bias		
Blinding of participants and personnel Assessments should be made for each main outcome (or class of outcomes)	Describe all measures used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective	Performance bias due to knowledge of the allocated interventions by participants and personnel during the study
Detection bias		
Blinding of outcome assessment Assessments should be made for each main outcome (or class of outcomes)	Describe all measures used, if any, to blind outcome assessors from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective	Detection bias due to knowledge of the allocated interventions by outcome assessors
Attrition bias		

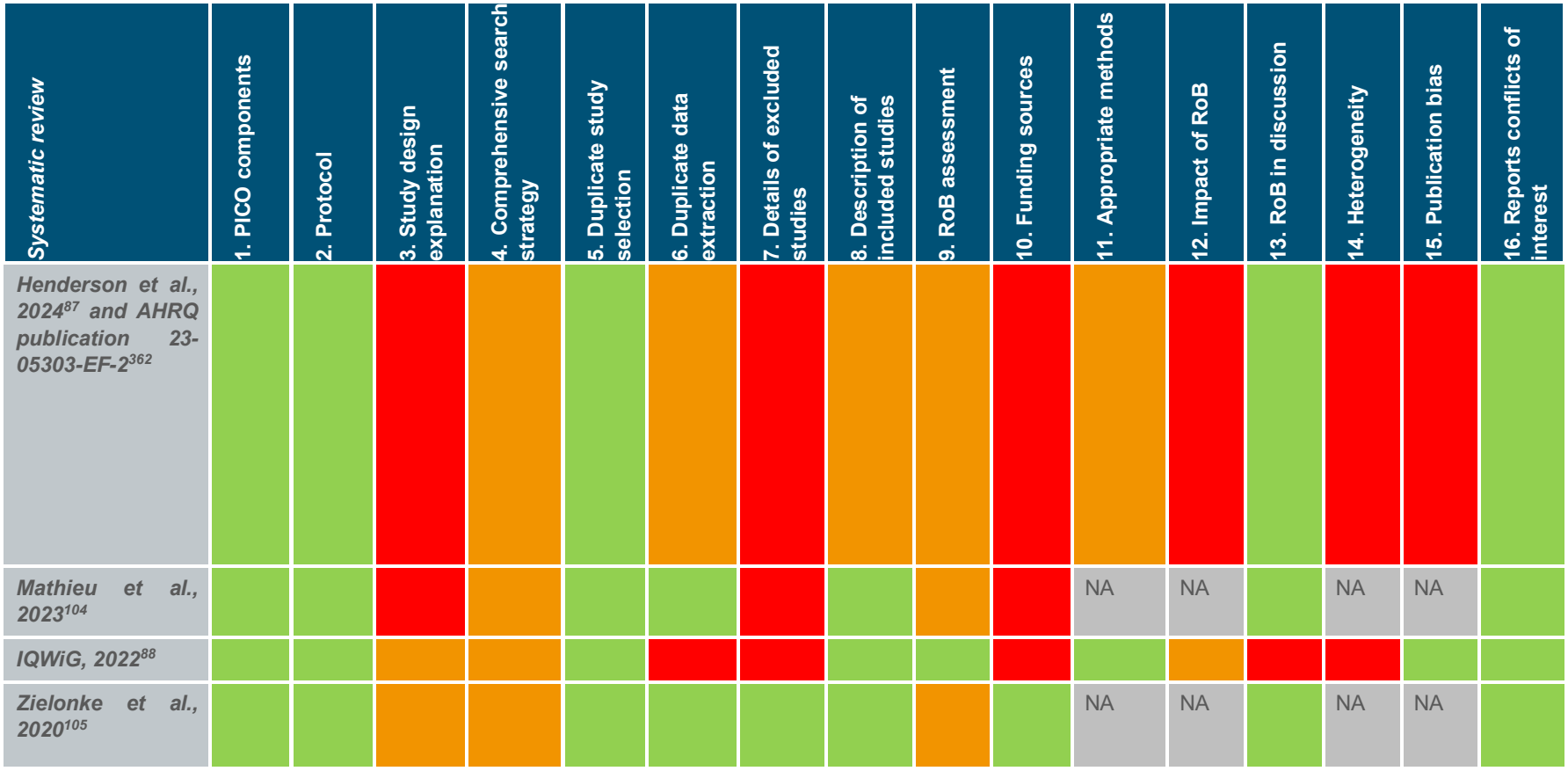
Domain	Support for judgement	Review authors' judgement
Incomplete outcome data Assessments should be made for each main outcome (or class of outcomes)	Describe the completeness of outcome data for each main outcome, including attrition and exclusions from the analysis. State whether attrition and exclusions were reported, the numbers in each intervention group (compared with total randomised participants), reasons for attrition/exclusions where reported, and any reinclusions in analyses performed by the review authors	Attrition bias due to amount, nature or handling of incomplete outcome data
Reporting bias		
Selective reporting	State how the possibility of selective outcome reporting was examined by the review authors, and what was found	Reporting bias due to selective outcome reporting
Other bias		
Other sources of bias	State any important concerns about bias not addressed in the other domains in the tool If particular questions/entries were prespecified in the review's protocol, responses should be provided for each question/entry	Bias due to problems not covered elsewhere in the table

***Source**: Higgins JPT, Altman DG, on behalf of the Cochrane Statistical Methods Group and the Cochrane Bias Methods Group. Assessing risk of bias in included studies. In: Higgins JPT, Green S, editors. Cochrane handbook for systematic reviews of interventions: John Wiley & Sons; 2012. p. 187-241.*[93]

Appendix 9.2.2. Quality appraisal of systematic reviews

Table 74 – AMSTAR-2 assessment of included SR (whether or not as part of health technology assessments)

Systematic review	1. PICO components	2. Protocol	3. Study design explanation	4. Comprehensive search strategy	5. Duplicate study selection	6. Duplicate data extraction	7. Details of excluded studies	8. Description of included studies	9. RoB assessment	10. Funding sources	11. Appropriate methods	12. Impact of RoB	13. RoB in discussion	14. Heterogeneity	15. Publication bias	16. Reports conflicts of interest
Bennett et al., 2024[13]																
Canelo-Aybar et al., 2022[100]											NA	NA		NA	NA	
Canelo-Aybar et al., 2021																
Glechner et al., 2023[99]																
Gøtzsche & Jørgensen, 2024[14]																



Abbreviations: *N/A: not applicable (did not perform meta-analysis); PICO: population, intervention, comparator/control and outcome; RoB: risk of bias*
Notes: *Green: yes; orange: partial yes; red: no*

Appendix 9.2.3. Overview of risk of bias assessments of RCTs across systematic reviews

The trials are ordered by start date of recruitment.

HIP	Gøtzsche (2013, 2024) (RoB 1)	Bennet (2018) (RoB 1)	Canelo-Aybar (2021) (RoB 1)	IQWiG (2022)
Randomisation	High Risk	Unclear	Unclear	Unclear
Allocation concealment	Unclear	Unclear	Unclear	Unclear
Blinding or participants/personnel	Low Risk	Unclear	Low Risk	
Blinding outcomes	High Risk	High Risk	High Risk	
Incomplete outcome data	High Risk	Unclear	Unclear	
Selective outcome reporting	High Risk	Unclear	Unclear	
Other	High Risk	Unclear	Unclear	
Potential for bias at study level	NA	NA	NA	High Risk

Abbreviations: *NR: not reported; NA: not available/applicable*

Malmö I	Gøtzsche (2013, 2024) (RoB 1)	Bennet (2024) (RoB 2)	Canelo-Aybar (2021) (RoB 1)	IQWiG (2022)
Randomisation	Low Risk	Unclear	Low Risk	Low Risk
Allocation concealment	Low Risk	Unclear	Low Risk	Unclear
Blinding or participants/personnel	Low Risk	Unclear	Low Risk	
Blinding outcomes	Low Risk	Low Risk	Low Risk	
Incomplete outcome data	Low Risk	Unclear	Low Risk	
Selective outcome reporting	Low Risk	Unclear	Low Risk	
Other	Low Risk	Low risk	Low Risk	
Potential for bias at study level	NA	NA	NA	High Risk

Abbreviations: *NR: not reported; NA: not available/applicable*

Malmö II	Gøtzsche (2013, 2024) (RoB 1)	Bennet (2024) (RoB 2)	Canelo-Aybar (2021) (RoB 1)	IQWiG (2022)
Randomisation	High Risk	NA	Unclear	Low Risk
Allocation concealment	High Risk	NA	Unclear	Unclear
Blinding or participants/personnel	Low Risk	NA	Low Risk	
Blinding outcomes	High Risk	NA	Low Risk	
Incomplete outcome data	High Risk	NA	Unclear	
Selective outcome reporting	High Risk	NA	Unclear	
Other	High Risk	NA	Unclear	
Potential for bias at study level	NA	NA	NA	High Risk

Abbreviations: *NR: not reported; NA: not available/applicable*

Swedish Two-County	Gøtzsche (2013, 2024) (RoB 1)	Bennet (2024) (RoB 2)	Canelo-Aybar (2021) (RoB 1)	IQWiG (2022)
Randomisation	Unclear	Low Risk	Unclear	Unclear
Allocation concealement	High Risk	High Risk	Unclear	Unclear
Blinding or participants/personnel	Low Risk	Unclear	Low Risk	
Blinding outcomes	High Risk	Low Risk	Unclear	
Incomplete outcome data	High Risk	Unclear	Unclear	
Selective outcome reporting	High Risk	Unclear	Unclear	
Other	High Risk	Unclear	Unclear	
Potential for bias at study level	NA	NA	NA	High Risk

Abbreviations: *NR: not reported; NA: not available/applicable*

Kopparberg	Gøtzsche (2013, 2024) (RoB 1)	Bennet (2018) (RoB 1)	Canelo-Aybar (2021) (RoB 1)	IQWiG (2022)
Randomisation	Unclear	NA	Unclear	NA
Allocation concealement	High Risk	NA	Unclear	NA
Blinding or participants/personnel	Low Risk	NA	Low Risk	
Blinding outcomes	High Risk	NA	Unclear	
Incomplete outcome data	High Risk	NA	Unclear	
Selective outcome reporting	High Risk	NA	Unclear	
Other	High Risk	NA	Unclear	
Potential for bias at study level	NA	NA	NA	NA

Abbreviations: *NR: not reported; NA: not available/applicable*

Östergötland	Gøtzsche (2013, 2024) (RoB 1)	Bennet (2018) (RoB 1)	Canelo-Aybar (2021) (RoB 1)	IQWiG (2022)
Randomisation	Unclear	NA	Unclear	NA
Allocation concealement	High Risk	NA	Unclear	NA
Blinding or participants/personnel	Low Risk	NA	Low Risk	
Blinding outcomes	High Risk	NA	Unclear	
Incomplete outcome data	High Risk	NA	Unclear	
Selective outcome reporting	High Risk	NA	Unclear	
Other	High Risk	NA	Unclear	
Potential for bias at study level	NA	NA	NA	NA

Abbreviations: *NR: not reported; NA: not available/applicable*

CNBSS-1	Gøtzsche (2013, 2024) (RoB 1)	Bennet (2024) (RoB 2)	Canelo-Aybar (2021) (RoB 1)	IQWiG (2022)
Randomisation	Low Risk	High Risk	Low Risk	Low Risk
Allocation concealment	Low Risk	Unclear	High Risk	Unclear
Blinding or participants/personnel	Low Risk	Unclear	Low Risk	
Blinding outcomes	Low Risk	Low Risk	Low Risk	
Incomplete outcome data	Low Risk	Unclear	Low Risk	
Selective outcome reporting	Low Risk	Unclear	Low Risk	
Other	Low Risk	Low Risk	Low Risk	
Potential for bias at study level	NA	NA	NA	High Risk

Abbreviations: *NR: not reported; NA: not available/applicable*

CNBSS-2	Gøtzsche (2013, 2024) (RoB 1)	Bennet (2024) (RoB 2)	Canelo-Aybar (2021) (RoB 1)	IQWiG (2022)
Randomisation	Low Risk	High Risk	Low Risk	Low Risk
Allocation concealment	Low Risk	Unclear	High Risk	Unclear
Blinding or participants/personnel	Low Risk	Unclear	Low Risk	
Blinding outcomes	Low Risk	Low Risk	Low Risk	
Incomplete outcome data	Low Risk	Unclear	Low Risk	
Selective outcome reporting	Low Risk	Unclear	Low Risk	
Other	Low Risk	Low Risk	Low Risk	
Potential for bias at study level	NA	NA	NA	High Risk

Abbreviations: *NR: not reported; NA: not available/applicable*

Stockholm	Gøtzsche (2013, 2024) (RoB 1)	Bennet (2024) (RoB 2)	Canelo-Aybar (2021) (RoB 1)	IQWiG (2022)
Randomisation	High Risk	High Risk	High Risk	High Risk
Allocation concealment	High Risk	High Risk	High Risk	NA
Blinding or participants/personnel	Low Risk	Unclear	Low Risk	
Blinding outcomes	High Risk	Low Risk	Unclear	
Incomplete outcome data	High Risk	Unclear	Unclear	
Selective outcome reporting	High Risk	Unclear	Unclear	
Other	High Risk	Low Risk	Unclear	
Potential for bias at study level	NA	NA	NA	High Risk

Abbreviations: *NR: not reported; NA: not available/applicable*

Gothenburg	Gøtzsche (2013, 2024) (RoB 1)	Bennett (2018) (RoB 1)	Canelo-Aybar (2021) (RoB 1)	IQWiG (2022)
Randomisation	High Risk	NA	High Risk	Unclear
Allocation concealment	High Risk	NA	High Risk	Unclear
Blinding or participants/personnel	Low Risk	NA	Low Risk	
Blinding outcomes	Low Risk	NA	Low Risk	
Incomplete outcome data	Low Risk	NA	Low Risk	
Selective outcome reporting	Low Risk	NA	Low Risk	
Other	High Risk	NA	Low Risk	
Potential for bias at study level	NA	NA	NA	High risk

Abbreviations*: NR: not reported; NA: not available/applicable*

UKCCCR	Canelo-Aybar (2022) (RoB 1)	Henderson (2024) (USPSTF-specific criteria for randomized trials)
Randomisation	High Risk	Moderate
Allocation concealment	High Risk	NR

UKCCCR	Canelo-Aybar (2022) (RoB 1)	Henderson (2024) (USPSTF-specific criteria for randomized trials)
Blinding or participants/personnel	Low Risk	NR
Blinding outcomes	Unclear	NR
Incomplete outcome data	Low Risk	Moderate
Selective outcome reporting	Low Risk	Low Risk
Other	Low Risk	NR

UK Age	Gøtzsche (2013, 2024) (RoB 1)	Bennet (2024) (RoB 2)	Canelo-Aybar (2021) (RoB 1)	IQWiG (NR)
Randomisation	Low Risk	Low Risk	Low Risk	Low Risk
Allocation concealment	Low Risk	Unclear	Low Risk	Low Risk
Blinding or participants/personnel	Low Risk	Unclear	Low Risk	
Blinding outcomes	Low Risk	Low Risk	Low Risk	
Incomplete outcome data	Low Risk	Low Risk	Low Risk	
Selective outcome reporting	Low Risk	High Risk	Low Risk	
Other	Low Risk	Low Risk	Low Risk	
Potential for bias at study level	NA	NA	NA	Low Risk

Abbreviations: *NR: not reported; NA: not available/applicable*

J-START	Glechner (2023) (RoB 2)	Henderson (2024) (USPSTF-specific criteria for randomized trials)
Randomisation	Low Risk	Low Risk
Deviation from intended intervention	Some concerns	Low Risk
Missing outcome data	Low Risk	Low Risk
Measurement of the outcomes	Low Risk	Low Risk
Selective outcome reporting	Low Risk	Moderate
Overall	Low Risk	Fair

Appendix 9.3. Evidence tables

Appendix 9.3.1. Evidence tables of systematic reviews

9.3.1.1. Bennett et al., 2024

Bennett et al., 2024[13] ***Screening for breast cancer: A systematic review update to inform the Canadian Task Force on Preventive Health Care guideline***	
Methods	
Design	Systematic review update
Source of funding and competing interest	Public Health Agency of Canada (*This funding supported all phases of conduct of the evidence review, including the search and selection of the evidence, collection of the data, data management, analyses, and writing. The funder was involved in the development of the protocol and reviewed a draft version of the manuscript but did not take part in the conduct of the systematic review. Final decisions were made by the review team. The views expressed herein do not necessarily represent the views of the Government of Canada.*)
Search window	2014 - 8 July 2023
Searched databases	- Ovid MEDLINE® ALL - Embase Classic+Embase - Cochrane Central Register of Controlled Trials
Research question(s)	a) What are the benefits and harms of different mammography-based screening strategies compared to no screening in cisgender women and other adults assigned female at birth aged 40 years and older? b) Do the benefits and harms of mammography screening differ by population characteristics (e.g., age, breast density, race and ethnicity, socioeconomic status, availability of mammography screening, family history)?
Included study designs	- Randomised controlled trials (RCTs) - Non/quasi RCTs - Observational studies
Included studies (papers)	RCTs[§]: - HIP (USA) – Habbema et al., 1986; Shapiro et al., 1988 - Malmo I (Sweden) – Nyström et al., 2002; Chiu et al., 2010; Nyström et al., 2016; Nyström et al., 2017 - Malmo II (Sweden) - Nyström et al., 2002; Chiu et al., 2010; Nyström et al., 2016; Nyström et al., 2017 - Swedish Two County (Ostergotland, Sweden) – Tabar et al., 2011; Yen et al., 2012; Tabar et al., 2016 - Swedish Two County (Kopparberg, Sweden) – Tabar et al., 2011; Yen et al., 2012; Tabar et al., 2016

Bennett et al., 2024[13] ***Screening for breast cancer: A systematic review update to inform the Canadian Task Force on Preventive Health Care guideline***	
	- CNBSS 1 (Canada) – Miller et al., 1992; Tarone, 1995; Baines, 1995; Bailar et al., 1997; Miller et al., 2014; Baines et al., 2016 - CNBSS2 (Canada) - Miller et al., 1992; Tarone, 1995; Baines, 1995; Bailar et al., 1997; Miller et al., 2014; Baines et al., 2016 - Stockholm (Sweden) – Frisell et al., 1997; Lind et al., 2010; Nyström et al., 2016; Nyström et al., 2017 - Gothenburg (Sweden) – Bjurstam et al., 2003; Bjurstam et al., 2016; Nyström et al., 2016; Nyström et al., 2017 - AGE (UK) – Moss et al., 2015; Duffy et al., 2020a; Duffy et al., 2020b Cohort studies: - Choi et al., 2021 (Korea; dates of screening: 2002-2015) - Duffy et al., 2021 (Sweden; dates of screening: 1992-2016) - Dunn et al., 2021 (Australia; dates of screening: 2000-2005) - Morrell et al., 2017 (New Zealand ; dates of screening: 2000-2011) - Lund et al., 2018 (Norway; dates of screening: 2005-2013) - Puliti et al., 2017 (Italy; dates of screening: 1991-2002) - Weedon-Fekjaer et al., 2014 (Norway; dates of screening: 1995-2009) - Richman et al., 2023 (USA; dates of screening: 2002-2005) - Garcia-Albeniz et al., 2020 (USA; dates of screening: 200-2008) Case-control studies: - Blyuss et al., 2023 (UK; dates of screening: 1988-2011) - De Troeyer et al., 2023 (Belgium; dates of screening: 2005-2012) - Maroni et al., 2021 (UK; dates of screening: 1990-2011) - van der Waal et al., 2017 (the Netherlands; dates of screening: 1975-2006) - Massat et al., 2016 (UK; dates of screening: 1990-2009) - Beckmann et al., 2015 (Australia; dates of screening: 1989-2010) - Pocobelli et al., 2015 (Canada; dates of screening: 1995-2008) - Paap et al., 2014 (the Netherlands; dates of screening: 1989-2009) - Ripping et al., 2016 (the Netherlands; dates of screening: 1975-2013) Time series: - Katalinic et al., 2020 (Germany; dates of screening: 2013-2014) - de Glas et al., 2014 (the Netherlands; dates of screening: 1998-2002) - Parvinen et al., 2015 (Finland; dates of screening: 1987-2009) - Helvie et al., 2014 (USA; dates of screening: 2007-2009) - Tabar et al., 2019 (Sweden; dates of screening: 1977-2015) Ecological studies: - Wilkinson et al., 2023 (Canada; dates of screening: 2002-2007) - Wilkinson et al., 2022 (Canada; dates of screening: 2002-2007)

Bennett et al., 2024[13] ***Screening for breast cancer: A systematic review update to inform the Canadian Task Force on Preventive Health Care guideline***	
	- Coldman et al., 2014 (Canada; dates of screening: 1990-2009)
Quality appraisal of included studies	- RCTs: Cochrane Risk of Bias 2.0 tool (Sterne et al., 2019) - Non-randomised and observational studies: Joanna Briggs Institute Critical Appraisal tools for use in JBI Systematic Reviews Checklist for Prevalence Studies
Summary of findings and assessment of the certainty of the evidence	GRADE Summary of Findings Tables, assessing four domains: imprecision, inconsistency, indirectness, and risk of bias
Data synthesis	Random effects models, presented in forest plots; - results from RCTs and observational studies pooled separately due to important differences in study design - studies were pooled if (1) studies were similar enough across PICOT criteria elements and (2) there was not substantial statistical heterogeneity (I2≤60%) - in cases of substantial to considerable heterogeneity (I2>60%), pooling was also considered if clinical heterogeneity could be explained via subgroups analyses or meta-regression
Subgroup analyses	- Performed for the following variables: age groups, short- vs. long-case accrual, type of screening analysis (e.g., invitation to screen vs. adherence to screen) and screening interval - Not performed for the following variables: race/ethnicity, family history, breast density, socioeconomic status
Sensitivity analyses	- Exclusion of all high risk of bias trials for outcomes of critical importance - Not possible for other factors of interest due to a lack of data reported for these factors (e.g., studies enrolling 20% more participants at high risk for breast cancer) or an insufficient number of studies (i.e., type of randomisation).
Patient characteristics	
Eligibility criteria	Adults assigned female at birth, aged ≥ 40 years and at average or moderately increased risk for breast cancer - average risk refers to those without factors placing them at higher-than-average risk of cancer (i.e., about 12.5% lifetime risk) - women with moderately increased risk (i.e.,12.5 to 20% lifetime risk) will include individuals with elevated risk of breast cancer (e.g., dense breasts, one first degree relative with history of breast cancer)
Exclusion criteria	Studies focusing on only those at high lifetime risk for developing breast cancer (i.e., >20% lifetime risk)
Interventions	
Intervention group	- Film or digital mammography - Digital breast tomosynthesis, with or without clinical breast examination (CBE)

Bennett et al., 2024[13] ***Screening for breast cancer: A systematic review update to inform the Canadian Task Force on Preventive Health Care guideline***	
Comparators	- A group with no mammography screening offered, or - Groups who did not participate in screening
Exclusion criteria	Studies where breast imaging or clinical examinations were conducted for diagnosis or surveillance
Time	
Screening period	- RCTs: no restrictions - Observational studies: studies with screening periods overlapping the 2000-year mark (to capture the full range of evidence that included screening in the 2000s)
Results	
All-cause mortality	**Mammography +/- CBE compared to usual care** - over 10 years, based on 7 RCTs: Relative effect: RR: 0.99, 95% CI: 0.98-1.00
Breast Cancer Mortality	**Mammography +/- CBE compared to usual care** - Short-case accrual£, over 10 years, based on 8 RCTs: Relative effect: RR: 0.85, 95% CI: 0.78-0.93 - Long-case accrual£, over 10 years, based on 6 RCTs: Relative effect: RR: 0.82, 95% CI: 0.71-0.94 **Screening with mammography* compared to no screening** - adherence to screen analysis, over 10 years, based on 4 observational studies Relative effect: RR*: 0.48, 95% CI: 0.41-0.57 **"Continue Screening" After Baseline Examination compared to "Stop Screening" After Baseline Examination** - stop screening analysis, over 10 years, based on 1 observational study Relative effect: - 70-74 years: HR: 0.78, 95% CI: 0.63-0.95 - 75-84 years: HR: 1.00, 95% CI: 0.83-1.19 **Screening with mammography* compared to no screening** – based on 7 case-control studies Relative effect: OR: 0.56, 95% CI: 0.49-0.64

Bennett et al., 2024[13] ***Screening for breast cancer: A systematic review update to inform the Canadian Task Force on Preventive Health Care guideline***	
	Before-and-after BC screening programme / Jurisdictions with or without BC screening programme in 40-49 years – quasi experimental studies Relative effect: unavailable
Breast cancer stage at diagnosis	**Screening with film mammography +/- CBE compared to usual care** Invasive breast cancer diagnosed at stage II or higher - Relative effect**: - All ages, based on 5 RCTs: RR: 0.72, 95% CI: 0.49-1.06 - 40-49 years, based on 1 RCT: RR: 1.55, 95% CI: 1.23-2.11 - 50-59 years, based on 1 RCT: RR: 1.09, 95% CI: 0.82-1.45 Invasive breast cancer diagnosed at stage II or higher - Relative effect**: - All ages, based on 3 RCTs: RR: 0.64, 95% CI: 0.47-0.88 **Screening with mammography* compared to no screening** Stage II+ at diagnosis - Relative effect, based on 1 cohort study: - Incidence rate ratio: 0.72, 95% CI: 0.68-0.76 Distant degree of spread at diagnosis - Relative effect, based on 1 cohort study: - RR: 0.44, 95% CI: 0.37-0.52 **Before-and-after BC screening programme implementation/ Jurisdictions with or without BC screening programme in 40-49 years** Advanced stage defined as stages III and IV as per the TNM classification - Relative effect, based on 1 time series: - 70-75 years: ○ Screening uptake period: 1998-2002: incidence rate ratio: 0.79, 95% CI: 0.71-0.87 ○ Screening uptake period: 2003-2011: incidence rate ratio: 0.88, 95% CI: 0.81-0.97 - 76-80 years: ○ Screening uptake period: 1998-2002: incidence rate ratio: 1.04, 95% CI: 0.94-1.17 ○ Screening uptake period: 2003-2011: incidence rate ratio: 1.04, 95% CI: 0.94-1.17
Overdiagnosis over 10 years	**Mammography +/- CBE compared to usual care** Overdiagnosis invasive + in situ cancers - Relative effect: - 40-49 years, based on 3 RCTs: RR: 1.11, 95% CI: 1.05-1.17 - 50-59 years, based on 2 RCTs: RR: 1.08, 95% CI: 1.01-1.16 Overdiagnosis invasive cancers only - Relative effect: - 40-49 years, based on 3 RCTs: RR: 1.06, 95% CI: 1.00-1.12 - 50-59 years, based on 2 RCTs: RR: 1.05, 95% CI: 0.97-1.13

Bennett et al., 2024[13] ***Screening for breast cancer: A systematic review update to inform the Canadian Task Force on Preventive Health Care guideline***	
	Observational studies: not pooled
Interval cancers	**Mammography +/- CBE compared to usual care** Descriptive data of RCTs (intervention arm only) - All ages: ○ Invasive and DCIS interval cancers: ▪ Screening interval ≤12 months, based on 1 RCT: 3.9 (95% CI: 3.4-4.5) interval cancers per 1000 women over FU of five years (screening interval 12 months) ▪ Screening interval 13-24 months, based on 2 RCTs: 3.1 (95% CI: 2.6-3.7) interval cancers per 1000 women over FU of 4.8-7.0 years (screening interval 18 months) ▪ Screening interval >24 months, based on 1 RCT: 3.9 (95% CI: 3.4-4.3) interval cancers per 1000 women over FU of 7 years (screening interval 23-33 months) ○ Invasive interval cancers: ▪ Screening interval 18 months, based on 2 RCTs: 2.8 (95% CI: 2.4-3.3) interval cancers per 1000 women over FU of 4.8-7.0 years ○ DCIS interval cancers: ▪ Screening interval 18 months, based on 2 RCTs: 0.2 (95% CI: 0.1-0.5) interval cancers per 1000 women over FU of 4.8-7.0 years - Age group 39-49 years: ○ Screening interval of 18 months, based on 1 RCT: ▪ Invasive and DCIS interval cancers: 3.0 (95% CI: 2.1-4.2) interval cancers per 1000 women over FU of 4.8-7.0 years ▪ Invasive interval cancers: 2.8 (95% CI: 1.9-3.9) interval cancers per 1000 women over FU of 4.8-7.0 years ▪ DCIS interval cancers: 0.2 (95% CI: 0.02-0.6) interval cancers per 1000 women over FU of 4.8-7.0 years - Age group 50-59 years: ○ Screening interval of 18 months, based on 1 RCT: ▪ Invasive and DCIS interval cancers: 1.9 (95% CI: 1.2-3.0) interval cancers (Invasive; no DCIS detected) per 1000 women over FU of 4.8-7.0 years
Treatment-related morbidity	**Mammography +/- CBE compared to usual care – RCTs, all ages** - Breast cancer requiring a full mastectomy, based on 5 RCTs, mean FU: 7-9 years: RR: 1.20, 95% CI: 1.11-1.30 - Breast cancer requiring radiotherapy, based on 2 RCTs, mean FU: 7-9 years: RR: 1.32, 95% CI: 1.16-1.50 - Breast cancer requiring chemotherapy, based on 2 RCTs, mean FU: 7-9 years: RR: 0.96, 95% CI: 0.78-1.19 **Screening with mammography* compared to no screening – Observational studies, all ages, adherence to screening analysis** - Breast cancer with conservative surgery as treatment, based on 1 cohort study: RR: 1.5, 95% CI: 1.4-1.6

Bennett et al., 2024[13] ***Screening for breast cancer: A systematic review update to inform the Canadian Task Force on Preventive Health Care guideline***	
	- Breast cancer with mastectomy as treatment, based on 1 cohort study: RR: 0.68, 95% CI: 0.63-0.72 **"Continue screening" after BL examination compared to "stop screening" after BL examination - Observational studies, by age subgroup, stop screening analysis** Only descriptive data provided
Additional imaging with or without biopsy (no cancer)	Data restricted to Canadian data

Abbreviations: *CBE: clinical breast examination*
Notes: *£: Short-case accrual refers to studies that reported deaths among cases of breast cancer that were diagnosed during the screening intervention period, whereas long-case accrual includes deaths occurring in all cases diagnosed to the end of the follow-up period. Short-case accrual was considered the primary analysis due to the reduced bias from contamination because women in the control group would not have been screened until the trial was over, whereas long-case accrual may underestimate the benefits of screening as women in the control group are more likely being screened after the trial.[13] §: the main characteristics of the included RCTs are summarised in Appendix 9.4; $: The baseline risk represents the breast cancer mortality rate over 10 years in an unscreened group based on observational data reported by Coldman et al.[363] To calculate a moderately increased risk group due to family history, estimates from Engmann et al. were used, which suggest that having a first degree relative increases the lifetime risk by 1.6 times and having dense breasts increases the lifetime risk by 1.9 times.[364] *: Pooling was performed for a screening adherence analysis. To note that Coldman reported a standardised mortality ratio (SMR) however, it has been noted in the literature that an SMR can approximate a RR when the mortality rate in the control group is less than 10 per 1000 for a one-year period in a 10-year age band (Symons and Taulbee, 1981). The statistical heterogeneity of this estimate is high (I2=94%). **: Rates calculated using number of participants with stage II+ or stage III+ reported in Tarone 1995 for included trials and the number of participants randomised in each trial*

9.3.1.2. Henderson et al., 2024

Henderson et al., 2024[87] ***Screening for Breast Cancer: Evidence Report and Systematic Review for the US Preventive Services Task Force***	
Methods	
Design	Systematic review (update of the US Preventive Services Task Force (USPSTF) 2016 review)
Source of funding and competing interest	This research was funded under contract number 75Q80120D00004, Task Order 75Q80121F32004, from the Agency for Healthcare Research and Quality (AHRQ), US Department of Health and Human Services.
Search window	2014 – 8 August 2022 (ongoing surveillance until March 2024)
Searched databases	- MEDLINE - Cochrane Central Register of Controlled Clinical Trials - Cochrane Database of Systematic Reviews - ClinicalTrials.gov (relevant ongoing trials)
Research question(s)	a) What is the comparative effectiveness of different mammography-based breast cancer screening strategies (e.g. by modality, interval, initiation and stopping age, use of supplemental imaging, or personalisation based on risk factors) on breast cancer morbidity and mortality? b) What is the comparative effectiveness of different mammography-based breast cancer screening strategies (eg, by modality, interval, initiation and stopping age, use of supplemental imaging, or personalisation based on risk factors) on the incidence of and progression to advanced breast cancer? c) What are the comparative harms of different mammography-based breast cancer screening strategies (modality, interval, initiation age, use of supplemental imaging, or personalisation based on risk factors)?
Included study designs	- RQs 1 & 2: ○ Individual participant data meta-analyses ○ Randomised, controlled trials; ○ Controlled clinical trials ○ Prospective cohort studies with contemporaneous comparison groups selected using unbiased criteria (e.g. screening modality used does not vary based on risk factor or marker) - RQ 3: Above, plus, ○ Population-based nested case-control studies ○ Cross-sectional studies from included trials or large population-based studies
Included studies (papers)	RCTs§: - UKCCCR Breast Screening Frequency Trial - Proteus Donna (digital mammo (DM) vs. digital breast tomosynthesis (DBT); Armaroli et al., 2022) - TOSYMA (tomosynthesis plus synthesised mammography versus digital screening mammography for the detection of invasive breast cancer; Heindel et al., 2022)

	- To-Be (Digital Breast Tomosynthesis vs. Digital Mammography Screening; Hofvind et al., 2021) - J-START trial (Ohuchi et al., 2016; Harada-Shoji et al., 2021; Ishida et al., 2014) - RE Tomo (Tomosynthesis Plus Mammography vs. Mammography; Pattacini et al., 2022) - DENSE trial (Supplemental Breast MRI for Women with Extremely Dense Breasts; Veenhuizen et al., 2021; Bakker et al., 2019; de Lange et al., 2018) <u>Non-randomised and observational studies</u>: - Conant et al., 2016 - Canguli et al., 2022 - Garcia-Albeniz et al., 2020 - Ho et al., 2022 - Hovda et al. 2020 - Johnson et al. 2021 - Kerlikowske et al. 2022 - Lee et al. 2019 - McGuinness et al. 2018 - Miglioretti et al. 2015 - Parvinen et al., 2011 - Richman et al., 2021 - Sprague et al. 2023
Quality appraisal of included studies	- RCTs: USPSTF-specific criteria (https://www.uspreventiveservicestaskforce.org/uspstf/aboutuspstf/methods-and-processes/procedure-manual) - Non-randomised and observational studies: an adapted tool from the Risk of Bias in Non-Randomized Studies of Interventions (ROBINS-I) *Note: Studies determined to be at high risk of bias were excluded.*
Summary of findings and assessment of the certainty of the evidence	Not mentioned
Data synthesis	Random-effects meta-analyses using the restricted maximum likelihood if effects were sufficiently consistent and clinical and statistical heterogeneity low
Subgroup analyses	Not mentioned
Sensitivity analyses	Not mentioned
Patient characteristics	
Eligibility criteria	Adult females
Exclusion criteria	- History of breast cancer or high-risk breast lesions (DCIS, LCIS, ADH, ALH)

	- Clinically significant genetic markers or syndromes associated with high risk (e.g. BRCA1 or BRCA2 gene mutations, Li-Fraumeni syndrome, Cowden syndrome, hereditary diffuse gastric cancer, or other familial breast cancer syndromes) - Previous large doses of chest radiation (≥20 Gy) before age 30 years
Interventions	
Intervention group	- Any mammography screening modality (i.e. film or digital mammography, digital breast tomosynthesis [3D mammography]) - Screening strategy (e.g. screening interval, age to start or stop screening, personalised screening based on risk and other characteristics) - Any mammography screening modality plus supplemental screening (e.g., ultrasound, MRI) - Any mammography screening modality plus supplemental screening for a defined population (e.g., negative mammography, dense breasts, age group)
Comparators	Standard population-based screening with film or digital mammography
Exclusion criteria	Intervention group: - Breast imaging or clinical examinations conducted for diagnosis or surveillance - Screening strategies that do not include mammography Comparator group: - Breast imaging or clinical examinations conducted for diagnosis or surveillance - Screening that does not include mammography
Time	
Screening period	Not mentioned
Results (restricted to RQ1, 2 and 3 for this report)	
All-cause mortality	**Annual vs. triennial screening** (based on 1 nonrandomised study of intervention (NRSI)): - 40-49 years – at 13 years: RR: 1.20, 95% CI: 0.99-1.46
Breast Cancer Mortality	**Stop screening at ages 70, 75, and 80 years** (based on 1 NRSI): - Continuation of screening from age 70 to 74 years vs. discontinuation of screening: adjusted HR: 0.78, 95% CI: 0.63-0.95 - Continuation of screening beyond age 74 years vs. discontinuation of screening: adjusted HR: 1.00, 95% CI: 0.83-1.19 **Annual vs. triennial screening** (based on 1 NRSI): 40-49 years: RR: 1.14, 95% CI: 0.59-2.19
Breast cancer stage at diagnosis	**Annual vs. triennial screening** (based on 1 RCT):

	- No statistical differences by screening interval in tumour size, nodal status, grade, or prognostic index for all cancers diagnosed **Annual vs. biennial screening** (based on 1 NRSI): - No difference in risk of stage IIB or higher or of less favourable prognosis cancers diagnosed after a biennial compared with annual interval for any age group
Incidence advanced cancer (harm of screening)	**Annual vs. triennial screening** (based on 1 RCT): - Invasive cancers screen detected: RR: 1.64, 95% CI: 1.28-2.09 - Total number of invasive cancers: RR: 1.16, 95% CI: 0.96-1.40
Overdiagnosis	**Stop screening at ages 70, 75, and 80 years** - 8-year cumulative proportion of participants with a breast cancer diagnosis (based on 1 NRSI): - Cancers diagnosed in stop screening strategy more likely to receive aggressive treatments (radical mastectomy and chemotherapy vs lumpectomy and radiotherapy)
Interval cancers	**Annual vs. triennial screening** - based on 1 RCT: RR: 0.68, 95% CI: 0.50-0.92 - based on 1 NRSI: no difference in interval cancer incidence
Treatment-related morbidity	**Stop screening at ages 70, 75, and 80 years** – based on 1 NRSI: - Continuation of screening from ages 70 to 84 years vs. no screening: 5.5% vs. 3.9% ('possible overdiagnosis with continued screening')
False-positive result	**Annual vs. biennial screening** - over a median of 8.9 years (based on 1 NRSI): - OR: 2.2, 95% CI: 1.7-2.8
Limitations and other comments	
Limitations	- Very broad review, but few details - Evidence comparing outcomes for different screening intervals and ages to start and stop screening was limited or absent. - Trials of personalised screening based on risk and patient preferences are in progress and may address evidence gaps related to optimal screening start ages and intervals.

Notes: *§: the main characteristics of the included RCTs are summarised in Appendix 9.4.*
Abbreviations: *HR: hazard ratio; RQ: research question; NRSI: nonrandomised study of intervention; OR, odds ratio; RCT: randomised clinical trial; RR: relative risk; }*

9.3.1.3. Mathieu et al., 2024

Mathieu et al., 2024[104] ***Health benefits and harms of mammography screening in older women (75+ years) - A systematic review***	
Methods	
Design	Systematic review
Source of funding and competing interest	The work was supported by the National Breast Cancer Foundation (NBCF) Chair in Breast Cancer Prevention grant (EC-21-001) and by a NHMRC Investigator (Leader) grant (1194410), awarded to NH. One author is supported by a Cancer Institute NSW Early Career Fellowship (grant # 2022/ECF1420) and a second by a Cancer Institute NSW Early Career Fellowship (# 2020/ECF1158).
Search window	1990 - July 2022
Searched databases	- Ovid MEDLINE - Embase - Cinahl
Research question(s)	Objective: synthesise the evidence on the outcomes of mammography screening in women aged 75 years and older
Included study designs	- Studies that reported relevant outcomes data for women aged 75+ years undergoing mammography screening using any method (i.e. film, digital, tomosynthesis) in a comparative context (relative to another group; - Continuing beyond 74 vs stopping at younger age; - Screening beyond 74 vs not screened) or a non-comparative design were eligible for inclusion in this review (case reports and case series were excluded)
Included studies (papers)	RCTs: none identified Cohort studies: - Advani et al., 2022 - Braithwaite et al., 2019 - Demb et al., 2020 - El-Zaemey et al., 2021 - Garcia-Albaniz et al., 2020 (assessed the impact of screening beyond the age of 75 by comparing those who continue screening with those who stop screening at the age of 75) - Malmgren et al., 2011 - Malmgren et al., 2014 (Note: patients included in Malmgren et al., 2011 also included in this study? Therefore, results from Malmgren et al., 2011 not presented in results section) - McCarthy et al., 2000 - McPherson et al., 2002 - Park et al., 2021

	- Richman et al., 2023 (assessed the impact of screening beyond the age of 75 by comparing those who continue screening with those who stop screening at the age of 75) - Simon et al., 2013 - Simon et al., 2014 - Smith-Bindman et al., 2000 - Upneja et al., 2022 - Van Dijck et al., 1996 - Vyas et al., 2014 - Yang et al., 2020 - Cross-sectional studies: - Braithwaite et al., 2019 - Cate et al., 2016 - Destounis et al., 2019 - Erbas et al., 2004 - Hartman et al., 2015 - Randolph et al., 2002 - Case-control studies: - Van Dijck et al., 1994 - Van Dijck et al., 1996 - Screening evaluation study: - Bennett et al., 2011 <u>Modelling studies</u>: - Arleo et al., 2017 - Boer et al., 1995 - Jansen et al., 1997a - Jansen et al., 1997b - Kregting et al., 2022 - Lansdorp-Vogelaar et al., 2014 - Mandelblatt et al., 2009 - Schousboe et al., 2022 - van Ravesteyn et al., 2015
Quality appraisal of included studies	- Observational studies: Risk of Bias in Non-randomised studies of interventions (ROBINS-I) tool or the Quality of primary diagnostic accuracy studies (QUADAS-2) tool with specific consideration of screening specific biases such as lead time and length time bias - Modelling studies: the Risk of Bias criteria used by Carter et al. (2015) was adapted using two criteria: transparent assumptions and data validation *Note:* - *The vast majority of observational studies were considered at critical or serious risk of bias and only two studies at moderate risk of bias*

	- *Most modelling studies did not report the assumptions made within the model, and a few failed to describe the validation process; two were deemed low risk of bias, six at moderate risk, and one at high risk of bias.*
Summary of findings and assessment of the certainty of the evidence	Not mentioned
Data synthesis	Tabulation and narrative synthesis
Subgroup analyses	Not mentioned
Sensitivity analyses	Not mentioned
Patient characteristics	
Eligibility criteria	Not mentioned
Exclusion criteria	Not mentioned
Interventions	
Intervention group	Not mentioned
Comparators	Not mentioned
Exclusion criteria	Not mentioned
Time	
Screening period	Not mentioned
Results ***(restricted to observational studies and to relative effect estimates; for other results see Mathieu et al. (2024), Tables 2-5)***	
All-cause mortality	**Mammography interval <2 years** (reference group for all comparisons) vs. 2–5 years vs. 5+ years or none – based on 1 cohort study (*Women diagnosed with invasive breast cancer at 75 years and older. Followed up until last document contact, death or September 2010 which ever came first*), serious risk of bias: - 2–5 years vs. ref: HR: 1.23, 95% CI: 0.94–1.61 - 5+ years or none vs. ref: HR: 1.73, 95% CI: 1.20–2.50
Breast Cancer Mortality	**Subsequent screen vs. no subsequent screen** (75-84 years) - based on 1 cohort study (Women in the SEER database who had not received a diagnosis of breast cancer before 2002, but had had a screening mammogram in 2002 and were linked with Medicare data.)

- HR: 0.87, 95% CI: 0.55–1.37

Mammography detected BC vs. physician detected vs. patient detected – based on 1 cohort study (*Cancer detected between 1990 and 2011, presenting at clinic. All women either patient, physician or mammography detected*), serious risk of bias):

- Only 1 HR reported, unclear which of the three groups are compared

Non-users (i.e. none in past 2 years) compared to regular users (at least 2 screening mammograms at least 11 months apart in past 2 years) - based on 1 cohort study (*All women (≥ 69 years) in the SEER database who received a diagnosis of incident breast cancer in 1995 or 1996 and were linked with Medicare data*), serious risk of bias:

- 75–84: HR: 2.47, 95% CI: 1.70– 3.58
- 85 +: HR: 1.45, 95% CI: 0.63– 3.32

Never/less frequent vs. biennial vs. annual screening – based on 1 cohort study (*Women enrolled in the California Teachers study (1995–1996) followed up with data linkage up until Dec 31, 2015*), serious risk of bias:

- Biennial vs. never/less frequent: HR: 0.67, 95% CI: 0.31–1.44
- Annual vs. never/less frequent: HR: 0.76, 95% CI: 0.38–1.53

Mammography interval <2 years (reference group) **vs. 2–5 years vs. 5+ years or none** - based on 1 cohort study (*Women diagnosed with invasive breast cancer at 75 years and older. Followed up until last document contact, death or September 2010 which ever came first*), serious risk of bias:

- 2–5 years vs. ref: HR: 1.87, 95% CI: 1.10–3.19
- 5+ years or none vs. ref: HR: 3.17, 95% CI: 1.68–5.96

Mammography interval <2 years (reference group) **vs. 2–5 years vs. 5+ years or none** - based on 1 cohort study (*Women in Women's Health Initiative study diagnosed with breast cancer*), serious risk of bias:

- 2–5 years vs. ref: HR: 1.62, 95% CI: 1.03–2.54
- 5+ years or none vs. ref: HR: 2.80, 95% CI: 1.57–5.00

Attended last screen or not – based on 1 cohort study (Nijmegen programme; Women invited to biennial single-view mammography screening. Women aged 70 years and older invited from 9th screening round onwards), serious risk of bias:

- RR: 2.87, 95% CI: 0.62-13.2 (increased risk in those who attended screening)

Advanced stage (risk of being diagnosed as stage II or higher)	**Non users vs. regular users** – based on 1 cohort study ((All women (≥ 69 years) in the SEER database who received a diagnosis of incident breast cancer in 1995 or 1996 and were linked with Medicare data), serious risk of bias: - 75-84 years: aOR[b]: 3.64, 95% CI: 2.96-4.48 - ≥85 years: aORb: 6.87, 95% CI: 3.97-11.9
Tumour size	No relative effect estimates reported for selected studies
Overdiagnosis	No relative effect estimates reported for selected studies
False positives and recalls	No relative effect estimates reported for selected studies
Biopsy	No relative effect estimates reported for selected studies
Cancer detection rates	**Any screening within 1992 and 1993 vs. no screening** – based on 1 cohort study (All women 75-79 years with Medicare), serious risk of bias: - RR: 3.6, 95% CI: 3.3–4.0
Invasive detection rates	No relative effect estimates reported for selected studies
DCIS rate	**Any screening within 1992 and 1993 vs. no screening** – based on 1 cohort study (All women 75-79 years with Medicare), serious risk of bias: - RR: 4.9, 95% CI: 3.5-6.9
Interval cancer rates	No relative effect estimates reported for selected studies
Node positive	No relative effect estimates reported for selected studies
Limitations and other comments	
Limitations	- Very broad review, which misses focus - Rather sloppy overview of results - Abundance of outcomes and of comparisons - Only two observational studies assessed the impact of screening beyond the age of 75 by comparing those who continue screening with those who stop screening at the age of 75. - The authors note that 'Many of the comparisons used in published studies are not directly informative as far as benefit or harms associated with continuing to screen (as opposed to stopping) beyond 75.'

Abbreviations: NHMRC = National Health and Medical Research Council

[b] aOR: Adjusted for age at diagnosis, race, marital status, income of ZIP code and comorbidity.

9.3.1.4. Glechner et al., 2023

Glechner et al., 2023[99] ***Mammography in combination with breast ultrasonography versus mammography for breast cancer screening in women at average risk***	
Methods	
Design	Systematic review update
Source of funding and competing interest	None (The previous version of this Cochrane Review was based on a report funded by the Austrian Ministry of Health. The update version was created without financial support.)
Searched databases & search windows	- Cochrane Breast Cancer Group (CBCG) Specialised Register, from 2011 to 10 May 2021; - Cochrane Central Register of Controlled Trials (CENTRAL), from 2011 to Issue 4 of 12, April 2021 (Cochrane Library/Wiley) on 4 - May 2021; - Ovid MEDLINE(R) ALL from 2011 to 3 May 2021; - Embase.com (Elsevier) from 2011 to 3 May 2021.
Research question(s)	What is the comparative efficacy and risk of harms of mammography screening with and without supplemental ultrasonography?
Included study designs	Randomised controlled trials (RCTs) with either individual or cluster randomisation and any controlled non-randomised studies with a sample size of at least 500 participants.
Included studies (papers)	RCTs[§]: - J-START (Japan Strategic Anti-cancer Randomised Trial) Prospective cohort studies: - Chough et al., 2020 (US; dates of screening: August 2015 - September 2018; breast tomosynthesis & automated breast ultrasound (ABUS)) - Giuliano, et al., 2013 (US; dates of screening: intervention group: January 2010 - May 2011control group: January 2009 - December 2009; digital mammography) Retrospective cohort studies: - Buchberger et al., 2018 (Austria; dates of screening: June 2008 - May 2010; digital mammography) - Chae et al., 2013 (Korea; dates of screening: January 2008 - December 2009; digital mammography) - Lee et al., 2019 (US; dates of screening: January 2000 - December 2013; no info on equipment) - Starikov et al., 2016 (US; dates of screening: 2013; digital mammography alone or in combination with tomosynthesis & ABUS (one-third) or handheld ultrasonography) - Tohno et al., 2013 (Japan; dates of screening: April 2011 - March 2012; digital mammography)
Quality appraisal of included studies	- RCTs: Cochrane Risk of Bias 2.0 tool (Sterne et al., 2019)

	- Non-randomised and observational studies: ROBINS-I tool (Sterne 2016)
Summary of findings and assessment of the certainty of the evidence	GRADE Summary of Findings Tables; GRADE criteria for assessing the certainty of the evidence include study limitations, inconsistency of results, indirectness of evidence, imprecision, and publication bias
Data synthesis	Random effects models, presented in forest plots
Subgroup analyses	- No subgroup analyses ('as according to Cochrane Handbook guidelines at least 10 observations should be available for each characteristic modelled') - Analyses performed separately performed for women with dense and non-dense breasts for the following outcomes: incremental cancer detection rate, incremental invasive cancer detection, interval cancer, lymph node status, false-positive rate, false-negative rate, and biopsy rate
Sensitivity analyses	When studies at high risk of bias contributed to the evidence, results are presented separately
Patient characteristics	
Eligibility criteria	Women between the ages of 40 and 75 years who are at average risk for breast cancer, have not previously had breast cancer, and who participate in a breast cancer screening programme or undergo mammography screening. - Definition average risk: those who have a lifetime risk of less than 15% or who have dense breasts without any additional risk factors for breast cancer - Studies in which 80% of the population matched age and breast cancer risk inclusion criteria, were included.
Exclusion criteria	Studies focusing on only those at high lifetime risk for developing breast cancer (i.e., >20% lifetime risk)
Interventions	
Intervention group	Any form of mammography screening (e.g. one view, two views, digital, tomosynthesis (three-dimensional (3D)-mammography), a combination of 2D- and 3D-mammography, etc.) with additional breast ultrasonography
Comparators	Mammography screening without breast ultrasonography
Exclusion criteria	(Studies not meeting the eligibility criteria (e.g. women with high risk of breast cancer or women with negative mammography))
Time	
Screening period	
Results - mixed populations of women with dense and non-dense breasts	
All-cause mortality	Not reported
Breast Cancer Mortality	Not reported

Incremental cancer detection	**RCT** - RR: 1.54, 95% CI: 1.22 - 1.94 **Cohort studies** - RR: 1.35, 95% CI: 0.92 - 1.98
Incremental detection of invasive cancers (i.e. Proportion of invasive cases out of all cancer cases detected by screening)	**RCT** - RR: 0.95, 95% CI: 0.82 - 1.09 **Cohort studies** - RR: 1.00, 95% CI: 0.95 - 1.06
Interval cancers	**RCT** - RR: 0.50, 95% CI: 0.29 – 0.89
Lymph node status (i.e. Proportion of positive lymph node status among invasive cancer cases)	**RCT** - RR: 0.53, 95% CI: 0.33 – 0.86
False-positive rate (i.e. Proportion of false-positive results amongst women with no cancer)	**RCT** - RR: 1.43, 95% CI: 1.37 - 1.50
False-negative rate (i.e. Proportion of false-negative results amongst women with cancer)	**RCT** - RR: 0.39, 95% CI: 0.23 – 0.66
Rate of biopsies	**RCT** - RR: 2.49, 95% CI: 2.28 – 2.72

***Notes**: §: the main characteristics of the included RCTs are summarised in Appendix 9.4*

9.3.1.5. Canelo-Aybar et al., 2022

Canelo-Aybar et al., 2022[100] ***Benefits and harms of annual, biennial, or triennial breast cancer mammography screening for women at average risk of breast cancer: a systematic review for the European Commission Initiative on Breast Cancer (ECIBC)***	
Methods	
Design	Systematic review
Source of funding and competing interest	The systematic review was carried out by Iberoamerican Cochrane Collaboration under the Framework contract 443094 for procurement of services between the European Commission's Joint Research Centre and Asociación Colaboración Cochrane Iberoamericana.
Search window	Inception – October 2016, with update for Medline and Embase in April 2020
Searched databases	- MEDLINE (via PubMed) - EMBASE (via Ovid) - CENTRAL (via The Cochrane Library)
Research question(s)	Should an annual, biennial or triennial screening frequency be used for screening asymptomatic women? With focus on three age groups: 45–49, 50–69, and 70–74 years old
Included study designs	- Randomised clinical trials (RCTs) - Observational studies such as cohorts, time trend (before-after), or analysis of population surveillance registries - Decision analytic models
Included studies (papers)	RCTs[§]: - UKCCCR Breast Screening Frequency Trial Observational studies: - Braithwaite et al., 2012 (US; dates of screening: 1999–2006) - Coldman et al., 2008 (Canada) - Dittus et al., 2013 (US, 1994–2008) - Goel et al., 2007 (United States, 1994–2002) - Hubbard et al., 2011 (United States, 1994–2006) - Hunt et al., 1999 (United States, 1985–1997) - Kerlikowske et al., 2013 (United States, 1994–2008) - Parvinen et al., 2011; Klemi et al., 1997 (Finland, 1987–2003 – quasi-experimental) - McGuinnes et al., 2018 (United States, 2014–2015) - Miglioretti et al., 2015 (United States, 1996–2012) - O'Meara et al., 2013 (United States, 1994–2008) - Sanderson et al., 2015 (United States, 1995–2000)

	- White et al., 2004 (United States, 1996–2001) - Modelling studies – Non-individual based studies: - Gunsoy et al., 2014 (United Kingdom) - Tsunematsu et al., 2015 (Japan, United States) - Vilaprinyo et al., 2014 (Spain) - Yaffe et al., 2011 (Canada) Modelling studies – Individual based models: - Arnold et al., 2019 (Germany) - Mandelblatt et al., 2016 (United States) - Miglioretti et al., 2016 (United States) - Mittmann et al., 2018 (Canada) - Trentham-Dietz et al., 2016 (United States) - Van Ravestein et al., 2012 (United States) - Yaffe et al., 2015 (Canadian)
Quality appraisal of included studies	- RCTs: Cochrane Risk of Bias tool (Higgins et al., 2011) - Observational studies: Risk of Bias in Non-randomised Studies of Intervention (ROBINS-I; Sterne et al., 2016) - Modelling studies: Questionnaire to Assess Relevance and Credibility of Modelling Studies (the ISPOR-AMCP-NPC Good Practice Task Force; Jaime Caro et al., 2014)
Summary of findings and assessment of the certainty of the evidence	- GRADE Summary of Findings Tables, assessing four domains: imprecision, inconsistency, indirectness, and risk of bias *Note: To apply the GRADE approach to modelling studies, the authors considered the certainty would depart from the lowest certainty of the bodies of evidence that informed the main inputs in the model. They used the credibility and relevance items from the ISPOR-AMCPNPC tool to inform the judgments for the risk of bias and indirectness domains.*
Data synthesis	None (‘*We did not attempt to conduct a meta-analysis of relative risks (RR) or odds ratios (OR) from empirical studies because there were not enough studies across age groups to be meaningful or because several publications reported the same population data at overlapping time periods.*’)
Subgroup analyses	- Performed for the following variables: age groups 45–49, 50–69, and 70–74 years old
Sensitivity analyses	None
Patient characteristics	
Eligibility criteria	Women who are at average risk of breast cancer: - 45–49 years - 50–69 years

	- 70–74 years
Exclusion criteria	(Studies of) Women at high risk for breast cancer, i.e. having known susceptibility gene mutations (BRCA1/BRCA2), a history of previous breast cancer or lobular neoplasia, exposure to chest irradiation (other than diagnostic imaging over that anatomical area) or having a direct family member with breast cancer.
Interventions	
Intervention group	Annual, biennial or triennial mammography screening (film or digital)
Comparators	Another interval (annual, biennial or triennial)
Exclusion criteria	Not mentioned
Time	
Screening period	- All studies included at least two screening intervals in one of the age groups of interest; - Screening intervals from observational studies should had been defined based on at least two examinations prior to diagnosis; - modelling studies should have assumed 100% adherence to the screening programmes and applied no discounting to the effects.
Results	
All-cause mortality	Not covered (i.e. not selected as outcome)
Breast Cancer Mortality	**Annual vs. biennial screening**: - 40-49 years: / - 50-69 years (based on 1 observational study): IRR: 0.94, 95% CI: 0.68-1.31 - Triennial vs. biennial screening: - 40-49 years: / - 50-69 years: / **Annual vs. triennial screening**: - 40-49 years (based on 1 quasi-experimental study): RR: 1.14, 95% CI: 0.59-2.19 - 50-69 years (based on 1 RCT, age group 50–62 years, median follow-up of 162 months (13.5 years); *data presented in congress abstract*): ○ Randomised patients: RR = 1.02, 95% CI : 0.88−1.17, p = 0.8 ○ Randomised patients who attended BL mammography: RR = 0.89, 95% CI: 0.73−1.07, p = 0.2
Breast cancer stage at diagnosis (i.e. advanced stage, IIB-IV)	**Annual vs. biennial screening**: - 40-49 years (based on 1 cohort study): OR: 0.85, 95% CI: 0.75-0.96 - 50-69 years (based on 1 cohort study): OR: 0.93, 95% CI: 0.81-1.09 - 70-74 years (based on 1 cohort study): OR: 0.98, 95% CI: 0.76-1.27

	Triennial vs. biennial screening: - 40-49 years (based on 1 cohort study): OR: 0.78, 95% CI: 0.54-1.11 (results reported are for white women) - 50-69 years (based on 1 cohort study): OR: 0.83, 95% CI: 0.65-1.07 (results reported are for white women) - 70-74 years: no data **Annual vs. triennial screening**: - 40-49 years: no data - 50-69 years: no data - 70-74 years: no data
Breast cancer size at diagnosis	**Annual vs. triennial screening** (based on 1 RCT, over median of 162 months (13.5 years) of follow-up): - Size of the tumour at diagnosis: 25% vs. 19% being 10mm or smaller
Overdiagnosis over 10 years	No data
Interval cancers	**Annual vs. biennial screening**: - 40-49 years (based on 1 comparative study): RR: 0.46, 95% CI: 0.16-1.36 - 50-69 years: no relative effect reported - 70-74 years: no relative effect reported **Triennial vs. biennial screening**: - 40-49 years: no relative effect reported - 50-69 years no relative effect reported - 70-74 years: no relative effect reported **Annual vs. triennial screening**: - 40-49 years: no relative effect reported - 50-69 years: no relative effect reported - 70-74 years: no relative effect reported
Treatment-related morbidity	Radiation induced breast cancers: no data Deaths due to radiation induced breast cancers: no data
False-positive results—10 year cumulative probability per woman	**Annual vs. biennial screening**: - 40-49 years: no relative effect reported - 50-69 years: no relative effect reported - 70-74 years: no relative effect reported **Triennial vs. biennial screening**: - 40-49 years: no relative effect reported - 50-69 years no relative effect reported - 70-74 years: no data

	Annual vs. triennial screening: - 40-49 years: no relative effect reported - 50-69 years: no relative effect reported - 70-74 years: no data
False-positive biopsy recommendation - 10 year cumulative probability per woman	**Annual vs. biennial screening**: - 40-49 years: no relative effect reported - 50-69 years: no relative effect reported - 70-74 years: no relative effect reported **Triennial vs. biennial screening**: - 40-49 years: no relative effect reported - 50-69 years no relative effect reported - 70-74 years: no data **Annual vs. triennial screening**: - 40-49 years: no relative effect reported - 50-69 years: no relative effect reported - 70-74 years: no data
Limitations and other comments	
Limitations	- Only English language articles - The authors warn that some results may not be directly transferable to the European context; for example the cumulative 10-year false-positive rates from US studies are higher than those reported in organised European screening programmes. - Scarce availability of empirical evidence to evaluate the trade-offs between benefits and harms (gaps were complemented with modelling evidence) - Very low to low certainty of evidence for almost all outcomes/results

***Notes**: §: the main characteristics of the included RCTs are summarised in Appendix 9.4.*

9.3.1.6. HTA report IQWiG, 2022

HTA report IQWiG, 2022[88] ***Review of the age limits in the mammography screening programme***	
Methods	
Design	Systematic review
Source of funding and competing interest	Public Health Agency of Canada (This funding supported all phases of conduct of the evidence review, including the search and selection of the evidence, collection of the data, data management, analyses, and writing. The funder was involved in the development of the protocol and reviewed a draft version of the manuscript but did not take part in the conduct of the systematic review. Final decisions were made by the review team. The views expressed herein do not necessarily represent the views of the Government of Canada.)
Search window	- SR: 2011 – 2021 - Primary studies: inception – 10 March 2022
Searched databases	- SR: o Pubmed o INAHTA, websites of the National Institute for Health and Care Excellence (NICE) and the Agency for Healthcare Research and Quality (AHRQ) - Primary studies: inception – 10 March 2022 o Ovid Medline o Embase o Cochrane - Study registers o ClinicalTrials.gov o International Clinical Trials Registry Platform Search Portal
Research question(s)	Objectives: to evaluate the benefits of screening for breast cancer using mammography compared to no screening (or breast palpation alone) - in women aged between 45 and 49 years without suspected breast cancer and without a specifically increased risk of breast cancer (RQ 1) and - in women aged 70 and over without suspected breast cancer and without a specifically increased risk of breast cancer (RQ 2) with regard to patient-relevant endpoints.
Included study designs	- SRs (as a source for RCTs) - Randomised controlled trials (RCTs) and quasi-randomised RCTs
Included studies (papers)	RCTs[§]:

	- HIP (USA) - Malmö I & II (Sweden) - Swedish Two County (Sweden) - CNBSS 1 & 2 (Canada; incl. age-stratified results for BC mortality from the authors of the CNBSS trial) - Stockholm (Sweden) - Gothenburg (Sweden) - UK Age Study - AgeX Pilot - Edinburgh Randomised Breast Screening Project (EBSP) *Note*: - *Data from the AgeX Pilot study were used for the 71- to 73-year-old age group;* - *Data from the Malmö study were used for the subgroup of over 69-year-olds (the authors assumed that these were exclusively 70-year-old women);* - *Data from the Swedish Two County study were used for the age subgroup of 70- to 74-year-olds.*
Quality appraisal of included studies	- SR: AMSTAR - To assess the qualitative certainty of results, cross-endpoint and endpoint specific criteria of bias potential were evaluated and the bias potential was classified as low or high in each case.
Summary of findings and assessment of the certainty of the evidence	- For each endpoint, a statement is made on the evidence of (higher) benefit or (higher) harm. - Four levels of certainty are possible: there is either evidence (highest certainty), an indication (medium certainty), a hint (weakest certainty) or none of these three situations. - The last case occurs when no data are available or the available data do not permit any of the other 3 statements. In this case, the statement "There is no indication of a (higher) benefit or (higher) harm" is made.
Data synthesis	- Estimated effects and CIs from the studies are summarised using forest plots ○ If number of studies is ≥ 5, random effects models are used (according to the method of Knapp and Hartung using the heterogeneity estimator according to Paule and Mandel) ○ If number of studies is < 5, fixed-effect models are used (Because heterogeneity cannot be reliably estimated in that case) - If the statistical test for the presence of heterogeneity a statistically non-significant result (p≥ 0.05), it is assumed that the estimation of a common (pooled) effect is meaningful.
Subgroup analyses	- The results are examined with regard to potential effect modifiers, i.e. clinical factors that influence the effects. - Subgroup analyses are only carried out if each subgroup comprises at least 10 people and, in the case of binary data, at least 10 events occurred in one of the subgroups.
Sensitivity analyses	If there are doubts about the robustness of results due to methodological factors (e.g. due to the choice of certain cut-off values, replacement strategies for missing values, survey time points or effect measures, the influence of such factors is investigated in sensitivity analyses.

Patient characteristics	
Eligibility criteria	- RQ1: women aged between 45 and 49 years in whom breast cancer was not suspected and there was no specific increased risk of breast cancer *Note: Data on precisely the relevant age group of 45- to 49-year-olds were only sporadically available. However, it seemed sufficiently plausible that the results from slightly younger women could be applied to the actual target population. Therefore, data of all age subgroups were used that included the age range 39 to 49 years (e.g. 39-49 years, 39-41 years, 45-49 years, 47-49 years).* - RQ2: women aged 70 years and over who were not suspected of having breast cancer and not at specifically increased risk of breast cancer. *Note: If no usable data of the relevant age group or the corresponding 10-year age group was available for an endpoint in a research question, data of a subgroup with a broader age range were used and questions of transferability were considered accordingly.*
Exclusion criteria	Not mentioned
Interventions	
Intervention group	- RQ 1 & 2: mammography screening
Comparators	- RQ 1 & 2: No screening or breast palpation alone
Exclusion criteria	Not mentioned
Time	
Screening period	Not mentioned
Results	
All-cause mortality	**Age group 45 to 49 years – after 7.9 to 13 years of follow up**, based on 4 RCTs: - IDR: 0.98, 95% CI: 0.90-1.08 *Note: There was no effect modification by the screening interval (≤ 1.5 years vs. > 1.5 years) or the duration of the screening phase (≤ 5 years versus > 5 years).* **Age group 70 years and older - after a mean follow-up of 7.9 years**, based on 1 RCT (Swedish Two County, 70-74 years): - RR: 0.98, 95% CI: 0.93-1.03 *Note: No sensitivity or subgroup analyses were carried out.*
Breast Cancer Mortality	**Age group 45 to 49 years** - 5 years after randomisation, based on 4 RCTs: IDR: 0.89, 95% CI: 0.53-1.52

	- 10 years after randomisation, based on 8 RCTS: IDR: 0.85, 95% CI: 0.73-1.00 Sensitivity analysis: ○ Taking into account the 9-year data from the UK Age study at around 10 years after randomisation[c]: IDR: 0.83, 95% CI: 0.70-0.99 ○ Without data from the Edinburgh study[d]: IDR: 0.85, 95% CI: 0.70-1.04 ○ With data from the 10-year age group of the Gothenburg study: IDR: 0.85, 95% CI: 0.72-0.99 - 15 years after randomisation, based on 5 RCTS: IDR: 0.89, 95% CI: 0.74-1.07 - 20 years after randomisation, based on 4 RCTS: IDR: 0.81, 95% CI: 0.60-1.09 *Note: There was no effect modification by the screening interval (≤ 1.5 years vs. > 1.5 years) or the duration of the screening phase (≤ 5 years versus > 5 years).* **Age group 70 years and older** - 10 years after randomisation, based on 2 RCTS: IDR: 0.91, 95% CI: 0.61-1.36 *Note: No sensitivity or subgroup analyses were carried out.*
Mastectomies (total surgeries)	**Age group 45 to 49 years** - based on 1 RCT: - After the first round of screening, based on 1 RCT: ○ Total number of surgeries: OR: 1.58, 95% CI: 1.15-2.18 ○ Mastectomies: OR: 1.67, 95% CI: 1.10-2.52 ○ Proportion of mastectomies among all breast cancer surgeries: OR: 1.14, 95% CI: 0.60-2.18 - After 7 years ○ Total number of surgeries: OR: 1.33, 95% CI: 1.15-1.54 ○ Mastectomies: OR: 1.17, 95% CI: 0.94-1.45 ○ Proportion of mastectomies among all breast cancer surgeries: OR: 0.78, 95% CI: 0.58-1.05 *Note: No sensitivity or subgroup analyses were carried out.*

[c] As part of a sensitivity analysis, it was examined in the IQWiG report to what extent it makes a difference which of the two time points of the UK-Age study suitable for this analysis is included in the meta-analysis. In the main meta-analysis the data at 10.7 years were used (IDR: 0.83, 95% CI: 0.66-1.04), while in the sensitivity analysis the data at 9 years after randomisation were used (IDR: 0.75, 95% CI: 0.58-0.96). In contrast to the main analysis, this sensitivity analysis yielded a statistically significant result (IDR: 0.83, 95% CI: 0.70-0.99). Evidence for an effect in favour of mammography screening is thus derived in the sensitivity analysis. One possible explanation for the fact that the UK Age study showed an effect at 9 years, but no longer at 10.7 years is, according to the authors of the UK Age study, that although there is a survival benefit for women with stage 1 and 2 tumours in both the short and long term, for women with stage 3 tumours it was only within the first 10 years. From this observation they concluded that although screening prolongs survival in more aggressive tumours, it cannot prevent death from breast cancer, thus diluting the effect.

[d] Compared to the other meta-analyses, the IQWiG report included an additional RCT, the Edinburgh trial.[118] This RCT was not included in the other meta-analyses due to an imbalance in study arms, probably due to inadequate randomisation.[88]

	Age group 70 years and older For this endpoint no usable data were identified.
Consequences of false-positive screening results - Biopsies with benign findings	**Age group 45 to 49 years**: - AgeX Pilot (47-49 years): After 12 months: 2.31% - CNBSS (40-49 years): ○ After 1 year: 3.4% ○ After 2 years: 1.8% ○ After 3 years: 1.3% ○ After 4 years: 1.2% ○ After 5 years: 1.3% - Malmö – MMST 1 (45-49 years): 1st screening round: 0.32% - Malmö – MMST 1 & 2 (44-49 years): after 10-15.5 years / 1-6.5 years: 0.69% - Stockholm (45-49 years): ○ 1st screening round: 0.96 ○ 2nd screening round: 0.64 - UK Age (39-41 years): ○ 1st invitation: 0.16 ○ 1st screening round with previous non-participants: 0.40 ○ 2nd screening round: 0.07 ○ 3rd screening round: 0.09 ○ 4th screening round: 0.11 ○ 5th screening round: 0.08 - HIP (40-49 years): proportion of biopsies with benign findings in all biopsies: 90% *Notes:* - *'Cumulative rates per screened woman over several screening rounds would be more meaningful for assessing the harm of screening with regard to the consequences of false-positive findings. However, since it is not reported how many women may have had multiple biopsies or operations with benign findings, it is not possible to calculate a cumulative rate over the entire screening period. However, this can be approximated under certain assumptions. Assuming that the events in the individual screening rounds are independent of each other, the results for biopsies with benign findings from the UK Age Study, for example, show that approximately 51 out of 10,000 women (0.51%) receive at least one invasive diagnostic work-up with subsequent benign findings within 5 screening rounds and 5 years.'* - *No sensitivity or subgroup analyses were carried out.* **Age group 70 years and older**: - AgeX Pilot (71-73 years): After 12 months: 0.66% *Note: No sensitivity or subgroup analyses were carried out.*

Consequences of false-positive screening results - Operations with benign findings	**Age group 45 to 49 years:** - AgeX Pilot (47-49 years): After 12 months: 0.15% - Gothenburg (39-49 years): o 1st screening round: 0.27% (of a total of 49 operations; proportion of all operations with benign findings: 65 %) o 2nd screening round: 0.13% (of a total of 25 operations; proportion of all operations with benign findings: 60 %) o 3rd screening round: 0.10% (of a total of 27 operations; proportion of all operations with benign findings: 44 %) o 4th screening round: 0.03% (of a total of 25 operations; proportion of all operations with benign findings: 16 %) o 5th screening round: 0.08% (of a total of 29 operations; proportion of all operations with benign findings: 31 %) *Note: No sensitivity or subgroup analyses were carried out.* **Age group 70 years and older**: - AgeX Pilot (71-73 years): After 12 months: 0.03% *Note: No sensitivity or subgroup analyses were carried out.*
Adverse events	No data were identified for this endpoint.
Overdiagnosis£	**Age group 45 to 49 years:** - CNBSS (40-49 years): o 5 years after start of the study: ▪ In women invited for screening: 0.41%, 95% CI: 0.16-0.66 ▪ In women diagnosed with BC during the screening phase: 31.61%, 95% CI: 12.10-51.19 *Note: The IQWiG authors warn that it cannot be ruled out that the value of 0.41 % determined for the CNBSS study is overestimated. All women underwent a clinical breast examination prior to randomisation. During the course of the study, a conspicuous accumulation of advanced breast cancer cases was observed in the screening group, which had presumably already been palpable during the initial examination. Kopans (2017) therefore suspected that women with conspicuous or unclear findings may have been preferentially assigned to the screening group.[112] If this were true, it would influence the overall number of breast cancer diagnoses in both the screening group and the control group, which would lead to an overestimation of the risk of overdiagnosis.* - Gothenburg (39-49 years): *Note: 'Due to the screening that takes place in the control arm after the end of the screening phase, the proportion of overdiagnoses could not be calculated precisely, as overdiagnoses can also occur in the control arm.'* - HIP: o 40-49 years: ▪ In women invited for screening: 0.04%, 95% CI: 0-0.28 ▪ In women diagnosed with BC during the screening phase: 8.06%, 95% CI: 0-62.25

	○ 45-49 years: ▪ In women invited for screening: 0.01%, 95% CI: 0-0.36 ▪ In women diagnosed with BC during the screening phase: 2.63%, 95% CI: 0-68.86 - Malmö (45-54 years): *Note: 'Due to the screening that takes place in the control arm after the end of the screening phase, the proportion of overdiagnoses could not be calculated precisely, as overdiagnoses can also occur in the control arm.'* - Swedish Two County (40-49 years): *Note: 'Due to the screening that takes place in the control arm after the end of the screening phase, the proportion of overdiagnoses could not be calculated precisely, as overdiagnoses can also occur in the control arm.'* - UK Age (39-41 years): *Note: 'Due to the screening that takes place in the control arm after the end of the screening phase, the proportion of overdiagnoses could not be calculated precisely, as overdiagnoses can also occur in the control arm.'* **Age group 70 years and older**: - Swedish Two County (70-74 years): *Note: 'Due to the screening that takes place in the control arm after the end of the screening phase, the proportion of overdiagnoses could not be calculated precisely, as overdiagnoses can also occur in the control arm.'*
Health-related quality of life	No data identified

***Notes**: §: the main characteristics of the included RCTs are summarised in Appendix 1.6; £: The methodology used to calculate overdiagnosis is based on a comparison of the breast cancer incidence of the screened women with a control group without screening, in which only symptomatic breast cancer cases were recorded.*

9.3.1.7. Canelo-Aybar et al., 2021

Canelo-Aybar et al., 2021[86] ***Benefits and harms of breast cancer mammography screening for women at average risk of breast cancer: A systematic review for the European Commission Initiative on Breast Cancer (ECIBC)***	
Methods	
Design	Systematic review
Source of funding and competing interest	The systematic review was carried out by Iberoamerican Cochrane Collaboration under the Framework contract 443094 for procurement of services between the European Commission's Joint Research Centre and Asociacion Colaboracion Cochrane Iberoamericana.
Search window	Inception (?) – March/April 2016
Searched databases	- MEDLINE (with update in June 2018) - Embase - Central
Research question(s)	Which is the optimal age range in which to carry out screening for breast cancer? - Three subpopulations were pre-defined: women under 50 (which was later split in 2 subgroups: 40-44 and 45-49), 50–69 and 70–74 years old at the moment of invitation to screening
Included study designs	- Randomised controlled trials (RCTs) - If no RCTs were identified, systematic reviews of observational studies *Note:* *For overdiagnosis, only trials in which, after completing the study phase, neither women in the control nor the intervention group were offered mammography screening, were included*
Included studies (/papers)	RCTs[§]: - HIP (USA) - Malmö I & II (Sweden) - Swedish Two County (Sweden) - CNBSS 1 & 2 (Canada; incl. age-stratified results for BC mortality from the authors of the CNBSS trial) - Stockholm (Sweden) - Gothenburg (Sweden) - AGE (UK) – Moss et al., 2015; Duffy et al., 2020a; Duffy et al., 2020b SRs: - Brett et al., 2005 (assessed the adverse psychological impact of mammography screening in the general population) - Salz et al., 2010 (examined the effects of false-positive mammogram results)

	- Bond et al., 2013 (evaluated the psychological effects of false-positive screening mammograms in the UK) - Hofvind et al., 2012 (assessed the cumulative risk of false-positive results leading to an invasive procedure (needle biopsy or surgery))
Quality appraisal of included studies	- RCTs: Cochrane Risk of Bias assessment tool - SRs: AMSTAR checklist
Summary of findings and assessment of the certainty of the evidence	GRADE
Data analysis	- To estimate the effect of mammography screening on BC mortality two methods were used: o 'Short case accrual' method: includes only BC deaths among BC cases diagnosed during the screening intervention phase o 'Long case accrual' method: considers all BC deaths irrespective of the date of diagnosis, accrual time being equivalent to the follow-up of the study - Overdiagnosis was estimated as the difference in the cumulative number of BC in the groups invited and not invited to screening, expressed as: o percentage of the number of cancers in the screening group ('population perspective'), or o percentage of the cancers diagnosed during the screening phase of the trial in the invited to screening group ('individual perspective').
Data synthesis	Random effects models Note: Heterogeneity among studies assessed using the Cochrane chi-square test and the I2 statistic
Subgroup analyses	- Based on the risk of bias assessment
Sensitivity analyses	- Post-hoc sensitivity analysis excluding RCTs with a substantial concern for breaking the concealment at randomisation
Patient characteristics	
Eligibility criteria	Women who are at average risk of breast cancer: - Under 50 years - 50–69 years - 70–74 years
Exclusion criteria	Family history of BC or inherited changes of BRCA1 and BRCA2 genes
Interventions	
Intervention group	- Invitation to mammography screening
Comparators	- No invitation to mammography screening

Exclusion criteria	Studies conducted outside the context of screening programmes or not published in English
Time	
Screening period	Not mentioned
Results	
All-cause mortality	Not covered
Breast Cancer Mortality	**Women under 50 years of age**: - Short case accrual, mean follow-up across studies: 16.8 years (based on 8 RCTs) ○ RR: 0.88, 95% CI: 0.76–1.02 (moderate certainty) ▪ Low RoB studies (n=2): RR: 0.86, 95% CI: 0.73-1.02 ▪ High RoB studies (n=6): RR: 0.89, 95% CI: 0.71-1.12 - Long case accrual, mean follow-up across studies: 15.2 years (based on 8 RCTs) ○ RR 0.92; 95% CI: 0.83–1.02 (moderate certainty) ▪ Low RoB studies (n=2): RR: 0.92, 95% CI: 0.79-1.06 ▪ High RoB studies (n=6): RR: 0.91, 95% CI: 0.76-1.07 **Women aged 50-69 years**: - Short case accrual, mean follow-up across studies: 16.8 years (based on 6 RCTs) ○ RR: 0.77, 95% CI: 0.66–0.90 (high certainty) ▪ Low RoB studies (n=1): RR: 0.83, 95% CI: 0.66-1.04 ▪ High RoB studies (n=5): RR: 0.76, 95% CI: 0.63-0.92 - Long case accrual, mean follow-up across studies: 15.2 years (based on 7 RCTs) ○ RR: 0.77, 95% CI: 0.67–0.88 (high certainty) ▪ Low RoB studies (n=1): RR: 0.83, 95% CI: 0.66-1.04 ▪ High RoB studies (n=5): RR: 0.75, 95% CI: 0.63-0.89 **Women aged 70–74 years**: - Short case accrual, mean follow-up across studies: 16.8 years (based on 2 RCTs) ○ RR: 0.77, 95% CI: 0.54-1.09 (high certainty) ▪ Low RoB studies (n=1): RR: 0.98, 95% CI: 0.20-4.83 ▪ High RoB studies (n=1): RR: 0.76, 95% CI: 0.53-1.09
Other cause mortality	**Women under 50 years of age** - based on 6 RCTs: - RR: 1.04, 95% CI: 0.95-1.15 (very low certainty) **Women aged 50-69 years** - based on 2 RCTs:

	- RR: 0.99, 95%CI: 0.95-1.04 (low certainty) **Women aged 70–74 years** – based on 1 RCT: - RR: 1.01, 95% CI: 0.91-1.10 (low certainty)
Advanced BC - stage IIA or higher at diagnosis	**Women under 50 years of age** - based on 5 RCTs: - RR: 0.88, 95% CI: 0.78-0.99 (very low certainty) **Women aged 50-69 years** - based on 4 RCTs: - RR: 0.80, 95%CI: 0.64-1.00 (very low certainty) **Women aged 50–74 years** – based on 1 RCT: - RR: 0.64, 95% CI: 0.55-0.73 (low certainty)
Advanced BC - stage III+ or tumour size ≥40 mm	**Women under 50 years of age** - based on 4 RCTs: - RR: 0.98, 95% CI: 0.74-1.29 (low certainty) **Women aged 50-69 years** - based on 3 RCTs: - RR: 0.62, 95%CI: 0.48-0.80 (low certainty) **Women aged 50–74 years** – based on 1 RCT: - RR: 0.63, 95% CI: 0.45-0.89 (low certainty)
Overdiagnosis – Population perspective	**Women under 50 years of age** - based on 1 RCT: - 12.4%, 95% CI: 9.9–14.9 (moderate certainty) **Women aged 50-69 years** - based on 2 RCTs: - 10.1%, 95% CI: 8.6-11.6 (moderate certainty)
Overdiagnosis – Individual perspective	**Women under 50 years of age** - based on 1 RCT: - 22.7%, 95% CI: 18.4–27.0 (moderate certainty) **Women aged 50-69 years** - based on 2 RCTs: - 17.3%, 95% CI: 14.7-20.0 (moderate certainty)
Interval cancers	Not covered
Rate of mastectomies	**All age groups** – based on 5 RCTs: - RR: 1.20, 95% CI: 1.11-1.30 (low certainty)
Provision of chemotherapy	**All age groups** – based on 2 RCTs: - RR: 0.86, 95% CI: 0.53-1.40 (very low certainty)

Quality of life (inferred from psychological effects)	**All age groups** – based on 1 SR including 54 primary studies – very low certainty: - It does not appear to create anxiety in women who are given a clear result after a mammogram and subsequently placed on routine recall. - Mixed results about anxiety in women recalled for further testing: several studies reported transient or long term (from 6 months to 1 year after recall) anxiety, while other studies reported no differences in anxiety levels.
False-positive-related adverse effects (psychological distress)	**All age groups** – based on 2 SRs including 24 primary studies – low certainty: - Psychological distress in women that needed further mammography: ○ RR: 1.28, 95% CI: 0.82-2.00 - For women placed in early recall: ○ RR: 1.82, 95% CI: 1.22-2.72; - For women who needed a fine needle puncture aspiration: ○ RR: 1.80, 95% CI: 1.17-2.77 - For women who needed a biopsy: ○ RR: 2.07, 95% CI: 1.22-3.52 - No differences in generic measures of general anxiety and depression at six weeks after assessment and three months after screening
False-positive-related adverse effects (biopsies and surgeries)	**All age groups** – One SR including four primary studies and a cross sectional data analysis – low certainty: - Overall 2.9% pooled cumulative risk (range 1.8% to 6.3%) of an invasive procedure with benign outcome (based on 2 studies) - Overall 0.9% risk of undergoing surgical intervention with benign outcome (based on 1 study, Hofvind et al., 2012) - Overall 2.2% and 1.1% (initial and subsequent screens) of all screening examinations resulted in needle biopsy among women without breast cancer (Cross-sectional data from the EUNICE Project)
Limitations and other comments	
Limitations	- No RCTs have sufficient statistical power to assess the benefit of screening on BC mortality according to age subgroups. - Only English language articles; - however, the risk of selection bias is probably small - because we screened previous systematic reviews, and the - GDG includes several international experts, making the - possibility of missing studies unlikely. Although our original - search was conducted up to April 2016, we conducted

Notes: *§: the main characteristics of the included RCTs are summarised in Appendix 9.4*

9.3.1.8. Gøtzsche & Jørgensen – Unpublished SR

Gøtzsche & Jørgensen[14] ***Screening for breast cancer with mammography***	
Methods	
Design	Systematic review update
Source of funding and competing interest	Sources of support: - Cochrane Denmark, Denmark (Facilites for 2023 update) - Danish Institute for Health Technology Assessment, Denmark (Financial support for the first version of this review) Conflict of interest: Both authors declared that they have no conflict of interest.
Searched databases & search windows	Update – searches up to 28 February 2023: - PubMed - The Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2023, Issue 2) - The Cochrane Breast Cancer Group's Specialised Register - The World Health Organization (WHO) International Clinical Trials Registry Platform (ICTRP) search portal(http://apps.who.int/trialsearch/Default.aspx) - Clinicaltrials.gov
Research question(s)	What is the effect of screening for breast cancer with mammography on mortality and morbidity?
Included study designs	Randomised controlled trials (RCTs)
Included studies (papers)	RCTs§: - HIP (USA) - Malmö I & II (Sweden) - Swedish Two County (Ostergotland & Kopparberg, Sweden) - CNBSS 1 & 2 (Canada) - Stockholm (Sweden) - Gothenburg (Sweden) - AGE (UK) The Edinburgh Randomised Breast Screening Project (EBSP) was identified, but considered too unreliable because of fundamental baseline imbalances. Therefore the results of this trial were presented separately.
Quality appraisal of included studies	RCTs: Cochrane Risk of Bias 1.0 tool (Higgins, 2008)

Summary of findings and assessment of the certainty of the evidence	GRADE Summary of Findings Tables; GRADE criteria for assessing the certainty of the evidence include study limitations, inconsistency of results, indirectness of evidence, imprecision, and publication bias
Data synthesis	Fixed effects models, presented in forest plots
Subgroup analyses	The trials were divided into two subgroups: - RCTs with adequate randomisation (individual, centralised randomisation) - RCTs with suboptimal randomisation (cluster randomisation, randomisation by date of birth, or 'randomisation in other ways that would raise concern about baseline imbalances') Primary analyses were based on studies at lowest risk of bias, as recommended in the Cochrane Handbook (Higgins 2008).[365] The review authors 'did not combine results from adequately randomised studies with other studies when there was important heterogeneity that could be explained in such a subgroup analysis'.
Sensitivity analyses	No sensitivity analyses ('as we had already specified to explore the possible impact of age and randomisation method on the robustness of results in subgroup analyses')
Patient characteristics	
Eligibility criteria	Women without clinically suspected or previously diagnosed breast cancer.
Exclusion criteria	Not defined.
Interventions	
Intervention group	Screening mammography with X-ray imaging (film or digital mammograms); trials which used technology such as computer-assisted detection were not excluded. Trials based on the number or frequency of screening tests or based on age groups included, were not excluded. Trials on tomosynthesis, magnetic resonance imaging (MRI), or ultrasound were not excluded..
Comparators	No offer of screening mammograms, but clinical- and self-breast examination in the control group were accepted.
Exclusion criteria	/
Time	
Screening period	No restrictions
Results	
All-cause mortality (13 years FU)	RR: 0.99, 95% CI: 0.95 - 1.03

Breast cancer mortality (13 years FU)	RR: 0.90, 95% CI: 0.79 - 1.02
Any cancer mortality (13 – 23 years FU)	RR: 1.00, 95% CI: 0.96 – 1.04
Number of mastectomies and lumpectomies (7 to 9 years FU)	RR: 1.31, 95% CI: 1.22 – 1.42
Number of mastectomies (7 to 9 years FU)	RR: 1.20, 95% CI: 1.08 – 1.32
Number treated with radiotherapy (9 years FU)	RR: 1.24, 95% CI: 1.04 – 1.49
Number treated with chemotherapy (9 years FU)	RR: 0.63, 95% CI: 0.39 – 1.04
Number of cancers (overdiagnosis; 7-9 years FU)	RR: 1.25, 95% CI: 1.18 – 1.34
Limitations and other comments	
Limitations	SR is neither published nor peer-reviewed, yet to a large extent the manuscript is an exact copy of previously published Cochrane SR (Gøtzsche et al., 2013)

Notes*: §: the main characteristics of the included RCTs are summarised in Appendix 9.4*

Appendix 9.4. Breast cancer screening trials – Main characteristics

The trials are ordered by start date of recruitment.

Appendix 9.4.1. Health Insurance Plan (HIP) of Greater New York

Table 75 – Health Insurance Plan (HIP) of Greater New York

Health Insurance Plan (HIP) trial (also known as the New York trial) – New York (US)	
Recruitment	December 1963 – June 1966
Design	RCT Individual randomisation within matched pairs; pairs derived from a computer list sorted by age, family size and employment group
Participants	Women 40 to 64 years Initially: ± 31 000 women/group *(Number of participants included in the analysis: N= 60 490)* *Note: this number was reduced by about 2%, primarily through the exclusion of women identified as having a prior breast cancer diagnosis; it has been suggested that exclusions were very biased, as probably 336 previous breast cancer cases were excluded from the control group and 853 from the mammo group.*
Intervention	Annual screening with mammography and clinical examination of breasts Number of views: 2 (cephalocaudal and lateral) Number of readers: 2 Number of screening rounds: 4 Attendance rate: 65% in total population; circa 58%, 50% and 40% participated in 2, 3 and 4 screens, respectively Annual clinical examination of breasts
Control	Usual care Mammography at the end of the trial: not described
Likelihood of selection bias	Suboptimal randomisation
Trial time (years)*	3.5
Last follow-up (years)**	18

***Notes**: *: Number represents median time in years women spent in the active intervention phase of the study; otherwise, number of years from start of randomisation to last screening in the intervention arm; **: Follow-up might differ for specific outcomes and accrual methods (i.e. short vs. long case). Number represents median time when available otherwise reported time from entry*

***Sources for majority of study characteristics**: Canelo-Aybar et al., 2021 and Gotzsche et al., 2013.[86, 95]*

Appendix 9.4.2. Malmö Mammographic Screening Trial (MMST)

Table 76 – Malmö Mammographic Screening Trial (MMST)

Malmö Mammographic Screening Trial (MMST) I and II – Malmö (Sweden)	
Recruitment	MMST I: October 1976 – September 1978 MMST II (extension of MMST I): September 1978 – November 1990
Design	RCT Individual randomisation; within each birth cohort a computer list was randomised and the first half invited for screening
Participants	MMST I: - women 45 to 70 years - 21 242 randomised into intervention group and 21 240 (or 21 244?) into control group *Note: Biased exclusions seem to have occurred: 154 women excluded from control group, while 49 from the intervention group* MMST II: - women 45 to 49 years *Note: Although in MMST II the entry criterion for age was stated to be 45 years, 6780 women aged 40 to 44 were also included* - 9 581 randomised into intervention group and 8212; o for those aged 45 to 49 years: 5724 women in the intervention group and only 5289 in the control group
Intervention	Screening with mammography every 18 to 24 months One-view or two-view mammography (two-view in 1st and 2nd round; one-view or two-view in later rounds depending on parenchymal pattern) Number of readers: 2 Number of screening rounds: 5-6 cycles according to protocol; 8 cycles in 1988; more during 1988-1992 Attendance rate: Circa 70%; 74% in first round ranging from 64% in oldest age group to 79% in youngest *Note for MMST II: 'Due to limited resources, the plan could not be strictly adhered to, which means that, some years, no women could be invited, while other years two or even three birth-year cohorts were randomized and invited to examination.'*[366]
Control	Usual care Mammography at the end of the trial: screening offered to age group 50-69 years in 1991; invited in 1992 and completed in 1993; most women in the control group were never screened

Malmö Mammographic Screening Trial (MMST) I and II – Malmö (Sweden)	
	Estimated intervention contrast (i.e. interval between start screening in the intervention group and in the control group): 19 years
Likelihood of selection bias	MMST I: Adequate randomisation MMST II: Suboptimal randomisation
Trial time (years)*	5.8/18.8
Last follow-up (years)**	19.2/9.1

Abbreviations: *ND: not described*
Notes*: *: Number represents median time in years women spent in the active intervention phase of the study; otherwise, number of years from start of randomisation to last screening in the intervention arm; **: Follow-up might differ for specific outcomes and accrual methods (i.e. short vs. long case). Number represents median time when available otherwise reported time from entry; mean years after randomisation*
Sources for majority of study characteristics*: Canelo-Aybar et al., 2021 and Gotzsche et al., 2013.*[86, 95]

Appendix 9.4.3. Swedish Two-County trial

Table 77 – Swedish Two-County trial

Swedish Two-County trial – Kopparberg (initially called Dalarna) & Ostergötland (Sweden)	
Recruitment	Kopparberg: October 1977 - January 1980 Östergötland: May 1978 - March 1981
Design	RCT Age-matched and cluster randomisation (Kopparberg: 21 clusters - randomisation ratio 2:1; Östergötland: 24 clusters - randomisation ratio 1:1) The selection of clusters was stratified to ensure an even distribution between the two groups with respect to residency (urban or rural), socioeconomic factors and size. *Note: The randomisation process has been inconsistently described and serious doubts about its quality has been reported.*
Participants	Women 40 to 74 years Kopparberg: 47 389 women randomised in screening areas and 22 658 in control areas o age group 40-74 years: 39 051 vs. 18 846

Swedish Two-County trial – Kopparberg (initially called Dalarna) & Ostergötland (Sweden)	
	○ age group 40-69 years: 33 641 vs. 16 359 Östergötland: 92 934 women randomised; 47 001 into screening parishes and 45 933 in control parishes ○ age group 40-74 years: 39 034 vs. 37 936 N= 133 065 (*Note: After exclusion of women previously diagnosed with breast cancer, there were 77 080 women in the intervention and 55 985 in the control group*)
Intervention	Screening with mammography Interval between screenings: Kopparberg: ▪ age group 40-49 years: 2 years ▪ age group 50-74 years: 3 years Östergötland: 2-2.5 years Number of views: 1 (mediolateral oblique) Kopparberg: additional views on suspicion Östergötland: women who reported a lump were examined clinically and by complete mammography Number of readers: 1 Number of screening rounds: Kopparberg: 2 cycles prestated (but more may have occurred) Attendance rate: ▪ age group 40-59 years: 91-94% ▪ age group 60-74 years: 50-80% Östergötland: ▪ age group 40-69 years: 3 ▪ age group 70-74 years: 2 Attendance rate: ca. 90% in first round, 80% in second; very age dependent
Control	Usual care Mammography at the end of the trial: 13%; unclear when screening started in control group (available information is conflicting; range of discrepancies amounts to three years for both counties) Estimated intervention contrast (i.e. interval between start screening in the intervention group and in the control group): ○ Kopparberg: 5 years

Swedish Two-County trial – Kopparberg (initially called Dalarna) & Ostergötland (Sweden)	
	○ Östergötland: 8 years
Likelihood of selection bias	Suboptimal randomisation and likely to be biased
Trial time (years)*	7
Last follow-up (years)**	20

Abbreviations: *ND: not described*
Notes*: *: Number represents median time in years women spent in the active intervention phase of the study; otherwise, number of years from start of randomisation to last screening in the intervention arm; **: Follow-up might differ for specific outcomes and accrual methods (i.e. short vs. long case). Number represents median time when available otherwise reported time from entry; mean years after randomisation*
Sources for majority of study characteristics*: Canelo-Aybar et al., 2021 and Gotzsche et al., 2013.*[86, 95]

Appendix 9.4.4. Edinburgh Randomised Breast Screening Project (EBSP)

Table 78 – Edinburgh Randomised Breast Screening Project (EBSP)

Edinburgh Randomised Breast Screening Project (EBSP) - Edinburgh (UK)	
Recruitment	1979 - 1981
Design	RCT Stratified cluster randomisation (general practices were clusters; stratification was by size of practice; about 87 clusters, but numbers vary in different reports) *Note: Serious doubts about the randomisation process due to baseline differences: 53% of the intervention group and 26% of the control group belonged to the highest socioeconomic level and screening with mammography was associated with a 26% reduction in cardiovascular mortality.*
Participants	Women 45 to 64 years Number of women and practices randomised inconsistently reported *Note: it has been suggested that exclusion procedures were different in intervention and control group, with 338 previous breast cancer cases excluded from the intervention group and 177 from the control group*
Intervention	Biennial screening with mammography and clinical examination: mammography and physical examination in year 1, 3, 5 and 7; physical examination in year 2, 4 and 6 Number of views: 2 (cranio-caudal and oblique) at first screen; only oblique in later rounds Number of readers: no data retrieved Number of screening rounds: 4

Edinburgh Randomised Breast Screening Project (EBSP) - Edinburgh (UK)	
	Attendance rate: Circa 60% in 1st round; 44% in 7th round
Control	Usual care Mammography at the end of the trial: unknown
Likelihood of selection bias	High risk for selection bias due to inadequate randomisation
Trial time (years)	No data retrieved
Last follow-up (years)	No data retrieved

***Source for majority of study characteristics**: Gotzsche et al., 2013.*[95]

Appendix 9.4.5. Canadian National Breast Screening Study (CNBSS)

Table 79 – Canadian National Breast Screening Study (CNBSS)

Canadian National Breast Screening Study (CNBSS) 1 and 2 - Canada	
Recruitment	January 1980 - March 1985
Design	Multicentre RCT with study centres in Canada Individual randomisation, in blocks of 2 or 4, stratified by centre and 5-year age group
Participants	CNBSS 1: - Women 40 to 49 years - 50 472 randomised; 59 were excluded from analyses, distributed equally between intervention and control group CNBSS 2: - Women 50 to 59 years - 39 459 randomised; 54 were excluded from analyses, distributed equally between both groups
Intervention	Annual screening with mammography Number of views: 2 (cranio-caudal and mediolateral (later medio-lateral oblique except in two centres)) Number of readers: 1 Number of screening rounds: 4-5 cycles of screening Attendance rate: 100% in first round CNBSS1: 89% in second, decreasing to 86% in fifth round CNBSS2: 90% in second, decreasing to 87% in fifth round

Canadian National Breast Screening Study (CNBSS) 1 and 2 - Canada	
	Annual clinical examination
Control	CNBSS 1: at the first visit, women were clinically examined taught self-examination; they were reminded annually by mail CNBSS 2: all women had their annual breast examinations Mammography at the end of the trial: - CNBSS1: 26%, most only once during the trial - CNBSS2: 17%
Likelihood of selection bias	Suboptimal randomisation and likely to be biased *Note: There was a clinical breast examination before randomisation, and this information was available to the personnel in charge of allocation.*
Trial time (years)*	No data retrieved
Last follow-up (years)**	21.9

***Notes**: **: Follow-up might differ for specific outcomes and accrual methods (i.e. short vs. long case). Number represents median time when available otherwise reported time from entry; mean years after randomisation*
***Sources for majority of study characteristics**: Canelo-Aybar et al., 2021 and Gotzsche et al., 2013.[86, 95]*

Appendix 9.4.6. Stockholm breast screening trial

Table 80 – Stockholm breast screening trial

Stockholm breast cancer screening trial – Stockholm (Sweden)	
Recruitment	First cohort: March 1981 - April 1982 Second cohort: April 1982 - May 1983
Design	RCT Quasi-randomised: individual randomisation by day of birth (i.e. 1-10 and 21-31 in study group and 11-20 in control group)
Participants	Women 40 to 64 years Number of participants in various subgroups inconsistently reported *Note: controls born in 1918 to 1941 served as controls for both subtrials (hence, results from the two subtrials cannot be pooled without correction for dependence as they were not independent)*
Intervention	Screening with mammography at baseline and at the end of the study, with an interval between both rounds of 2 years; recalled for conventional three-view if malignancies suspected Number of views: 1 (oblique mammography)

Stockholm breast cancer screening trial – Stockholm (Sweden)	
	Number of readers: 1 Number of screening rounds: 2 Attendance rate: circa 80% *Note: 25% of the intervention group had a mammography during two years preceding the trial*
Control	Usual care Mammography at the end of the trial, yet inconsistent information provided Estimated intervention contrast (i.e. interval between start screening in the intervention group and in the control group): four years
Likelihood of selection bias	Suboptimal randomisation
Trial time (years)*	4.4
Last follow-up (years)**	17.4

***Notes**: *: Number represents median time in years women spent in the active intervention phase of the study; otherwise, number of years from start of randomisation to last screening in the intervention arm; **: Follow-up might differ for specific outcomes and accrual methods (i.e. short vs. long case). Number represents median time when available otherwise reported time from entry; mean years after randomisation*
***Sources for majority of study characteristics**: Canelo-Aybar et al., 2021 and Gotzsche et al., 2013.[86, 95]*

Appendix 9.4.7. Gothenburg breast screening trial

Table 81 – Gothenburg breast screening trial

Gothenburg breast screening trial – Gothenburg (Sweden)	
Recruitment	December 1982 - April 1984
Design	RCT Randomisation by cluster based on day of birth in the 1923–1935 cohorts, and individual randomisation for the 1936–1944 cohorts
Participants	Women 39 to 59 years Number of women randomised: 21 904 to intervention and 30 318 to control Number of women excluded due to a history of breast carcinoma prior to randomisation: 254 women (1.2%) from the intervention and 357 (1.2%) from the control group
Intervention	Screening with mammography every 18 months

	Number of views: 2 at first screen, single at later rounds Number of readers: 1 at first screen, 2 at later rounds Number of screening rounds: Women 40 - 49 years: 5 Women 50 - 59 years: 4 Attendance rate: Women 40 - 49 years: 85%, 78%, 79%, 77%, 75% in rounds 1-5 Women 50 - 59 years: 83% at first screen
Control	Usual care Mammography at the end of the trial, yet inconsistent information provided (ranging from 3 to 7 years after randomisation) Estimated intervention contrast (i.e. interval between start screening in the intervention group and in the control group): five years
Likelihood of selection bias	Suboptimal randomisation
Trial time (years)*	6.7
Last follow-up (years)**	24

***Notes**: *: Number represents median time in years women spent in the active intervention phase of the study; otherwise, number of years from start of randomisation to last screening in the intervention arm; **: Follow-up might differ for specific outcomes and accrual methods (i.e. short vs. long case). Number represents median time when available otherwise reported time from entry; mean years after randomisation*
***Sources for majority of study characteristics**: Canelo-Aybar et al., 2021 and Gotzsche et al., 2013.[86, 95]*

Appendix 9.4.8. United Kingdom Co-ordinating Committee on Cancer Research (UKCCCR) trial of Breast Screening Frequency

Table 82 – United Kingdom Co-ordinating Committee on Cancer Research (UKCCCR) trial of Breast Screening Frequency

United Kingdom Co-ordinating Committee on Cancer Research (UKCCCR) trial of Breast Screening Frequency - UK	
Recruitment	1989 - 1996
Design	RCT Multicentre (Five screening units: Cardiff, Epping, Gateshead, Newcastle and Nottingham); randomization took place immediately after, and without knowledge of the result of, the prevalence screen. *Note 1: Randomisation was by month of birth in the first 2 years of the trial, after which the national screening programme software was augmented to allow individual randomisation.* *Note 2: Endpoint used is predicted deaths from the tumour size, node status and histological grade of the tumours diagnosed (summarized in the Nottingham Prognostic Index (NPI)*

United Kingdom Co-ordinating Committee on Cancer Research (UKCCCR) trial of Breast Screening Frequency - UK	
Participants	Women of 50 to 62 years Number of women randomised: 49 173 to intervention and 50 216 to control Number of women who attended the prevalent screening: 37 530 women in the study arm vs. 38 492 in the control arm Women with a history of breast carcinoma were excluded, but no numbers are provided
Intervention	Prevalent screening, followed by three annual screenings Number of views: Two-view mammography in 96% of participants at the prevalence screen; single-view mammography at 4% of prevalence screens and 100% of subsequent screens. Number of readers: Double reading was performed in 60% of cases, single read at the remainder. Number of screening rounds: 4 Attendance rate at prevalent screen: 76% Attendance rate among those who attended the prevalent screen: 78%, 78% and 81% at the first, second and third annual screens, respectively
Control	Prevalent screening, followed by conventional single screen after an interval of 3 years Attendance rate at prevalent screen: 77% Attendance rate among those who attended the prevalent screen: 85% at 3-year screen
Likelihood of selection bias	High risk (according to Canelo-Aybar et al.; *personal communication*)
Trial time (years)*	No data retrieved
Last follow-up (years)**	No data retrieved

Abbreviations: *ND: not described*
Notes*: *: Number represents median time in years women spent in the active intervention phase of the study; otherwise, number of years from start of randomisation to last screening in the intervention arm; **: Follow-up might differ for specific outcomes and accrual methods (i.e. short vs. long case). Number represents median time when available otherwise reported time from entry; mean years after randomisation*
Source for majority of study characteristics*: Breast Screening Frequency Trial, 2002 and Warren et al., 2003*[158, 367]

Appendix 9.4.9. UK Age trial

Table 83 – UK Age trial

UK Age trial - UK	
Recruitment	1991 - 1997
Design	RCT Randomisation at individual level; 23 breast-screening units in England, Wales, and Scotland
Participants	Women 39 to 41 years *Note: this is the only trial whose study population remained below 50 years throughout the screening period.* 53 914 randomised into intervention group and 107 007 into control group; 30 and 51 excluded after randomisation
Intervention	Annual screening with mammography up to and including the calendar year of the 48th birthday Number of views: two-view mammography at first screen, and by single mediolateral oblique view thereafter; recall for full assessment in case of a suspected abnormality Number of readers: No data retrieved Number of screening rounds: 4-6 (7 screens planned) Attendance rate: ca 66% at prevalence screen, below 50% at 8th screen.
Control	Usual care Mammography at the end of the trial: invited for screening at age 50 years and every 3 years thereafter Estimated intervention contrast (i.e. interval between start screening in the intervention group and in the control group): ten years
Likelihood of selection bias	
Trial time (years)*	9
Last follow-up (years)**	17

***Notes**: *: Number represents median time in years women spent in the active intervention phase of the study; otherwise, number of years from start of randomisation to last screening in the intervention arm; **: Follow-up might differ for specific outcomes and accrual methods (i.e. short vs. long case). Number represents median time when available otherwise reported time from entry; mean years after randomisation;*
***Sources for majority of study characteristics**: Canelo-Aybar et al., 2021 and Gotzsche et al., 2013.[86, 95]*

Appendix 9.4.10. J-START

Table 84 – J-Start

J-START - Japan	
Recruitment	2007 - 2009
Design	RCT Multicentre (42 organizations from 23 prefectures) Randomisation: individual: 71.0%; cluster: 25.0% *Note: 3.9% were non-randomly assigned to intervention or control group; no data are provided on the randomisation process*
Participants	Women 40 to 49 years Overall 76 196 women; intervention: 36 859 women vs. control: 36 139 women *Note: 57.7% of women with dense breasts*
Intervention	Mammography and ultrasonography, or Mammography and ultrasonography and clinical breast examination Number of views: No data retrieved Number of readers: No data retrieved Number of screening rounds: Initial screening followed by 1 screening round after 2 years Attendance rate: No data retrieved
Control	Mammography only, or Mammography and clinical breast examination Number of views: No data retrieved Number of readers: No data retrieved Number of screening rounds: Initial screening followed by 1 screening round after 2 years Attendance rate: no data retrieved
Likelihood of selection bias	Low
Trial time (years)*	2 years
Last follow-up (years)**	13-17 years

Date publication	Reference publication
2014	[167, 168, 368]
2016	Ohuchi N, Suzuki A, Sobue T, Kawai M, Yamamoto S, Zheng Y-F, et al. Sensitivity and specificity of mammography and adjunctive ultrasonography to screen for breast cancer in the Japan Strategic Anti-cancer Randomized Trial (J-START): a randomised controlled trial. Lancet (London, England). 2016 Jan 23;387(10016):341-8.[167]
2021	Harada-Shoji N, Suzuki A, Ishida T, Zheng Y-F, Narikawa-Shiono Y, Sato-Tadano A, et al. Evaluation of Adjunctive Ultrasonography for Breast Cancer Detection Among Women Aged 40-49 Years With Varying Breast Density Undergoing Screening Mammography: A Secondary Analysis of a Randomized Clinical Trial. JAMA network open. 2021 Aug 2;4(8):e2121505.[168]
2026	Harada-Shoji N, Suzuki A, Ishida T, Yamamoto S, Kanemura S, Yamaguchi T, Shiono-Narikawa Y, Ohuchi N; J-START investigators. Cumulative incidence of advanced breast cancer in women aged 40-49 years in the Japan Strategic Anti-cancer Randomised Trial (J-START) of adjunctive ultrasonography: a prespecified secondary analysis. Lancet. 2026 Feb 21;407(10530):784-793. doi: 10.1016/S0140-6736(25)02319-0. PMID: 41722967.[89]

Abbreviations: *ND: not described*
Notes*: *: Number represents median time in years women spent in the active intervention phase of the study; otherwise, number of years from start of randomisation to last screening in the intervention arm; **: Follow-up might differ for specific outcomes and accrual methods (i.e. short vs. long case). Number represents median time when available otherwise reported time from entry; mean years after randomisation.*
Source for majority of study characteristics*: Ohuchi et al. (2016)*

Appendix 9.4.11. AgeX Pilot study

Table 85 – AgeX Pilot study

AgeX Pilot study - UK		
Characteristics		
Start	2009	
Design	Multicentre cluster RCT *Note: intended as feasibility study for AgeX study*	
Number of participants at randomisation	- Age group 47-49 years: o Invited for screening: 20 596 women o Control: 19 409 women - Age group 71-73 years:	

	○ Invited for screening: 10 473 women Control: 10 230 women	
Age at recruitment (years)	- 47-49 years - 71-73 years	
Intervention (incl. screening interval)	1 screening in addition to the national screening programme offered between 50 and 70 years of age	
Control	- Age group 47-49 years: No screening before start routine screening - Age group 71-73 years: No screening before after routine screening	
Number of views	Two- view digital mammography	
Number of readers		
Number of screening rounds	2	
Recruitment time	June 2009 – March 2020 (earlier stop due to Covid-19 pandemic)	
Results expected	2026	
Controls invited to screening at end of intervention[$]	NA	
Date publication	**Reference publication**	**Endnote**
2011	Moser K, Sellars S, Wheaton M, Cooke J, Duncan A, Maxwell A, et al. Extending the age range for breast screening in England: pilot study to assess the feasibility and acceptability of randomisation. Journal of medical screening. 2011;18(2):96-102.	[117]

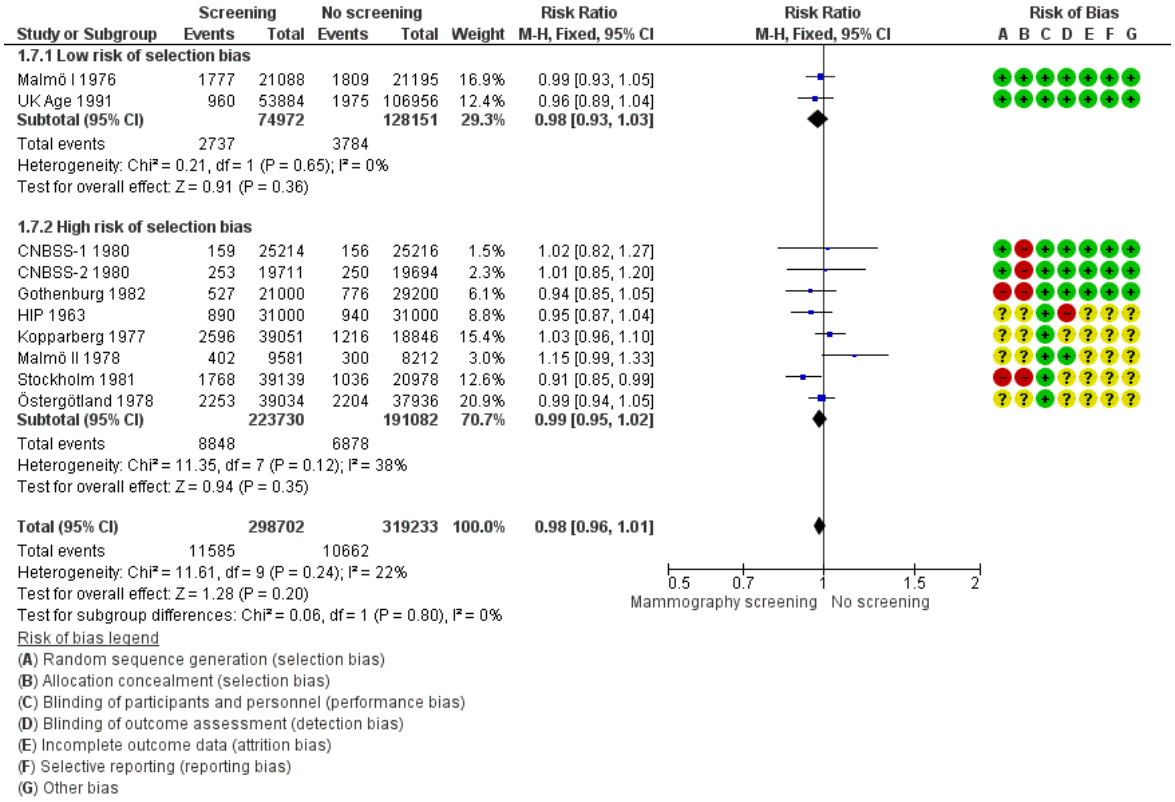
***Abbreviations**: ND: not described;*
***Notes**: *: Number represents median time in years women spent in the active intervention phase of the study; otherwise, number of years from start of randomisation to last screening in the intervention arm; **: Follow-up might differ for specific outcomes and accrual methods (i.e. short vs. long case). Number represents median time when available otherwise reported time from entry; mean years after randomisation;*
***Source for majority of study characteristics**: Moser et al., 2011 and https://www.ceu.ox.ac.uk/research/agex-trial/trial-documentation/agex-trial-protocol/agex-trial-protocol-the-agex-trial.*

Appendix 9.5. Additional results

Appendix 9.5.1. Findings – Invited for screening with mammography vs. not being invited for screening

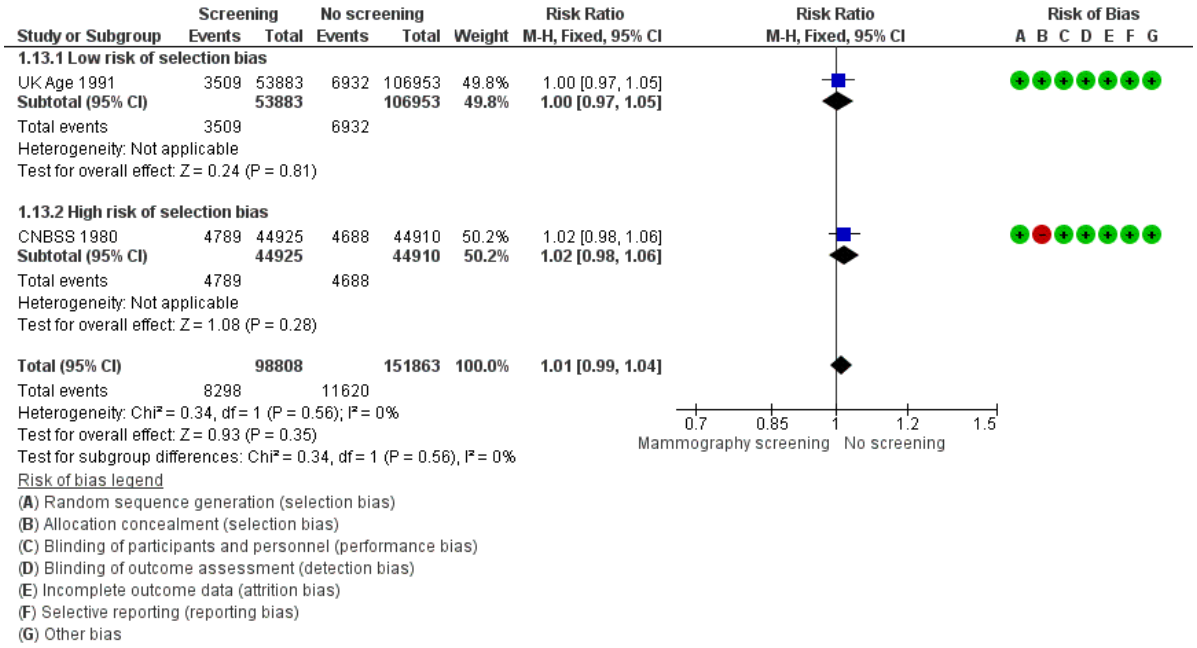
All-cause mortality

Figure 63 – Forest plot for mammography screening vs. no screening, outcome: all-cause mortality (7 years FU), all ages



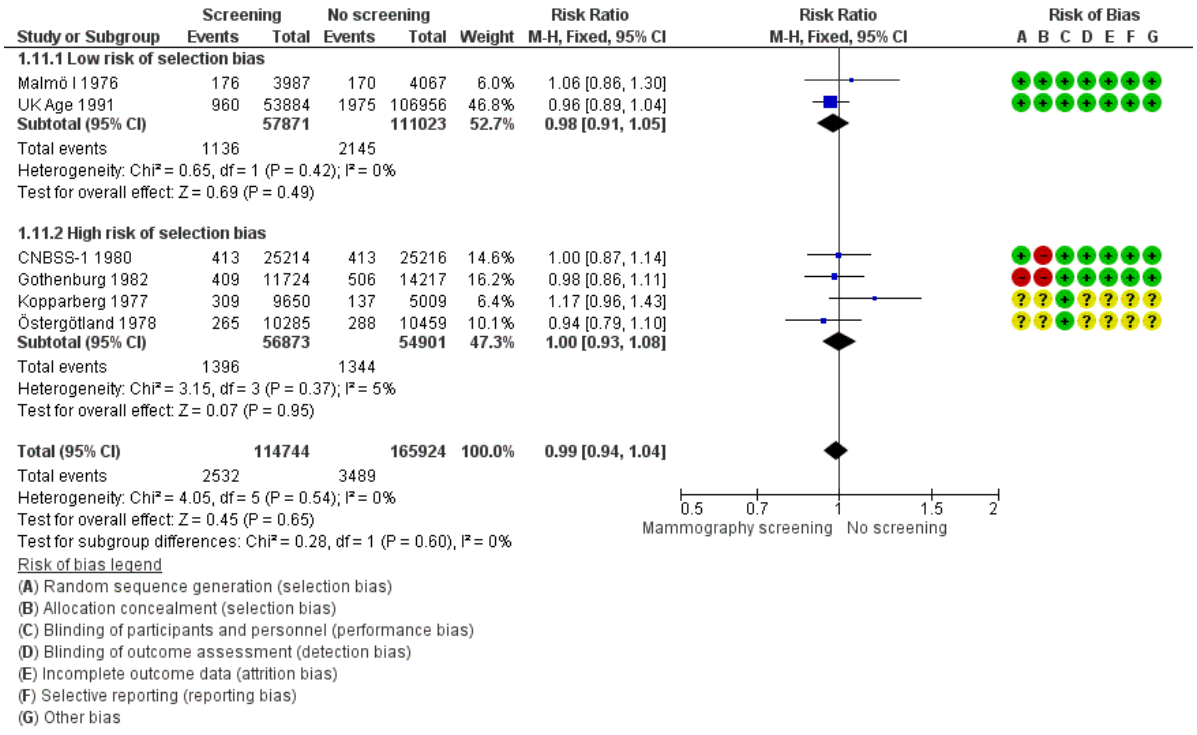
***Sources**: Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]*

Figure 64 – Forest plot for mammography screening vs. no screening, outcome: all-cause mortality (24 years FU), all ages



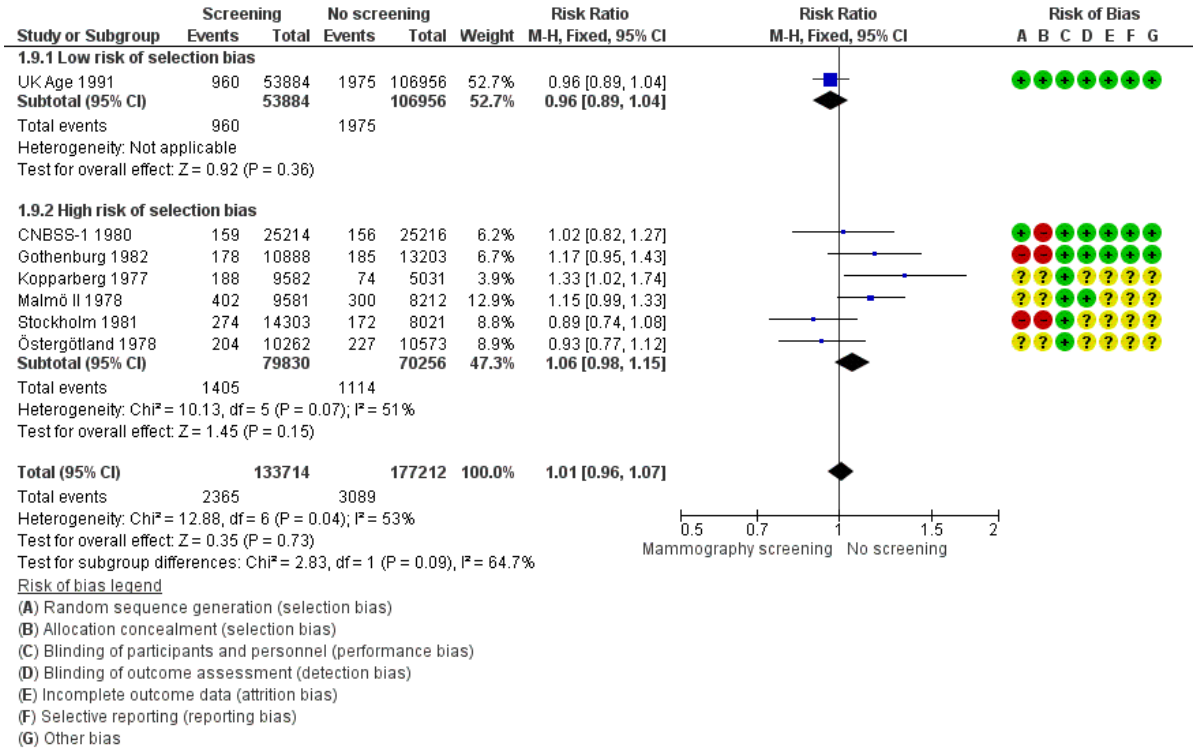
Sources: *Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]*

Figure 65 – Forest plot for mammography screening vs. no screening, outcome: all-cause mortality (13 years FU), under age 50 years



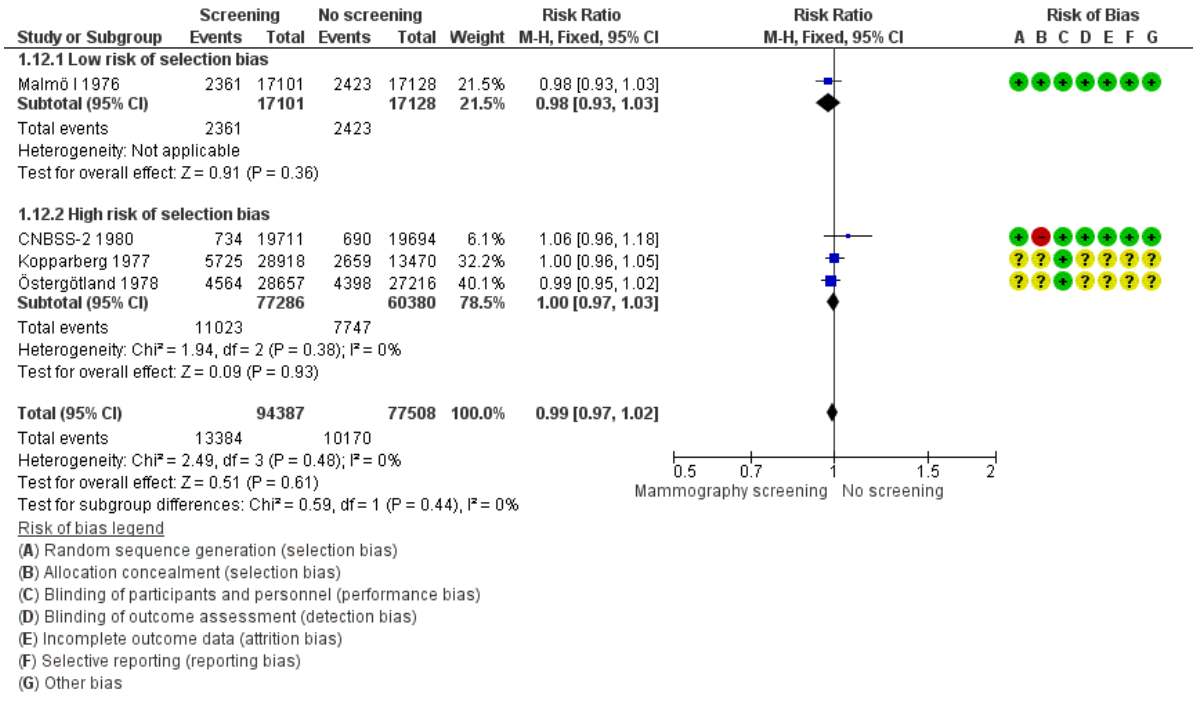
Sources: *Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]*

Figure 66 – Forest plot for mammography screening vs. no screening, outcome: all-cause mortality (7 years FU), under age 50 years



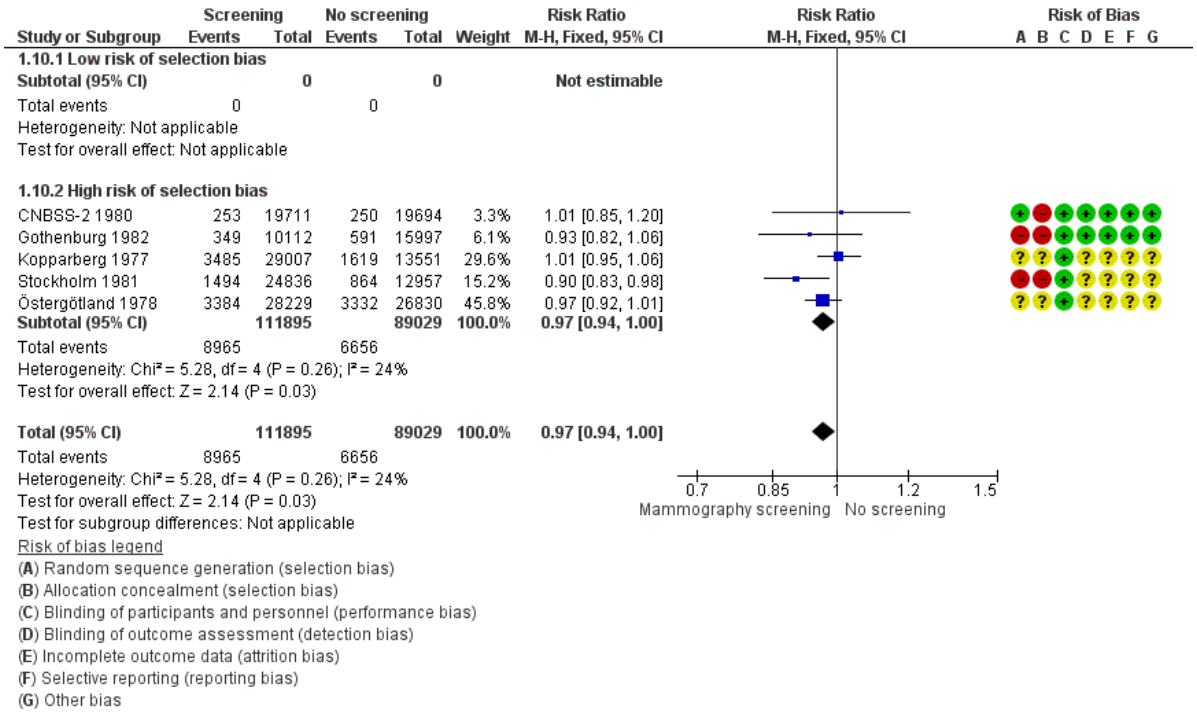
Sources: *Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]*

Figure 67 – Forest plot for mammography screening vs. no screening, outcome: all-cause mortality (13 years FU), over age 50 years



Sources: Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]

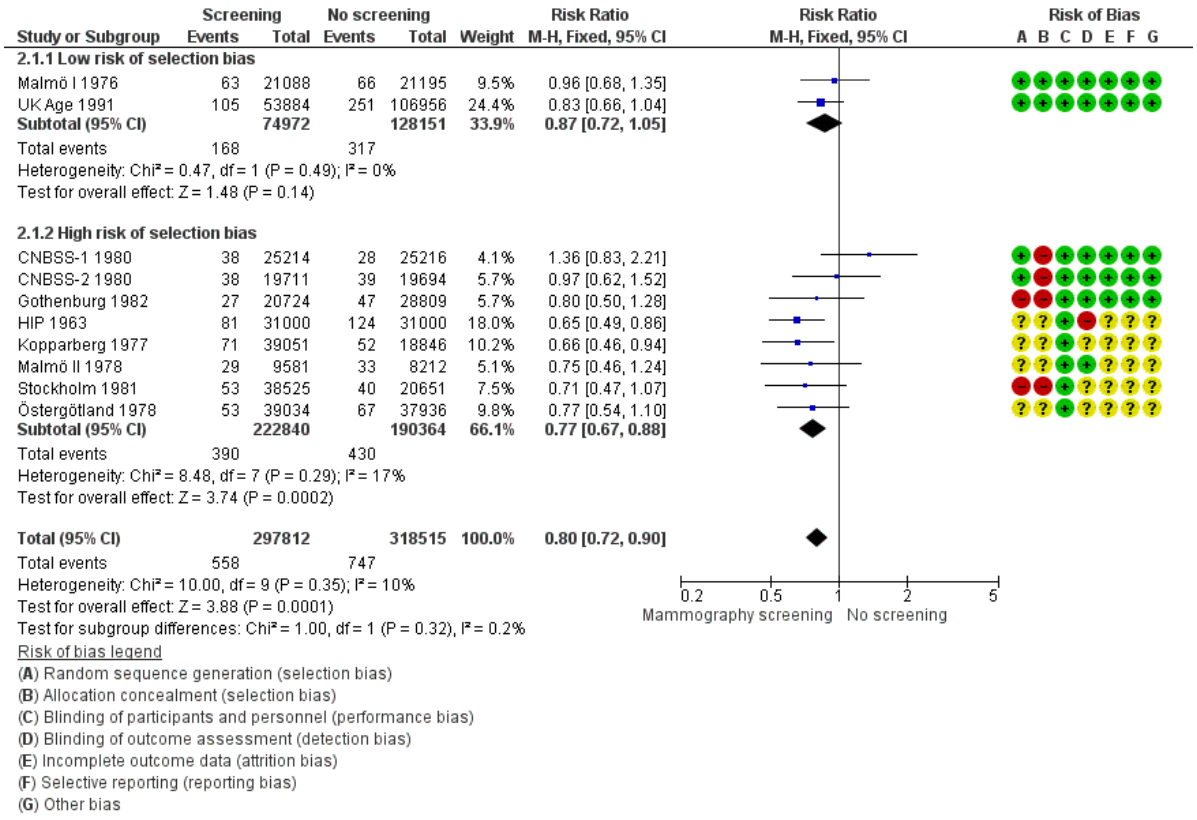
Figure 68 – Forest plot for mammography screening vs. no screening, outcome: all-cause mortality (7 years FU), over age 50 years



Sources: Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]

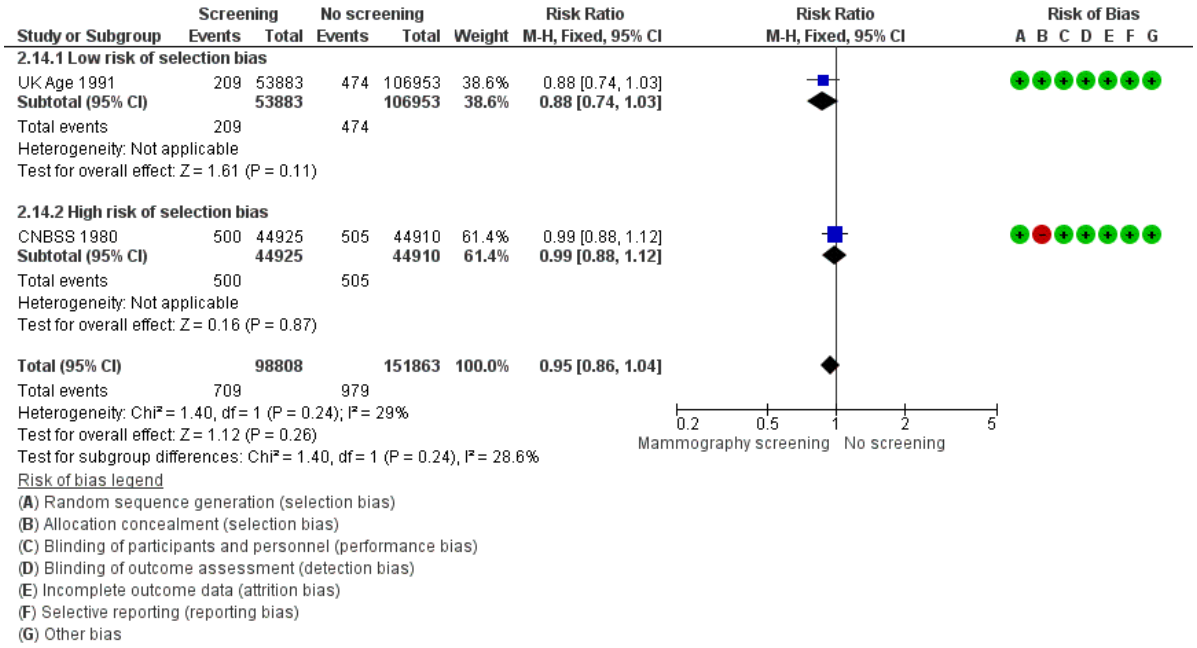
9.5.1.1. Breast cancer mortality

Figure 69 – Forest plot for mammography screening vs. no screening, outcome: breast cancer mortality (7 years FU), all ages



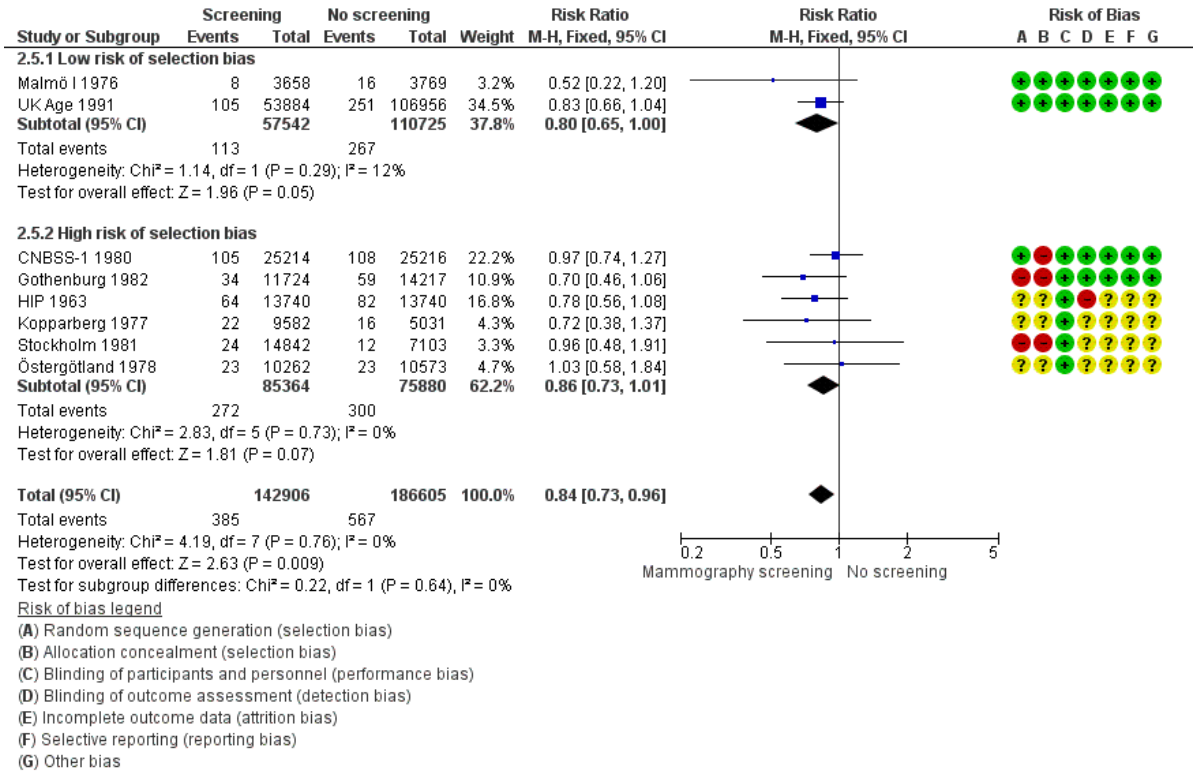
***Sources**: Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]*

Figure 70 – Forest plot for mammography screening vs. no screening, outcome: breast cancer mortality (24 years FU), all ages



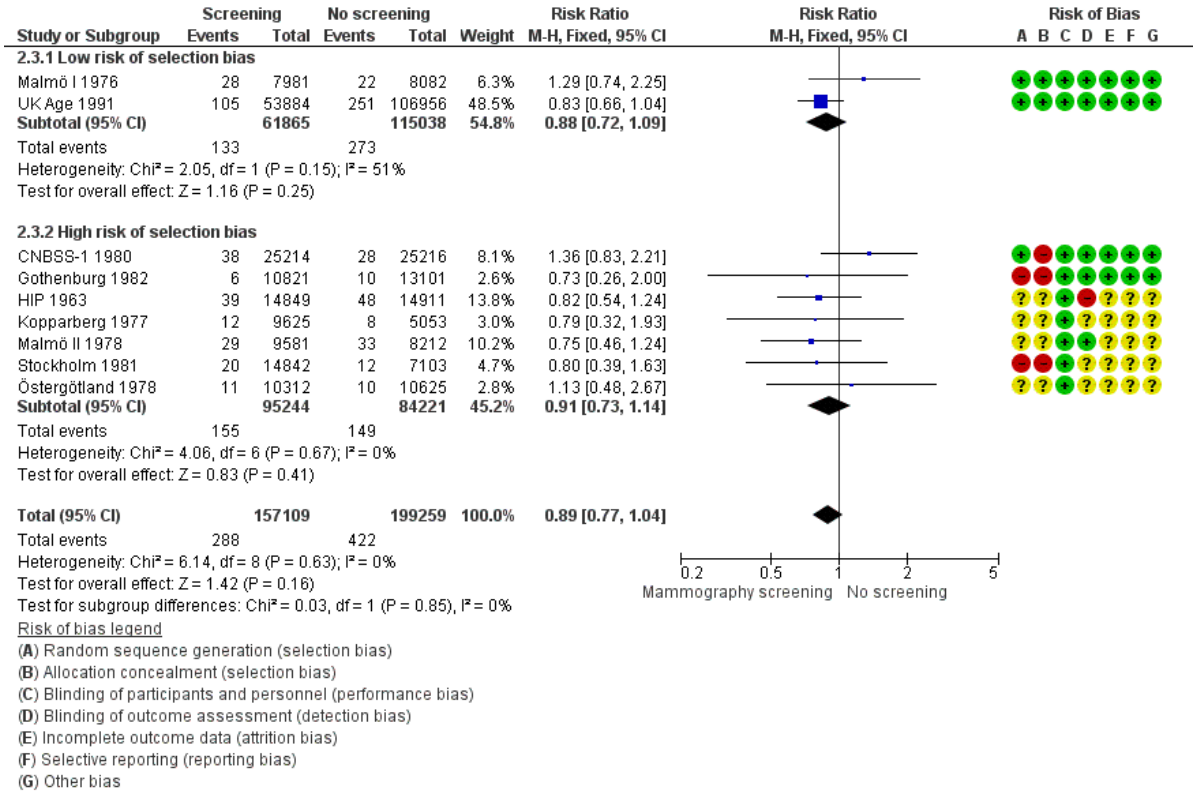
Sources: *Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]*

Figure 71 – Forest plot for mammography screening vs. no screening, outcome: breast cancer mortality (13 years FU), under age 50 years



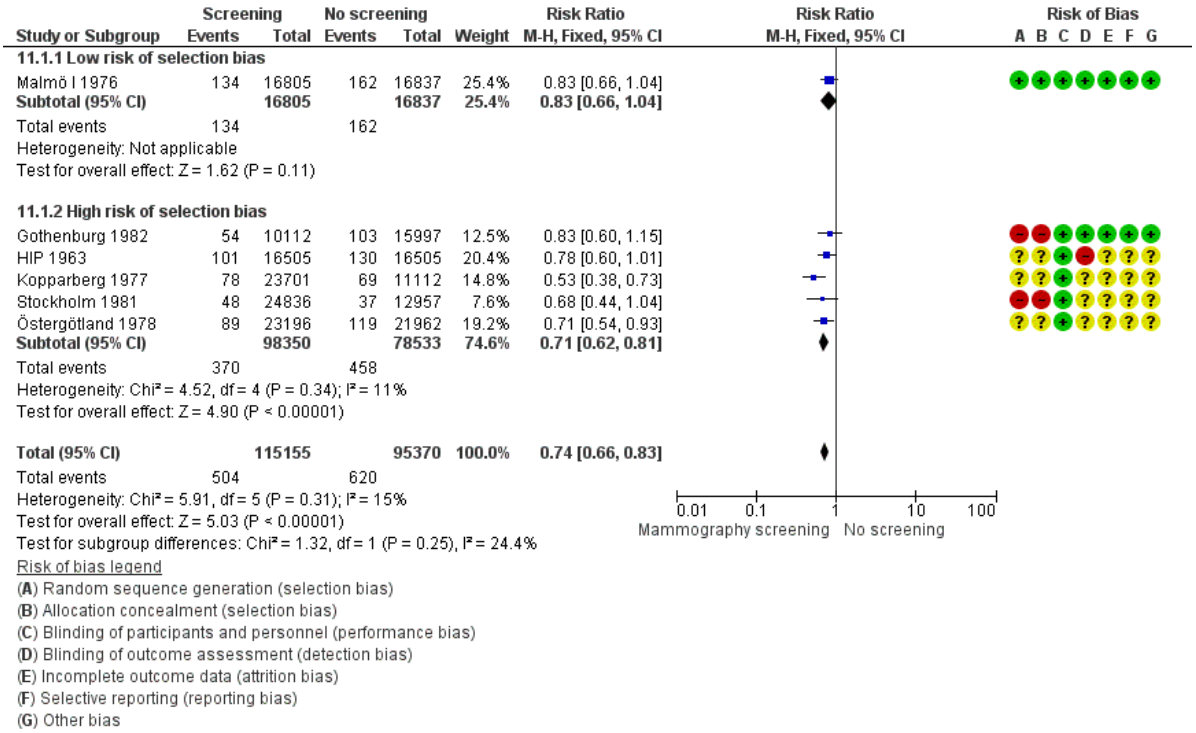
Sources: *Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]*

Figure 72 - Forest plot for mammography screening vs. no screening, outcome: breast cancer mortality (7 years FU), under age 50 years



Sources: *Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,*[14, 95] *and Canelo-Aybar et al., 2021.*[86]

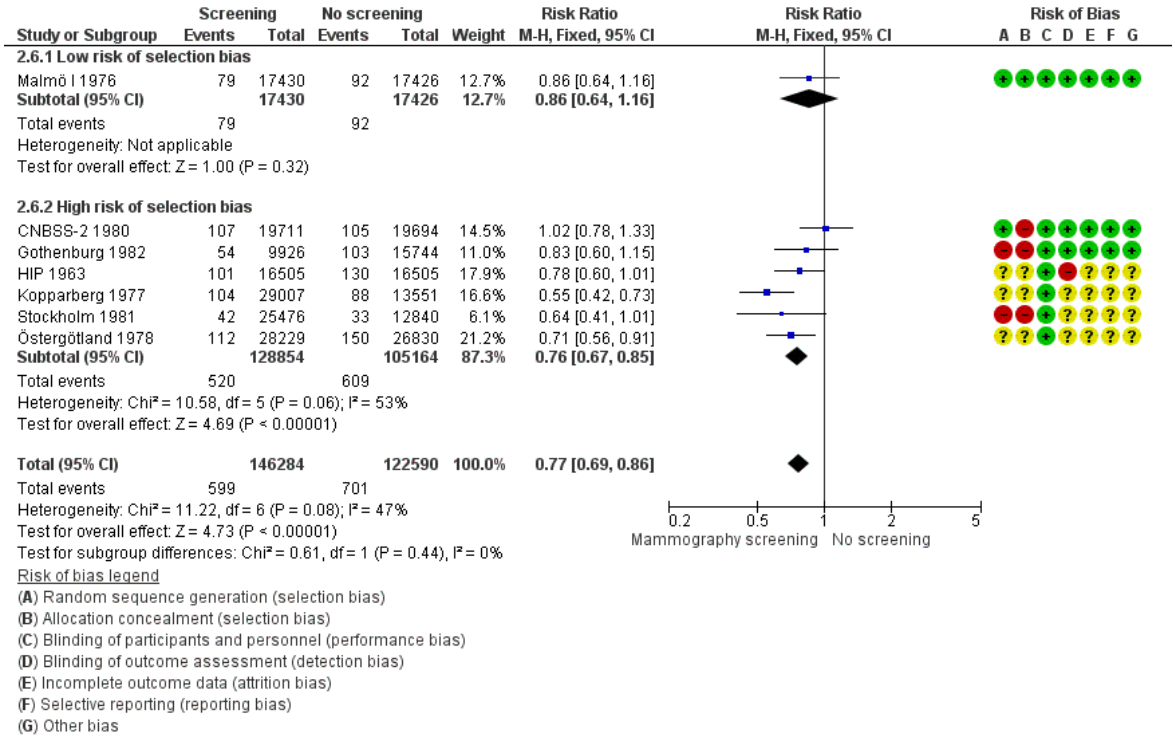
Figure 73 – Forest plot for mammography screening vs. no screening, outcome: breast cancer mortality (long case accrual[e]), age 50-69 years



***Sources**: Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]*

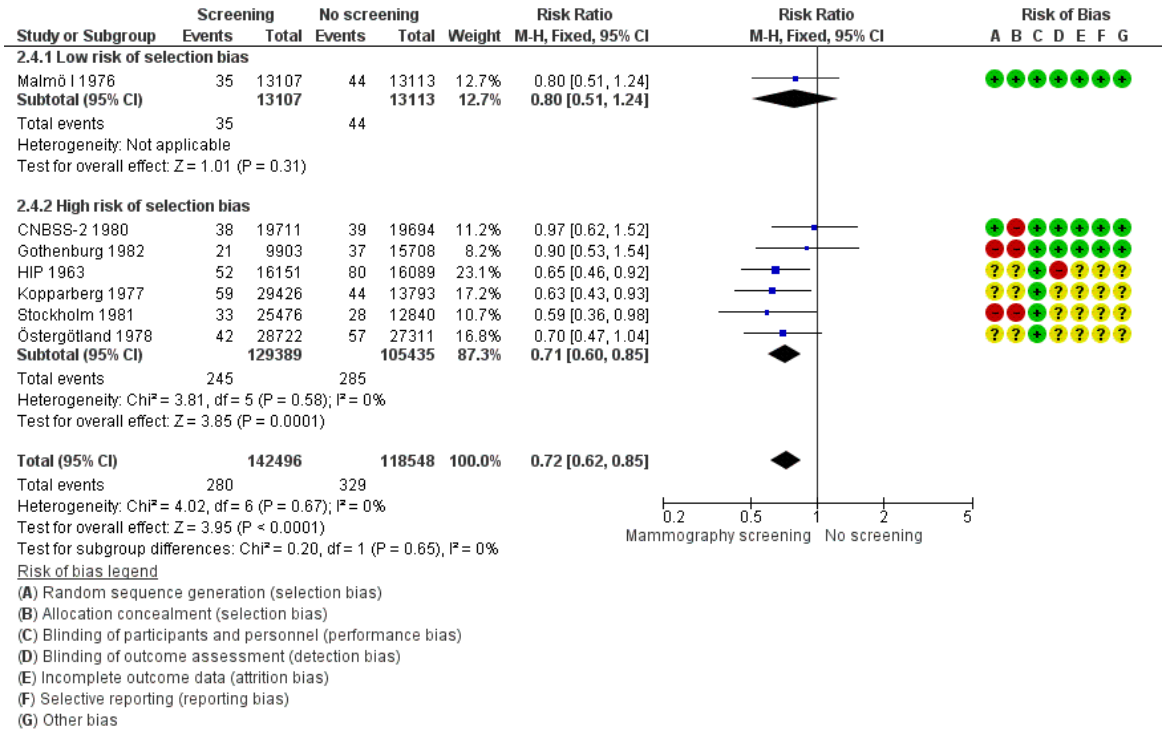
[e] 'The long case accrual method considers all BC deaths irrespective of the date of diagnosis, accrual time being equivalent to the follow-up of the study'.[86]

Figure 74 – Forest plot for mammography screening vs. no screening, outcome: breast cancer mortality (13 years FU), over age 50 years



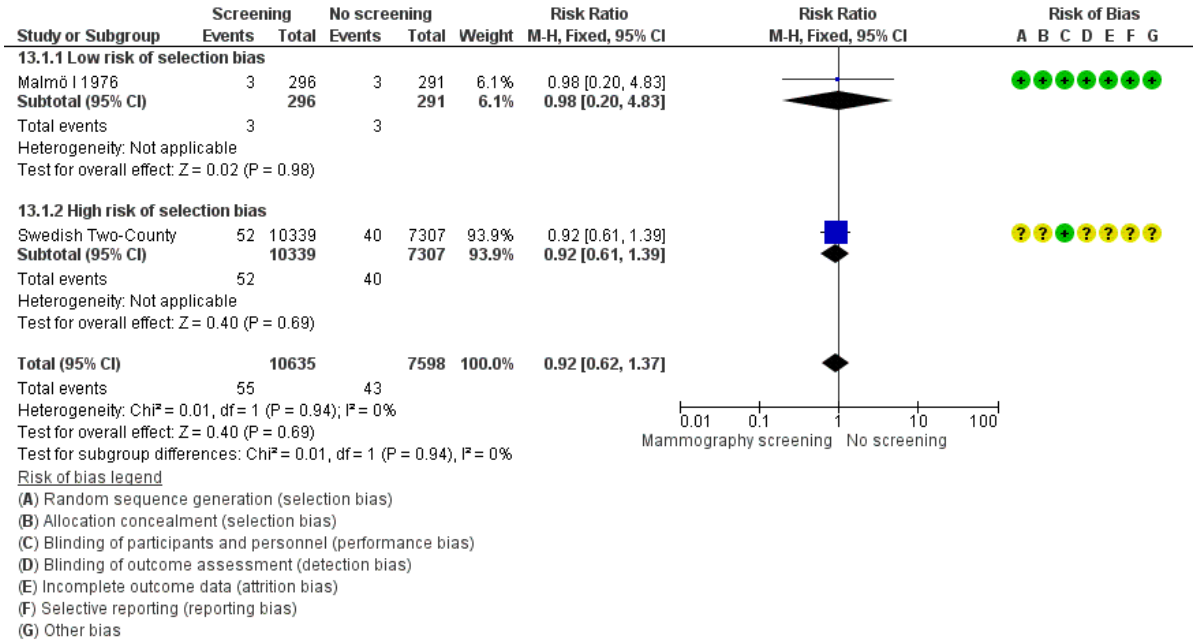
***Sources**: Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]*

Figure 75 – Forest plot for mammography screening vs. no screening, outcome: breast cancer mortality (7 years FU), over age 50 years



***Sources**: Gøtzsche & Jørgensen, 2013; Gøtzsche & Jørgensen, 2024,[14, 95] and Canelo-Aybar et al., 2021.[86]*

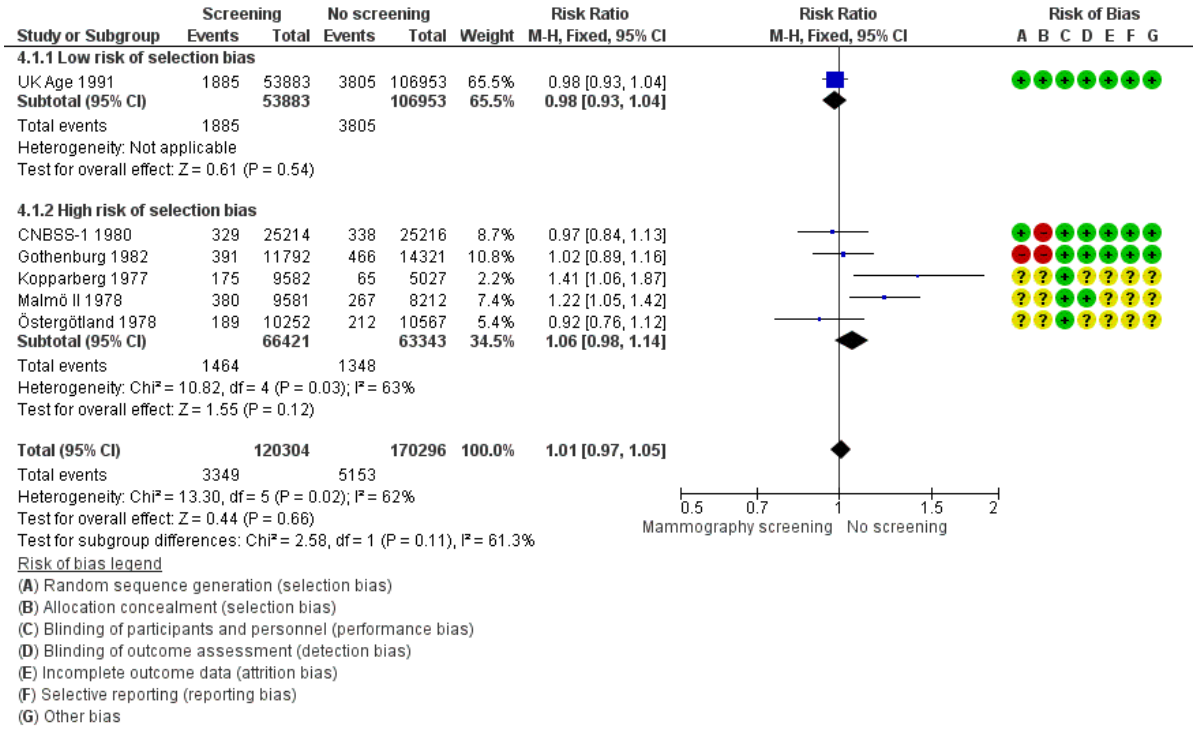
Figure 76 – Forest plot for mammography screening vs. no screening, outcome: breast cancer mortality (11-14 years FU), over age 69 years



***Sources**: HTA report IQWiG, 2022*[88]

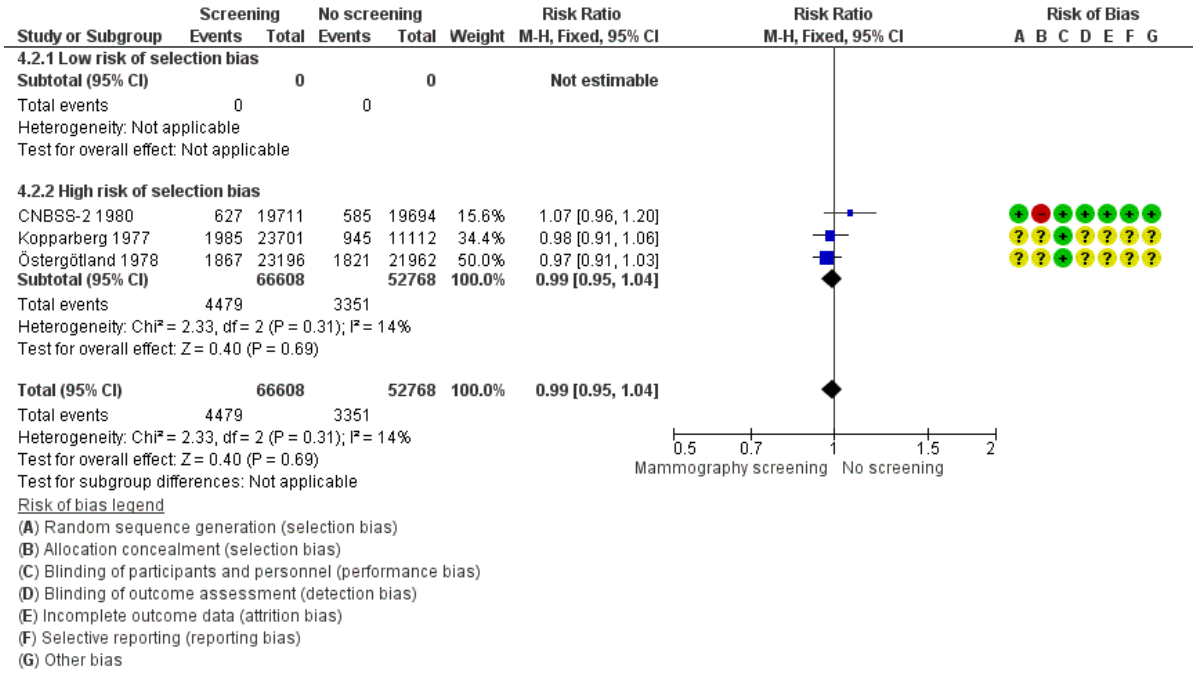
9.5.1.2. Other cause mortality

Figure 77 – Forest plot for mammography screening vs. no screening, outcome: other cause mortality, women aged below 50 years



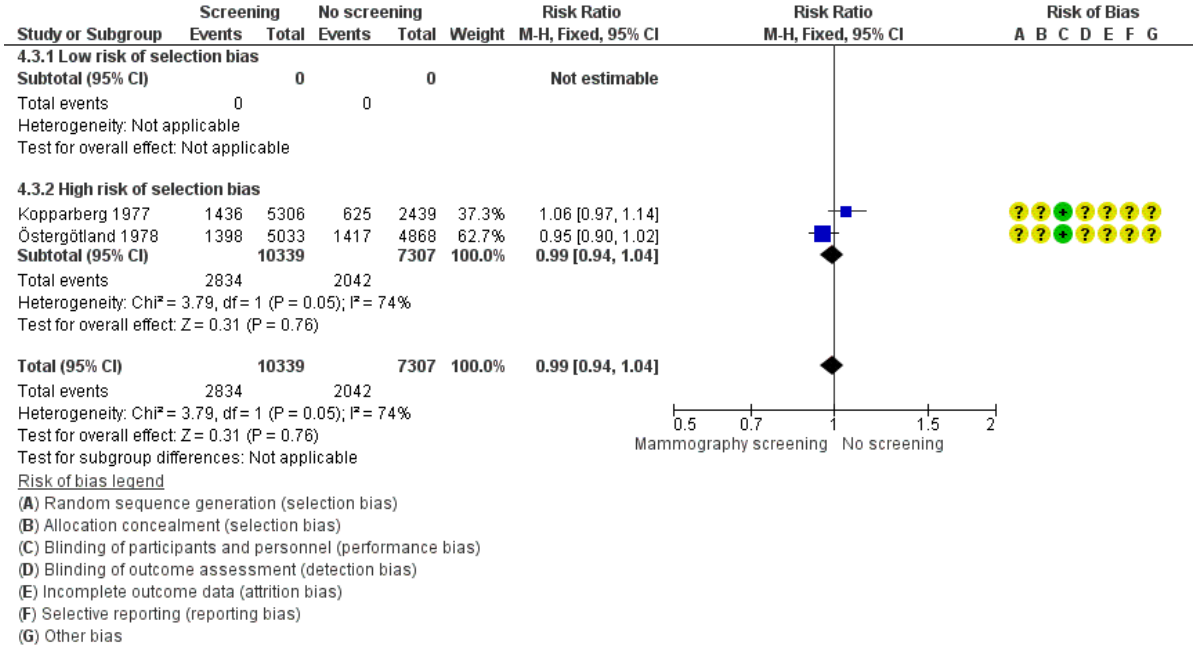
***Sources**: Canelo-Aybar et al., 2021,*[86]

Figure 78 – Forest plot for mammography screening vs. no screening, outcome: other cause mortality, women aged 50-69 years



Sources: *Canelo-Aybar et al., 2021,*[86]

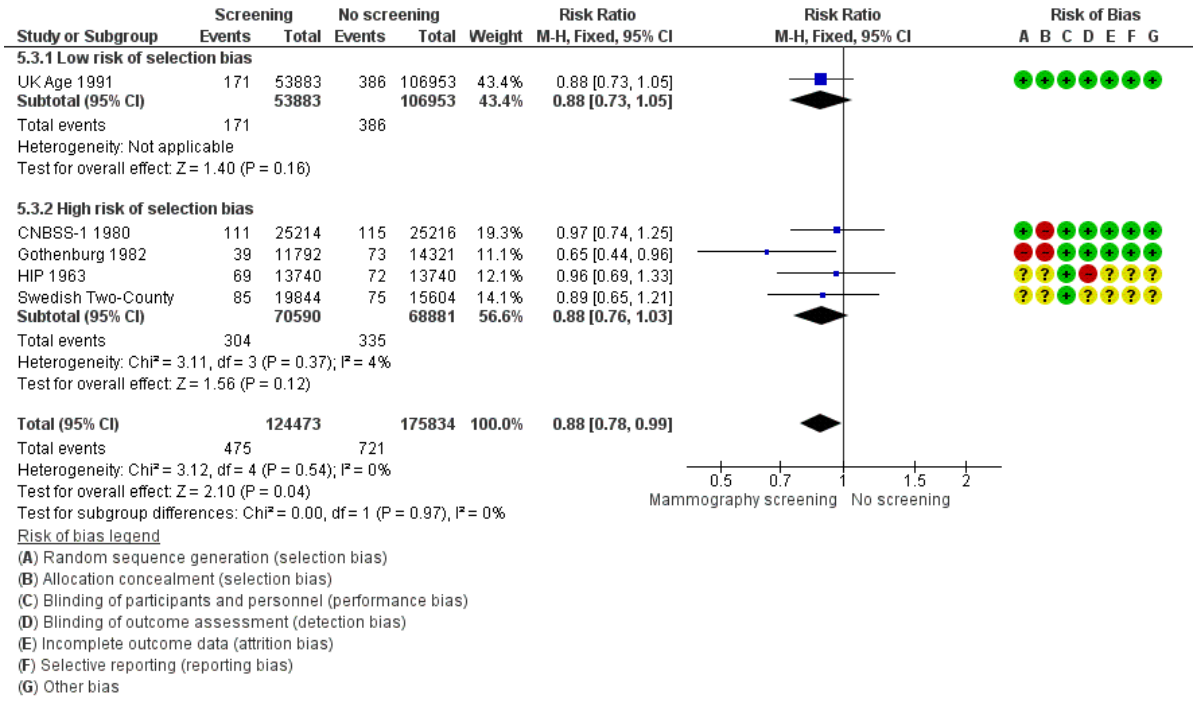
Figure 79 – Forest plot for mammography screening vs. no screening, outcome: other cause mortality, women aged 70-74 years



Sources: *Canelo-Aybar et al., 2021,*[86]

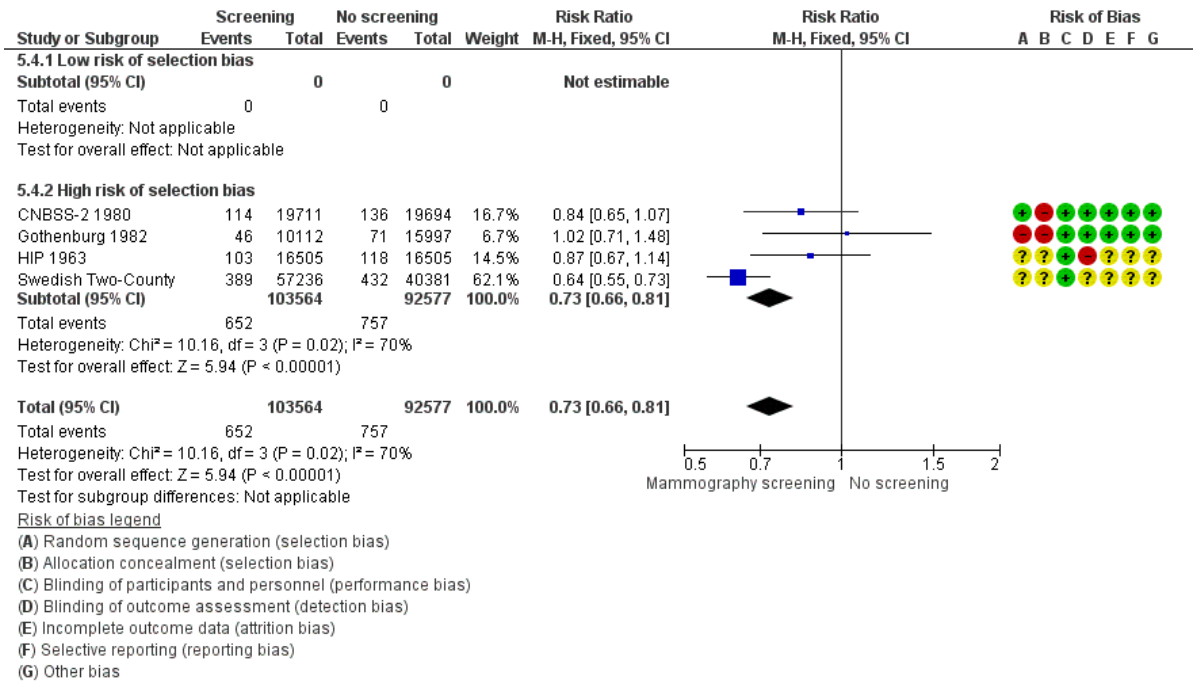
9.5.1.3. Breast cancer stage at diagnosis

Figure 80 – Forest plot for mammography screening vs. no screening, outcome: stage IIA disease or higher, women below 50 years



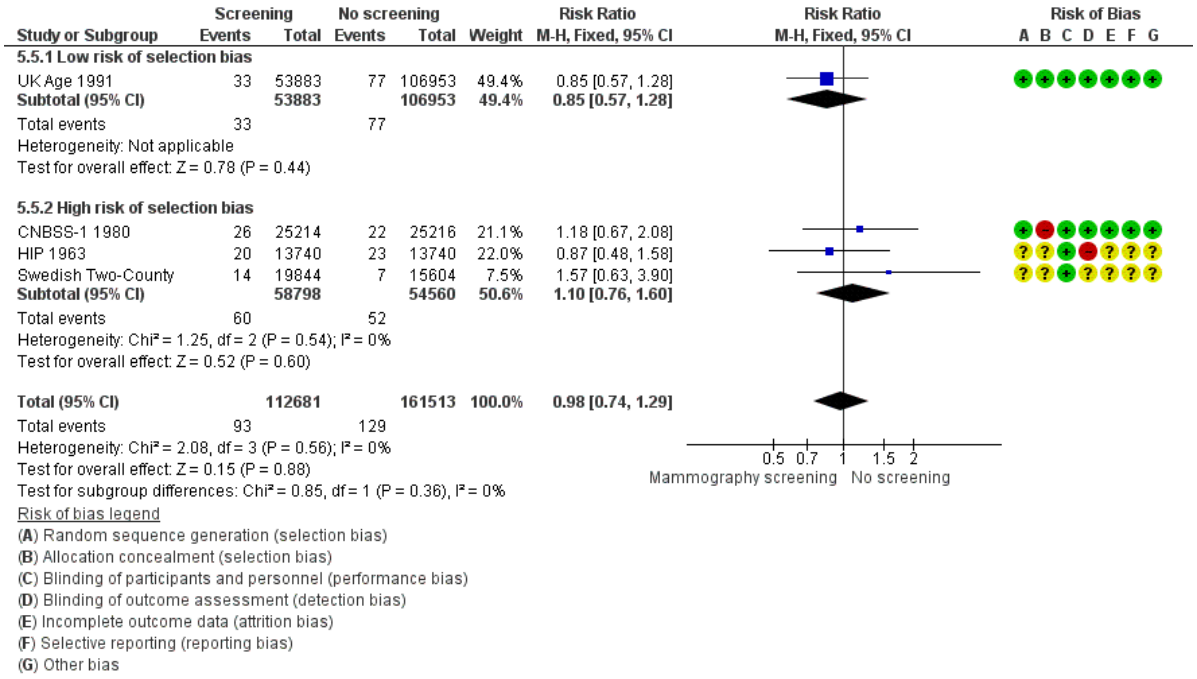
***Source**: Canelo-Aybar et al., 2021.[86]*

Figure 81 – Forest plot for mammography screening vs. no screening, outcome: stage IIA disease or higher, women aged 50-69 years



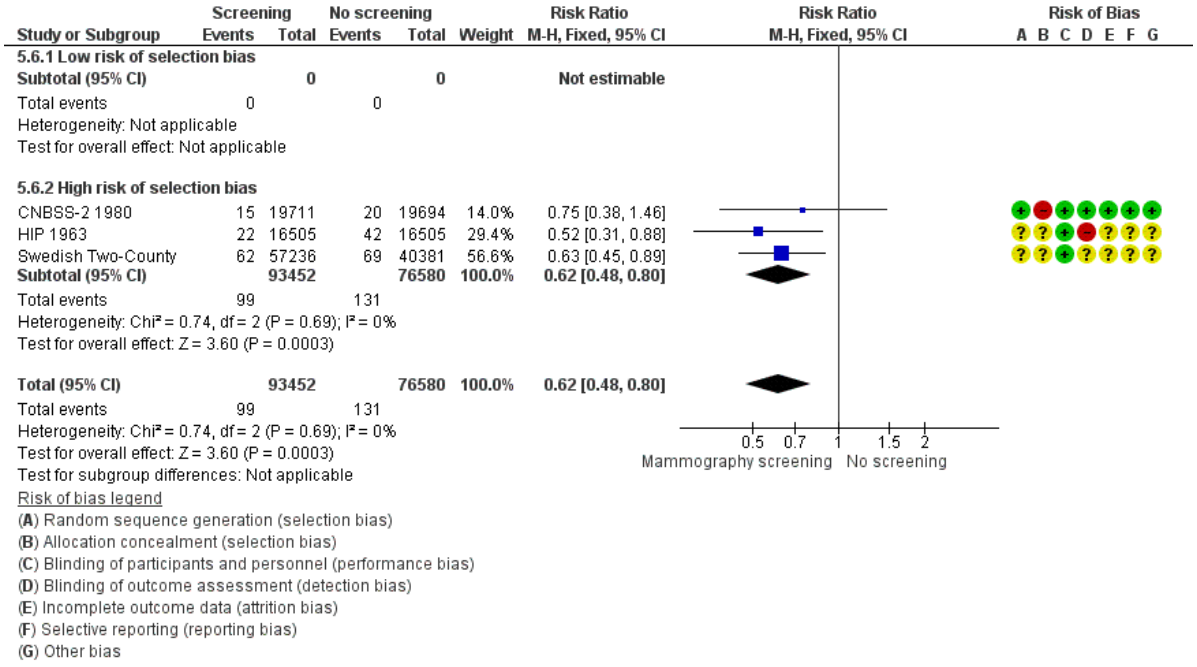
***Source**: Canelo-Aybar et al., 2021.[86]*

Figure 82 – Forest plot for mammography screening vs. no screening, outcome: stage III disease or size ≥ 40 mm, women below 50 years



Sources: *Canelo-Aybar et al., 2021.*[86]

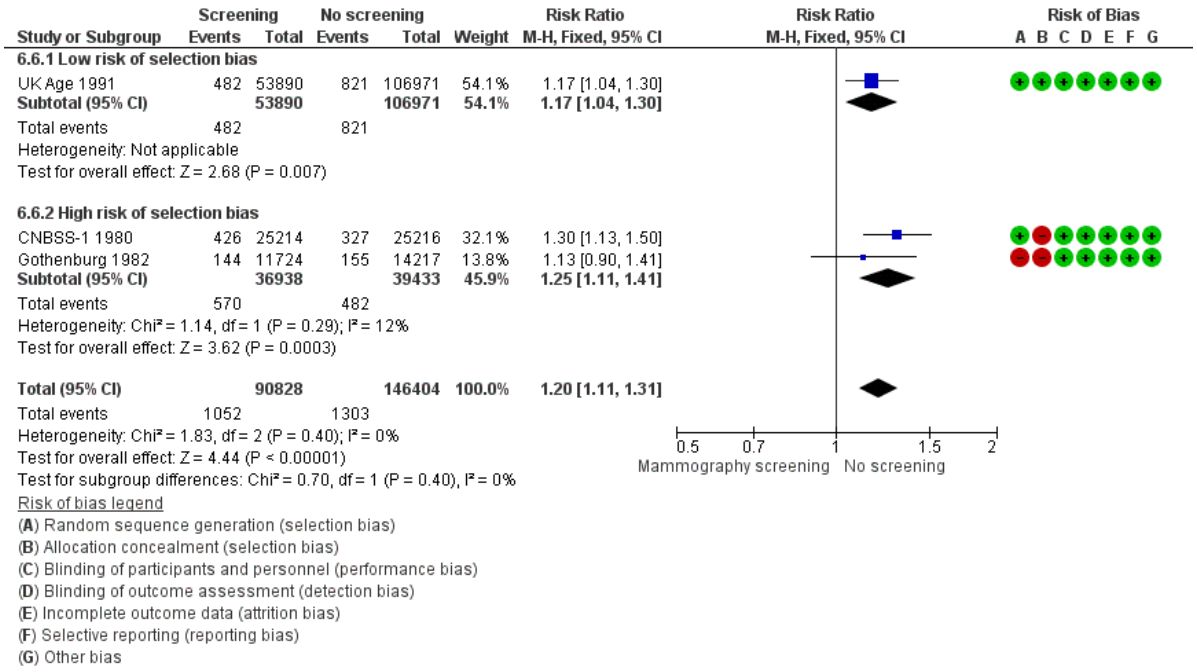
Figure 83 – Forest plot for mammography screening vs. no screening, outcome: stage III disease or size ≥ 40 mm, women aged 50-69 years



Source: *Canelo-Aybar et al., 2021.*[86]

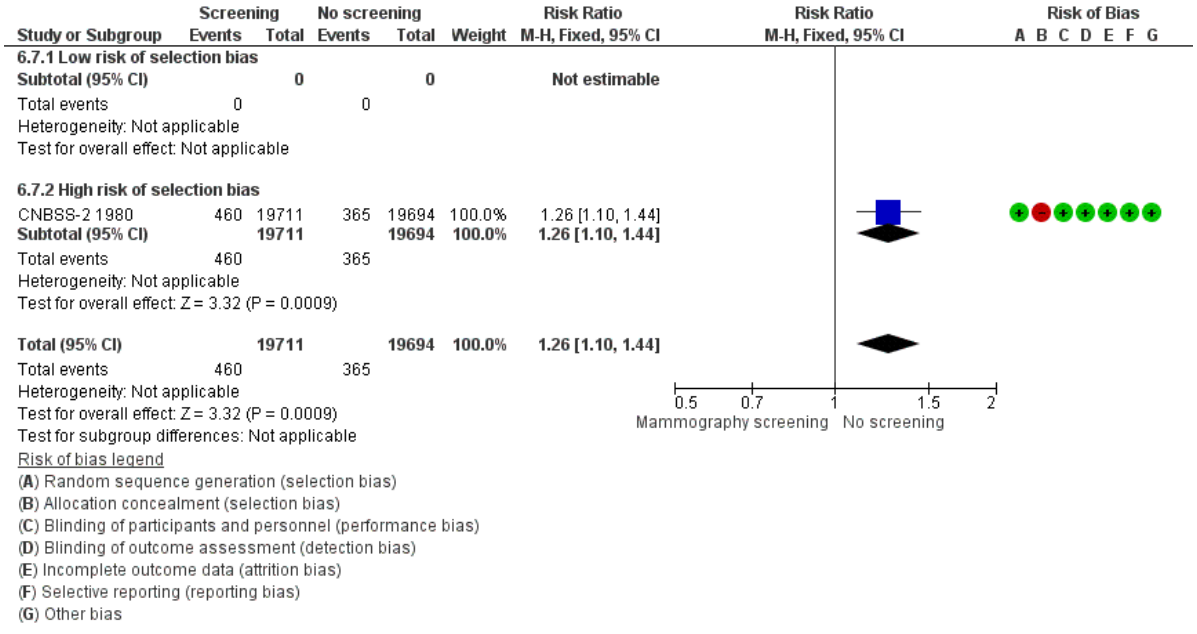
9.5.1.4. Overdiagnosis

Figure 84 – Forest plot for mammography screening vs. no screening, outcome: overdiagnosis (invasive and non-invasive breast cancer), women aged 40-49 years



***Sources**: Moss et al., 2005;[369] Miller, 1993;[132] Bjurstam et al., 1997.[370]*

Figure 85 – Forest plot for mammography screening vs. no screening, outcome: overdiagnosis (DCIS & invasive breast cancer), women aged 50-69 years

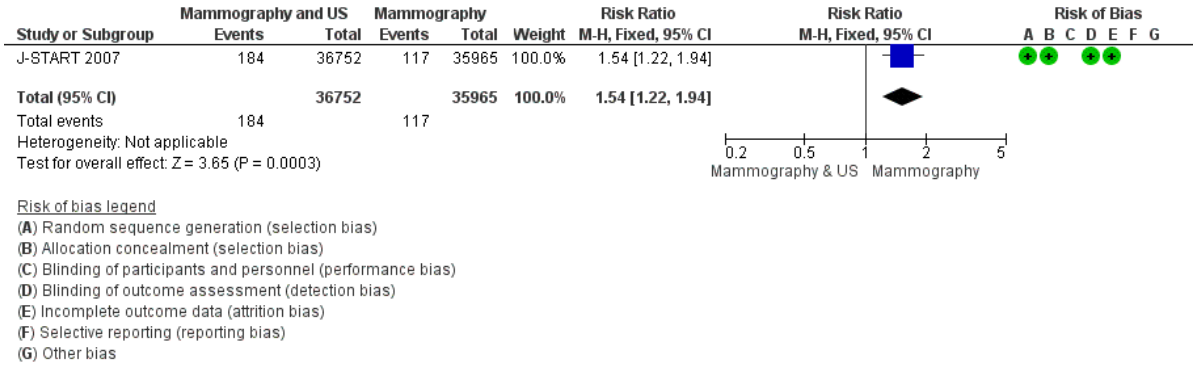


***Sources**: Miller, 1993.[132]*

Appendix 9.5.2. Findings – Invited for screening with mammography and ultrasound vs. invited for screening with mammography

9.5.2.1. Incremental cancer detection

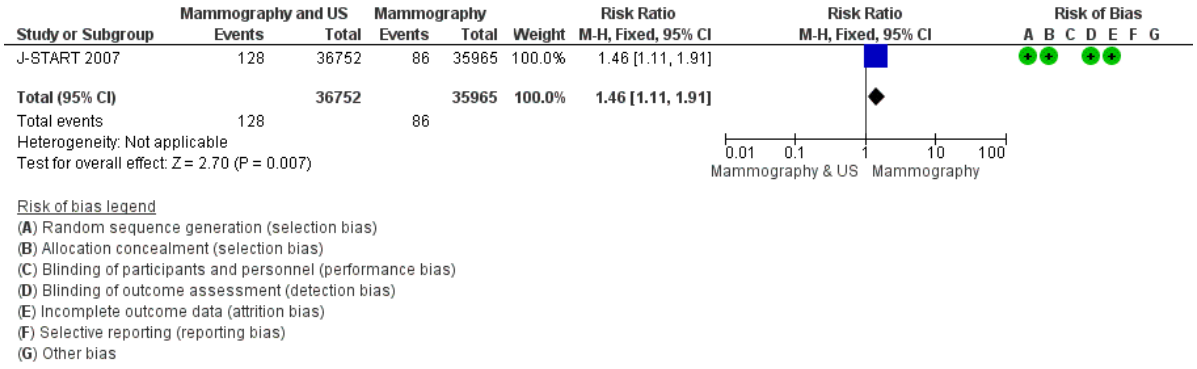
Figure 86 – Forest plot for mammography & US vs. mammography, outcome: incremental cancer detection, 2 years FU



***Source**: Glechner et al. (2023).*[99]

9.5.2.2. Incremental detection of invasive cancer

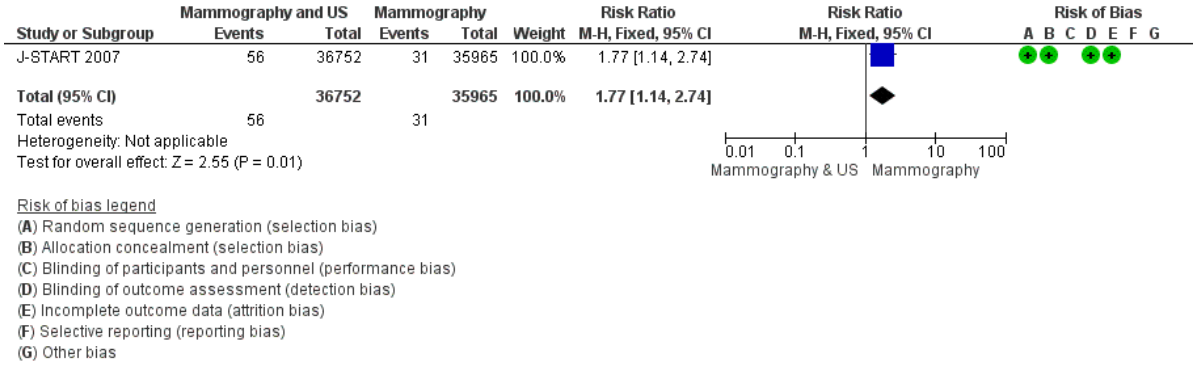
Figure 87 – Forest plot for mammography & US vs. mammography, outcome: incremental detection of invasive cancers, 2 years FU



***Source**: Ohuchi et al. (2016) & Glechner et al. (2023).*[99, 167]

9.5.2.3. Incremental detection of non-invasive cancer

Figure 88 – Forest plot for mammography & US vs. mammography, outcome: incremental detection of non-invasive cancers, 2 Years FU



Risk of bias legend
(**A**) Random sequence generation (selection bias)
(**B**) Allocation concealment (selection bias)
(**C**) Blinding of participants and personnel (performance bias)
(**D**) Blinding of outcome assessment (detection bias)
(**E**) Incomplete outcome data (attrition bias)
(**F**) Selective reporting (reporting bias)
(**G**) Other bias

Source: *Ohuchi et al. (2016) & Glechner et al. (2023).*[99, 167]

Appendix 9.6. GRADE summary of findings tables

Appendix 9.6.1. Screening with mammography vs. no screening

9.6.1.1. All age groups

9.6.1.1.1. Meta-analysis of RCTs with low and high risk of selection bias

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality (follow-up: mean 13 years)												
8	randomised trials	serious[a]	not serious	serious[b]	not serious	none	18999/248646 (7.6%)	17510/289180 (6.1%)	**RR 0.99** (0.97 to 1.01)	**61 fewer per 100,000** (from 182 fewer to 61 more)	⨁⨁◯◯ Low[a,b]	CRITICAL
Mortality ascribed to breast cancer (follow-up: mean 13 years)												
9	randomised trials	serious[c]	not serious	serious[b]	not serious	none	1037/289552 (0.4%)	1318/309538 (0.4%)	**RR 0.81** (0.74 to 0.87)	**81 fewer per 100,000** (from 111 fewer to 55 fewer)	⨁⨁◯◯ Low[b,c]	CRITICAL
Mortality ascribed to any cancer (follow-up: range 9 years to 23 years)												
7	randomised trials	serious[d]	not serious	serious[b]	not serious	none	5188/228220 (2.3%)	6631/260605 (2.5%)	**RR 1.00** (0.96 to 1.03)	**0 fewer per 100,000** (from 102 fewer to 76 more)	⨁⨁◯◯ Low[b,d]	IMPORTANT
Other cause mortality - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
Breast cancer stage at diagnosis (stage II or higher)												
5	randomised trials	serious[e]	not serious	serious[b]	not serious	none	1175/173980 (0.7%)	1240/136430 (0.9%)	**RR 0.66** (0.61 to 0.72)	**309 fewer per 100,000** (from 354 fewer to 254 fewer)	⊕⊕◯◯ Low[b,e]	IMPORTANT
Breast cancer stage at diagnosis (stage III or higher or tumour size ≥40 mm)												
3	randomised trials	serious[f]	not serious	serious[b]	not serious	none	124/90466 (0.1%)	163/72938 (0.2%)	**RR 0.66** (0.52 to 0.83)	**76 fewer per 100,000** (from 107 fewer to 38 fewer)	⊕⊕◯◯ Low[b,f]	IMPORTANT
Overdiagnosis (follow-up: range 7 years to 9 years)												
7	randomised trials	serious[d]	not serious	serious[b]	not serious	none	3906/249025 (1.6%)	3009/263221 (1.1%)	**RR 1.29** (1.23 to 1.35)	**332 more per 100,000** (from 263 more to 400 more)	⊕⊕◯◯ Low[b,d]	CRITICAL
Mastectomy and lumpectomy (follow-up: range 7 years to 9 years)												
5	randomised trials	serious[e]	not serious	serious[b]	not serious	none	2405/145536 (1.7%)	1419/104943 (1.4%)	**RR 1.35** (1.26 to 1.44)	**473 more per 100,000** (from 352 more to	⊕⊕◯◯ Low[b,e]	IMPORTANT

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
										595 more)		
Radiotherapy (follow-up: mean 9 years)												
2	randomised trials	serious[g]	not serious	serious[b]	not serious	none	693/60293 (1.1%)	358/40090 (0.9%)	**RR 1.32** (1.16 to 1.50)	**286 more per 100,000** (from 143 more to 446 more)	⨁⨁◯◯ Low[b,g]	IMPORTANT
Chemotherapy (follow-up: mean 9 years)												
2	randomised trials	serious[g]	not serious	serious[b]	serious[h]	none	252/60293 (0.4%)	144/40090 (0.4%)	**RR 0.96** (0.78 to 1.19)	**14 fewer per 100,000** (from 79 fewer to 68 more)	⨁◯◯◯ Very low[b,g,h]	IMPORTANT
Consequences of false-positive screening results - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	
Health-related quality of life (HRQoL) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	
Radiation exposure - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	

Abbreviations: *CI: confidence interval; RR: risk ratio*

Notes: *a. The certainty of the evidence was downgraded one level because the risk of selection bias was high in six out of eight RCTs.*

b. The certainty of the evidence was downgraded one level due to indirectness because of the age of the trials.

c. The certainty of the evidence was downgraded one level because the risk of selection bias was high in seven out of nine RCTs.

d. The certainty of the evidence was downgraded one level because the risk of selection bias was high in five out of seven RCTs.

e. The certainty of the evidence was downgraded one level because the risk of selection bias was high in four out of five RCTs.
f. The certainty of the evidence was downgraded one level because the risk of selection bias was high in two out of three RCTs.
g. The certainty of the evidence was downgraded one level because the risk of selection bias was high in one out of two RCTs.
h. The certainty of the evidence was downgraded one level due to imprecision because the 95% CI includes a positive as well as a harmful effect.

Appendix 9.6.2. Meta-analysis restricted to RCTs with low risk of selection bias

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality (follow-up: 13 years)												
2	randomised trials	not serious	not serious	serious[a]	serious[b]	none	3497/74972 (4.7%)	4568/128151 (3.6%)	**RR 0.98** (0.94 to 1.02)	**71 fewer per 100,000** (from 214 fewer to 71 more)	⨁⨁◯◯ Low[a,b]	CRITICAL
Mortality ascribed to breast cancer (follow-up: 13 years)												
2	randomised trials	not serious	not serious	serious[a]	serious[c]	none	192/74579 (0.3%)	359/127739 (0.3%)	**RR 0.82** (0.69 to 0.98)	**51 fewer per 100,000** (from 87 fewer to 6 fewer)	⨁⨁◯◯ Low[a,c]	CRITICAL
Mortality ascribed to any cancer (follow-up: range 9 years to 23 years)												
2	randomised trials	not serious	not serious	serious[a]	serious[b]	none	2477/74971 (3.3%)	4303/128148 (3.4%)	**RR 0.98** (0.93 to 1.03)	**67 fewer per 100,000** (from 235 fewer to 101 more)	⨁⨁◯◯ Low[a,b]	IMPORTANT
Other cause mortality - not reported												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Breast cancer stage at diagnosis (stage II or higher)												
1	randomised trials	not serious	not serious	serious[a]	very serious[d]	none	190/21088 (0.9%)	231/21195 (1.1%)	**RR 0.83** (0.68 to 1.00)	**185 fewer per 100,000** (from 349 fewer to 0 fewer)	⊕◯◯◯ Very low[a,d]	IMPORTANT
Breast cancer stage at diagnosis (stage III or higher or tumour size ≥40 mm)												
2	randomised trials	not serious	not serious	serious[a]	very serious[e]	none	48/21080 (0.2%)	59/21195 (0.3%)	**RR 0.82** (0.56 to 1.20)	**50 fewer per 100,000** (from 122 fewer to 56 more)	⊕◯◯◯ Very low[a,e]	IMPORTANT
Overdiagnosis (follow-up: range 7 years to 9 years)												
2	randomised trials	not serious	not serious	serious[a]	not serious	none	1070/74978 (1.4%)	1268/128166 (1.0%)	**RR 1.24** (1.14 to 1.34)	**237 more per 100,000** (from 139 more to 336 more)	⊕⊕⊕◯ Moderate[a]	CRITICAL
Mastectomy and lumpectomy (follow-up: range 7 years to 9 years)												
1	randomised trials	not serious	not serious	serious[a]	serious[f]	none	561/21242 (2.6%)	419/21244 (2.0%)	**RR 1.34** (1.18 to 1.52)	**671 more per 100,000** (from 355	⊕⊕◯◯ Low[a,f]	IMPORTANT

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
										more to 1,026 more)		
Radiotherapy (follow-up: mean 9 years)												
1	randomised trials	not serious	not serious	serious[a]	very serious[g]	none	260/21242 (1.2%)	209/21244 (1.0%)	**RR 1.24** (1.04 to 1.49)	**236 more per 100,000** (from 39 more to 482 more)	⨁◯◯◯ Very low[a,g]	IMPORTANT
Chemotherapy (follow-up: mean 9 years)												
1	randomised trials	not serious	not serious	serious[a]	very serious[h]	none	26/21242 (0.1%)	41/21244 (0.2%)	**RR 0.63** (0.39 to 1.04)	**71 fewer per 100,000** (from 118 fewer to 8 more)	⨁◯◯◯ Very low[a,h]	IMPORTANT
Consequences of false-positive screening results - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Health-related quality of life (HRQoL) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Radiation exposure - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

Abbreviations: *CI: confidence interval; RR: risk ratio*
Notes: *a. The certainty of the evidence was downgraded one level due to indirectness because of the age of the trials.*
b. The certainty of the evidence was downgraded one level due to imprecision because the 95% CI includes a positive as well as a harmful effect.

c. The certainty of the evidence was downgraded one level due to imprecision because the 95% CI includes a positive effect as well as a trivial effect.
d. The certainty of the evidence was downgraded two levels due to imprecision because the outcome was reported in only one adequately randomised trial and because the 95% CI includes a positive effect as well as no effect.
e. The certainty of the evidence was downgraded two levels due to imprecision because the outcome was reported in only one adequately randomised trial and because the 95% CI includes a positive as well as a harmful effect.
f. The certainty of the evidence was downgraded one level due to imprecision because the outcome was reported in only one adequately randomised trial.
g. The certainty of the evidence was downgraded two levels due to imprecision because the outcome was reported in only one adequately randomised trial and because the 95% CI includes a negative effect as well as a trivial effect.
h. The certainty of the evidence was downgraded two levels due to imprecision because the outcome was reported in only one adequately randomised trial and because the 95% CI includes a positive effect as well as a trivial harmful effect.

Appendix 9.6.3. Age group below 50 years

META-ANALYSIS OF RCTS WITH LOW AND HIGH RISK OF SELECTION BIAS

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality (follow-up: mean 13 years)												
6	randomised trials	serious[a]	not serious	serious[b]	not serious	none	2532/114744 (2.2%)	3489/165924 (2.1%)	**RR 0.99** (0.94 to 1.04)	**21 fewer per 100,000** (from 126 fewer to 84 more)	⨁⨁◯◯ Low[a,b]	CRITICAL
Mortality ascribed to breast cancer (follow-up: mean 13 years)												
8	randomised trials	serious[c]	not serious	serious[b]	not serious	none	385/142906 (0.3%)	567/186605 (0.3%)	**RR 0.84** (0.73 to 0.96)	**49 fewer per 100,000** (from 82 fewer to 12 fewer)	⨁⨁◯◯ Low[b,c]	CRITICAL

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
Mortality ascribed to any cancer - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Other cause mortality (follow-up: mean 17 years)												
6	randomised trials	serious[d]	not serious	serious[b]	not serious	none	3349/120304 (2.8%)	5153/170296 (3.0%)	**RR 1.01** (0.97 to 1.05)	**30 more per 100,000** (from 91 fewer to 151 more)	⨁⨁◯◯ Low[b,d]	IMPORTANT
Breast cancer stage at diagnosis (stage II or higher)												
5	randomised trials	serious[d]	not serious	serious[b]	not serious	none	475/124473 (0.4%)	721/175834 (0.4%)	**RR 0.88** (0.78 to 0.99)	**49 fewer per 100,000** (from 90 fewer to 4 fewer)	⨁⨁◯◯ Low[b,d]	IMPORTANT
Breast cancer stage at diagnosis (stage III or higher or tumour size ≥40 mm)												
4	randomised trials	serious[e]	not serious	serious[b]	serious[f]	none	93/112681 (0.1%)	129/161513 (0.1%)	**RR 0.98** (0.74 to 1.29)	**2 fewer per 100,000** (from 21 fewer to 23 more)	⨁◯◯◯ Very low[b,e,f]	IMPORTANT
Overdiagnosis (follow-up: range 7 years to 9 years)												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
3	randomised trials	serious[g]	not serious	serious[b]	not serious	none	1052/90828 (1.2%)	1303/146404 (0.9%)	**RR 1.20** (1.11 to 1.31)	**178 more per 100,000** (from 98 more to 276 more)	⨁⨁◯◯ Low[b,g]	CRITICAL
Mastectomy and lumpectomy (follow-up: range 7 years to 9 years)												
1	randomised trials	serious[h]	not serious	serious[b]	serious[i]	none	415/25214 (1.6%)	313/25216 (1.2%)	**RR 1.33** (1.15 to 1.53)	**410 more per 100,000** (from 186 more to 658 more)	⨁◯◯◯ Very low[b,h,i]	IMPORTANT
Radiotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Chemotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Consequences of false-positive screening results - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Health-related quality of life (HRQoL) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

***Abbreviations**: CI: confidence interval; RR: risk ratio*
***Notes**: a. The certainty of the evidence was downgraded one level because the risk of selection bias was high in four out of six RCTs*
b. The certainty of the evidence was downgraded one level due to indirectness because of the age of the trials.
c. The certainty of the evidence was downgraded one level because the risk of selection bias was high in six out of eight RCTs.
d. The certainty of the evidence was downgraded one level because the risk of selection bias was high in four out of five RCTs.
e. The certainty of the evidence was downgraded one level because the risk of selection bias was high in three out of four RCTs.
f. The certainty of the evidence was downgraded one level due to imprecision because the 95% CI includes a positive as well as a harmful effect.
g. The certainty of the evidence was downgraded one level because the risk of selection bias was high in two out of three RCTs.
h. The certainty of the evidence was downgraded one level due to serious risk of selection bias.
i. The certainty of the evidence was downgraded one level because the outcome was reported in only one (non-adequately) randomised trial.

Appendix 9.6.4. Meta-analysis restricted to RCTs with low risk of selection bias

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality (follow-up: mean 13 years)												
2	randomised trials	not serious	not serious	serious[a]	serious[b]	none	1136/57871 (2.0%)	2145/111023 (1.9%)	**RR 0.98** (0.91 to 1.05)	**39 fewer per 100,000** (from 174 fewer to 97 more)	⊕⊕◯◯ Low[a,b]	CRITICAL
Mortality ascribed to breast cancer (follow-up: mean 13 years)												
2	randomised trials	not serious	not serious	serious[a]	serious[c]	none	113/57542 (0.2%)	267/110725 (0.2%)	**RR 0.80** (0.65 to 1.00)	**48 fewer per 100,000** (from 84 fewer to 0 fewer)	⊕⊕◯◯ Low[a,c]	CRITICAL
Mortality ascribed to any cancer - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Other cause mortality (follow-up: mean 17 years)												
1	randomised trials	not serious	not serious	serious[a]	very serious[d]	none	1885/53883 (3.5%)	3805/106953 (3.6%)	**RR 0.98** (0.93 to 1.04)	**71 fewer per 100,000** (from 249 fewer to 142 more)	⊕◯◯◯ Very low[a,d]	IMPORTANT
Breast cancer stage at diagnosis (stage II or higher)												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
1	randomised trials	not serious	not serious	serious[a]	very serious[d]	none	171/53883 (0.3%)	386/106953 (0.4%)	**RR 0.88** (0.73 to 1.05)	**43 fewer per 100,000** (from 97 fewer to 18 more)	⨁◯◯◯ Very low[a,d]	IMPORTANT
Breast cancer stage at diagnosis (stage III or higher or tumour size ≥40 mm)												
1	randomised trials	not serious	not serious	serious[a]	very serious[e]	none	33/53883 (0.1%)	77/106953 (0.1%)	**RR 0.85** (0.57 to 1.28)	**11 fewer per 100,000** (from 31 fewer to 20 more)	⨁◯◯◯ Very low[a,e]	IMPORTANT
Overdiagnosis (follow-up: range 7 years to 9 years)												
2	randomised trials	not serious	not serious	serious[a]	not serious	none	1493/75002 (2.0%)	2238/128202 (1.7%)	**RR 1.09** (1.02 to 1.16)	**157 more per 100,000** (from 35 more to 279 more)	⨁⨁⨁◯ Moderate[a]	CRITICAL
Mastectomy and lumpectomy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Radiotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Chemotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
Consequences of false-positive screening results - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Health-related quality of life (HRQoL) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Radiation exposure - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

Abbreviations: *CI: confidence interval; RR: risk ratio*
Notes: *a. The certainty of the evidence was downgraded one level due to indirectness because of the age of the trials*
b. The certainty of the evidence was downgraded one level due to imprecision because the 95% CI includes a positive as well as a harmful effect
c. The certainty of the evidence was downgraded one level due to imprecision because the 95% CI includes a positive effect as well as no effect.
d. The certainty of the evidence was downgraded two levels due to imprecision because the outcome was reported in only one adequately randomised trial and because the 95% CI includes a positive effect as well as a trivial harmful effect.
e. The certainty of the evidence was downgraded two levels due to imprecision because the outcome was reported in only one adequately randomised trial and because the 95% CI includes a positive as well as a harmful effect.

Appendix 9.6.5. Age group 50-69 years

META-ANALYSIS OF RCTS WITH LOW AND HIGH RISK OF SELECTION BIAS

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Mortality ascribed to breast cancer (follow-up: mean 13 years)												
6	randomised trials	serious[a]	not serious	serious[b]	not serious	none	504/115155 (0.4%)	620/95370 (0.7%)	**RR 0.74** (0.66 to 0.83)	**169 fewer per 100,000** (from 221 fewer to 111 fewer)	⊕⊕◯◯ Low[a,b]	CRITICAL
Mortality ascribed to any cancer - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Other cause mortality												
3	randomised trials	serious[c]	not serious	serious[b]	not serious	none	4479/66608 (6.7%)	3351/52768 (6.4%)	**RR 0.99** (0.95 to 1.04)	**64 fewer per 100,000** (from 318 fewer to 254 more)	⊕⊕◯◯ Low[b,c]	IMPORTANT
Breast cancer stage at diagnosis (stage II or higher)												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
4	randomised trials	serious[c]	not serious	serious[b]	not serious	none	652/103564 (0.6%)	757/92577 (0.8%)	**RR 0.73** (0.66 to 0.81)	**221 fewer per 100,000** (from 278 fewer to 155 fewer)	⊕⊕◯◯ Low[b,c]	IMPORTANT
Breast cancer stage at diagnosis (stage III or higher or tumour size ≥40 mm)												
4	randomised trials	serious[d]	not serious	serious[b]	not serious	none	99/93452 (0.1%)	131/76580 (0.2%)	**RR 0.62** (0.48 to 0.80)	**65 fewer per 100,000** (from 89 fewer to 34 fewer)	⊕⊕◯◯ Low[b,d]	IMPORTANT
Overdiagnosis												
1	randomised trials	serious[e]	not serious	serious[b]	serious[f]	none	460/19711 (2.3%)	365/19694 (1.9%)	**RR 1.26** (1.10 to 1.44)	**482 more per 100,000** (from 185 more to 815 more)	⊕◯◯◯ Very low[b,e,f]	CRITICAL
Mastectomy and lumpectomy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	
Radiotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	
Chemotherapy - not reported												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
-	-	-	-	-	-	-	-	-	-	-	-	
Consequences of false-positive screening results - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	
Health-related quality of life (HRQoL) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	
Radiation exposure - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	

Abbreviations: *CI: confidence interval; RR: risk ratio*
Notes: *a. The certainty of the evidence was downgraded one level because the risk of selection bias was high in five out of six RCTs.*
b. The certainty of the evidence was downgraded one level due to indirectness because of the age of the trials.
c. The certainty of the evidence was downgraded one level because the risk of selection bias was high in all included RCTs.
d. The certainty of the evidence was downgraded one level because the risk of selection bias was high in three out of four RCTs.
e. The certainty of the evidence was downgraded one level because the risk of selection bias was high in one out of two RCTs.
f. The certainty of the evidence was downgraded one level due to imprecision because the outcome was reported in only one inadequately randomised trial.

Appendix 9.6.6. Meta-analysis restricted to RCTs with low risk of selection bias

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Mortality ascribed to breast cancer (follow-up: mean 13 years)												
1	randomised trials	not serious	not serious	serious[a]	very serious[b]	none	134/16805 (0.8%)	162/16837 (1.0%)	**RR 0.83** (0.66 to 1.04)	**164 fewer per 100,000** (from 327 fewer to 38 more)	⨁◯◯◯ Very low[a,b]	CRITICAL
Mortality ascribed to any cancer - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Other cause mortality												
3	randomised trials	serious[c]	not serious	serious[a]	not serious	none	4479/66608 (6.7%)	3351/52768 (6.4%)	**RR 0.99** (0.95 to 1.04)	**64 fewer per 100,000** (from 318 fewer to 254 more)	⨁⨁◯◯ Low[a,c]	IMPORTANT
Breast cancer stage at diagnosis (stage II or higher)												
4	randomised trials	serious[c]	serious[d]	serious[a]	not serious	none	652/103564 (0.6%)	757/92577 (0.8%)	**RR 0.73** (0.66 to 0.81)	**221 fewer per 100,000** (from 278	⨁◯◯◯ Very low[a,c,d]	IMPORTANT

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mamography	no screening	Relative (95% CI)	Absolute (95% CI)		
										fewer to 155 fewer)		
Breast cancer stage at diagnosis (stage III or higher or tumour size ≥40 mm)												
3	randomised trials	serious[c]	not serious	serious[a]	not serious	none	99/93452 (0.1%)	131/76580 (0.2%)	**RR 0.62** (0.48 to 0.80)	**65 fewer per 100,000** (from 89 fewer to 34 fewer)	⨁⨁◯◯ Low[a,c]	IMPORTANT
Overdiagnosis - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Mastectomy and lumpectomy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Radiotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Chemotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Consequences of false-positive screening results - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Health-related quality of life (HRQoL) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	
Radiation exposure - not reported												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
-	-	-	-	-	-	-	-	-	-	-	-	

Abbreviations: *CI: confidence interval; RR: risk ratio*
Notes: *a. The certainty of the evidence was downgraded one level due to indirectness because of the age of the trials.*
b. The certainty of the evidence was downgraded two levels due to imprecision because the outcome was reported in only one adequately randomised trial and because the 95% CI includes a positive effect as well as a no effect.
c. The certainty of the evidence was downgraded one level due to serious risk of bias.
d. The certainty of the evidence was downgraded one level due to high unexplained heterogeneity of results.

Appendix 9.6.7. Age group above 70 years

META-ANALYSIS OF RCTS WITH LOW AND HIGH RISK OF SELECTION BIAS

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality (follow-up: mean 7.9 years)												
1	randomised trials	serious[a]	not serious	serious[b]	serious[c]	none	2869/10339 (27.7%)	2073/7307 (28.4%)	**RR 0.98** (0.93 to 1.03)	**567 fewer per 100,000** (from 1,986 fewer to 851 more)	⨁◯◯◯ Very low[a,b,c]	CRITICAL
Mortality ascribed to breast cancer (follow-up: range 11 years to 14 years)												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
2	randomised trials	serious[d]	not serious	serious[b]	serious[e]	none	55/10635 (0.5%)	43/7598 (0.6%)	**RR 0.92** (0.62 to 1.37)	**45 fewer per 100,000** (from 215 fewer to 209 more)	⊕◯◯◯ Very low[b,d,e]	CRITICAL
Mortality ascribed to any cancer - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Other cause mortality												
2	randomised trials	serious[a]	serious[f]	serious[b]	not serious	none	2834/10339 (27.4%)	2042/7307 (27.9%)	**RR 0.99** (0.94 to 1.04)	**279 fewer per 100,000** (from 1,677 fewer to 1,118 more)	⊕◯◯◯ Very low[a,b,f]	IMPORTANT
Breast cancer stage at diagnosis (stage II or higher) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Breast cancer stage at diagnosis (stage III or higher or tumour size ≥40 mm) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Overdiagnosis - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Mastectomy and lumpectomy - not reported												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Radiotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Chemotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Consequences of false-positive screening results - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Health-related quality of life (HRQoL) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Radiation exposure - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

Abbreviations:*CI: confidence interval; RR: risk ratio*
Notes: *a. The certainty of the evidence was downgraded one level due to serious risk of selection bias.*
b. The certainty of the evidence was downgraded one level due to indirectness because of the age of the trials.
c. The certainty of the evidence was downgraded one level because the outcome was reported in only one (inadequately) randomised trial.
d. The certainty of the evidence was downgraded one level because the risk of selection and other biases was high for the RCT that had the highest weight in the meta-analysis.
e. The certainty of the evidence was downgraded one level because the 95% CI includes an important positive effect as well as an important negative effect.
f. The certainty of the evidence was downgraded one level due to high unexplained heterogeneity of results.

META-ANALYSIS RESTRICTED TO RCTS WITH LOW RISK OF SELECTION BIAS

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Mortality ascribed to breast cancer												
1	randomised trials	not serious	not serious	serious[b]	very serious[c]	none	3/296 (1.0%)	3/291 (1.0%)	**RR 0.98** (0.20 to 4.83)	**21 fewer per 100,000** (from 825 fewer to 3,948 more)	⨁◯◯◯ Very low[b,c]	CRITICAL
Mortality ascribed to any cancer - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Other cause mortality												
2	randomised trials	serious[a]	serious[d]	serious[b]	serious[e]	none	2834/10339 (27.4%)	2042/7307 (27.9%)	**RR 0.99** (0.94 to 1.04)	**279 fewer per 100,000** (from 1,677 fewer to 1,118 more)	⨁◯◯◯ Very low[a,b,d,e]	NOT IMPORTANT
Breast cancer stage at diagnosis (stage II or higher) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Breast cancer stage at diagnosis (stage III or higher or tumour size ≥40 mm) - not reported												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography	no screening	Relative (95% CI)	Absolute (95% CI)		
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Overdiagnosis - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Interval cancers - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	NOT IMPORTANT
Mastectomy and lumpectomy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Radiotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Chemotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Consequences of false-positive screening results - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Health-related quality of life (HRQoL) - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Radiation exposure - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

Abbreviations:*CI: confidence interval; RR: risk ratio*
Notes: *a. The certainty of the evidence was downgraded one level due to serious risk of bias.*
b. The certainty of the evidence was downgraded one level due to indirectness because of the age of the trials.

c. The certainty of the evidence was downgraded two levels due to imprecision because the outcome was reported in only one adequately randomised trial and because the 95% CI includes a positive as well as a harmful effect.
d. The certainty of the evidence was downgraded one level due to high unexplained heterogeneity of results.
e. The certainty of the evidence was downgraded one level due to imprecision because the 95% CI includes a positive as well as a harmful effect.

Appendix 9.6.8. Screening intervals

BIENNIAL VS. TRIENNIAL SCREENING

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	biennial screening with mammography	triennial screening with mammography	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Mortality ascribed to breast cancer - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Breast cancer stage at diagnosis - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Overdiagnosis - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Mastectomy and lumpectomy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Radiotherapy - not reported												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	biennial screening with mammography	triennial screening with mammography	Relative (95% CI)	Absolute (95% CI)		
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Chemotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

Abbreviations:*CI: confidence interval; RR: risk ratio*

BIENNIAL VS. ANNUAL SCREENING

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	biennial screening with mammography	triennial screening with mammography	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Mortality ascribed to breast cancer - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL
Breast cancer stage at diagnosis - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Overdiagnosis - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	CRITICAL

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	biennial screening with mammography	triennial screening with mammography	Relative (95% CI)	Absolute (95% CI)		
Mastectomy and lumpectomy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Radiotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT
Chemotherapy - not reported												
-	-	-	-	-	-	-	-	-	-	-	-	IMPORTANT

Abbreviations: *CI: confidence interval; RR: risk ratio*

Appendix 9.6.9. Screening with mammography & US vs. screening with mammography alone in women below fifty years old

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography and ultrasound	screening with mammography alone	Relative (95% CI)	Absolute (95% CI)		
All-cause mortality (follow-up: mean 11 years)												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	297/36723 (0.8%)	280/35938 (0.8%)	**RR 1.04** (0.88 to 1.22)	**31 more per 100,000** (from 93 fewer to 171 more)	⊕⊕⊕◯ Moderate[a]	CRITICAL
Mortality ascribed to breast cancer (follow-up: mean 11 years)												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	21/36723 (0.1%)	21/35938 (0.1%)	**RR 0.98** (0.53 to 1.79)	**1 fewer per 100,000** (from 27 fewer to 46 more)	⊕⊕⊕◯ Moderate[a]	CRITICAL
Incremental cancer detection (follow-up: mean 11 years)												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	894/36723 (2.4%)	843/35938 (2.3%)	**RR 1.04** (0.95 to 1.14)	**94 more per 100,000** (from 117 fewer to 328 more)	⊕⊕⊕◯ Moderate[a]	CRITICAL
Incremental detection of invasive cancer (follow-up: mean 11 years)												

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography and ultrasound	screening with mammography alone	Relative (95% CI)	Absolute (95% CI)		
1	randomised trials	not serious	not serious	not serious	serious[a]	none	684/36723 (1.9%)	666/35938 (1.9%)	**RR 1.01** (0.90 to 1.12)	**19 more per 100,000** (from 185 fewer to 222 more)	⊕⊕⊕◯ Moderate[a]	IMPORTANT
Incremental detection of non-invasive cancer (follow-up: mean 11 years)												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	210/36723 (0.6%)	177/35938 (0.5%)	**RR 1.16** (0.95 to 1.42)	**79 more per 100,000** (from 25 fewer to 207 more)	⊕⊕⊕◯ Moderate[a]	IMPORTANT
Incremental detection of advanced cancer - stage II or higher (follow-up: mean 11 years)												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	234/36723 (0.6%)	277/35938 (0.8%)	**RR 0.83** (0.70 to 0.98)	**131 fewer per 100,000** (from 231 fewer to 15 fewer)	⊕⊕⊕◯ Moderate[a]	IMPORTANT
Incremental detection of advanced cancer - stage III or higher (follow-up: mean 11 years)												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	48/36723 (0.1%)	44/35938 (0.1%)	**RR 1.07** (0.71 to 1.61)	**9 more per 100,000**	⊕⊕⊕◯ Moderate[a]	IMPORTANT

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography and ultrasound	screening with mammography alone	Relative (95% CI)	Absolute (95% CI)		
										(from 36 fewer to 75 more)		
Lymph node involvement at diagnosis (follow-up: mean 2 years)												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	23/36752 (0.1%)	29/35965 (0.1%)	**RR 0.78** (0.45 to 1.34)	**18 fewer per 100,000** (from 44 fewer to 27 more)	⊕⊕⊕◯ Moderate[a]	IMPORTANT
Interval cancer												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	18/36752 (0.0%)	35/35965 (0.1%)	**RR 0.50** (0.29 to 0.89)	**49 fewer per 100,000** (from 69 fewer to 11 fewer)	⊕⊕⊕◯ Moderate[a]	IMPORTANT
False-negative rate (follow-up: mean 2 years)												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	18/202 (8.9%)	35/152 (23.0%)	**RR 0.39** (0.23 to 0.66)	**14,046 fewer per 100,000** (from 17,730 fewer to 7,829 fewer)	⊕⊕⊕◯ Moderate[a]	IMPORTANT

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	screening with mammography and ultrasound	screening with mammography alone	Relative (95% CI)	Absolute (95% CI)		
False-positive rate (follow-up: mean 2 years)												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	4427/35847 (12.3%)	3015/34978 (8.6%)	**RR 1.43** (1.37 to 1.50)	**3,706 more per 100,000** (from 3,189 more to 4,310 more)	⊕⊕⊕◯ Moderate[a]	IMPORTANT
Rate of biopsies (follow-up: mean 2 years)												
1	randomised trials	not serious	not serious	not serious	serious[a]	none	1665/36752 (4.5%)	655/35965 (1.8%)	**RR 2.49** (2.28 to 2.72)	**2,714 more per 100,000** (from 2,331 more to 3,132 more)	⊕⊕⊕◯ Moderate[a]	IMPORTANT

Abbreviations: *CI: confidence interval; RR: risk ratio*
Notes: *a. The certainty of the evidence was downgraded one level because the outcome was reported in only one adequately randomised trial.*

APPENDIX 10. LIST OF CONSULTED HTA BODIES

Table 86 – Organizations consulted for HTA reports

Abbreviation	Institute	Country
INAHTA members (May 2025)		
ACE	Agency for Care Effectiveness	Singapore
AETS	Agencia de Evaluación de Tecnologias Sanitarias	Spain
AETSA	Andalusian Agency for Health Technology Assessment	Spain
AGENAS	The Agency for Regional Healthcare	Italy
AHRQ	Agency for Healthcare Research and Quality	USA
AHTA	Adelaide Health Technology Assessment	Australia
AIHTA	Austrian Institute for Health Technology Assessment	Austria
ANS	Agência Nacional de Saúde Suplementar/ National Regulatory Agency for Private Health Insurance and Plans	Brazil
AOTMiT	Agency for Health Technology Assessment and Tariff System	Poland
AP-HP	Assistance publique- Hopitaux de Paris	France
AQuAS	Agència de Qualitat i Avaluació Sanitàries de Catalunya	Spain
ASERNIP-S	Australian Safety and Efficacy Register of New Interventional Procedures -Surgical	Australia
AVALIA-T	Galician Agency for Health Technology Assessment	Spain
CADTH/CDA-AMC	Canadian Agency for Drugs and Technologies in Health	Canada
C2H	Center For Outcomes Research And Economic Evaluation For Health	Japan
CDE	Center for Drug Evaluation	Taiwan
CONITEC	National Committee for Technology Incorporation	Brazil
DHQI	The Danish Healthcare Quality Institute	Denmark
DIGEMID	General Directorate of Medicines, Supplies and Drugs	Peru
FinCCHTA	Finnish Coordinating Center for Health Technology Assessment	Finland
G-ba	The German Health Care System and the Federal Joint Committee	Germany
GÖG	Gesundheit Österreich	Austria
HAD-Uruguay	Health Assessment Division, Ministry of Public Health	Uruguay
HAS	Haute Autorité de Santé	France
HIQA	Health Information and Quality Authority	Ireland
HIS	Healthcare Improvement Scotland	United Kingdom
HTAIn	Health Technology Assessment of India, Ministry of Health & Family Welfare	India
HTW	Health Technology Wales	United Kingdom
IACS	Health Sciences Institute in Aragon	Spain
IECS	Institute for Clinical Effectiveness and Health Policy	Argentina
IETS	Instituto de Evaluación Tecnológica en Salud	Colombia
IHE	Institute of Health Economics	Canada
INEAS	National Authority for Assessment and Accreditation in Healthcare	Tunisia

Abbreviation	Institute	Country
INESSS	Institut national d'excellence en santé et en services sociaux	Canada
IQWiG	Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen	Germany
KCE	Belgian Federal Health Care Knowledge Centre	Belgium
MaHTAS	Health Technology Assessment Section at Ministry of Health of Malaysia	Malaysia
NECA	National Evidence-based healthcare Collaboration Agency	Korea
NICE	National Institute for Health and Care Excellence	United Kingdom
NIHO	National institute for Value and Technologies in Healthcare	Slovak Republic
NIHR	National Institute for Health Research	United Kingdom
NIPH	Norwegian Institute of Public Health	Norway
OH	Ontario Health	Canada
OSTEBA	Basque Office for Health Technology Assessment	Spain
PHARMAC	Pharmaceutical Management Agency	New Zealand
RER	Regione Emilia-Romagna	Italy
SK-NRCHD	Salidat Kairbekova National Research Center for Health Development	Kazakhstan
SBU	Swedish Council on Technology Assessment in Health Care	Sweden
SFOPH	Swiss Federal Office of Public Health	Switzerland
UVT	HTA Unit in A. Gemelli University Hospital	Italy
ZIN	Zorginstituut Nederland	The Netherlands
ZonMw	The Medical and Health Research Council of The Netherlands	The Netherlands
Non-INAHTA members		
CEDIT	Comité dÉvaluation et de Diffusion des Innovations Technologiques	France
CHE	Centre for Health Economics	United Kingdom
CMT	Center for Medical Technology Assessment	Sweden
CRD	Centre for Reviews and Dissemination	United Kingdom
CTFPHC	Canadian Task Force on Preventive Health Care	Canada
DAHTA	German Agency for HTA at the German Institute for Medical Documentation and Information	Germany
DEFACTUM	Social & Health Services and Labour Market	Denmark
DSI	Danish Institute for Health Services Research	Denmark
ECIBC	European Commission Initiative on Breast Cancer	International
EUnetHTA	European Network for HealthTechnology Assessment	International
FinOHTA	Finnish Office for Health Care Technology Assessment	Finland
GR	Gezondheidsraad	The Netherlands
HITAP	Health Intervention and Technology Assessment Program	Thailand
HQO	Health Quality Ontario	Canada
HSAC	Health Services Assessment Collaboration	New Zealand
HTAi	Health Technology Assessment International	International
IHEA	International Health Economics Association (iHEA)	International

Abbreviation	Institute	Country
INAHTA	International Network of Agencies for Health Technology Assessment	International
ISPOR	International Society for Pharmacoeconomics and Outcomes Research	International
MSAC	Medicare Services Advisory Committee	Australia
MTU-SFOPH	Medical Technology Unit - Swiss Federal Office of Public Health	Switzerland
NECA	National Evidence-based healthcare Collaborating Agency	South Korea
NHMRC CTC	NHMRC Clinical Trials Centre	Australia
NHS QIS	NHS Quality Improvement Scotland	United Kingdom
NHSC	National Horizon Scanning Center	United Kingdom
UCEETS	The National Coordination Unit of Health Technology Assessment and Implementation	Argentina
USPSTF	United States Preventive Services Task Force	United States of America
WHO	World Health Organization	International

APPENDIX 11. SEARCH STRATEGY – ECONOMIC LITERATURE

Table 87 – Search strategy and results for MEDLINE (OVID) and MEDLINE In-Process & Other Non-Indexed Citations (OVID) (Results of 24/04/2024)

Date	24 April 2024				
Publication years	…. - Current				
Search string		**Hits**	**Search string**		**Hits**
1	exp Economics/	673 563	**22**	(survival adj3 analy$).tw.	88 818
2	Economics, Medical/	9280	**23**	exp Health Expenditures/	26 636
3	Economics, Nursing/	4013	**24**	Uncertainty/	18 861
4	Economics, Pharmaceutical/	3130	**25**	(cost-effectiveness$ or CEA or cost effectiveness$).ti,ab,kf.	107 131
5	exp Economics, Hospital/	25 812	**26**	(cost-utility$ or CUA or cost utility$).ti,ab,kf.	7951
6	(economic$ or cost or costs or costly or costing or price or prices or pricing or priced or discount or discounts or discounted or discounting or ration$ or expenditure or expenditures or budget$ or afford$ or pharmacoeconomic$ or pharmacoeconomic$).ti,kf.	336 362	**27**	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26	1 310 652
7	exp "Fees and Charges"/	31 431	**28**	exp Breast Neoplasms/	352 531
8	exp "Costs and Cost Analysis"/	269 958	**29**	((breast*) adj3 (cancer* or carcinoma* or tumour* or tumor*)).ti,ab.	407 125
9	exp Health Care Costs/	72 820	**30**	28 or 29	482 680
10	(cost* adj2 (effective* or utilit* or benefit* or minimi* or analy* or outcome or outcomes)).ti,ab,kf.	238 443	**31**	Mass Screening/	117 564
11	exp Decision Support Techniques/	82 676	**32**	Early Detection of Cancer/	40 037
12	exp Models, Economic/	16 286	**33**	screening*.mp.	802 583
13	economic model*.ab,kf.	4438	**34**	31 or 32 or 33	812 795
14	markov$.tw.	33 036	**35**	exp Mammography/	34 023
15	exp Budgets/	14 205	**36**	mammogr*.ti,ab.	37 616
16	(econom$ adj2 (evaluat$ or analy$ or study or studies)).ti,ab,kf.	33 045	**37**	35 or 36	46 930

Date	24 April 2024				
17	Markov Chains/	16 102	38	(30 and 34 and 37) or (breast adj3 screen$).ti,kw.	20 525
18	monte carlo.tw.	61 182	39	Animals/ not human.sh.	7 418 176
19	Monte Carlo Method/	32 784	40	27 not 39	1 240 868
20	(decision adj2 (tree$ or analy$ or model$)).ti,ab,kf.	40 756	41	38 and 40	2373
21	exp Decision Theory/	13 614	42	41 and (english or dutch or french).lg.	2282

Table 88 – Search strategy and results for EMBASE (Results of 24/04/2024)

Date	24 April 2024				
Publication years	…. - Current				
Search string		Hits	Search string		Hits
1	'economics'/exp	252 107	15	'breast cancer'/exp	604 532
2	'health economics'/exp	1 086 396	16	(breast* NEAR/3 (cancer* OR carcinoma* OR tumour* OR tumor*)):ti,ab	588 654
3	('cost*' NEXT/2 ('effective*' OR 'utility*' OR 'benefit*' OR 'minimi*' OR 'analy*' OR 'outcome' OR 'outcomes')):ti,ab,kw	305 066	17	#15 OR #16	739 771
4	'economic model*':ab,kw	6585	18	'mass screening'/exp	328 267
5	'markov':ti,ab,kw	40 036	19	'early detection of cancer'/exp	14 878
6	'monte carlo method'	56 091	20	'screening'	1 419 725
7	'monte carlo':ti,kw	21 398	21	#18 OR #19 OR #20	1 430 760
8	'decision theory'	2763	22	'mammography'/exp	70 961
9	'decision tree'	30 102	23	'mammogr*':ti,ab	50 368
10	(decision* NEAR/2 (model* OR tree* OR analy*)):ti,kw	12 063	24	#22 OR #23	78 810
11	('econom$' NEAR/2 ('evaluat$' OR 'analy$' OR 'study' OR 'studies')):ti,ab,kw	0	25	#17 AND #21 AND #24 OR ((breast NEAR/3 screen$):ti,kw)	25 928
12	('cost-effectiveness*' OR 'CEA' OR 'cost effectiveness*'):ti,ab,kw	156 599	26	#14 AND #25	3830
13	('cost-utility*' OR 'CUA' OR 'cost utility*'):ti,ab,kw	11 959	27	#26 AND ([dutch]/lim OR [english]/lim OR [french]/lim)	3725

14	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13	1 507 486			

Table 89 – Search strategy and results for Econlit (OVID) (Results of 24/04/2024)

Date	24 April 2024				
Publication years	…. - Current				
Search string		**Hits**	**Search string**		**Hits**
1	Economics.mp.	472 955	**15**	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14	527 502
2	(Fees and Charges).mp.	247	**16**	Breast Cancer.ti,kw.	174
3	(Costs and Cost Analysis).mp.	496	**17**	(breast$ adj3 (cancer$ or maligna$ or neopla$ or tumor$ or tumour$ or carcinoma$)).ti,tw.	385
4	Healthcare Costs.mp.	320	**18**	16 or 17	386
5	(cost* adj2 (effective* or utilit* or benefit* or minimi* or analy* or outcome or outcomes)).ab,ti,kw.	22 403	**19**	Mass Screening.mp.	8
6	Decision Support Techniques.mp.	4	**20**	Early Detection of Cancer.mp.	0
7	economic model*.ab,kw.	9371	**21**	mammography.ti,ab,kw.	88
8	(econom$ adj2 (evaluat$ or analy$ or study or studies)).ti,ab,kw.	30 353	**22**	mammogr$'.ti,ab,kw.	127
9	markov$.tw,ti,ab,kw.	10 077	**23**	19 or 20	8
10	monte carlo.ti,kw.	2229	**24**	21 or 22	127
11	Health Expenditures.mp.	709	**25**	(18 and 23 and 24) or (breast adj3 screen$).ti,ab,kw.	70
12	Budgets.mp.	4209	**26**	25 and 15	36
13	(cost-effectiveness* or CEA or cost effectiveness*).ti,ab,kw.	3438	**27**	limit 26 to (dutch or english or flemish or french)	36
14	(cost-utility* or CUA or cost utility*).ti,ab,kw.	263			

Table 90 – Search strategy and results for PsycInfo (OVID) (Results of 24/04/2024)

Date	24 April 2024				
Publication years	…. - Current				
Search string		**Hits**	**Search string**		**Hits**
1	Economics.mp.	36 612	**15**	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14	83 692
2	(Fees and Charges).mp.	184	**16**	Breast Cancer.ti.	7998
3	(Costs and Cost Analysis).mp.	16 334	**17**	(breast$ adj3 (cancer$ or maligna$ or neopla$ or tumor$ or tumour$ or carcinoma$)).ti,tw.	13 819
4	Healthcare Costs.mp.	1722	**18**	16 or 17	13 819
5	(cost* adj2 (effective* or utilit* or benefit* or minimi* or analy* or outcome or outcomes)).ab,ti.	25 160	**19**	Mass Screening.mp.	9677
6	Decision Support Techniques.mp.	1465	**20**	Early Detection of Cancer.mp.	1808
7	economic model*.ti.	95	**21**	mammography.ti,ab.	1644
8	(econom$ adj2 (evaluat$ or analy$ or study or studies)).ti,ab.	5406	**22**	mammogr$'.ti,ab.	2184
9	markov$.tw,ti,ab.	4619	**23**	19 or 20	10 973
10	monte carlo.ti.	475	**24**	21 or 22	2184
11	Health Expenditures.mp.	1679	**25**	(18 and 23 and 24) or (breast adj3 screen$).ti,ab.	1622
12	Budgets.mp.	3621	**26**	25 and 15	72
13	(cost-effectiveness* or CEA or cost effectiveness*).ti,ab.	8672	**27**	limit 26 to (dutch or english or french)	72
14	(cost-utility* or CUA or cost utility*).ti,ab.	750			

Table 91 – Inclusion & exclusion criteria for systematic literature review

Criterion	Include	Exclude
Population	• Adult women (age 18y and older) at average risk of breast cancer without diagnosed/suspected breast cancer	• Patients with diagnosed or suspected breast cancer • Patients with high risk of breast cancer (e.g. BRCA1/2 gene carriers, family history,…)
Intervention	• Any breast cancer screening programme (e.g. various screening intervals, various implementations of screening programme, various age eligibility criteria,…) • Mammography (RX) or mammography combined with ultrasound	• Risk-based breast cancer screening • Screening with any other imaging technology (e.g. Magnetic Resonance Imaging (MRI), ultrasound alone, digital breast tomosynthesis) • Screening for a combination of conditions • Non-imaging screening (e.g. clinical breast examination alone) • Screening combined with other interventions (e.g. diagnostic biomarkers, artificial intelligence)
Comparator	• No organized screening programme • Other screening strategy (e.g. various age windows, various screening intervals, current screening strategy) • Mammography screening	• No comparator • Any other imaging or non-imaging screening (e.g. magnetic resonance imaging (MRI), ultrasound alone, clinical breast examination,…)
Study type	• Full economic evaluations: ○ Cost-effectiveness analysis (CEA) ○ Cost-utility analysis (CUA) ○ Cost-consequence analysis (CCA) ○ Cost-minimisation analysis (CMA) ○ Cost-benefit analysis (CBA)	• Budget impact analysis • Cost analysis • Financial analysis, return of investment analysis, profitability analysis • Non-incremental or non-comparative studies
Study design	• Model-based studies • Trial-based studies • Systematic reviews of relevant studies	• Descriptive studies • Implementation studies
Period	• Primary studies published since 2016 • Belgian and Dutch studies published since 2000 • Systematic reviews published since 2014 • No time restriction on Health Technology Asssessments (HTAs)	• Primary studies published before 2016 • Belgian and Dutch studies published before 2000 • Systematic reviews published before 2014
Type of publication	• Peer-reviewed journal articles • Health technology assesment (HTA)-reports • Government reports	• Editorials, notes, letters, opinions, discussions • Conference abstracts • Non-peer-reviewed work (exception for reports)
Setting*	• Countries categorized as “Very high” on the Human Development Index (as defined by the United Nations Development Programme; based on 2022 data, published in 2024)	• Countries with a designation “High”, “Medium” or “Low” on the Human Development Index or non-high-income countries as categorized by the World Bank

Criterion	Include	Exclude
	• AND categorized as "high-income country" by the World bank (fiscal year 2025)	
Language	• English, Dutch, and French	• Studies published in any other language

Notes: *Countries fitting the setting selection criteria are shown in Appendix Table 93*
Abbreviations: *BRCA = Breast Cancer gene, y = years.*

Table 92 – Results of search strategy (second stage)

Database	Identified references
	24 April 2024
MEDLINE and MEDLINE In-Process & Other Non-Indexed Citations (via OVID)	2282
Embase	3725
EconLit (via OVID)	36
PsycInfo (via OVID)	72
Total (incl. duplicates)	6115
Duplicates	1308
Total (excl. duplicates)	4807
Published before 2016	3243
Total	1564

Figure 89 – Flow chart of the second stage

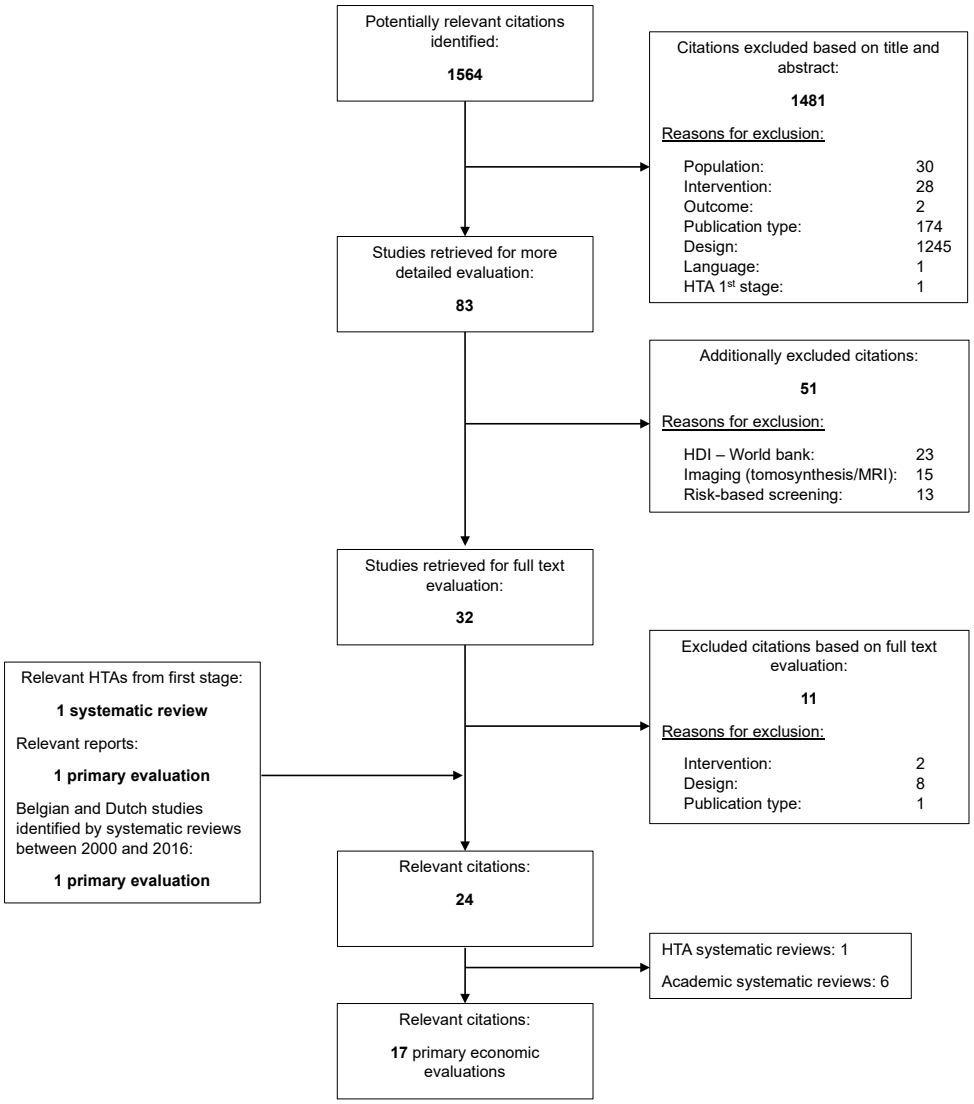


Table 93 – Countries with 'very high' human development index and high-income countries

Countries with 'very high' human development index and high-income economies (sorted on HDI ranking from left to right)										
Switzerland	Norway	Iceland	Hong Kong	Denmark	Sweden	Germany	Ireland	Singapore	Australia	Netherlands
Belgium	Finland	Liechtenstein	United Kingdom	New Zealand	United Arab Emirates	Canada	South-Korea	Luxembourg	United States of America	Austria
Slovenia	Japan	Israel	Malta	Spain	France	Cyprus	Italy	Estonia	Czechia	Greece
Bahrain	Andorra	Poland	Latvia	Lithuania	Croatia	Qatar	Saudi Arabia	Portugal	San Marino	Chile
Slovakia	Hungary	Kuwait	Saint Kitts and Nevis	Uruguay	Romania	Antigua and Barbuda	Brunei	Russia	Bahamas	Panama
Trinidad and Tobago	Barbados	Seychelles								

***Source**: United Nations Development Reports: countries ranked 1-69(https://hdr.undp.org/data-center/country-insights#/ranks). The World Bank: countries with a gross national income per capita >$14 005 (https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups).*

Table 94 – Overview of included studies in systematic reviews

First author, year of publication	KCE, 2024	Mühlberger, 2021	Yuniar, 2020	Jayasekera, 2019*	Mandrik, 2019	Schiller-Frühwirth, 2017b	Ontario Health, 2016	Koleva-Kolarova, 2015
Shafik, 2023	x							
Blankenburg, 2023	x							
Schousboe, 2022	x							
Kregting, 2022	x							
Mühlberger, 2021	x							
Tina Shih, 2021	x							
Chootipongchaivat, 2021	x							
Yuniar, 2020	x							
Jayasekera, 2019	x							
Mandrik, 2019	x							
Phi, 2019	E			x				
Rim, 2019	E			x				
Tina-Shih, 2019	x			x				
Carter, 2018	x							
Koleva-Kolarova, 2018	x	x		x				
Mittmann, 2018	x							
Nguyen, 2018	E		x					
Pashayan, 2018	E	x		x				
Sun, 2018	E		x					
Arnold, 2017	E				x			
Christensen, 2017	E							
Gray, 2017	E	x		x				
Ozmen, 2017	E		x					
Morton, 2017	x			x				
Posso, 2017	E				x			
Schiller-Frühwirth, 2017	x	x		x				
Schiller-Frühwirth, 2017b	x				x			
van Luijt, 2017	x	x		x				
Arrospide, 2016	x	x		x				
Haghighat, 2016	E		x			x		
HQO, 2016	x				x			
Kalra, 2016	E			x				
Obdeijn, 2016	E	x		x				
Posso, 2016	E	x						
Rafia, 2016	x	x		x		E		

First author, year of publication	KCE, 2024	Mühlberger, 2021	Yuniar, 2020	Jayasekera, 2019*	Mandrik, 2019	Schiller-Frühwirth, 2017b	Ontario Health, 2016	Koleva-Kolarova, 2015
Trentham-Dietz, 2016	E			x				
Zehtab, 2016	E		x					
Gocgun, 2015	E			x		E		
Koleva-Kolarova, 2015	x				x	E		
Lee, 2015	E			x				
Li, 2015	NE				x			
Mittmann, 2015	E			x		x		
O'Mahony, 2015	E	x						
Ruile, 2015	E	x						
Sankatsing, 2015	x	x		x		x		
Sprague, 2015	E			x			x	
Barfar, 2014	E		x					
Comas, 2014	E	x						
Pataky, 2014	E					x		
Sato, 2014	E		x					
Vilaprinyo, 2014	E	x						
Kang, 2013	E		x					
Pharoah, 2013	E	x				x		
Rashidian, 2013	E				x	E		
Yoo, 2013	E				x			
Ishikawa, 2012	E		x					
Carles, 2011	E	x				x		x
Madan, 2010	E	x				x		
de Gelder, 2009	E	x				x		x
IMS Health Pty Ltd Australia, 2009						x		
Lee, 2009	E		x					
Valencia-Mendoza, 2009	NE							
Okonkwo, 2008	E		x			E		x
Rojnik, 2008	E	x				x		
Tosteson, 2008	E					E		x
Neeser, 2007	E	x				x		
Norman, 2007	E	x						
Wong, 2007	E		x			x		
Groot, 2006	NE					E		
Ohnuki, 2006	E		x					
Jacobi, 2006	E	x				E		

First author, year of publication	KCE, 2024	Mühlberger, 2021	Yuniar, 2020	Jayasekera, 2019*	Mandrik, 2019	Schiller-Frühwirth, 2017b	Ontario Health, 2016	Koleva-Kolarova, 2015
Stout, 2006	E					x		x
Mandelblatt, 2005	E					E		x
Mandelblatt, 2004	E					x		x
Arveux, 2003	E	x				x		
Mandelblatt, 2003	E				x			
Ho, 2002	NE				x			
Baxter, 2001	NE				x			
Dinnes, 2001	E				x			
Gyrd-Hansen, 2000	E	x				E		

***Notes**: 'E' refers to studies identified by a search strategy, but excluded based on the in- and exclusion criteria. 'NE' means the study was not identified by the search strategy and appeared out of scope. Studies in Italic in the first column are systematic reviews. * For Jayasekera, 2019 only the studies related to screening in the general population with average or intermediate risk are displayed.*

APPENDIX 12. OVERVIEW OF INCLUDED STUDIES

Table 95 – Relevant citations & systematic reviews

Study ID (first author, year)	Full reference	Type of article
Journal articles		
Shafik, 2023[178]	Shafik N, Ilmonen P, Viitasaari L, Sarkeala T, Heinävaara S. Flexible transition probability model for assessing cost-effectiveness of breast cancer screening extension to include women aged 45-49 and 70-74. PLoS ONE. 2023;18(6 June).	Economic evaluation
Blankenburg, 2023[179]	Blankenburg M, Sánchez-Collado I, Soyemi BO, Åkerborg Ö, Caleyachetty A, Harris J, et al. Economic evaluation of supplemental breast cancer screening modalities to mammography or digital breast tomosynthesis in women with heterogeneously and extremely dense breasts and average or intermediate breast cancer risk in US healthcare. Journal of Medical Economics. 2023;26(1):850-61.	Economic evaluation
Schousboe, 2022[180]	Schousboe JT, Sprague BL, Abraham L, O'Meara ES, Onega T, Advani S, et al. Cost-Effectiveness of Screening Mammography Beyond Age 75 Years: A Cost-Effectiveness Analysis. Annals of Internal Medicine. 2022;175(1):11-9.	Economic evaluation
Kregting, 2022[181]	Kregting LM, Sankatsing VDV, Heijnsdijk EAM, de Koning HJ, van Ravesteyn NT. Finding the optimal mammography screening strategy: A cost-effectiveness analysis of 920 modelled strategies. International Journal of Cancer. 2022;151(2):287-96.	Economic evaluation
Mühlberger, 2021[182]	Muhlberger N, Sroczynski G, Gogollari A, Jahn B, Pashayan N, Steyerberg E. Cost Effectiveness of Breast Cancer Screening and Prevention: A Systematic Review with a Focus on Risk-Adapted Strategies. European Journal of Health Economics. 2021;22(8):1311-44.	Systematic review
Tina Shih, 2021[183]	Tina Shih YC, Dong W, Xu Y, Etzioni R, Shen Y. Incorporating baseline breast density when screening women at average risk for breast cancer: A cost-effectiveness analysis. Annals of Internal Medicine. 2021;174(5):602-12.	Economic evaluation
Chootipongchaivat, 2021[184]	Chootipongchaivat S, Wong XY, Ten Haaf K, Hartman M, Tan KB, van Ravesteyn NT, et al. Cost-effectiveness analysis of breast cancer screening using mammography in singapore: A modeling study. Cancer Epidemiology Biomarkers and Prevention. 2021;30(4):653-60.	Economic evaluation
Yuniar, 2020[185]	Yuniar P, Robinson S, Moorin R, Norman R. Economic Evaluation of Breast Cancer Early Detection Strategies in Asia: A Systematic Review. Value in Health Regional Issues. 2020;21:252-63.	Systematic review
Jayasekera, 2020[186]	Jayasekera J, Mandelblatt JS. Systematic review of the cost effectiveness of breast cancer prevention, screening, and treatment interventions. Journal of Clinical Oncology. 2020;38(4):332-50.	Systematic review
Tina Shih, 2019[187]	Tina Shih YC, Dong W, Xu Y, Shen Y. Assessing the Cost-Effectiveness of Updated Breast Cancer Screening Guidelines for Average-Risk Women. Value in Health. 2019;22(2):185-93.	Economic evaluation

Study ID (first author, year)	Full reference	Type of article
Mandrik, 2019[188]	Mandrik O, Ekwunife OI, Meheus F, Severens JL, Lhachimi S, Uyl-de Groot CA, et al. Systematic reviews as a "lens of evidence": Determinants of cost-effectiveness of breast cancer screening. Cancer Medicine. 2019;8(18):7846-58.	Review of reviews
Mittmann, 2018[189]	Mittmann N, Stout NK, Tosteson ANA, Trentham-Dietz A, Alagoz O, Yaffe MJ. Cost-effectiveness of mammography from a publicly funded health care system perspective. CMAJ open. 2018;6(1):E77-E86.	Economic evaluation
Koleva-Kolarova, 2018[190]	Koleva-Kolarova RG, Daszczuk AM, de Jonge C, Abu Hantash MK, Zhan ZZ, Postema EJ, et al. A modelling study to evaluate the costs and effects of lowering the starting age of population breast cancer screening. Maturitas. 2018;109:81-8.	Economic evaluation
Carter, 2018[191]	Carter KJ, Castro F, Morcos RN. Insights into breast cancer screening: A computer simulation of two contemporary screening strategies. American Journal of Roentgenology. 2018;210(3):564-71.	Economic evaluation
van Luijt, 2017[192]	van Luijt PA, Heijnsdijk EAM, de Koning HJ. Cost-effectiveness of the Norwegian breast cancer screening program. International Journal of Cancer. 2017;140(4):833-40.	Economic evaluation
Schiller-Frühwirth, 2017b[176]	Schiller-Frühwirth IC, Jahn B, Arvandi M, Siebert U. Cost-Effectiveness Models in Breast Cancer Screening in the General Population: A Systematic Review. Applied Health Economics and Health Policy. 2017;15(3):333-51.	Systematic review
Schiller-Frühwirth, 2017[193]	Schiller-Frühwirth I, Jahn B, Einzinger P, Zauner G, Urach C, Siebert U. The Long-Term Effectiveness and Cost Effectiveness of Organized versus Opportunistic Screening for Breast Cancer in Austria. Value in Health. 2017;20(8):1048-57.	Economic evaluation
Morton, 2017[194]	Morton R, Sayma M, Sura MS. Economic analysis of the breast cancer screening program used by the UK NHS: Should the program be maintained? Breast Cancer: Targets and Therapy. 2017;9:217-25.	Economic evaluation
Rafia, 2016[195]	Rafia R, Brennan A, Madan J, Collins K, Reed MWR, Lawrence G, et al. Modeling the Cost-Effectiveness of Alternative Upper Age Limits for Breast Cancer Screening in England and Wales. Value in Health. 2016;19(4):404-12.	Economic evaluation
Arrospide, 2016[196]	Arrospide A, Rue M, van Ravesteyn NT, Comas M, Soto-Gordoa M, Sarriugarte G, et al. Economic evaluation of the breast cancer screening programme in the Basque Country: Retrospective cost-effectiveness and budget impact analysis. BMC Cancer. 2016;16(1).	Economic evaluation
Sankatsing, 2015[197]	Sankatsing VDV, Heijnsdijk EAM, van Luijt PA, van Ravesteyn NT, Fracheboud J, De Koning HJ. Cost-effectiveness of digital mammography screening before the age of 50 in the Netherlands. International Journal of Cancer. 2015;137(8):1990-9.	Economic evaluation
Koleva-Kolarova, 2015[198]	Koleva-Kolarova RG, Zhan Z, Greuter MJ, Feenstra TL, De Bock GH. Simulation models in population breast cancer screening: A systematic review. Breast. 2015;24(4):354-63.	Systematic review
Health Technology Assessments (HTAs)		

Study ID (first author, year)	Full reference	Type of article
HQO, 2016[199]	Health Quality Ontario (HQO). Ultrasound as an Adjunct to Mammography for Breast Cancer Screening: A Health Technology Assessment. 2016	Systematic review
Other reports		
I-CHER, 2024[200]	Lelie M, Vandenbulcke B, Verhaeghe N, Annemans L, Simoens S, Putman K. De kosteneffectiviteit van het bevolkingsonderzoek borstkanker in Vlaanderen. Interuniversity Centre for Health Economics Research (I-CHER); 2024	Economic evaluation

APPENDIX 13. OVERVIEW OF EXCLUDED STUDIES

Table 96 – Excluded HTAs with economic chapter & reason for exclusion

Study	Exclusion criterium
Excluded HTAs after full text evaluation	
Agence nationale d'accréditation et d'évaluation en santé. Opportunité d'étendre le programme national de dépistage du cancer du sein aux femmes âgées de 40 à 49 ans. ANAES; 2004.	Year of included studies in systematic review economic evaluation
Oregon Evidence-based Practice Center. Screening for Breast Cancer: Systematic Evidence Review Update for the U.S. Preventive Services Task Force. Agency for Healthcare Research and Quality (AHRQ); 2009.	Systematic review of economic evidence not discussed in main text (appendix)
Haute Autorité de Santé (HAS). Dépistage du cancer du sein chez les femmes de 40 à 49 ans et de 70 à 79 ans en France. 2013.	Publication type (note de cadrage) & full study not available
Institute for clinical and economic review (ICER). Appropriate Imaging for Breast Cancer Screening in Special Populations. Health Technology Assessment Program (HTA) Washington State Health Care Authority; 2014.	Intervention (Digital Breast Tomosynthesis)
Norwegian Institute of Public Health (NIPH). Digital Breast Tomosynthesis with Hologic 3D mammography Selenia Dimensions System for use in breast cancer screening. 2017.	Intervention (Digital Breast Tomosynthesis)
Canadian Agency for Drugs and Technologies in Health (CADTH). Digital Breast Tomosynthesis for the Screening and Diagnosis of Breast Cancer: A Review of the Diagnostic Accuracy, Cost-Effectiveness and Guidelines. 2019.	Intervention (Digital Breast Tomosynthesis)
Haute Autorité de Santé (HAS). Évaluation de la performance et de la place de la mammographie par tomosynthèse dans le programme national de dépistage organisé du cancer du sein – Volet 2. 2023.	Intervention (Digital Breast Tomosynthesis)

Table 97 – Excluded studies with reason for exclusion

Study	Exclusion criterium
Excluded studies: Lower than 'Very high' on Human Development Index or indexed lower than 'High-income country' by World Bank	
Couto HL, Gargano LP, de Oliveira VM, Coelho BA, Pessoa EC, Hassan AT, et al. Cost-Effectiveness Analysis of Digital Breast Tomosynthesis Added to Synthetic Mammography in Breast Cancer Screening in Brazil. PharmacoEconomics - Open. 2024.	HDI & world bank
Irzaldy A, Gvamichava R, Beruchashvili T, Sturua L, van Ravesteyn NT, de Koning HJ, et al. Breast Cancer Screening in Georgia: Choosing the Most Optimal and Cost-Effective Strategy. Value in Health Regional Issues. 2024;39:66-73.	World bank
Yeong SW, Lee SW, Ong SC. Cost-Effectiveness of Breast Cancer Early Detection Program in Low- and Middle-Income Countries: A Systematic Review. Value in Health Regional Issues. 2023;35:57-68.	World bank
Shi J, Guan Y, Liang D, Li D, He Y, Liu Y. Cost-effectiveness evaluation of risk-based breast cancer screening in Urban Hebei Province. Scientific reports. 2023;13(1):3370.	HDI & world bank
Ahmed HF, Mohamed NI, Abdelfatah HEH, Omar EH. Cost Effectiveness Analysis of Breast Cancer Screening in Upper-And Low-Middle Income Countries, Focusing on Egypt: A Systematic Review. Journal of Pharmaceutical Negative Results. 2023;14(2):189-98.	World bank
Wang J, Greuter MJW, Zheng S, van Veldhuizen DWA, Vermeulen KM, Wang Y, et al. Assessment of the Benefits and Cost-Effectiveness of Population-Based Breast Cancer Screening in Urban China: A Model-Based Analysis. International journal of health policy and management. 2022;11(9):1658-67.	HDI & world bank
Lin CN, Lee KT, Chang SM, Wang JD. Cost-effectiveness evaluation of mammography screening program in Taiwan: Adjusting different distributions of age and calendar year for real world data. Journal of the Formosan Medical Association. 2022;121(3):633-42.	HDI
Icanervilia AV, van der Schans J, Cao Q, de Carvalho AC, Cordova-Pozo K, At Thobari J, et al. Economic evaluations of mammography to screen for breast cancer in low- and middle-income countries: A systematic review. Journal of global health. 2022;12:04048.	World bank
Askarian M, Dianat S, Tahmasebi S, Jafari A, Hatam N. Cost- effectiveness of breast cancer screening in Shiraz, Iran. International Journal of Preventive Medicine. 2022;13(1):147.	HDI & world bank
Zhang X, Yang L, Liu S, Li H, Li Q, Cheng Y, et al. Evaluation of Different Breast Cancer Screening Strategies for High-Risk Women in Beijing, China: A Real-World Population-Based Study. Frontiers in Oncology. 2021;11.	HDI & world bank
Mishra G, Pimple S, Mittra I, Badwe R. Screening for breast cancer: Cost-effective solutions for low-& middle-income countries. Indian Journal of Medical Research. 2021;154(2):229-36.	HDI & world bank
Malek Pascha VA, Sun L, Gilardino R, Legood R. Telemammography for breast cancer screening: A cost-effective approach in Argentina. BMJ Health and Care Informatics. 2021;28(1).	World bank
Leung K, Wu JT, Wong IOL, Shu XO, Zheng W, Wen W, et al. Using Risk Stratification to Optimize Mammography Screening in Chinese Women. JNCI Cancer Spectrum. 2021;5(4).	HDI & world bank
Kejela S. Cost-effectiveness of screening mammography in a low income country: a Markov simulation analysis. BMC medical imaging. 2021;21(1):162.	HDI & world bank

Study	Exclusion criterium
Sun L, Sadique Z, dos-Santos-Silva I, Yang L, Legood R. Cost-effectiveness of breast cancer screening programme for women in rural China. International Journal of Cancer. 2019;144(10):2596-604.	HDI & world bank
Salikhanov I, Crape B, Howie P. Cost- Effectiveness of Mammography Screening Program in a Resource-Limited Post-Soviet Country of Kazakhstan. Asian Pacific journal of cancer prevention : APJCP. 2019;20(10):3153-60.	HDI & world bank
Yang L, Wang J, Cheng J, Wang Y, Lu W. Quality assurance target for community-based breast cancer screening in China: a model simulation. BMC Cancer. 2018;18(1):261.	HDI & world bank
Sun L, Legood R, Sadique Z, dos-Santos-Silva I, Yang L. Cost–effectiveness of risk-based breast cancer screening programme, China. Bulletin of the World Health Organization. 2018;96(8):568-77.	HDI & world bank
Nguyen CP, Adang EMM. Cost-effectiveness of breast cancer screening using mammography in Vietnamese women. PLoS ONE. 2018;13(3).	HDI & world bank
Özmen V, Gürdal SÖ, Cabioğlu N, Özcinar B, Nilüfer Özaydın A, Kayhan A, et al. Cost-Effectiveness of Breast Cancer Screening in Turkey, a Developing Country: Results from Bahçeşehir Mammography Screening Project. Meme Sagligi Dergisi / Journal of Breast Health. 2017;13(3):117-22.	World bank
Zehtab N, Jafari M, Barooni M, Nakhaee N, Goudarzi R, Larry Zadeh MH. Cost-Effectiveness Analysis of Breast Cancer Screening in Rural Iran. Asian Pacific journal of cancer prevention : APJCP. 2016;17(2):609-14.	HDI & world bank
Ulloa-Pérez E, Mohar-Betancourt A, Reynoso-Noverón N. Estimation of the Cost-Effectiveness of Breast Cancer Screening Using Mammography in Mexico Through a Simulation. Revista de investigacion clinica; organo del Hospital de Enfermedades de la Nutricion. 2016;68(4):184-91.	HDI & world bank
Haghighat S, Akbari ME, Yavari P, Javanbakht M, Ghaffari S. Cost-effectiveness of three rounds of mammography breast cancer screening in iranian women. International Journal of Cancer Management. 2016;9(1):1-8.	HDI & world bank
Excluded studies: Other imaging than mammography (+ultrasound)	
Tollens F, Baltzer PAT, Froelich MF, Kaiser CG. Economic evaluation of breast MRI in screening - a systematic review and basic approach to cost-effectiveness analyses. Frontiers in Oncology. 2023;13((Tollens F.; Froelich M.F.; Kaiser C.G., clemens.kaiser@umm.de) Department of Radiology and Nuclear Medicine, University Medical Centre Mannheim, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany).	Intervention (MRI)
Moger TA, Holen Å, Hanestad B, Hofvind S. Costs and Effects of Implementing Digital Tomosynthesis in a Population-Based Breast Cancer Screening Program: Predictions Using Results from the To-Be Trial in Norway. PharmacoEconomics - Open. 2022;6(4):495-507.	Intervention (Digital breast tomosynthesis)
Tollens F, Baltzer PAT, Dietzel M, Rubenthaler J, Froelich MF, Kaiser CG. Cost-Effectiveness of Digital Breast Tomosynthesis vs. Abbreviated Breast MRI for Screening Women with Intermediate Risk of Breast Cancer-How Low-Cost Must MRI Be? Cancers. 2021;13(6):12.	Intervention (Digital breast tomosynthesis)
Cressman S, Mar C, Sam J, Kan L, Lohrisch C, Spinelli JJ. The cost-effectiveness of adding tomosynthesis to mammography-based breast cancer screening: an economic analysis. CMAJ open. 2021;9(2):E443-E50.	Intervention (Digital breast tomosynthesis)

Study	Exclusion criterium
Wang J, Phi XA, Greuter MJW, Daszczuk AM, Feenstra TL, Pijnappel RM, et al. The cost-effectiveness of digital breast tomosynthesis in a population breast cancer screening program. European Radiology. 2020;30(10):5437-45.	Intervention (Digital breast tomosynthesis)
Sankatsing VDV, Juraniec K, Grimm SE, Joore MA, Pijnappel RM, de Koning HJ, et al. Cost-effectiveness of digital breast tomosynthesis in population-based breast cancer screening: A probabilistic sensitivity analysis. Radiology. 2020;297(1):40-8.	Intervention (Digital breast tomosynthesis)
Lowry KP, Trentham-Dietz A, Schechter CB, Alagoz O, Barlow WE, Burnside ES, et al. Long-Term Outcomes and Cost-Effectiveness of Breast Cancer Screening with Digital Breast Tomosynthesis in the United States. Journal of the National Cancer Institute. 2020;112(6):582-9.	Intervention (Digital breast tomosynthesis)
Kaiser CG, Dietzel M, Vag T, Froelich MF. Cost-effectiveness of MR-mammography vs. conventional mammography in screening patients at intermediate risk of breast cancer - A model-based economic evaluation. European Journal of Radiology. 2021;136.	Intervention (MR mammography)
Mango VL, Goel A, Mema E, Kwak E, Ha R. Breast MRI screening for average-risk women: A monte carlo simulation cost–benefit analysis. Journal of Magnetic Resonance Imaging. 2019;49(7):e216-e21.	Intervention (MRI)
Pozzi A, Corte AD, Lakis MA, Jeong H. Digital Breast Tomosynthesis in Addition to Conventional 2DMammography Reduces Recall Rates and is CostEffective. Asian Pacific journal of cancer prevention : APJCP. 2016;17(7):3521-6.	Intervention (Digital breast tomosynthesis)
Kalra VB, Wu X, Haas BM, Forman HP, Philpotts LE. Cost-effectiveness of tomosynthesis in annual screening mammography. American Journal of Roentgenology. 2016;207(5):1152-5.	Intervention (Digital breast tomosynthesis)
Excluded studies: Risk-based screening	
Hill H, Kearns B, Pashayan N, Roadevin C, Sasieni P, Offman J, et al. The cost-effectiveness of risk-stratified breast cancer screening in the UK. British Journal of Cancer. 2023;129(11):1801-9.	Intervention (risk-based screening)
Mital S, Nguyen HV. Cost-effectiveness of using artificial intelligence versus polygenic risk score to guide breast cancer screening. BMC Cancer. 2022;22(1).	Intervention (risk-based screening)
Wong JZY, Chai JH, Yeoh YS, Mohamed Riza NK, Liu J, Teo YY, et al. Cost effectiveness analysis of a polygenic risk tailored breast cancer screening programme in Singapore. BMC health services research. 2021;21(1):379.	Intervention (risk-based screening)
Quante AS, Husing A, Chang-Claude J, Kiechle M, Kaaks R, Pfeiffer RM. Estimating the Breast Cancer Burden in Germany and Implications for Risk-based Screening. Cancer Prevention Research. 2021;14(6):627-34.	Intervention (risk-based screening)
Khan SA, Hernandez-Villafuerte KV, Muchadeyi MT, Schlander M. Cost-effectiveness of risk-based breast cancer screening: A systematic review. International Journal of Cancer. 2021;149(4):790-810.	Intervention (risk-based screening)
Sankatsing VDV, van Ravesteyn NT, Heijnsdijk EAM, Broeders MJM, de Koning HJ. Risk stratification in breast cancer screening: Cost-effectiveness and harm-benefit ratios for low-risk and high-risk women. International Journal of Cancer. 2020;147(11):3059-67.	Intervention (risk-based screening)
Roman M, Sala M, Domingo L, Posso M, Louro J, Castells X. Personalized breast cancer screening strategies: A systematic review and quality assessment. PLoS ONE [Electronic Resource]. 2019;14(12):e0226352.	Intervention (risk-based screening)
Arnold M, Pfeifer K, Quante AS. Is risk-stratified breast cancer screening economically efficient in Germany? PLoS ONE. 2019;14(5).	Intervention (risk-based screening)

Study	Exclusion criterium
Pashayan N, Morris S, Gilbert FJ, Pharoah PDP. Cost-effectiveness and Benefit-to-Harm Ratio of Risk-Stratified Screening for Breast Cancer A Life-Table Model. JAMA Oncology. 2018;4(11):1504-10.	Intervention (risk-based screening)
Arnold M, Quante AS. Personalized Mammography Screening and Screening Adherence-A Simulation and Economic Evaluation. Value in Health. 2018;21(7):799-808.	Intervention (risk-based screening)
Gray E, Donten A, Karssemeijer N, van Gils C, Evans DG, Astley S, et al. Evaluation of a Stratified National Breast Screening Program in the United Kingdom: An Early Model-Based Cost-Effectiveness Analysis. Value in Health. 2017;20(8):1100-9.	Intervention (risk-based screening)
Arnold M. Simulation modeling for stratified breast cancer screening - a systematic review of cost and quality of life assumptions. BMC Health Services Research. 2017;17(1):802.	Intervention (risk-based screening)
Trentham-Dietz A, Kerlikowske K, Stout NK, Miglioretti DL, Schechter CB, Ergun MA, et al. Tailoring Breast Cancer Screening Intervals by Breast Density and Risk for Women Aged 50 Years or Older: Collaborative Modeling of Screening Outcomes. Annals of Internal Medicine. 2016;165(10):700-12.	Intervention (risk-based screening)
Excluded studies: Women with dense breasts with other imaging than mammography (+ ultrasound)	
Wang J, Greuter MJW, Vermeulen KM, Brokken FB, Dorrius MD, Lu W, et al. Cost-effectiveness of abbreviated-protocol MRI screening for women with mammographically dense breasts in a national breast cancer screening program. Breast. 2022;61:58-65.	Population (dense breasts) & intervention (abbreviated MRI)
Tollens F, Baltzer PAT, Dietzel M, Schnitzer ML, Schwarze V, Kunz WG, et al. Economic potential of abbreviated breast MRI for screening women with dense breast tissue for breast cancer. European Radiology. 2022;32(11):7409-19.	Population (dense breasts) & intervention (abbreviated MRI)
Tollens F, Baltzer PAT, Dietzel M, Schnitzer ML, Kunz WG, Rink J, et al. Cost-Effectiveness of MR-Mammography in Breast Cancer Screening of Women With Extremely Dense Breasts After Two Rounds of Screening. Frontiers in Oncology. 2021;11.	Population (dense breasts) & intervention (MR-mammography)
Geuzinge HA, Bakker MF, Heijnsdijk EAM, van Ravesteyn NT, Veldhuis WB, Pijnappel RM, et al. Cost-Effectiveness of Magnetic Resonance Imaging Screening for Women With Extremely Dense Breast Tissue. Journal of the National Cancer Institute. 2021;113(11):1476-83.	Population (dense breasts) & intervention (MRI)
Excluded studies after full text evaluation	
Holzel D, Halfter K, Schubert-Fritschle G, Engel J. Expanding mammography screening for women aged 40-80 years: evidence from a modeling approach using real-world data. Scientific Reports. 2023;13(1):16229.	Wrong design (no economic evaluation)
Ghorbani S, Rezapour A, Eisavi M, Barahman M, Bagheri Faradonbeh S. Cost-benefit Analysis of Breast Cancer Screening with Digital Mammography: A Systematic Review. Medical Journal of the Islamic Republic of Iran. 2023;37:89.	Wrong design (preference-based studies & cost analyses)
Waller J, DeStefano K, Dempsey J, Leckron J, Tucker A, Umair M. A Primer to Cost-Effectiveness Analysis in Breast Cancer Imaging: A Review of the Literature. Cureus. 2022;14(8):e28356.	Wrong design (no systematic review)
Gao Y, Reig B, Heacock L, Bennett DL, Heller SL, Moy L. Magnetic Resonance Imaging in Screening of Breast Cancer. Radiologic Clinics of North America. 2021;59(1):85-98.	Wrong design (no economic evaluation or systematic review)
Harkness EF, Astley SM, Evans DG. Risk-based breast cancer screening strategies in women. Best Practice and Research: Clinical Obstetrics and Gynaecology. 2020;65:3-17.	Wrong design (no economic evaluation or systematic review)

Study	Exclusion criterium
Rim SH, Allaire BT, Ekwueme DU, Miller JW, Subramanian S, Hall IJ, et al. Cost-effectiveness of breast cancer screening in the National Breast and Cervical Cancer Early Detection Program. Cancer Causes & Control. 2019;30(8):819-26.	Wrong intervention (combined intervention on breast and cervical screening)
Bewley S, Blennerhassett M, Payne M. Cost of extending the NHS breast screening age range in England. BMJ. 2019;365:l1293.	Wrong design (no economic evaluation)
Trentham-Dietz A, Ergun MA, Alagoz O, Stout NK, Gangnon RE, Hampton JM, et al. Comparative effectiveness of incorporating a hypothetical DCIS prognostic marker into breast cancer screening. Breast Cancer Research and Treatment. 2018;168(1):229-39.	Wrong intervention (screening combined with other intervention)
Esserman LJ, LaCroix AZ. Precision risk-based screening might maximize benefit and minimize harm. Nature Reviews Clinical Oncology. 2018;15(11):661-2.	Wrong publication type (Letter)
Christensen MK, Niclasen BV, Iburg KM. Societal costs and effects of implementing population-based mammography screening in Greenland. International journal of circumpolar health. 2017;76(1):1373580.	Wrong design (non-comparative study)
Beard C, Beard V. Re-examining current breast cancer screening: An analysis of the 2009 U.S. Preventive Services Task Force guidelines for breast cancer screening. Women & health. 2016;56(3):281-95.	Wrong design (no economic evaluation or systematic review)
Excluded studies which were included by other systematic reviews (if not included above and published since 2016)	
Mango VL, Goel A, Mema E, Kwak E, Ha R. Breast MRI screening for average-risk women: A monte carlo simulation cost–benefit analysis. Journal of Magnetic Resonance Imaging. 2019;49(7):e216-e21.	Design (only assessment of the costs)
Phi XA, Greuter MJW, Obdeijn IM, Oosterwijk JC, Feenstra TL, Houssami N, et al. Should women with a BRCA1/2 mutation aged 60 and older be offered intensified breast cancer screening? - A cost-effectiveness analysis. Breast. 2019;45:82-8.	Population (high-risk)
Posso M, Puig T, Carles M, Rue M, Canelo-Aybar C, Bonfill X. Effectiveness and cost-effectiveness of double reading in digital mammography screening: A systematic review and meta-analysis. Eur J Radiol. 2017;96:40-49.	Intervention (double reading)
Haghighat S, Akbari ME, Yavari P, Javanbakht M, Ghaffari S. Cost-effectiveness of three rounds of mammography breast cancer screening in iranian women. International Journal of Cancer Management. 2016;9(1):1-8.	Country (not very high HDI)
Obdeijn, I.M., Heijnsdijk, E.A., Hunink, M.G., Tilanus-Linthorst, M.M., de Koning, H.J.: Mammographic screening in BRCA1 mutation carriers postponed until age 40: Evaluation of benefits, costs and radiation risks using models. Eur J Cancer 63, 135–142 (2016).	Population (high-risk)
Posso, M., Carles, M., Rue, M., Puig, T., Bonfill, X.: Cost-effectiveness of double reading versus single reading of mammograms in a breast cancer screening programme. PLoS ONE 11(7), e0159806 (2016)	Intervention (double reading)
Zehtab N, Jafari M, Barooni M, Nakhaee N, Goudarzi R, Larry Zadeh MH. Cost-Effectiveness Analysis of Breast Cancer Screening in Rural Iran. Asian Pacific journal of cancer prevention : APJCP. 2016;17(2):609-14.	Outcome & country

APPENDIX 14. DATA EXTRACTION SHEET – TEMPLATE

Table 98 – Template data extraction sheet

1	Reference (including all authors)
2	Conflict of interest and/or study funding
3	Country
4	Study question(s)
5	Type of analysis (analytic technique) e.g. cost-effectiveness analysis, cost-utility analysis,…
6	Design e.g. Markov model, decision tree,…
7	Population
8	Intervention
9	Comparator
10	Time horizon
11	Discount rate for costs and/or effects
12	Perspective
13	Costs Cost items included Measurement of resource use Valuation of resource use Data sources Currency and cost year Other aspects
14	Outcomes Endpoints taken into account and/or health states Valuation of health states

	Treatment effect and extrapolation Utility assessment (Quality of Life) Data sources for outcomes Other aspects
15	Uncertainty Scenario analyses Sensitivity analyses
16	Assumptions
17	Results Cost-effectiveness and/or cost-utility Scenario analysis Sensitivity analysis Other aspects
18	Conclusion of the authors
19	Remarks

APPENDIX 15. COSTS

Table 99 – Costs considered in primary evaluations

Study	Costs	Cost elements (source)
Shafik, 2023 *Finland*	• €30 • *Available in original publication*	Screening cost (Literature-based: Lehtinen et al.) Stage- and age-specific treatment costs on yearly basis for 5 years + last year before death (Literature-based: Lehtinen et al.)
Blankenburg, 2023 *United States of America*	• US$134.34 • US$108.87 • US$1407 • US$60 637 • US$82 121 • US$19 387	• Mammography screen (official fee schedule) • Ultrasound (official fee schedule) • Biopsy (official fee schedule) • Treatment cost DCIS, T1mi, T1a, T1b (literature-based) • Treatment cost T1c (literature-based) • Treatment cost T2, T3 (literature-based)
Schousboe, 2022 *United States of America*	• US$151.19 • US$1539 & US$1632 • US$160 • US$2449 & US$2065 • US$14 657 • US$1402 • US$23 927 • US$2288 • US$58 781 • US$40 818 • US$3904 • US$63 682 • US$55 263 • US$5285 • US$80 602	• Screening mammography (official fee schedule) • Cost of false positive with biopsy (literature-based) • Cost of false positive - only imaging (literature-based) • Work-up costs of true positive mammography (64-74 & 75+) • DCIS 1st year (SEER-Medicare linked databases) • DCIS after 1st year (SEER-Medicare linked databases) • Local: 1st year (SEER-Medicare linked databases) • Local: after 1st year (SEER-Medicare linked databases) • Local: last year of life (SEER-Medicare linked databases) • Regional: 1st year (SEER-Medicare linked databases) • Regional: After 1st year (SEER-Medicare linked databases) • Regional: Last year of life (SEER-Medicare linked databases) • Distant: 1st year (SEER-Medicare linked databases) • Distant: After 1st year (SEER-Medicare linked databases) • Distant: Last year of life (SEER-Medicare linked databases)
Kregting, 2022 *The Netherlands*	• €2 • €68.97	• Invitation (Literature-based: Sankatsing et al.) • Mammography in screening setting (Registry data)

Study	Costs	Cost elements (source)
	• €97.97 • €272 • €72.57 • €115.23 • €293.22 • €293.22 • €17.69 • €34.34 • €5520 • €6376 • €6617 • €7441 • €10 110 • €9073 • €9901 • €8480 • €8448 • €12 367.88	• Mammography in hospital setting (Literature-based) • MRI (Literature-based) • Palpation (Literature-based) • Ultrasound (Literature-based) • FNA (hospital fee schedule) • Biopsy (hospital fee schedule) • GP consultation (Literature-based) • GP consultation by phone (Literature-based) • Treatment cost DCIS (Literature-based) • Treatment cost T1a, N- (Literature-based) • Treatment cost T1a, N+ (Literature-based) • Treatment cost T1b, N- (Literature-based) • Treatment cost T1a, N+ (Literature-based) • Treatment cost T1c, N- (Literature-based) • Treatment cost T1c, N+ (Literature-based) • Treatment cost T2+, N- (Literature-based) • Treatment cost T2+, N+ (Literature-based) • Palliative therapy (Literature-based)
Tina Shih, 2021 *United States of America*	• US$139 • US$172 • US$943.12 • US$1400 • US$79 184 • US$45 717 • US$0 – US$26 113 • US$4157 – US$30 762 • US$12 280 – US$36 303	• Screening mammography (Physician Fee Schedule and the literature) • Diagnostic mammography (Physician Fee Schedule and the literature) • Breast biopsy (Physician Fee Schedule and the literature) • Treatment with tamoxifen for 5 years (Physician Fee Schedule and the literature) • Trastuzumab as adjuvant therapy per year (Physician Fee Schedule and the literature) • Trastuzumab for metastatic breast cancer (Physician Fee Schedule and the literature) • Initial care without chemotherapy, radiation therapy & surgery (stage 0-IV) (SEER database) • Initial care without chemotherapy & radiation therapy & with lumpectomy (stage 0-IV) (SEER database) • Initial care without chemotherapy & radiation therapy & with mastectomy (stage 0-IV) (SEER database)

Study	Costs	Cost elements (source)
	• US$6294 – US$47 195	• Initial care without chemotherapy & surgery & with radiation therapy (stage 0-IV) (SEER database)
	• US$17 743 – US$41 334	• Initial care without chemotherapy & with radiation therapy & lumpectomy (stage 0-IV) (SEER database)
	• US$22 453 – US$44 554	• Initial care without chemotherapy & with radiation therapy & mastectomy (stage 0-IV) (SEER database)
	• US$8835 – US$62 283	• Initial care with chemotherapy & without radiation therapy & surgery (stage 0-IV) (SEER database)
	• US$12 477 – US$81 516	• Initial care with chemotherapy & lumpectomy & without radiation therapy (stage 0-IV) (SEER database)
	• US$29 704 – US$71 324	• Initial care with chemotherapy & mastectomy & without radiation therapy (stage 0-IV) (SEER database)
	• US$22 535 – US$88 280	• Initial care with chemotherapy & radiation therapy & without surgery (stage 0-IV) (SEER database)
	• US$20 965 – US$73 660	• Initial care with chemotherapy & radiation therapy & lumpectomy (stage 0-IV) (SEER database)
	• US$29 607 – US$82 982	• Initial care with chemotherapy & radiation therapy & mastectomy (stage 0-IV) (SEER database)
	• US$0 – US$26 419	• Continuing care year 1 (stage 0-IV) (SEER database)
	• US$0 – US$23 618	• Continuing care year 2 (stage 0-IV) (SEER database)
	• US$0 – US$22 746	• Continuing care year 3 (stage 0-IV) (SEER database)
	• US$0 – US$20 059	• Continuing care year 4 (stage 0-IV) (SEER database)
	• US$0 – US$14 815	• Continuing care year 5 (stage 0-IV) (SEER database)
	• US$0 – US$15 260	• Continuing care year 6 and beyond (stage 0-IV) (SEER database)
	• US$71 196 – US$120 129	• Terminal care when cause of death = breast cancer (SEER database)
	• US$12 462 – US$53 062	• Terminal care when cause of death = other (SEER database)
Chootipongchaivat, 2021 *Singapore*	• SGP$110	• Screening mammography (BSS)
	• SGP$14 547	• DCIS Initial care (first 12 months after diagnosis) (Ministry of Health)
	• SGP$4803	• DCIS Continuous care (period between initial and terminal care) (Ministry of Health)
	• SGP$29 217	• DCIS Terminal care (last 6 months of life) (Ministry of Health)

Study	Costs	Cost elements (source)
	• SGP$27 954 • SGP$6812 • SGP$29 217 • SGP$39 437 • SGP$9572 • SGP$29 217 • SGP$50 186 • SGP$11 726 • SGP$29 217 • SGP$55 153 • SGP$25 786 • SGP$29 217 • SGP$1018.5 – 1818.50 • SGP$268.5 – 1018.50	• Stage I Initial care (Ministry of Health) • Stage I Continuous care (Ministry of Health) • Stage I Terminal care (Ministry of Health) • Stage II Initial care (Ministry of Health) • Stage II Continuous care (Ministry of Health) • Stage II Terminal care (Ministry of Health) • Stage III Initital care (Ministry of Health) • Stage III Continuous care (Ministry of Health) • Stage III Terminal care (Ministry of Health) • Stage IV Initial care (Ministry of Health) • Stage IV Continuous care (Ministry of Health) • Stage IV Terminal care (Ministry of Health) • Diagnostic work-up costs for true positive & clinical detection (NUH PASS) • Diagnostic work-up costs for false positive (NUH PASS)
Tina Shih, 2019 *United States of America*	• US$137 • US$167 • US$831 • US$1430 • US$76 924 • US$44 413 • US$0 – US$23 009 • US$3663 – US$27 106 • US$10 819 – US$31 988 • US$5546 – US$41 584 • US$15 633 – US$36 420	• Screening mammography (Physician Fee Schedule and the literature) • Diagnostic mammography (Physician Fee Schedule and the literature) • Breast biopsy (Physician Fee Schedule and the literature) • Treatment with tamoxifen for 5 years (Physician Fee Schedule and the literature) • Trastuzumab as adjuvant therapy per year (Physician Fee Schedule and the literature) • Trastuzumab for metastatic breast cancer (Physician Fee Schedule and the literature) • Initial care without chemotherapy, radiation therapy & surgery (stage 0-IV) (SEER database) • Initial care without chemotherapy & radiation therapy & with lumpectomy (stage 0-IV) (SEER database) • Initial care without chemotherapy & radiation therapy & with mastectomy (stage 0-IV) (SEER database) • Initial care without chemotherapy & surgery & with radiation therapy (stage 0-IV) (SEER database) • Initial care without chemotherapy & with radiation therapy & lumpectomy (stage 0-IV) (SEER database)

Study	Costs	Cost elements (source)
	• US$19 783 – US$39 258	• Initial care without chemotherapy & with radiation therapy & mastectomy (stage 0-IV) (SEER database)
	• US$7784 – US$54 879	• Initial care with chemotherapy & without radiation therapy & surgery (stage 0-IV) (SEER database)
	• US$10 994 – US$71 826	• Initial care with chemotherapy & lumpectomy & without radiation therapy (stage 0-IV) (SEER database)
	• US$26 173 – US$62 846	• Initial care with chemotherapy & mastectomy & without radiation therapy (stage 0-IV) (SEER database)
	• US$19 856 – US$77 786	• Initial care with chemotherapy & radiation therapy & without surgery (stage 0-IV) (SEER database)
	• US$18 473 – US$64 904	• Initial care with chemotherapy & radiation therapy & lumpectomy (stage 0-IV) (SEER database)
	• US$26 088 – US$73 118	• Initial care with chemotherapy & radiation therapy & mastectomy (stage 0-IV) (SEER database)
	• US$0 – US$23 278	• Continuing care year 1 (stage 0-IV) (SEER database)
	• US$0 – US$20 811	• Continuing care year 2 (stage 0-IV) (SEER database)
	• US$0 – US$20 042	• Continuing care year 3 (stage 0-IV) (SEER database)
	• US$0 – US$17 674	• Continuing care year 4 (stage 0-IV) (SEER database)
	• US$0 – US$13 054	• Continuing care year 5 (stage 0-IV) (SEER database)
	• US$0 – US$13 446	• Continuing care year 6 and beyond (stage 0-IV) (SEER database)
	• US$41 822 – US$70 603	• Terminal care when cause of death = breast cancer (SEER database)
	• US$7321 – US$31 170	• Terminal care when cause of death = other (SEER database)
Mittmann, 2018 *Canada*	• CA$183	• Mammography screening
	• CA$445.95	• Non-invasive work-up
	• CA$745.46	• Invasive work-up (needle biopsy: 82.1%)
	• CA$1652.44	• Invasive work-up (Excisional: 17.8%)
	• CA$7376.10	• Chemotherapy
	• CA$29 709	• Herceptin (14% with invasive cancer)
	• CA$383.40	• Tamoxifen
	• CA$822.40	• Aromatase inhibitors (not for DCIS)
	• CA$5014.05	• Radiation for invasive cancer (67%)

Study	Costs	Cost elements (source)
	• CA$4937.06 • CA$6956.77 • CA$5014.05 • CA$4937.06 • CA$6956.77	• Surgery-lumpectomy for invasive cancer (63%) • Surgery-mastectomy for invasive cancer (37%) • Radiation for DCIS (50%) • Surgery-lumpectomy for DCIS (67%) • Surgery-mastectomy for DCIS (33%) *Sources: guidelines, reports, peer-reviewed literature and expert opinion*
Koleva-Kolarova, 2018 *The Netherlands*	• €64 • €176 • €6438 • €7128 • €7701	• Screening mammography (Dutch national screening programme) • Biopsy (Literature-based) • Treatment with tumour size <2cm (Cancer registry) • Treatment with tumour size 2-5cm (Cancer registry) • Treatment with tumour size >5cm (Cancer registry)
Carter, 2018 *United States of America*	• US$132 • US$124 • US$731 • US$16 400 – US$32 200 • US$1500 – US$3600 • US$54 600	• Screening mammography (CMS reimbursement schedule) • Unilateral diagnostic mammography (CMS reimbursement schedule) • Ultrasound-guided needle biopsy (CMS reimbursement schedule) • Treatment in year 1 (no details available) (not disclosed) • Ongoing treatment (not disclosed) • Treatment terminal phase (not disclosed)
van Luijt, 2018 *Norway*	• NOK812 • NOK70 642.63 • NOK1034.52 • NOK174 504.2 • NOK106 868.50 • NOK1643.52 • NOK133 712.30 • NOK214 542.19 • NOK3125.05 • NOK168 846.80 • NOK263 548.04 • NOK4347.90	• Screening cost (literature-based) • DCIS initial treatment (first 12 months) (Oslo University) • DCIS continuous care (per 2 months) (Oslo University) • DCIS terminal costs (last 6 months before death) (Oslo University) • TNM1 initial treatment (first 12 months) (Oslo University) • TNM1 continuous care (per 2 months) (Oslo University) • TNM1 terminal costs (last 6 months before death) (Oslo University) • TNM2 initial treatment (first 12 months) (Oslo University) • TNM2 continuous care (per 2 months) (Oslo University) • TNM2 terminal costs (last 6 months before death) (Oslo University) • TNM3 initial treatment (first 12 months) (Oslo University) • TNM3 continuous care (per 2 months) (Oslo University)

Study	Costs	Cost elements (source)
	• NOK138 925.30 • NOK247 895.15 • NOK9111.90 • NOK182 511.20 • NOK2869	• TNM3 terminal costs (last 6 months before death) (Oslo University) • TNM4 initial treatment (first 12 months) (Oslo University) • TNM4 continuous care (per 2 months) (Oslo University) • TNM4 terminal costs (last 6 months before death) (Oslo University) • Cost of recall examination (for false positives) (literature-based)
Schiller-Frühwirth, 2017 Austria	• €2.45 • €75.02 • €77.70 • €75.02 • €16.53 • €22.14 • €187.37 • €66.95 • €73.59 • €6052.03 • €12 162.98 • €3775.99 • €26 094.23 • €130.21	• Screening invitation (Viennese Sickness Fund) • Opportunistic screening (health insurance) • Organized screening (health insurance) • Diagnostic mammography outside screening (health insurance) • Doctor visit (Main Association of Austrian Social Insurance Institutions) • Ultrasound (Main Association of Austrian Social Insurance Institutions) • MRI (Main Association of Austrian Social Insurance Institutions) • Evaluation after positive mammography in opportunistic screening (Main Association of Austrian Social Insurance Institutions) • Evaluation after positive mammography in organized screening (Main Association of Austrian Social Insurance Institutions) • DCIS therapy: hospital first stay (registry) • DCIS therapy up to 18 months after diagnosis (registry) • Invasive cancer: hospital first stay (registry) • Invasive cancer: up to 18 months after diagnosis (registry) • Follow-up (18 months – 5 years after diagnosis) (registry)
Morton, 2017 *United Kingdom*	• £7589.04 • £8624.68 • £2095.12 • £55.96 • £301.06	• Treatment of screened person (Literature-based) • Treatment of unscreened person (Literature-based) • Cost of unnecessary treatment (Literature-based) • GP appointment & referral (Literature-based) • Follow-up test (Literature-based)
Rafia, 2016 *United Kingdom*	• £14.90 • £11.90 • £183.50 • £271	• Screening (Literature-based) • Invitation for screening (Literature-based) • Recall for further investigation (NHS reference cost) • Fine-needle biopsy of the breast (NHS reference cost)

Study	Costs	Cost elements (source)
	• £71	• Ultrasound scan (NHS reference cost)
	• £2937	• Mastectomy alone (NHS reference cost)
	• £2519	• Wide local excision alone (NHS reference cost)
	• £3355	• Sentinel lymph node biopsy (SLNB) in combination with surgery: WLE (Literature-based)
	• £3910	• Sentinel lymph node biopsy (SLNB) in combination with surgery: Mastectomy (Literature-based)
	• £3914	• Axillary lymph node dissection in combination with surgery and no SLND: WLE (Literature-based)
	• £4562	• Axillary lymph node dissection in combination with surgery and no SLND: Mastectomy (Literature-based)
	• £5345	• Axillary lymph node dissection in combination with surgery and SLND: WLE (Literature-based)
	• £6231	• Axillary lymph node dissection in combination with surgery and SLND: Mastectomy (Literature-based)
	• £2288	• Radiotherapy (PRIME trial)
	• £1002	• Hormonal therapy per annum (Literature-based)
	• £8788	• Chemotherapy (Literature-based)
	• £99	• Follow-up attendance nonadmitted face to face (NHS reference cost)
	• £44.60	• Band B1 mammography (NHS reference cost)
	• £18 018	• Treatment for recurrence (Literature-based)
	• £3228	• Palliative care (Literature-based)
Arrospide, 2016 *Spain*	• €42.28	• Screening mammography (Basque Health Services)
	• €44.14	• Ultrasound (Basque Health Services)
	• €113.49	• Fine needle aspiration (Basque Health Services)
	• €127.46	• Core needle biopsy (Basque Health Services)
	• €2594	• Surgical biopsy (Basque Health Services)
	• €9838	• Stage 0 (Basque Health Services)
	• €17 273	• Stage I (Basque Health Services)
	• €22 145	• Stage II (Basque Health Services)
	• €28 776	• Stage III (Basque Health Services)
	• €17 879	• Stage IV (Basque Health Services)

Study	Costs	Cost elements (source)
	• €172 • €908 • €1994 • €1166	• Annual follow-up stage 0 (Basque Health Services) • Annual follow-up cost stage I (Basque Health Services) • Annual follow-up cost stage II (Basque Health Services) • Annual follow-up cost stage III (Basque Health Services)
Sankatsing, 2015 *The Netherlands*	• €2 • €58 • €367.59 • €69.05 • €77.08 • €141.73 • €175.86 • €103.23 • €4569 • €4333 • €5057 • €11 146 • €10 815 • €16 103 • €6744 • €20 822 • €15 063 • €18 000	• Screening invitation (Screening organizations) • Digital screening mammography (Screening organizations) • Diagnosis: MRI (Literature- & trial-based: MRISC study) • Diagnosis: Consultation after recall (Literature- & trial-based: MRISC study) • Diagnosis: ultrasound (Literature- & trial-based: MRISC study) • Diagnosis: fine needle aspiration (Literature- & trial-based: MRISC study) • Diagnosis: biopsy (Literature- & trial-based: MRISC study) • Diagnosis: additional mammogram (Literature- & trial-based: MRISC study) • Treatment DCIS (Literature- & trial-based: MRISC study) • Treatment T1a, N- (Literature- & trial-based: MRISC study) • Treatment T1b, N- (Literature- & trial-based: MRISC study) • Treatment T1c, N- (Literature- & trial-based: MRISC study) • Treatment T2, N- (Literature- & trial-based: MRISC study) • Treatment T1a, N+ (Literature- & trial-based: MRISC study) • Treatment T1b, N+ (Literature- & trial-based: MRISC study) • Treatment T1c, N+ (Literature- & trial-based: MRISC study) • Treatment T2, N+ (Literature- & trial-based: MRISC study) • Palliative care (Literature-based)
I-CHER, 2024	• €0.51 • €8.14 • €2 051 791 • €71 • €214 • €127 • €13 961	• Invitation (Screening organization) • Second reading & result communication (Screening organization) • Cost of screening programme (Screening organization) • Digital mammography (Nomenclature) • MRI scan (Nomenclature) • Multidisciplinary oncological consult (Nomenclature) • Diagnosis & treatment stage 0 (Nomenclature + Broeckx et al. (2010))

Study	Costs	Cost elements (source)
	• €15 836 • €20 444 • €27 380 • €31 323 • €430 • €430 • €621 • €4217 • €16 867 • €7384 • €5731	• Diagnosis & treatment stage I (Nomenclature + Broeckx et al. (2010)) • Diagnosis & treatment stage II (Nomenclature + Broeckx et al. (2010)) • Diagnosis & treatment stage III (Nomenclature + Broeckx et al. (2010)) • Diagnosis & treatment stage IV (Nomenclature + Broeckx et al. (2010)) • Follow-up stage 0 (Nomenclature + Broeckx et al. (2010)) • Follow-up stage I (Nomenclature + Broeckx et al. (2010)) • Follow-up stage II (Nomenclature + Broeckx et al. (2010)) • Follow-up stage III (Nomenclature + Broeckx et al. (2010)) • Follow-up stage IV (Nomenclature + Broeckx et al. (2010)) • Death due to breast cancer (?) • Death due to other causes (?)

Abbreviations: *CMS = Centers for Medicare & Medicaid Services, NUH PASS = National University Hospital Patient Affordability Simulation System.* ***Notes****: Indicative currency exchange rates on 21/01/2025: US$1 = €0.97; £1 = €1.18; CA$1 = €0.67; NOK1 = €0.085; SGP1 = €0.71. This report refers to the original studies for the authentic sources used for costs.*

APPENDIX 16. RESULTS OF PRIMARY EVALUATIONS IDENTIFIED IN SYSTEMATIC REVIEW

Table 100 – Results of primary evaluations

Study	Type of intervention	Comparator	Screening strategy intervention	Incremental costs	Incremental benefits	ICER*	Deemed cost-effective by authors?
Journal publications							
Shafik, 2023[178]	Age-based mammography screening	Current screening (biennial & 50-69 years)	Biennial screening in women aged 46-69	*€7.70*	*0.007996 LYG*	€963/LYG	Yes
			Biennial screening in women aged 50-74	*€8.00*	*0.000863 LYG*	€92 736/LYG	No
			IQWIG: Biennial screening in women aged 46-74	*€78.51*	*0.01011 LYG*	€7766/LYG	*Not reported*
Blankenburg, 2023[179]	Supplemental screening for women with dense breasts	Current screening (annual & 40-74 years without supplemental screening for dense breasts)	Annual screening with mammography & ultrasound in women with dense breasts aged 40-74	Average risk: US$2870 per screening	0.109 LYG 0.123 QALYs	*US$26 330/LYG* US$23 394/QALY gained	Yes
				Intermediate risk: US$2380 per screening	0.159 LYG 0.180 QALYs	*US$14 969/LYG* US$13 241/QALY gained	
			Biennial screening with mammography & ultrasound in women with dense breasts aged 40-74	Average risk: *not reported* Intermediate: *not reported*	*Not reported* *Not reported*	US$13 109/QALY gained *Not reported*	Yes
			Triennial screening with mammography & ultrasound in women	Average risk: *not reported*	*Not reported*	US$10 797/QALY gained *Not reported*	Yes

Study	Type of intervention	Comparator	Screening strategy intervention	Incremental costs	Incremental benefits	ICER*	Deemed cost-effective by authors?
			with dense breasts aged 40-74	Intermediate: *not reported*	*Not reported*		
Schousboe, 2022[180]	Mammography screening until 80	Mammography screening until 74	Biennial screening until 80 for CCS 0 - >1	*Not reported*	*Not reported*	US$54 000 – US$85 000/QALY gained	Yes
			Annual screening until 80 for CCS 0 - >1	*Not reported*	*Not reported*	US$116 000 – US$377 000/QALY gained	No
	Mammography screening until 85	Mammography screening until 80	Biennial screening until 85 for CCS 0 - >1	*Not reported*	*Not reported*	US$109 000 – US$202 000/QALY gained	No
			Annual screening until 85 for CCS 0 - >1	*Not reported*	*Not reported*	US$268 000 – US$487 000/QALY gained	No
	Mammography screening until 90	Mammography screening until 85	Biennial screening until 85 for CCS 0 - >1	*Not reported*	*Not reported*	US$297 000 – US$472 000/QALY gained	No
			Annual screening until 85 for CCS 0 - >1	*Not reported*	*Not reported*	US$575 000 – US$17 300 000/QALY gained	No
Kregting, 2022[181]	Age-based mammography screening	No screening	Biennial screening in women aged 50-74	€374.762	0.0617 QALYs	€6074/QALY gained (dominated strategy)	No
		Biennial screening women aged 50-74	Triennial screening in women aged 44-74	Cost saving	0.0045 QALYs	Cost saving	Yes
		Biennial screening women aged 50-74	USPSTF: Biennial screening in women aged 40-74	€302.165	0.0277 QALYs	*€10 908/QALY gained*	Yes

Study	Type of intervention	Comparator	Screening strategy intervention	Incremental costs	Incremental benefits	ICER*	Deemed cost-effective by authors?
		Biennial screening women aged 40-74	Biennial screening in women aged 40-76	€15.63	0.0008 QALYs	€19 164/QALY gained	Yes
		Current screening (biennial & 50-74)		€317.79	0.0285 QALYs	*€11 150/QALY gained*	
		Biennial screening (40-76)	Annual screening in women aged 40-75	€642.400	0.0253 QALYs	€25 478/QALY gained	No
Tina Shih, 2021[183]	Age- and density-based mammography screening	No screening	Triennial screening in women aged 50-75	US$24	0.0255 LYG 0.02333 QALYs	*US$910/LYG* US$996/QALY gained	No
			Biennial screening in women aged 50-75	US$101	0.0290 LYG 0.02598 QALYs	*US$3480/LYG* *US$3880/QALY gained*	No
		Biennial screening in women aged 50-75	Stratified screening with annual screening in women with dense breasts aged 40-75 & biennial screening in women without dense breasts aged 50-75	US$547	0.01511 LYG 0.01081 QALYs	*US$36 000/LYG* US$50 596/QALY gained	Yes
Chootipongchaivat, 2021[184]	Age-based mammography screening	No screening	Current programme Singapore: Annual screening in women aged 40-49 & biennial screening in women	SGP$37.99	0.01054 LYG 0.00312 QALYs gained	*SGP$3604/LYG* *SGP$12 176/QALY gained* (dominated)	No

Study	Type of intervention	Comparator	Screening strategy intervention	Incremental costs	Incremental benefits	ICER*	Deemed cost-effective by authors?
			aged 50-69 (10% participation)				
			USPSTF: Biennial screening in women aged 40-74 (100% participation)	SGP$915.68	0.20678 LYG 0.06143 QALYs gained	*SGP$4428/LYG* *SGP$14 906/QALY gained* (dominated)	No
			Lowest ICER: Triennial screening in women aged 50-64 (10% participation)	SGP$29.97	0.00944 LYG 0.00294 QALYs	*SGP$3174/LYG* SGP$10 186/QALY gained	Yes
			Highest ICER: Annual screening in women aged 40-79 (10% participation)	SGP$239.27	0.05322 LYG 0.01462 QALYs	*SGP$4495/LYG* SGP$56 306/QALY gained	Yes
Tina Shih, 2019[187]	Age-based mammography	No screening	Biennial screening in women aged 50-75	US$642	0.0166 QALYs	US$38 600/QALY gained	Yes
		Biennial screening in women aged 50-75	Annual screening 45-54 & biennial screening 55-75	US$374	0.0094 QALYs	US$40 135/QALY gained	Yes
		Annual screening 45-54 & biennial screening 55-75	Annual screening in women aged 40-75	US$926	0.0080 QALYs	US$115 274/QALY gained	No
Mittmann, 2018[189]	Age-based mammography screening	No screening	Lowest ICER: Triennial screening in women aged 50-69	CA$1402.33	0.046 LYG 0.038 QALYs	CA$30 536/LYG CA$36 981/QALY gained	*Not discussed*

Study	Type of intervention	Comparator	Screening strategy intervention	Incremental costs	Incremental benefits	ICER*	Deemed cost-effective by authors?
			Belgian strategy: Biennial screening in women aged 50-69	CA$1869.83	0.060 LYG 0.050 QALYs	CA$30 879/LYG CA$37 265/QALY gained	*Not discussed*
			Current programme: Biennial screening in women aged 50-74	CA$2251.38	0.067 LYG 0.055 QALYs	CA$33 715/LYG CA$40 851/QALY gained	*Weakly dominated by annual screening*
			Highest ICER: Annual screening in women aged 40-74	CA$6085.87	0.125 LYG 0.105 QALYs	CA$48 718/LYG CA$57 938/QALY gained	*Not discussed*
Koleva-Kolerova, 2018[190]	Age-based mammography screening	Current screening (biennial & 50-74)	Biennial screening in women aged 48-74	€1190	0.0531 YOLS	€26 000/YOLS	Yes
		Biennial screening 48-74	IQWIG: Biennial screening in women aged 46-74	€1260	0.0534 YOLS	€27 100/YOLS	Yes
Carter, 2018[191]	Age-based mammography screening	No screening	Biennial screening in women aged 50-74	US$2228	0.12 LYG	*US$18 566/LYG*	No
			Annual screening in women aged 45-54 and biennial screening in women aged 55-80	US$3560	0.17 LYG	*US$20 941/LYG*	Yes
van Luijt, 2017[192]	Age-based mammography screening	No screening	Belgian strategy: Biennial screening in women aged 50-69	Health care payer: NOK3288	0.06085 QALYs	NOK112 162/QALY gained	Yes
				Societal: NOK5927	0.068085 QALYs	NOK189 557/QALY gained	Yes

Study	Type of intervention	Comparator	Screening strategy intervention	Incremental costs	Incremental benefits	ICER*	Deemed cost-effective by authors?
Schiller-Frühwirth, 2017[193]	Age-based mammography screening	No screening	Biennial screening in women aged 45-69	€650.76	0.032 LYG	€20 023.62/LYG	Yes
		Opportunistic screening	Biennial screening in women aged 45-69	- €10.90	0.009 LYG	*Cost saving (dominates opportunistic screening)*	Yes
Morton, 2017[194]	Age-based mammography screening	No screening	Triennial screening in women aged 50-70	*Not reported*	*Not reported*	£11 546.11/QALY gained	Yes
Rafia, 2016[195]	Age-based mammography screening	Current screening (triennial & 50-70)	Triennial screening in women aged 50-72	£35.45	0.006532 LYG 0.005125 QALYs	£5428/LYG £6918/QALY gained	Yes
		Triennial screening in women aged 50-72	Triennial screening in women aged 50-75	£35.68	0.004624 LYG 0.003538 QALYs	£7715/LYG £10 085/QALY gained	Yes
		Triennial screening in women aged 50-75	Triennial screening in women aged 50-78	£34.81	0.003143 LYG 0.002310 QALYs	£11 076/LYG £15 072/QALY gained	Yes
		Triennial screening in women aged 50-78	Triennial screening in women aged 50-81	£34.79	0.001857 LYG 0.001274 QALYs	£18 731/LYG £27 306/QALY gained	No
		Triennial screening in women aged 50-81	Triennial screening in women aged 50-84	£34.52	0.000875 LYG 0.000454 QALYs	£39 445/LYG £75 997/QALY gained	No
		Triennial screening in	Triennial screening in women aged 50-87	£34.00	0.000319 LYG	£106 554/LYG	No

Study	Type of intervention	Comparator	Screening strategy intervention	Incremental costs	Incremental benefits	ICER*	Deemed cost-effective by authors?
		women aged 50-84			-0.000053 QALYs	*Dominated*	
Arrospide, 2016[196]	Age-based mammography screening	No screening	Belgian strategy: Biennial screening in women aged 50-69	€87.91	0.020930 QALYs	€4214/QALY gained	Yes
Sankatsing, 2015[197]	Age-based mammography screening	No screening	Current screening: Biennial screening in women aged 50-74	€137.06	0.041 LYG 0.054 QALYs	€3376/LYG €2529/QALY gained	Yes
		Current screening (biennial & 50-74)	Biennial screening in women aged 48-74	€26.65	0.005 LYG 0.007 QALYs	€5329/LYG €4060/QALY gained	Yes
		Biennial screening in women aged 48-74	IQWIG: Biennial screening in women aged 45-74	€46.53	0.006 LYG 0.008 QALYs	€7628/LYG €5802/QALY gained	Yes
		Biennial screening in women aged 45-74	Annual screening in women aged 45-49 & biennial screening in women aged 50-74	€71.41	0.004 LYG 0.006 QALYs	*Dominated*	No
		Biennial screening in women aged 45-74	USPSTF: Biennial screening in women aged 40-74	€96.36	0.009 LYG 0.011 QALYs	€10 826/LYG €8259/QALY gained	Yes
		Biennial screening in women aged 40-74	Annual screening in women aged 40-49 & biennial screening in women aged 50-74	€168.83	0.009 LYG 0.012 QALYs	€18 759/LYG €14 300/QALY gained	Yes
Other reports							

Study	Type of intervention	Comparator	Screening strategy intervention	Incremental costs	Incremental benefits	ICER*	Deemed cost-effective by authors?
I-CHER, 2024[200]	Age-based mammography screening	Stop screening programme (opportunistic screening will increase)	Belgian strategy: Biennial screening in women aged 50-69	HCP: €468 875 075 Societal: €452 330 512	98 610 LYG 46 735 QALYs	HCP: €4755/LYG HCP: €10 033/QALY gained Societal: €9679/QALY gained	Yes
		Current screening (biennial 50-69)	ECIBC: Biennial screening in women aged 45-69 & triennial screening in women aged 70-74	HCP: €265 682 493 Societal: €280 232 425	17 328 LYG 16 356 QALYs	HCP: €15 333/LYG HCP: €16 244/QALY gained Societal: €17 133/QALY gained	Yes
			Biennial screening in women aged 45-69	HCP: €141 128 226	13 140 QALYs	€10 740/QALY gained	Yes
			Biennial screening in women aged 50-69 & triennial screening in women aged 70-74	HCP: €165 639 708	4 633 QALYs	€35 752/QALY gained	Yes

***Notes**: *Outcomes in Italic mean the ICER can be estimated based on information provided by the authors, but was not calculated by the authors themselves. Indicative currency exchange rates on 21/01/2025: US$1 = €0.97; £1 = €1.18; CA$1 = €0.67; NOK1 = €0.085; SGP1 = €0.71. 'IQWIG' corresponds to the screening strategy recommended by IQWIG (biennial screening in women aged 45-74), 'USPSTF' to the strategy recommended by USPSTF (biennial screening in women aged 40-74), 'ECIBC' to the strategy recommended by ECIBC (biennial screening in women aged 45-69 & triennial screening in women aged 70-74).*

***Abbreviations**: CCS = Charlson Comorbidity Score, HCP: Health Care Payer perspective, ICER = Incremental Cost-Effectiveness Ratio, LYG = Life Years Gained, QALY = Quality-Adjusted Life Year, USPSTF = United States Preventive Services Task Force, y = years, YOLS = Years of Life Saved, US$ = United States Dollar, SGP = Singaporean Dollar, CA$ = Canadian Dollar, NOK = Norwegian Krone, £ = Pound Sterling, DKK = Danish Krone.*

APPENDIX 17. SENSITIVITY ANALYSES

Table 101 – Factors considered in sensitivity & scenario analyses

Study	Type of sensitivity analysis performed	Main parameters & assumptions tested
Shafik, 2023[178]	• Deterministic	• Incidence rates • Treatment costs • Stage distributions • Probabilities of localized breast cancer
Blankenburg, 2023[179]	• Deterministic • Probabilistic	• Breast cancer prevalence and incidence • Undetected breast cancer mortality and utility • Discount rates • Cost of screening modalities • Age at model start Scenarios: • Screening frequency (annual, biennial & triennial) • Excluding DCIS • Accounting for decline of breast density with age • Assuming false-positives decrements • Accounting for equipment costs
Schousboe, 2022[180]	• Deterministic • Probabilistic	• Breast cancer costs • DCIS incidence • Invasive breast cancer incidence • Breast cancer mortality • Disutility of breast cancer • Cost of screening mammography • Stage shift from regional to localized cancer • Proportion of mammograms with false-positive results • Disutility of false positive

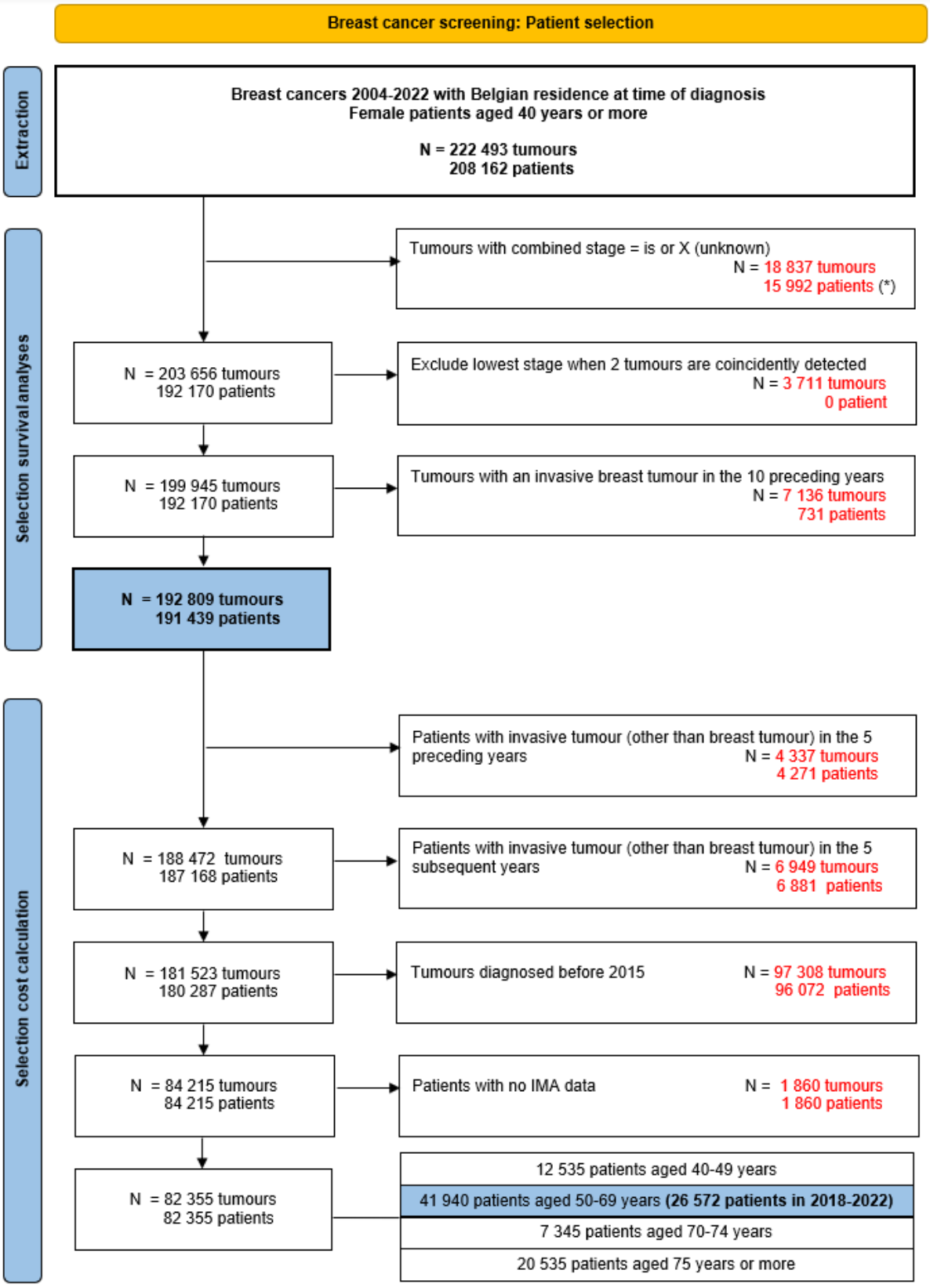
Study	Type of sensitivity analysis performed	Main parameters & assumptions tested
		Scenarios: • Screening frequency (annual & biennial)
Kregting, 2022[181]	• Deterministic	Scenarios: • Dutch age-specific attendance rates • Different adjuvant treatment use • Only starting age between 45 and 60 • Screening frequency (annual & biennial)
Tina Shih, 2021[183]	• Determinstic • Probabilistic	• Disutility associated with screening and diagnostic work-up • Reduced specificity of screening mammography by 8% • Birth cohort of 1960 • Screening frequency (triennial & biennial)
Chootipongchaivat, 2021[184]	• Deterministic	• Work-up costs • Continuous care 5 years instead of period between initial & terminal care • Attendance rates • Screening frequency (annual, biennial & triennial)
Tina Shih, 2019[187]	• Deterministic • Probabilistic	• Screening frequency (annual & biennial) • *Other variables not reported*
Mittmann, 2018[189]	• Deterministic	• Input cost for key resources • Discount rate • Screening frequency (annual & biennial)
Koleva-Kolarova, 2018[190]	• Deterministic	• Incidence mean age • Self-detection mean • Sensitivity • Self-detection standard deviation • Doubling time 50-70 years • Incidence life time risk • Dose

Study	Type of sensitivity analysis performed	Main parameters & assumptions tested
		• Doubling time >70 years • Specificity • Doubling time <50 years • Incidence standard deviation
Carter, 2018[191]	• Deterministic • Probabilistic	• LYG by screening strategies diminished by: ○ 75% ○ 50% ○ 25%
van Luijt, 2017[192]	• /	• /
Schiller-Frühwirth, 2017[193]	• Deterministic • Probabilistic	• Attendance • Discount rate • Mammography sensitivity organized screening • Mammography sensitivity opportunistic screening
Morton, 2017[194]	• Deterministic	• Maximum costs instead of average costs • 100% attendance (only costs) • Combination of latter two scenarios
Rafia, 2016[195]	• Deterministic	• Recall rate • Utility weights for diagnosis of breast cancer • Duration of health state • Cost of screening and invitation • Discount rates • Different parametric distributions for survival • Disutilities • Cost of recall • Cost of treatment • Growth rate • Cost of palliative care • Uptake rate (ICER increases when 100% and decreases when 65%)

Study	Type of sensitivity analysis performed	Main parameters & assumptions tested
		Scenarios: • the model assumes screen-detected women die at same time as if not detected through screening • the model assumes that screening necessarily translates into an improvement in survival
Arrospide, 2016[196]	• Deterministic • Probabilistic	Scenarios: • Participation rate of 30% • Participation rate of 50%
Sankatsing, 2015[197]	• Deterministic • Probabilistic	• Sensitivity • Positive predictive value of digital mammography • Breast cancer incidence • Number of women undergoing additional mammogram after positive screening • Discount rate
I-CHER, 2024[200]	• Deterministic • Probabilistic	• Proportion of screened population receiving MRI (base case: 35%) • DCIS progression probability • Increase in opportunistic screening in scenario where the screening programme is stopped • Cost of campaign aimed at increasing participation (€50 000/year for 1-2.5% increase; €100 000/year for 3-4% increase) • Breast cancer incidence • Probability of symptoms • Cost of digital mammography • Participation rate • Disutility of unidentified stage • Cost of MRI scan • Cost of BC treatment in stages 0-2 • Probability of recurrence • Cost of follow-up in stages 3-4 • Disutility BC stage 4

Study	Type of sensitivity analysis performed	Main parameters & assumptions tested
		• Disutility BC stage 2 • Disutility of follow-up • Opportunistic screening • Cost of screening programme • Cost of follow-up in stages 0-2 • Cost of BC treatment in stages 3-4 • Disutility of false positives • Disutility of treatment • Disutility BC stage 3 • Disutility BC stage 1 • BC prevalence • End of life costs • Disutility stage 0 • Time horizon (20 and 50 years)

APPENDIX 18. PATIENT SELECTION



(*) Tumours and patients not retained are marked in red – number of patients not retained can be lower than number of tumours (the removal of a tumour does not necessarily lead to the removal of a patient).

APPENDIX 19. COST CATEGORIES (CANCER CASES)

DIAGNOSTIC AND FOLLOW-UP COSTS

Diagnostic and follow-up procedures were grouped in one category as for many of these procedures it is not possible to differentiate diagnostic from follow-up purposes based on administrative data. This category encompassed: anatomical-pathological, immunohistochemical, histological, cytological and blood examinations, oestrogen and progesterone testing, genetic testing including HER2 in situ hybridization and BRCA mutation testing, breast medical imaging (mammography outside organised screening programme, echography, MRI), other medical imaging (CT, scintigraphy, SPECT(-CT), PET(-CT), thorax X-ray, brain CT-scan and MRI, abdominal ultrasound), isotopes used during these medical imaging techniques, breast and lymph nodes punctures and biopsies, and finally multidisciplinary team meetings. Supplementary fees were also included, but only when coded on the same day as the main code, to avoid e.g. supplementary fees for medical imaging unrelated to the management of breast cancer. The same rule applied to the medical devices delivery margin that can be billed in case of biopsy or puncture material. These codes are all specified in Appendix 24.

Of note, next generation sequencing for metastatic breast cancer was not identified in the IMA – IMA database as billing codes have only been introduced on 1 July 2024.

As mentioned before, for this cost group, the time window to identify relevant procedures was defined as three months preceding the date of incidence until one week after the last therapeutic service.

RADIOTHERAPY COSTS

In addition to radiotherapy nomenclature codes billed between seven days before up to five years after incidence date, radiotherapy lump sum fees related to the preparation and simulation of the therapy as well as those for customised blocks, masks or fixation systems were included when billed within the time window extending from seven days before the first radiotherapy session until seven days after the last billing date.

Given the absence of specific billing codes for complications or side effects related to radiotherapy, these costs could not be identified in the study database.

SYSTEMIC THERAPY COSTS

Systemic therapy (chemotherapy, targeted therapy, immunotherapy and hormone therapy) costs were identified using ATC product codes. Lump sum fees for in-hospital patient monitoring billed from two days before to seven days after the drug administration were also included as ancillary costs.

Supportive medication administered alongside systemic therapy (e.g. anti-emetics corticosteroids, anticoagulants, analgesics, organ and bone-protective agents) were included in the analyses when billed two days before up to seven after the treatment session, as they play key roles in improving treatment tolerance and preventing toxicity. Likewise, intravenous fluids, antiseptics and drug-diluting agents to ensure safe and stable treatment administration were included when administered in the same time window. In cases where two administration sessions were separated by fewer than nine days, supportive medication was counted only once to prevent double counting.

SURGERY COSTS

Surgical hospitalisation costs included all hospital-related costs from admission until discharge for all hospital stays during which at least one of the selected surgery billing codes was billed. The surgery codes pertained to respective breast surgery, lymph node surgery, reconstructive surgery and breast implants, that were billed from seven days before incidence date to five years after (see Appendix 24.1.2 for the list).

The hospital admission and discharge dates were determined by matching the date of surgery and the hospitalisations IMA – AIM data file. The matching was unique in 88% of the surgery dates. In a

few cases, the surgery date was equal to both the discharge date of a first stay and the admission date of a second subsequent stay (in another hospital). Assuming that in these cases the patient was transferred to another hospital to be operated, both hospitalisations were collated. In some other cases, no matches were found in the hospitalisation file (even after correcting when surgery fell one day outside admission/discharge dates). In such cases, one-day stay was assumed if the surgical code was a one-day code and all costs incurred on the surgery date were included. Otherwise IMA – AIM data were investigated to identify the correspondence between hospital episodes and surgical dates. In all these cases, the billing of hospital lump sums confirmed that the surgery was performed during a hospitalisation of more than one night.

Once the admission and discharge of the hospitalisations were known, all costs incurred between these dates were added up, after reconstruction of the 100% per diem price. This correction is necessary to take into account the large fixed part of the hospitals budget (budget of financial means; BFM-BFM). The fixed part of the budget is paid to the hospitals by the sickness funds in provisional twelfths and is not included in the IMA – AIM data. This part represents 80% of the 'B1-B2 components' (a.o. hospital staffing costs and standard medical material such as syringes, dressings, etc.) and 100% of the other components of the budget (e.g. overheads, capital costs). The variable part included in the IMA – AIM data is paid through the admission and per day lump sums. The lump sums tariffs are hospital-specific, depending on the type of bed. They are adapted and published yearly by the NIHDI (RIZIV – INAMI).

For this purpose, the amount reimbursed for each hospitalisation per diem lump sum was replaced by the tariff specific to each term and each hospital multiplied by the number of times the lump sum was billed. Hospitalisation lump sums per admission were discarded.

In addition to the hospitalisation costs, preoperative costs were also included. Therefore, we selected following healthcare services billed within the 30 days before surgical admission: specialist consultations, complete transthoracic echocardiographic assessment of the heart, electrocardiographic examination, exercise or hypoxia test with continuous monitoring. Note that this relatively short list comes in addition to the diagnostic codes, which may also be relevant in a preoperative management context but cover a broader time window than the month preceding hospital admission.

As the complications after surgery requiring readmissions could not be identified in the data, these hospitalisation costs were not included.

Of note, our study period spans the pandemic during which dedicated billing codes and fees were implemented. To avoid artificially inflating the cost estimates with fees unrelated to cancer treatment, we explicitly excluded all COVID-19–specific billing codes charged during surgical hospitalisations. These codes, which include SARS-CoV-2 diagnostic tests, COVID-19 patient identification or monitoring fees, supplemental hospital surcharges, and pandemic-related coordination activities, were systematically removed from surgical hospitalisation costs. The complete list of excluded codes is presented in Appendix 24.

PALLIATIVE COSTS

Costs were identified using the dedicated billing codes for palliative care. The most important groups were home nursing care lump sums, agreements with multidisciplinary palliative care teams, surveillance in palliative care units.

Only surveillance fees costs were included for the in-hospital palliative care. No complex hospital stay reconstruction was performed, as in surgical hospitalisation costs. Nevertheless, the large number of zero-cost cells in the palliative cost calculation by age group, incidence year and time period covered indicates an absence of hospital activity for many strata. Consequently, the palliative costs may be underestimated but the presence of many empty cells suggests that the non-exhaustive inclusion of hospital costs is unlikely to substantially bias the results.

MISCELLANEOUS COSTS

The miscellaneous category comprises costs recorded throughout the entire healthcare management (from seven days before the incidence date up to five years afterward). It includes catheter use, transport costs for patients with cancer (to and from a hospital), lump-sum fees for mono- or combination oncology therapies, contributions for hair prostheses following chemo- or radiotherapy, and medical coordination fees within an oncology care programme for day-hospital stays during which antitumour drugs are administered.

As a previous KCE report showed a negligible impact of excluding the Maximum Billing System and the Global Payment System, no adjustment was made in the present analysis.[264]

Box 3 – Maximum Billing system and Global Payment System

- The system of **Maximum Billing** puts a ceiling on the total amount of co-payments at the level of a household during a calendar year, where the ceiling is a function of the household income. When the ceiling is exceeded, the national health insurance fully reimburses health care costs (except for supplements). While in the IMA – AIM data the total amount of waived co-payments and increased health insurance reimbursements are equal at the household level, this is not necessarily the case at the individual patient level, because sickness funds can choose how they register the reimbursements (for example, an equal amount in the record of each household member).
- The **Global Payment System** was introduced in the hospital financing in 2019 (not for pharmaceuticals). When the Global Payment System applies, individual fee-for-services are put to zero as health care is covered by a global lump sum.

APPENDIX 20. PATIENT AND TUMOUR CHARACTERISTICS

Table 102 – Main patient characteristics at diagnosis

	2015*	2016	2017	2018	2019	2020	2021	2022
				N (%, calculated per year)				
Age at incidence								
40 – 44 years	583 (5.6%)	562 (5.2%)	662 (6.1%)	595 (5.3%)	607 (5.4%)	647 (6.0%)	657 (5.6%)	685 (6.0%)
45 – 49 years	1 023 (9.8%)	1 042 (9.7%)	1 015 (9.4%)	1 019 (9.2%)	1 066 (9.5%)	1 004 (9.4%)	1 069 (9.1%)	1 011 (8.8%)
50 – 54 years	1 303 (12.5%)	1 394 (12.9%)	1 335 (12.4%)	1 351 (12.1%)	1 278 (11.4%)	1 205 (11.3%)	1 271 (10.8%)	1 227 (10.7%)
55 – 59 years	1 278 (12.3%)	1 239 (11.5%)	1 303 (12.1%)	1 314 (11.8%)	1 314 (11.7%)	1 314 (12.3%)	1 407 (12.0%)	1 286 (11.2%)
60 – 64 years	1 395 (13.4%)	1 490 (13.8%)	1 449 (13.4%)	1 493 (13.4%)	1 493 (13.3%)	1 448 (13.5%)	1 591 (13.5%)	1 511 (13.2%)
65 – 69 years	1 420 (13.7%)	1 519 (14.1%)	1 427 (13.2%)	1 476 (13.3%)	1 530 (13.6%)	1 416 (13.2%)	1 635 (13.9%)	1 462 (12.7%)
70 – 74 years	1 011 (9.7%)	1 089 (10.1%)	1 140 (10.6%)	1 257 (11.3%)	1 310 (11.7%)	1 244 (11.6%)	1 348 (11.5%)	1 383 (12.1%)
>=75 years	2 379 (22.9%)	2 433 (22.6%)	2 447 (22.7%)	2 619 (23.5%)	2 637 (23.5%)	2 418 (22.6%)	2 790 (23.7%)	2 905 (25.3%)
WHO performance status								
0 – Asymptomatic	5 957 (57.3%)	6 124 (56.9%)	5 937 (55.1%)	6 425 (57.8%)	6 384 (56.8%)	6 206 (58.0%)	7 320 (62.2%)	7 150 (62.3%)
1 – Symptomatic but completely ambulatory	3 541 (34.1%)	3 605 (33.5%)	3 641 (33.8%)	3 600 (32.4%)	3 977 (35.4%)	3 767 (35.2%)	3 726 (31.7%)	3 471 (30.3%)
2 – Symptomatic <50% in bed during the day	171 (1.6%)	186 (1.7%)	229 (2.1%)	221 (2.0%)	235 (2.1%)	270 (2.5%)	297 (2.5%)	358 (3.1%)
3 – Symptomatic >50% in bed, but not bedbound	58 (0.6%)	50 (0.5%)	93 (0.9%)	88 (0.8%)	66 (0.6%)	80 (0.7%)	106 (0.9%)	117 (1.0%)
4 –- Bedbound	42 (0.4%)	24 (0.2%)	27 (0.3%)	14 (0.1%)	21 (0.2%)	32 (0.3%)	55 (0.5%)	38 (0.3%)
Missing	623 (6.0%)	779 (7.2%)	851 (7.9%)	776 (7.0%)	552 (4.9%)	341 (3.2%)	264 (2.2%)	336 (2.9%)
TOTAL	**10 392**	**10 768**	**10 778**	**11 124**	**11 235**	**10 696**	**11 768**	**11 470**

***Notes**: * for readability reasons, the results are presented for the most recent years of diagnosis. Results 2004-2014 are available on request.*

Table 103 – Main tumour characteristics at diagnosis

	2015*	2016	2017	2018	2019	2020	2021	2022
				N (%, calculated per year)				
Combined stage **								
0	911 (8.8%)	939 (8.7%)	906 (8.4%)	940 (8.5%)	971 (8.6%)	922 (8.6%)	1 086 (9.2%)	1 001 (8.7%)
I	4 193 (40.3%)	4 275 (39.7%)	4 312 (40.0%)	4 405 (39.6%)	4 488 (39.9%)	4 130 (38.6%)	4 814 (40.9%)	4 522 (39.4%)
II	3 540 (34.1%)	3 693 (34.3%)	3 730 (34.6%)	3 830 (34.4%)	3 925 (34.9%)	3 839 (35.9%)	4 022 (34.2%)	4 052 (35.3%)
III	1 142 (11.0%)	1 212 (11.3%)	1 142 (10.6%)	1 142 (10.3%)	1 108 (9.9%)	1 068 (10.0%)	1 054 (9.0%)	1 069 (9.3%)
IV	606 (5.8%)	649 (6.0%)	688 (6.4%)	807 (7.3%)	743 (6.6%)	737 (6.9%)	792 (6.7%)	826 (7.2%)
Sublocalisation (ICD-10 classification)								
In situ breast tumours§	**899 (8.7%)**	**936 (8.7%)**	**899 (8.3%)**	**938 (8.4%)**	**961 (8.6%)**	**914 (8.6%)**	**1 072 (9.1%)**	**990 (8.6%)**
D05.0: Lobular carcinoma in situ	92 (10.2%)	97 (10.4%)	71 (7.9%)	91 (9.7%)	86 (8.9%)	69 (7.5%)	82 (7.6%)	97 (9.8%)
D05.1: Intraductal carcinoma in situ	687 (76.4%)	733 (78.3%)	709 (78.9%)	724 (77.2%)	748 (77.8%)	734 (80.3%)	828 (77.2%)	749 (75.7%)
D05.7: Other carcinoma in situ	120 (13.3%)	102 (10.9%)	117 (13.0%)	122 (13.0%)	121 (12.6%)	109 (11.9%)	153 (14.3%)	141 (14.2%)
D059 Unspecified type of carcinoma		4 (0.4%)	2 (0.2%)	1 (0.1%)	6 (0.6%)	2 (0.2%)	9 (0.8%)	3 (0.3%)
Subtotal	**899 (100%)**	**936 (100%)**	**899 (100%)**	**938 (100%)**	**961 (100%)**	**914 (100%)**	**1 072 (100%)**	**990 (100%)**
Invasive breast tumours§	*9 493 (91.4%)*	*9 832 (91.3%)*	*9 879 (91.7%)*	*10 186 (91.6%)*	*10 274 (91.5%)*	*9 782 (91.5%)*	*10 696 (90.9%)*	*10 480 (91.4%)*
C50.0: Nipple and areola	118 (1.2%)	94 (1.0%)	94 (1.0%)	87 (0.9%)	106 (1.0%)	93 (1.0%)	89 (0.8%)	79 (0.8%)
C50.1: Central portion of breast	570 (6.0%)	546 (5.6%)	574 (5.8%)	700 (6.9%)	692 (6.7%)	693 (7.1%)	771 (7.2%)	708 (6.8%)
C50.2: Upper-inner quadrant of breast	1 021 (10.8%)	1 133 (11.5%)	1 163 (11.8%)	1 212 (11.9%)	1 253 (12.2%)	1 172 (12.0%)	1 264 (11.8%)	1 198 (11.4%)
C50.3: Lower-inner quadrant of breast	495 (5.2%)	535 (5.4%)	561 (5.7%)	567 (5.6%)	576 (5.6%)	561 (5.7%)	624 (5.8%)	623 (5.9%)
C50.4: Upper-outer quadrant of breast	3 082 (32.5%)	3 107 (31.6%)	3 306 (33.5%)	3 471 (34.1%)	3 588 (34.9%)	3 519 (36.0%)	3 761 (35.2%)	3 713 (35.4%)
C50.5: Lower-outer quadrant of breast	696 (7.3%)	769 (7.8%)	824 (8.3%)	869 (8.5%)	852 (8.3%)	813 (8.3%)	851 (8.0%)	903 (8.6%)

	2015*	2016	2017	2018	2019	2020	2021	2022
C50.6: Axillary tail of breast	53 (0.6%)	78 (0.8%)	68 (0.7%)	57 (0.6%)	69 (0.7%)	62 (0.6%)	80 (0.7%)	69 (0.7%)
C50.8: Overlapping sites of breast	94 (1.0%)	132 (1.3%)	238 (2.4%)	245 (2.4%)	262 (2.6%)	251 (2.6%)	485 (4.5%)	432 (4.1%)
C50.9: Unspecified site	3 364 (35.4%)	3 438 (35.0%)	3 051 (30.9%)	2 978 (29.2%)	2 876 (28.0%)	2 618 (26.8%)	2 771 (25.9%)	2 755 (26.3%)
Subtotal	**9 493 (100%)**	**9 832 (100%)**	**9 879 (100%)**	**10 186 (100%)**	**10 274 (100%)**	**9 782 (100%)**	**10 696 (100%)**	**10 480 (100%)**
Grade								
In situ breast tumours§								
Grade I	128 (14.2%)	131 (14.0%)	103 (11.5%)	108 (11.5%)	109 (11.3%)	99 (10.8%)	117 (10.9%)	98 (9.9%)
Grade II	178 (19.8%)	219 (23.4%)	195 (21.7%)	210 (22.4%)	227 (23.6%)	240 (26.3%)	266 (24.8%)	271 (27.4%)
Grade III	259 (28.8%)	274 (29.3%)	273 (30.4%)	300 (32.0%)	308 (32.0%)	304 (33.3%)	406 (37.9%)	315 (31.8%)
Missing	334 (37.2%)	312 (33.3%)	328 (36.5%)	320 (34.1%)	317 (33.0%)	271 (29.6%)	283 (26.4%)	306 (30.9%)
Invasive breast tumours§								
Grade I	1 454 (15.3%)	1 419 (14.4%)	1 428 (14.5%)	1 412 (13.9%)	1 526 (14.9%)	1 346 (13.8%)	1 595 (14.9%)	1 576 (15.0%)
Grade II	4 421 (46.6%)	4 705 (47.9%)	4 652 (47.1%)	4 899 (48.1%)	5 082 (49.5%)	4 930 (50.4%)	5 590 (52.3%)	5 628 (53.7%)
Grade III	3 091 (32.6%)	3 131 (31.8%)	3 144 (31.8%)	3 159 (31.0%)	3 058 (29.8%)	2 967 (30.3%)	2 976 (27.8%)	2 766 (26.4%)
Missing	527 (5.6%)	577 (5.9%)	655 (6.6%)	716 (7.0%)	608 (5.9%)	539 (5.5%)	535 (5.0%)	510 (4.9%)
TOTAL	**10 392**	**10 768**	**10 778**	**11 124**	**11 235**	**10 696**	**11 768**	**11 470**

***Notes**: *: for readability reasons, the results are presented for the most recent years of diagnosis. Results 2004-2014 are available on request. **: the combined stage is a summary of the information included in the clinical stage and the pathological stage and is defined as follows: a known pathological stage takes priority over a known clinical stage; §: percentages are calculated for in situ and invasive breast cancers separately.*

APPENDIX 21. OBSERVED SURVIVAL

Table 104 – Unadjusted observed survival for women diagnosed with (invasive and non-invasive) breast cancer in 2004 and 2022, by age group

Unadjusted observed survival (%, 95% CI)						
Age group	**1-year survival**	**3-year survival**	**5-year survival**	**10-year survival**	**15-year survival**	**20-year survival**
40-44 years N = 11 963	99.3 [99.1, 99.4] (N = 11 845)	96.5 [96.2, 96.8] (N = 10 995)	93.9 [93.5, 94.4] (N = 9 437)	88.9 [88.3, 89.5] (N = 6 227)	84.5 [83.7, 85.3] (N = 3 227)	80.8 [79.6, 81.9] (N = 578)
45-49 years N = 19 979	99.2 [99.1, 99.3] (N = 19 791)	96.7 [96.5, 97.0] (N = 18 541)	94.3 [94.0, 94.6] (N = 16 051)	89.6 [89.2, 90.1] (N = 10 574)	85.4 [84.8, 86.0] (N = 5 336)	79.2 [78.2, 80.3] (N = 941)
50-54 years N = 24 088	99.1 [99.0, 99.2] (N = 23 821)	96.3 [96.0, 96.5] (N = 22 237)	93.6 [93.3, 93.9] (N = 19 228)	88.0 [87.6, 88.5] (N = 12 158)	82.3 [81.7, 82.9] (N = 5 886)	75.6 [74.6, 76.6] (N = 1 045)
55-59 years N = 23 872	98.6 [98.5, 98.8] (N = 23 515)	95.3 [95.0, 95.5] (N = 21 816)	91.9 [91.5, 92.2] (N = 18 426)	84.4 [83.9, 84.9] (N = 11 372)	76.4 [75.7, 77.1] (N = 5 395)	66.4 [65.2, 67.6] (N = 912)
60-64 years N = 25 871	98.1 [97.9, 98.3] (N = 25 343)	94.3 [94.0, 94.6] (N = 23 278)	90.4 [90.1, 90.8] (N = 19 497)	81.5 [81.0, 82.1] (N = 11 532)	71.7 [70.9, 72.4] (N = 5 052)	58.9 [57.6, 60.2] (N = 735)
65-69 years N = 24 193	97.6 [97.4, 97.8] (N = 23 578)	93.1 [92.8, 93.5] (N = 21 496)	88.4 [88.0, 88.8] (N = 17 634)	76.5 [75.9, 77.1] (N = 9 523)	62.7 [61.8, 63.6] (N = 3 720)	44.0 [42.5, 45.6] (N = 513)
70-74 years N = 19 803	96.0 [95.7, 96.2] (N = 18 981)	89.0 [88.6, 89.5] (N = 16 678)	81.8 [81.3, 82.4] (N = 13 120)	63.8 [63.0, 64.6] (N = 6 356)	43.8 [42.8, 44.8] (N = 2 184)	20.6 [19.1, 22.2] (N = 201)
75 years or older N = 41 669	89.2 [88.9, 89.5] (N = 37 186)	72.2 [71.8, 72.7] (N = 28 535)	57.7 [57.2, 58.2] (N = 19 597)	30.5 [29.9, 31.0] (N = 6 524)	12.3 [11.8, 12.8] (N = 1 276)	2.7 [2.3, 3.3] (N = 45)

***Notes**: N in each cell denotes the number of patients with invasive breast cancer at risk at the specified follow-up time, defined as those alive and not censored before that time. Censoring can be due to either loss to follow-up or too recent to have long enough follow-up.*



Table 105 – Observed survival for women diagnosed with (invasive and non-invasive) breast cancer in 2004 and 2022, by WHO performance status

Unadjusted observed survival (%, 95% CI)						
WHO performance status	**1-year survival**	**3-year survival**	**5-year survival**	**10-year survival**	**15-year survival**	**20-year survival**
0 – Asympto-matic N = 103 575	98.4 [98.4, 98.5] (N = 101 811)	94.4 [94.3, 94.5] (N = 92 570)	90.0 [89.8, 90.2] (N = 75 556)	79.3 [79.1, 79.6] (N = 41 870)	68.7 [68.3, 69.1] (N = 18 074)	57.5 [56.9, 58.2] (N = 2 915)
1 – Sympto-matic but completely ambulatory N = 63 326	95.0 [94.8, 95.2] (N = 60 124)	85.6 [85.3, 85.8] (N = 51 944)	77.4 [77.1, 77.7] (N = 41 098)	62.2 [61.8, 62.6] (N = 21 736)	50.9 [50.4, 51.5] (N = 8 031)	40.3 [39.5, 41.2] (N = 1 027)
2 – Sympto-matic, <50% in bed during the day N = 3 947	76.5 [75.2, 77.8] (N = 3 025)	53.7 [52.1, 55.3] (N = 1 991)	39.0 [37.5, 40.6] (N = 1 246)	23.7 [22.3, 25.2] (N = 585)	18.5 [17.1, 20.0] (N = 409)	14.7 [13.2, 16.3] (N = 22)
3 – Sympto-matic, >50% in bed, not bedbound N = 1 178	55.4 [52.6, 58.3] (N = 654)	30.8 [28.3, 33.6] (N = 343)	17.2 [15.1, 19.6] (N = 157)	6.1 [4.6, 8.1] (N = 33)	4.5 [3.0, 6.6] (N = 11)	2.9 [1.5, 5.6] (N = 2)
4 – Bedbound N = 467	49.9 [45.6, 54.6] (N = 233)	26.7 [23.0, 31.1] (N = 118)	17.0 [13.8, 20.9] (N = 61)	9.4 [6.8, 12.9] (N = 15)	5.6 [2.8, 11.1] (N = 3)	
Missing N = 18 945	96.3 [96.0, 96.6] (N = 18 213)	89.2 [88.8, 89.7] (N = 16 610)	82.7 [82.1, 83.2] (N = 14 872)	69.2 [68.5, 69.9] (N = 10 027)	56.9 [56.1, 57.7] (N = 5 548)	45.5 [44.4, 46.5] (N = 1 004)

***Notes**: N in each cell denotes the number of patients with invasive breast cancer at risk at the specified follow-up time, defined as those alive and not censored before that time. Censoring can be due to either loss to follow-up or too recent to have long enough follow-up.*

Table 106 – Observed survival for women diagnosed with (invasive and non-invasive) breast cancer in 2004 and 2022, by combined stage

Unadjusted observed survival (%, 95% CI)						
Combined stage	**1-year survival**	**3-year survival**	**5-year survival**	**10-year survival**	**15-year survival**	**20-year survival**
Stage 0 N = 16 268	99.5 [99.3, 99.6] (N = 16 151)	98.0 [97.8, 98.2] (N = 15 161)	96.3 [96.0, 96.6] (N = 12 943)	89.9 [89.4, 90.5] (N = 7 899)	81.8 [81.0, 82.7] (N = 3 578)	73.1 [71.8, 74.6] (N = 563)
Stage I N = 75 439	98.8 [98.8, 98.9] (N = 74 443)	96.0 [95.9, 96.2] (N = 69 106)	92.7 [92.5, 92.9] (N = 58 190)	83.4 [83.1, 83.7] (N = 34 328)	72.8 [72.4, 73.3] (N = 14 998)	60.9 [60.2, 61.6] (N = 2 427)
Stage II N = 66 478	97.1 [97.0, 97.3] (N = 64 513)	90.1 [89.9, 90.3] (N = 57 052)	83.2 [82.9, 83.5] (N = 45 980)	68.3 [67.9, 68.7] (N = 24 978)	55.6 [55.1, 56.1] (N = 10 861)	43.9 [43.2, 44.7] (N = 1 644)
Stage III N = 21 671	93.8 [93.5, 94.1] (N = 20 335)	80.7 [80.2, 81.3] (N = 16 875)	69.5 [68.9, 70.2] (N = 12 970)	50.2 [49.5, 51.0] (N = 6 367)	38.0 [37.2, 38.9] (N = 2 435)	28.2 [27.0, 29.4] (N = 304)
Stage IV N = 11 582	74.4 [73.6, 75.2] (N = 8 618)	49.1 [48.2, 50.1] (N = 5 382)	31.9 [31.0, 32.7] (N = 2 907)	13.8 [13.1, 14.7] (N = 694)	8.6 [7.9, 9.4] (N = 204)	6.2 [5.3, 7.2] (N = 32)

***Notes**: N in each cell denotes the number of patients with invasive breast cancer at risk at the specified follow-up time, defined as those alive and not censored before that time. Censoring can be due to either loss to follow-up or too recent to have long enough follow-up.*



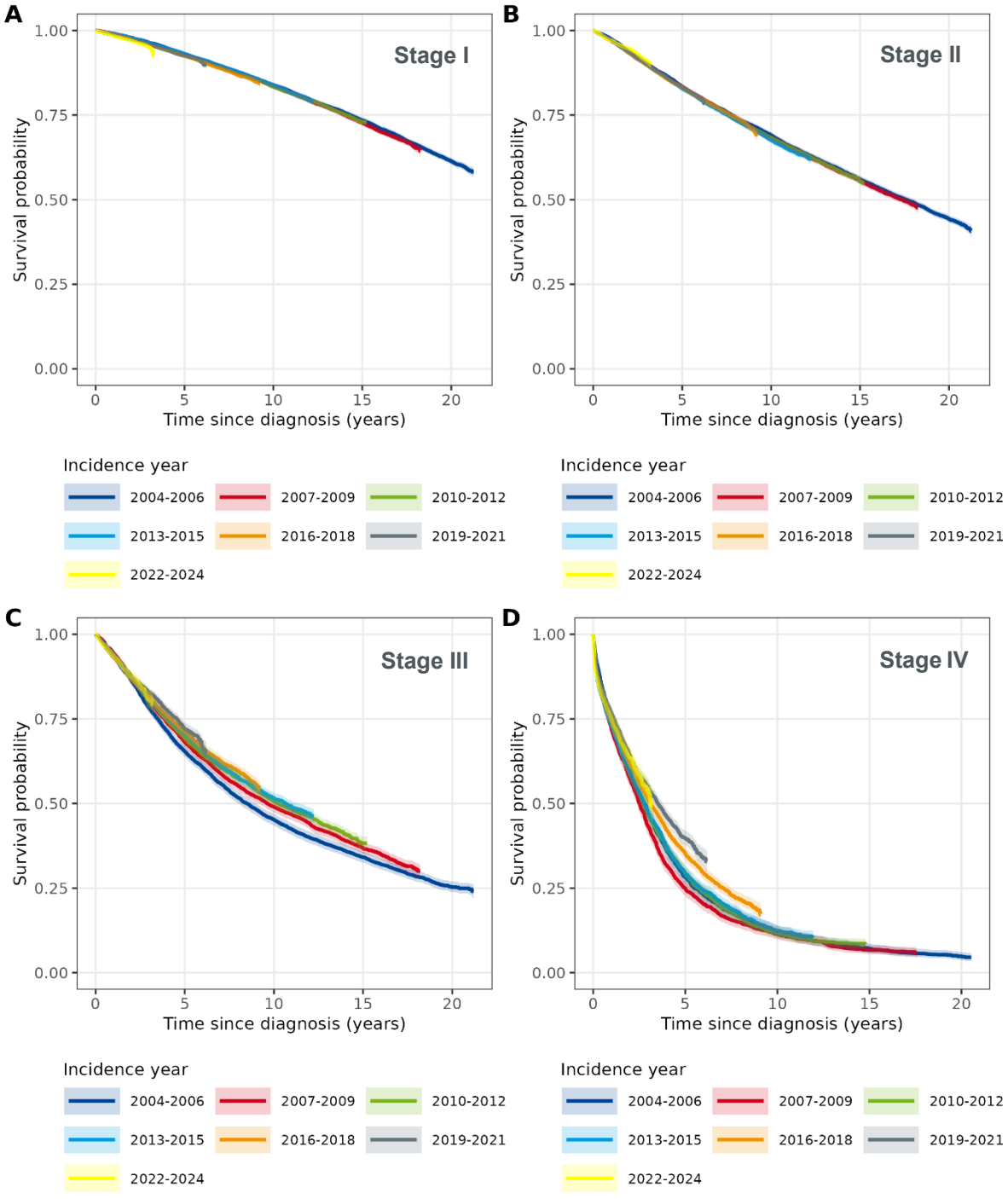
Table 107 – Observed survival for women diagnosed with (invasive and non-invasive) breast cancer in 2004 and 2022, by year of incidence

Unadjusted observed survival (%, 95% CI)						
Year of incidence	**1-year**	**3-year**	**5-year**	**10-year**	**15-year**	**20-year**
2004 N = 8 245	96.3 [95.9, 96.7] (N = 7 939)	89.2 [88.6, 89.9] (N = 7 357)	82.6 [81.8, 83.4] (N = 6 797)	69.7 [68.7, 70.7] (N = 5 727)	58.8 [57.7, 59.9] (N = 4 813)	47.6 [46.5, 48.7] (N = 3 863)
2005 N = 8 286	96.8 [96.4, 97.1] (N = 8 015)	89.3 [88.6, 90.0] (N = 7 388)	82.9 [82.1, 83.7] (N = 6 856)	69.8 [68.8, 70.8] (N = 5 765)	59.1 [58.1, 60.2] (N = 4 860)	49.1 [48.0, 50.2] (N = 1 107)
2006 N = 8 804	96.5 [96.1, 96.8] (N = 8 485)	89.8 [89.2, 90.4] (N = 7 900)	83.1 [82.3, 83.9] (N = 7 304)	71.5 [70.5, 72.4] (N = 6 264)	60.2 [59.2, 61.2] (N = 5 252)	
2007 N = 8 732	96.4 [96.0, 96.8] (N = 8 413)	89.9 [89.3, 90.5] (N = 7 839)	83.6 [82.9, 84.4] (N = 7 287)	70.9 [69.9, 71.8] (N = 6 148)	59.6 [58.6, 60.7] (N = 5 143)	
2008 N = 8 872	96.4 [96.1, 96.8] (N = 8 550)	89.2 [88.6, 89.9] (N = 7 905)	82.8 [82.0, 83.6] (N = 7 329)	70.3 [69.3, 71.2] (N = 6 201)	59.4 [58.4, 60.4] (N = 5 208)	
2009 N = 9 157	96.3 [96.0, 96.7] (N = 8 812)	89.0 [88.3, 89.6] (N = 8 133)	82.5 [81.7, 83.3] (N = 7 530)	70.0 [69.0, 70.9] (N = 6 348)	59.0 [58.0, 60.0] (N = 5 301)	
2010 N = 9 628	96.1 [95.8, 96.5] (N = 9 254)	89.2 [88.5, 89.8] (N = 8 573)	83.3 [82.5, 84.0] (N = 7 999)	71.0 [70.1, 71.9] (N = 6 778)	60.1 [59.1, 61.2] (N = 1 499)	
2011 N = 10 400	96.2 [95.9, 96.6] (N = 9 999)	89.4 [88.8, 90.0] (N = 9 281)	83.4 [82.7, 84.1] (N = 8 642)	70.7 [69.9, 71.6] (N = 7 285)		
2012 N = 10 209	96.4 [96.0, 96.8] (N = 9 829)	89.5 [88.9, 90.1] (N = 9 100)	83.0 [82.2, 83.7] (N = 8 428)	70.3 [69.4, 71.2] (N = 7 097)		
2013 N = 10 540	96.4 [96.1, 96.8] (N = 10 152)	89.8 [89.2, 90.4] (N = 9 437)	83.5 [82.8, 84.3] (N = 8 765)	70.9 [70.0, 71.8] (N = 7 381)		
2014 N = 10 335	96.4 [96.0, 96.7] (N = 9 952)	90.0 [89.4, 90.6] (N = 9 284)	84.0 [83.3, 84.8] (N = 8 653)	71.1 [70.2, 72.0] (N = 7 254)		
2015 N = 10 392	96.4 [96.1, 96.8] (N = 10 008)	89.5 [88.9, 90.0] (N = 9 269)	83.5 [82.8, 84.3] (N = 8 627)	71.2 [70.3, 72.1] (N = 2 018)		
2016 N = 10 768	96.3 [95.9, 96.6] (N = 10 353)	89.6 [89.0, 90.2] (N = 9 620)	83.7 [83.0, 84.4] (N = 8 967)			
2017 N = 10 778	95.8 [95.4, 96.2] (N = 10 315)	89.7 [89.1, 90.2] (N = 9 628)	83.5 [82.8, 84.2] (N = 8 934)			
2018 N = 11 124	95.9 [95.5, 96.2] (N = 10 643)	89.1 [88.6, 89.7] (N = 9 858)	83.4 [82.7, 84.1] (N = 9 198)			

2019 **N = 11 235**	96.2 [95.8, 96.5] (N = 10 798)	89.6 [89.1, 90.2] (N = 10 026)	84.0 [83.3, 84.6] (N = 9 349)			
2020 **N = 10 696**	96.2 [95.9, 96.6] (N = 10 276)	90.1 [89.6, 90.7] (N = 9 593)	84.4 [83.7, 85.2] (N = 2 325)			
2021 **N = 11 768**	96.1 [95.7, 96.4] (N = 11 291)	89.9 [89.3, 90.4] (N = 10 522)				
2022 **N = 11 469**	95.9 [95.6, 96.3] (N = 10 976)	89.6 [88.9, 90.2] (N = 2 863)				

***Notes**: N in each cell denotes the number of patients with invasive breast cancer at risk at the specified follow-up time, defined as those alive and not censored before that time. Censoring can be due to either loss to follow-up or too recent to have long enough follow-up.*

Figure 90 – Unadjusted observed survival of patients with breast cancer by combined stage and year of diagnosis



APPENDIX 22. TARGETED LITERATURE SEARCH HRQOL

Table 108 – Included & excluded systematic reviews on QoL

Full reference	
Included references	**Type of study**
Pillay J, Guitard S, Rahman S, Saba S, Rahman A, Bialy L, et al. Patient preferences for breast cancer screening: a systematic review update to inform recommendations by the Canadian Task Force on Preventive Health Care. Systematic Reviews. 2024;13(1):140.[278]	Meta-analysis
Kaur MN, Yan J, Klassen AF, David JP, Pieris D, Sharma M, et al. A Systematic Literature Review of Health Utility Values in Breast Cancer. Medical Decision Making. 2022;42(5):704-19.[217]	Systematic review
Rautenberg T, Hodgkinson B, Zerwes U, Downes M. Meta-analysis of health state utility values measured by EuroQol 5-dimensions (EQ5D) questionnaire in Chinese women with breast cancer. BMC cancer. 2022;22(1):52.[276]	Systematic review
Pourrahmat M-M, Kim A, Kansal AR, Hux M, Pushkarna D, Fazeli MS, et al. Health state utility values by cancer stage: a systematic literature review. The European Journal of Health Economics. 2021;22(8):1275-88.[283]	Systematic review
Gong J, Han J, Lee D, Bae S. A Meta-Regression Analysis of Utility Weights for Breast Cancer: The Power of Patients' Experience. International Journal of Environmental Research and Public Health; 2020.[280]	Meta-analysis
Li L, Severens JL, Mandrik O. Disutility associated with cancer screening programs: A systematic review. PLOS ONE. 2019;14(7):e0220148.[205]	Systematic review
Peasgood T, Ward SE, Brazier J. Health-state utility values in breast cancer. Expert Review of Pharmacoeconomics & Outcomes Research. 2010;10(5):553-66.[287]	Meta-analysis
Excluded references	**Reason for exclusion**
Su R, Snyder C, Wu AW, Gross AL, Ji J, Zhang J, et al. A systematic review of patient-reported outcome measures (PROMs) to assess health-related quality of life (HRQoL) for breast cancer patients who are undertaking adjuvant endocrine therapy. Quality of life research: an international journal of quality of life aspects of treatment, care and rehabilitation. 2025(9210257, bqm).	Only disease-specific questionnaires
Javan Biparva A, Raoofi S, Rafiei S, Pashazadeh Kan F, Kazerooni M, Bagheribayati F, et al. Global quality of life in breast cancer: systematic review and meta-analysis. BMJ supportive & palliative care. 2024;13(e3):e528-e36.	No studies with stage-specific utilities included
Heidary Z, Ghaemi M, Hossein Rashidi B, Kohandel Gargari O, Montazeri A. Quality of Life in Breast Cancer Patients: A Systematic Review of the Qualitative Studies. Cancer control : journal of the Moffitt Cancer Center. 2023;30(dlg, 9438457):10732748231168318.	No quantification of outcomes
Zhao Y, Chen L, Zheng X, Shi Y. Quality of life in patients with breast cancer with neoadjuvant chemotherapy: a systematic review. BMJ open. 2022;12(11):e061967.	Only disease-specific questionnaires
Li Y, Guo J, Sui Y, Chen B, Li D, Jiang J. Quality of Life in Patients with Breast Cancer following Breast Conservation Surgery: A Systematic Review and Meta-Analysis. Journal of healthcare engineering. 2022;2022(101528166):3877984.	Retracted publication
Ghanei Gheshlagh R, Mohammadnejad E, Dalvand S, Dehkordi AH. Health-related quality of life in patients with breast cancer: A systematic review and meta-analysis. Breast disease. 2022;41(1):191-8.	Only studies using disease-specific questionnaire included

Full reference	
Moshina N, Falk RS, Hofvind S. Long-term quality of life among breast cancer survivors eligible for screening at diagnosis: a systematic review and meta-analysis. Public health. 2021;199(qi7, 0376507):65-76.	Focused on examining QoL differences between BC survivors & healthy population
Drageset S, Austrheim G, Ellingsen S. Quality of life of women living with metastatic breast cancer and receiving palliative care: A systematic review. Health care for women international. 2021;42(7-9):1044-65.	Only disease-specific questionnaires
Chopra I, Kamal KM. A systematic review of quality of life instruments in long-term breast cancer survivors. Health and quality of life outcomes. 2012;10(101153626):14.	Only disease-specific questionnaires
Lemieux J, Goodwin PJ, Bordeleau LJ, Lauzier S, Theberge V. Quality-of-life measurement in randomized clinical trials in breast cancer: an updated systematic review (2001-2009). Journal of the National Cancer Institute. 2011;103(3):178-231.	No studies included using generic QoL instruments and reporting stage-specific utilities
Delgado-Sanz MC, Garcia-Mendizabal MJ, Pollan M, Forjaz MJ, Lopez-Abente G, Aragones N, et al. Heath-related quality of life in Spanish breast cancer patients: a systematic review. Health and quality of life outcomes. 2011;9(101153626):3.	No studies with stage-specific utilities included

***Notes**: pragmatic search for systematic reviews and meta-analyses in Ovid Medline and Google Scholar with search terms 'utility or utilities or quality of life' combined with 'breast cancer'. Results were limited to stage-specific health utilities and screening-specific (dis)utilities.*

APPENDIX 23. COST INFORMATION FALSE-POSITIVE FINDINGS

Table 109 – Frequency table related to false-positive findings (2020-2022)

Outpatient/Inpatient codes*	Frequence (on a total of 19 158 cases**)	Percentage	Fee (2026 values)
227091	3	0.02%	€52
227102	0	0.00%	€52
227640	7	0.04%	€264.06
227662	8	0.04%	€396.08
227684	3	0.02%	€464.36
227706	4	0.02%	€528.11
227721	0	0.00%	€628.71
227732	5	0.03%	€104.01
227743	0	0.00%	€104.01
227754	38	0.20%	€188.61
227765	15	0.08%	€188.61
227776	2	0.01%	€528.11
227780	17	0.09%	€528.11
227791	1	0.01%	€595.63
227802	15	0.08%	€595.63
227824	0	0.00%	€943.06
227835	0	0.00%	€594.13
227846	2	0.01%	€594.13
227850	27	0.14%	€104.01
227861	6	0.03%	€104.01
227872	89	0.46%	€188.61
227883	10	0.05%	€188.61
227894	0	0.00%	€264.06
227905	1	0.01%	€264.06
355213	1672	8.73%	€60.28
355224	3	0.02%	€60.28
355235	96	0.50%	€60.28
355246	1	0.01%	€60.28
355250	1147	5.99%	€135.64
355261	2	0.01%	€135.64
355272	780	4.07%	€45.21
355283	29	0.15%	€45.21
355670	943	4.92%	€15.07
355681	11	0.06%	€15.07
450096	13779	71.92%	€27.97
450100	49	0.26%	€27.97

450354	13	0.07%	€74.59
450365	0	0.00%	€74.59
459476	2626	13.71%	€192.16
459480	2	0.01%	€192.16
459793	194	1.01%	€56.38
459804	1	0.01%	€56.38
459830	12	0.06%	€224.19
460132	18473	96.42%	€24.16
460143	59	0.31%	€24.16
461090	13	0.07%	€27.69
461101	1	0.01%	€27.69
461134	23	0.12%	€56.38
461145	0	0.00%	€56.38
469394	189	0.99%	€23.92
469405	0	0.00%	€23.92
588011	832	4.34%	€83.19
588022	51	0.27%	€83.19
588033	19	0.10%	€164.53
588044	30	0.16%	€164.53
588254	2642	13.79%	€143.34
588265	20	0.10%	€143.34
588276	420	2.19%	€196.14
588280	97	0.51%	€196.14
588291	12	0.06%	€331.96
588302	70	0.37%	€331.96
588416	970	5.06%	€79.21
588420	20	0.10%	€79.21

Notes: ** A description of these codes is available in Appendix 24.2. ** Observation period 2020-2022.*

APPENDIX 24. HEALTH INSURANCE DATA (IMA – AIM DATA)

Appendix 24.1. Nomenclature codes by cost category

Appendix 24.1.1. Diagnostics and follow-up

Table 110 – Nomenclature codes for biopsy

Outpatient	Inpatient	Dutch Description	French Description
161932	161943	Biopsienaald aangewend ter gelegenheid van de verstrekking 355213-355224 van de nomenclatuur	Aiguille pour biopsie utilisée lors de la prestation 355213-355224 de la nomenclature
161954	161965	Geheel van materiaal , met uitzondering van de clip, aangewend ter gelegenheid van de verstrekkingen 355235-355246 en 355250-355261 van de nomenclatuur	Ensemble du matériel, à l'exception du clip, utilisé lors des prestations 355235-355246 et 355250-355261 de la nomenclature
161976	161980	Clip gebruikt in combinatie met de verstrekking 161954-161965	Clip utilisé en combinaison avec la prestation 161954-161965
227091	227102	Incisie voor biopsie van de borstklier	Biopsie incisionnelle de la glande mammaire
353253	353264	Laparoscopie, met afname voor biopsie, inclusief pneumoperitoneum	Laparoscopie avec prélèvement biopsique, y compris le pneumopéritoine
355213	355224	Cilinderbiopsie van de borstklier voor histologisch onderzoek	Biopsie en cylindre de la glande mammaire pour examen histologique
355235	355246	Vacuümgeassisteerde biopsie van de borstklier voor histologisch onderzoek	Biopsie assistée par aspiration de la glande mammaire pour examen histologique
355250	355261	Vacuümgeassisteerde biopsie van de borstklier voor histologisch onderzoek onder stereotactische geleiding	Biopsie assistée par aspiration de la glande mammaire pour examen histologique, effectuée sous guidance stéréotaxique
355434	355445	Peritoneale punctie van vrij vocht	Ponction péritonéale d'un épanchement liquidien libre
355633	355644	Pleurabiopsie met naald	Biopsie pleurale à l'aiguille
355655	355666	Punctiebiopsie van een longletsel onder radiologische controle	Ponction biopsique d'une lésion pulmonaire sous contrôle radiologique
355714	355725	Botbiopsie met naald	Biopsie osseuse à l'aiguille

355736	355740	Botbiopsie van wervellichaam met naald onder radiologische controle	Biopsie osseuse à l'aiguille du corps vertébral sous contrôle radiologique
355751	355762	Leverpunctie	Ponction du foie
355994	356005	Diagnostische, unilaterale pleurapunctie, één of meerdere	Ponction pleurale diagnostique unilatérale, une ou plusieurs
688472	688483	Geheel van materiaal, met uitzondering van de clip, aangewend ter gelegenheid van de verstrekkingen 355235-355246 en 355250-355261	Ensemble du matériel, à l'exception du clip, utilisé à l'occasion des prestations 355235-355246 et 355250-355261
688494	688505	Clip gebruikt in combinatie met de verstrekking 688472 - 688483	Clip utilisé en combinaison avec la prestation 688472 - 688483
698913	698924	Biopsienaald aangewend ter gelegenheid van de verstrekking 355213-355224	Aiguille pour biopsie utilisée à l'occasion de la prestation 355213-355224
Included when billed on the same day as the above codes			
619673	619684	Afleveringsmarge van implantaten: implantaten en invasieve medische hulpmiddelen uit “de lijst”	Marge de délivrance des implants : implants et dispositifs médicaux invasifs de la “liste”

Table 111 – Nomenclature codes for breast puncture

Outpatient	Inpatient	Dutch Description	French Description
161991	162002	Draadvormige markeerder in metaal of kunststof voor zachte weefsels die zowel het doelweefsel als het punctiekanaal markeert, en die samen met het doelweefsel chirurgisch verwijderd wordt	Marqueur sous forme de fil, en métal ou synthétique, pour les tissus mous qui marque le tissu cible et le canal de ponction, et qui est retiré chirurgicalement avec le tissu cible
182836	182840	Markeerder voor zachte weefsels, die geen draad is en geen gebruik maakt van radio-isotopen, waarbij langdurige plaatsing mogelijk is en die samen met het doelweefsel chirurgisch verwijderd wordt	Marqueur pour les tissus mous, qui n’est pas un fil et n’utilise pas de radio-isotopes, permettant un placement à long terme et qui est retiré chirurgicalement avec le tissu cible
355272	355283	Intralesionele plaatsing van één of meerdere markeerders met het oog op chirurgisch ingrijpen op de borstklier	Mise en place intralésionnelle d'un ou plusieurs marqueurs en vue d'une intervention chirurgicale sur la glande mammaire

355670	355681	Punctie van de borstklier voor cytologisch onderzoek of inspuiting	Ponction de la glande mammaire pour examen cytologique ou injection
Included when billed on the same day as the above codes			
355913	355924	Bijkomend honorarium bij de verstrekkingen 355353-355364, 355375-355386, 355434-355445, 355456-355460, 355471-355482, 355552-355563, 355596-355600, 355611-355622, 355633-355644, 355670-355681, 355714-355725, 355751-355762, 355994-356005, 356016-356020, 356031-356042, 475930-475941, 475952-475963, 475974-475985 en 475996-476000, wanneer zij uitgevoerd worden onder echografische of radiologische controle	Supplément aux prestations 355353-355364, 355375-355386, 355434-355445, 355456-355460, 355471-355482, 355552-355563, 355596-355600, 355611-355622, 355633-355644, 355670-355681, 355714-355725, 355751-355762, 355994-356005, 356016-356020, 356031-356042, 475930-475941, 475952-475963, 475974-475985 et 475996-476000, lorsque celles-ci sont effectuées sous contrôle échographique ou radiologique
619673	619684	Afleveringsmarge van implantaten: implantaten en invasieve medische hulpmiddelen uit “de lijst”	Marge de délivrance des implants : implants et dispositifs médicaux invasifs de la “liste”

Table 112 – Nomenclature codes for lymph node puncture

Outpatient	Inpatient	Dutch Description	French Description
220356	220360	Exeresis van ganglion	Exérèse ganglionnaire
355132	355143	Punctie van een lymfeklier	Ponction d’un ganglion lymphatique
355692	355703	Punctie van hematopoiëtisch orgaan, exclusief lever en milt	Ponction d'un organe hématopoïétique, à l'exclusion du foie et de la rate

Table 113 – Nomenclature codes for cytological examination

Outpatient	Inpatient	Dutch Description	French Description
588416	588420	Cytologisch onderzoek naar neoplastische cellen op afnames niet gespecifieerd in de verstrekkingen 589853-589864 en 588394-588405, ongeacht het aantal preparaten, per afname	Recherche cytologique de cellules néoplasiques sur des prélèvements non précisés dans les prestations 589853-589864 et 588394-588405, quel que soit le nombre de lames, par prélèvement
Included when billed on the same day as the above codes			
588910	588921	Bijkomend honorarium voor de verstrekkingen 588011- 588022, 588114 - 588125, 588232 - 588243, 588254 - 588265, 588276 -	Supplément d'honoraires pour les prestations 588011- 588022, 588114 - 588125, 588232 - 588243, 588254 - 588265, 588276 -

		588280, 588291-588302, 587112-587123, 588394-588405 en588416-588420 die worden aangerekend door een geaccrediteerde arts-specialist in de pathologische anatomie. Dat bijkomend honorarium wordt maximum een keer per voorschrift of per dag, indien de uitvoering van het voorschrift over meerdere dagen gespreid wordt, toegekend	588280, 588291-588302, 587112-587123, 588394-588405 et 588416-588420, qui sont portées en compte par un médecin spécialiste en anatomie pathologique accrédité. Ce supplément d'honoraires n'est accordé au maximum qu'une fois par prescription ou par jour, si l'exécution de la prescription s'étend sur plusieurs jours

Although the cytological assessment of breast tumours before treatment is nowadays obsolete, cytological assessment was still included in the calculation as previous exploration of the administrative database revealed that the nomenclature codes intended for cytology were during (part of) the study period still used for a histological assessment and vice versa. [265]

Table 114 – Nomenclature codes for anatomical-pathological examinations

Outpatient	Inpatient	Dutch Description	French Description
587112	587123	Histologisch onderzoek, door inclusie en coupe, ongeacht het aantal coupes en ongeacht het aantal onderzochte organen, en met inbegripvan het eventueel macroscopisch onderzoek, van volgende operatiestukken voor oncologische indicatie: - Partiële of totale resectie van het pancreas, - Partiële of totale resectie van de slokdarm, - Partiële of totale resectie van de long, - Partiële of totale resectie van de maag, - Partiële of totale resectie van de larynx, - Partiële of totale resectie van de borst na neo-adjuvante therapie, - Abdominoperineale resectie en partiële of totale resectie van het rectum of rectosigmoïd na neo-adjuvante therapie, - Mucosectomie van het spijsverteringskanaal, - Hysterectomie- Totale resectie van de blaas, - Radicale prostatectomie, - Debulking operatie bij oncologische aandoening van de organen, van het kleine bekken	Examen histologique par inclusion et coupe, quel que soit le nombre de coupes et quel que soit le nombre d'organes examinés, en ce compris l'examen macroscopique éventuel des pièces opératoires suivantes pour des indications oncologiques : - Résection partielle ou totale du pancréas, - Résection partielle ou totale de l'œsophage, - Résection partielle ou totale du poumon, - Résection partielle ou totale de l'estomac, - Résection partielle ou totale du larynx, - Résection partielle ou totale du sein après traitement néo-adjuvant, - Résection abdominopérinéale et résection partielle ou totale du rectum ou rectosigmoide après traitement néo-adjuvant, - Mucosectomie du tube digestif, - Hystérectomie- Cystectomie totale, - Prostatectomie totale, - Opération de debulking pour affection oncologique des organes du petit bassin
588011	588022	Histologisch onderzoek door inclusie en coupe, ongeacht het aantal coupes en ongeacht het aantal onderzochte organen, en met inbegrip van het eventueel macroscopisch onderzoek, van afnames die niet overeenkomen met de verstrekkingen 588232-588243, 588254-588265, 588276-588280, 588291-588302 of 587112-587123	Examen histologique par inclusion et coupe, quel que soit le nombre de coupes et quel que soit le nombre d'organes examinés, en ce compris l'examen macroscopique éventuel, des prélèvements ne correspondant pas aux prestations 588232-588243, 588254-588265, 588276-588280, 588291-588302 ou 587112-587123

588033	588044	Peroperatoir pathologisch-anatomisch extempore onderzoek, ongeacht het aantal afnames, volgens de vriesmethode of depmethode en ongeacht het aantal verrichte controle-onderzoeken na inclusie en coupe	Examen peropératoire extemporané quel que soit le nombre de prélèvements par la technique de congélation ou d'apposition sur lame quel que soit le nombre de contrôles effectués après inclusion et coupe
588114	588125	Pathologisch-anatomisch onderzoek met een elektronenmicroscoop, ongeacht de aangewende techniek of technieken, ongeacht het aantal afnames	Examen anatomo-pathologique avec microscope électronique quelle(s) que soi(en)t la ou les technique(s) utilisée(s), quel que soit le nombre de prélèvements
588254	588265	Histologisch onderzoek door inclusie en coupe, ongeacht het aantal coupes en ongeacht het aantal onderzochte organen, en met inbegrip van het eventueel macroscopisch onderzoek, van de biopten van volgende diepe organen: - lever, - nier, - nierbekken, - bijnier, - prostaat, - borst, - lymfeklier, - beenmerg, - bot, - schildklier, - speekselklier, - pleura, - long, - testikel, - peritoneum, - retroperitoneum, - mediastinum, - hersenen en ruggenmerg, - hart, - pancreas	Examen histologique par inclusion et coupe, quel que soit le nombre de coupes et quel que soit le nombre d'organes examinés, en ce compris l'examen macroscopique éventuel, pour les biopsies des organes profonds suivants: - foie, - rein, - bassinet, - surrénale, - prostate, - sein, - ganglion lymphatique, - moelle osseuse, - os, - glande thyroïde, - glande salivaire, - plèvre, - poumon, - testicule, - péritoine, - rétropéritoine, - médiastin, - cerveau et moelle épinière, - coeur, - pancreas
588276	588280	Histologisch onderzoek, door inclusie en coupe, ongeacht het aantal coupes en ongeacht het aantal onderzochte organen, en met inbegrip van het eventueel macroscopisch onderzoek, van volgende operatiestukken : - lymfeklierexerese, - eenzijdige lymfeklier oksel, - eenzijdige lymfeklier lies, - heelkundige longbiopsie voor niet-oncologische indicatie, - partiële of totale thymectomie, - resectie van subfasciale tumoren, - partiële hepatectomie, - cholecystectomie, - splenectomie, - mesenteriale tumorectomie, - retroperitoneale tumorectomie, - oogbol resectie, - speekselklierresectie (met uitzondering van de accessoire speekselklieren), - partiële of totale glossectomie, - thyroidectomie, - parathyroidectomie, - pharyngectomie, - incisionele borstbiopsie, - borsttumorectomie, - partiële cystectomie (met uitzondering van de endoscopische blaasresectie), - prostaatadenomectomie, - epididymectomie, - orchidectomie, - partiële penis amputatie, - diepe hals tumorectomie, - partiële nefrectomie, - adnexectomie, - ovariectomie, - salpingectomie, - partiële vulvectomie, - baarmoederhals conisatie of -resectie, - bijnier resectie, - zenuwbiopsie, - spierbiopsie, - hersen-, ruggenmerg- of hypofyse- tumor resectie, - bottumor resectie, - tonsillectomie (> 18 jaar), - adenoidectomie (> 18 jaar)	Examen histologique par inclusion et coupe, quel que soit le nombre de coupes et quel que soit le nombre d'organes examinés, en ce compris l'examen macroscopique éventuel des pièces opératoires suivantes : - exérèse de ganglion lympathique, - évidement ganglionnaire axillaire unilatéral, - évidement ganglionnaire inguinal unilatéral - biopsie pulmonaire chirurgicale pour indication non-oncologique, -thymectomie partielle ou totale, - résection de tumeur sous-fasciale, - hépatectomie partielle, - cholécystectomie , - splénectomie, - tumorectomie mésentérique, - tumorectomie rétropéritonéale, - résection du globe oculaire, - résection d'une glande salivaire (à l'exception des glandes salivaires accessoires), - glossectomie partielle ou totale, - thyroïdectomie,- parathyroïdectomie, - pharyngectomie, - biopsie par incision du sein, - tumorectomie du sein, - cystectomie partielle (à l'exception de la résection vésicale endoscopique), - adénomectomie prostatique, - épididymectomie, - orchidectomie, - amputation partielle du pénis, - tumorectomie profonde du cou, - néphrectomie partielle, - annexectomie, - ovariectomie, - salpingectomie, - vulvectomie partielle, - conisation ou résection du col de l'utérus, - résection de la glande surrénale, - biopsie nerveuse- biopsie musculaire, - résection d'une tumeur du cerveau, de la moelle épinière ou de l'hypophyse - résection de

			tumeur osseuse, - amygdalectomie (> 18 ans), - adénoïdectomie (> 18 ans)
588291	588302	Histologisch onderzoek, door inclusie en coupe, ongeacht het aantal coupes en ongeacht het aantal onderzochte organen, en met inbegrip van het eventueel macroscopisch onderzoek, van volgende operatiestukken : - partiële mastectomie met okselklier(en), -totale mastectomie met of zonder okselklier(en), - partiële of totale pneumectomie voor niet-oncologische indicatie, - partiële of totale slokdarmresectie voor niet-oncologische indicatie, - bilaterale liesklieruitruiming, - lymfeklier uitruiming van twee of meerdere groepen halsklieren, - tumorectomie van de mondbodem of het verhemelte, - maxillectomie, - partiële of totale gastrectomie voor niet-oncologische indicatie, - dunne darm resectie, - partiële of totale colectomie, - pancreatectomie voor niet-oncologische indicatie, - hysterectomie voor niet-oncologische indicatie, - abdominoperineale resectie voor niet-oncologische indicatie, - totale cystectomie voor niet-oncologische indicatie, - totale penisamputatie, - totale nefrectomie, - hartresectie, - hart long blok, - totale hepatectomie, - totale pelvectomie, - totale vulvectomie, - foetus van 14 tot en met 24 weken	Examen histologique par inclusion et coupe, quel que soit le nombre de coupes et quel que soit le nombre d'organes examinés, en ce compris l'examen macroscopique éventuel des pièces opératoires suivantes : - mastectomie partielle avec ganglion(s) axillaire(s), - mastectomie totale avec ou sans ganglion(s) axillaire(s), - pneumectomie partielle ou totale pour indication non-oncologique, - résection partielle ou totale de l'oesophage pour indication nononcologique, - évidement ganglionnaire inguinal bilatéral, - évidement de deux ou plusieurs groupes de ganglions du cou, - tumorectomie du plancher buccal ou du palais, - maxillectomie, - gastrectomie partielle ou totale pour indication non-oncologique, - résection de l'intestin grêle, - colectomie partielle ou totale, - pancréatectomie pour indication non-oncologique, - hystérectomie pour indication non-oncologique, - résection abdominopérinéale pour indication non-oncologique, - cystectomie totale pour indication non-oncologique, - amputation totale du pénis, - néphrectomie totale, - résection cardiaque, - bloc coeur poumon(s), - hépatectomie totale, - pelvectomie totale, - vulvectomie totale, - foetus de 14 à 24 semaines y compris
Included when billed on the same day as the above codes			
588910	588921	Bijkomend honorarium voor de verstrekkingen 588011- 588022, 588114 - 588125, 588232 - 588243, 588254 - 588265, 588276 - 588280, 588291-588302, 587112-587123, 588394-588405 en588416-588420 die worden aangerekend door een geaccrediteerde arts-specialist in de pathologische anatomie. Dat bijkomend honorarium wordt maximum een keer per voorschrift of per dag, indien de uitvoering van het voorschrift over meerdere dagen gespreid wordt, toegekend	Supplément d'honoraires pour les prestations 588011- 588022, 588114 - 588125, 588232 - 588243, 588254 - 588265, 588276 - 588280, 588291-588302, 587112-587123, 588394-588405 et 588416-588420, qui sont portées en compte par un médecin spécialiste en anatomie pathologique accrédité. Ce supplément d'honoraires n'est accordé au maximum qu'une fois par prescription ou par jour, si l'exécution de la prescription s'étend sur plusieurs jours

Table 115 – Nomenclature codes for immunohistochemical examination (general)

Outpatient	Inpatient	Dutch Description	French Description
588070	588081	Immuunhistochemisch onderzoek voor het aantonen van antigenen, per antiserum	Examens immunohistochimique pour la révélation d'antigènes, par antisérum
588976	588980	Immuunhistochemisch onderzoek voor het aantonen van farmacopredictieve of prognostische biomerkers in een tumor, per antiserum, in het kader van het voorschrijven van tumor-specifieke medicatie	Examen immunohistochimique pour mise en évidence des biomarqueurs pharmaco- prédictifs ou pronostiques au niveau d'une tumeur, par antisérum, dans le cadre de la prescription d'une médication spécifique à la tumeur

Exploration of the data revealed that the nomenclature codes for the combined testing of ER and PR status (546416 - 546420 and 435831- 435842) were not billed. Instead, nomenclature codes for more general immunohistochemical testing (588070 - 588081 and 588976 - 588980, describing the testing for tumour antigen) were used to bill ER-PR-HER2 IHC testing collectively

Table 116 – Nomenclature codes for HER2 in situ hybridization

Outpatient	Inpatient	Dutch Description	French Description
588556	588560	Opsporen van HER2 genamplificatie door middel van een in situ "hybridization" techniek (Diagnoseregel 1, 13, 21)	Dépistage d'une amplification du gène HER2 au moyen d'une technique par "hybridization" in situ (Règle diagnostique 1, 13, 21)
594436	594440	Analyse van HER2 genamplificatie bij niet-gemetastaseerde borstkanker	Analyse de l'amplification du gène HER2 en cas de cancer du sein non métastatique
594451	594462	Analyse van HER2 genamplificatie bij gemetastaseerde borstkanker	Analyse de l'amplification du gène HER2 en cas de cancer du sein métastatique

Table 117 – Nomenclature codes for BRCA testing

Outpatient	Inpatient	Dutch Description	French Description
565154	565165	Complex moleculair cytogenetisch onderzoek (met submicroscopische, genoomwijde analyse) bij de diagnose van een maligne aandoening (Cumulregel 1) (Diagnoseregel 3, 10, 18, 19)	Examen de cytogénétique moléculaire complexe (avec analyse sub-microscopique, pangénomique) pour le diagnostic d'une affection maligne (Règle de cumul 1) (Règle diagnostique 3, 10, 18, 19)
565390	565401	Moleculair onderzoek voor het opsporen van constitutionele aandoeningen of voor het bepalen van een individueel genetisch	Analyse moléculaire pour la recherche d'affections constitutionnelles ou établissement d'un profil génétique individuel

		profiel met het oog op genetisch advies en/of voor diagnostische doeleinden, inclusief DNA isolatie (Diagnoseregel 10, 11, 18)	à des fins de conseil génétique et/ou à des fins diagnostiques, incluant l'extraction de l'ADN (Règle diagnostique 10, 11, 18)
565434	565445	Predictief genetisch onderzoek naar een familiale mutatie in het kader van kanker of familiaal kankersyndroom, inclusief DNA isolatie (Diagnoseregel 12)	Examen génétique prédictif d'une mutation familiale dans le cadre de cancer ou d'un syndrome cancéreux familial, incluant l'extraction de l'ADN (Règle diagnostique 12)
565515	565526	Complex moleculair genetisch onderzoek voor het opsporen van mutaties in het kader van kanker of familiaal kankersyndroom (niveau 1) (Diagnoseregel 10, 18)	Analyse moléculaire complexe pour la recherche de mutations dans le cadre de cancer ou de syndrome cancéreux familial (niveau 1) (Règle diagnostique 10, 18)
565530	565541	Complex moleculair genetisch onderzoek voor het opsporen van mutaties in het kader van kanker of familiaal kankersyndroom (niveau 2) (Diagnoseregel 10, 18)	Analyse moléculaire complexe pour la recherche de mutations dans le cadre de cancer ou de syndrome cancéreux familial (niveau 2) (Règle diagnostique 10, 18)
565552	565563	Complex moleculair genetisch onderzoek voor het opsporen van mutaties in het kader van kanker of familiaal kankersyndroom (niveau 3) (Diagnoseregel 10, 18)	Analyse moléculaire complexe pour la recherche de mutations dans le cadre de cancer ou de syndrome cancéreux familial (niveau 3) (Règle diagnostique 10, 18)
587915	587926	Opsporen van een verworven puntmutatie door middel van een moleculair biologische methode in de diagnostische investigatiefase van een niet-lymfoïde en niet-myeloïde vaste tumor (Cumulregel 5) (Diagnoseregel 1, 13)	Dépistage d'une mutation ponctuelle acquise au moyen d'une méthode de biologie moléculaire dans la phase d'investigation diagnostique d'une tumeur solide non lymphoïde et non-myéloïde. (Règle de cumul 5) (Règle diagnostique 1, 13)
588534	588545	Opsporen van een verworven chromosoom of genafwijking met uitzondering van een puntmutatie door middel van een moleculair biologische methode, in de diagnostiche investigatiefase van een niet-lymfoïde en niet-myeloïde vaste tumor (Cumulregel 5) (Diagnoseregel 1, 13)	Dépistage d'anomalies chromosomiques ou géniques acquises à l'exception d'une mutation ponctuelle au moyen d'une méthode de biologie moléculaire, dans la phase d'investigation diagnostique d'une tumeur solide non-lymphoïde et non-myéloïde (Règle de cumul 5) (Règle diagnostique 1, 13)

Table 118 – Nomenclature codes for other genetic testing

Outpatient	Inpatient	Dutch Description	French Description
594053	594064	Opsporen van een verworven moleculaire afwijking met een predictieve waarde voor een therapeutisch antwoord op een farmaceutische specialiteit ingeschreven in hoofdstuk VIII van het koninklijk besluit van 1 februari 2018 door middel van een	Dépistage d'une anomalie moléculaire acquise avec valeur prédictive de réponse thérapeutique à une spécialité pharmaceutique inscrite au chapitre VIII de l'arrêté royal du 1 février 2018 au moyen d'une méthode biologique moléculaire dans

		moleculair biologische methode in de diagnostische investigatiefase NIVEAU 2. (Cumulregel 1) (Diagnoseregel 1, 2)	la phase d'investigation diagnostique NIVEAU 2. (Règle de cumul 1) (Règle diagnostique 1, 2)
594090	594101	Opsporen van een verworven moleculaire afwijking met een predictieve waarde voor een therapeutisch antwoord op een farmaceutische specialiteit ingeschreven in hoofdstuk VIII van het koninklijk besluit van 1 februari 2018 door middel van een moleculair biologische methode in de diagnostische investigatiefase NIVEAU 3. (Cumulregel 1) (Diagnoseregel 1, 2)	Dépistage d'une anomalie moléculaire acquise avec valeur prédictive de réponse thérapeutique à une spécialité pharmaceutique inscrite au chapitre VIII de l'arrêté royal du 1 février 2018 au moyen d'une méthode biologique moléculaire dans la phase d'investigation diagnostique NIVEAU 3. (Règle de cumul 1) (Règle diagnostique 1, 2)

Table 119 – Nomenclature codes for mammography

Outpatient	Inpatient	Dutch Description	French Description
Mammography outside organised screening programme			
450096	450100	Mammografie per borst, inclusief de eventuele okselclichés (ongeacht het aantal clichés)	Mammographie par sein y compris les clichés axillaires éventuels (quel que soit le nombre de clichés)
461090	461101	Mammografie per borst, inclusief de eventuele okselclichés (ongeacht het aantal clichés)	Mammographie par sein y compris les clichés axillaires éventuels (quel que soit le nombre de clichés)
Screening mammography			
450192	450203	Mammografie van beide borsten, in het kader van een door een overheid georganiseerd bevolkingsonderzoek	Mammographie des deux seins dans le cadre d'un examen de masse organisé par une autorité
450214	450225	Tweede lezing van een screeningsmammografie van beide borsten, in het kader van een door een overheid georganiseerd bevolkingsonderzoek	Deuxième lecture de mammographie de dépistage, des deux seins, dans le cadre d'un examen de masse organisé par une autorité
450354	450365	Mammografie van beide borsten in het kader van opsporing van borstkanker bij asymptomatische vrouwen met een sterk verhoogd risicoprofiel	Mammographie des deux seins effectuée dans le cadre du dépistage du cancer du sein chez les femmes asymptomatiques ayant un profil de risque très élevé

Table 120 – Nomenclature codes for breast MRI

Outpatient	Inpatient	Dutch Description	French Description
459476	459480	NMR-onderzoek van één of beide mammae, minstens drie sequenties, met of zonder contrast, met registratie op optische of elektromagnetische drager	Examen d'IRM d'un ou des deux seins, minimum 3 séquences, avec ou sans contraste, avec enregistrement sur support soit optique, soit électromagnétique
459830	459841	NMR van beide borsten in het kader van opsporing van borstkanker bij asymptomatische vrouwen met een verhoogd risicoprofiel, zoals bepaald in artikel 17, § 1, 1°bis	IRM des deux seins dans le cadre du dépistage du cancer du sein chez des femmes asymptomatiques ayant un profil de risque très élevé, comme défini à l'article 17, § 1er, 1°bis

Table 121 – Nomenclature codes for breast ultrasound

Outpatient	Inpatient	Dutch Description	French Description
459793	459804	Echografie van minstens twee verschillende anatomische regio's : schedelinhoud (transfontanellair), thorax, borsten, lever-galblaas, pancreas-milt, nieren-blaas, retroperitoneum, grote abdominale vaten, mannelijk of vrouwelijk bekken	Echographie d'au moins deux régions anatomiques différentes : contenu du crâne (transfontanellaire), thorax, seins, foie-vésicule biliaire, pancréas-rate, reins-vessie, rétropéritoine, gros vaisseaux abdominaux, bassin masculin ou féminin
460132	460143	Bidimensionele echografie met geschreven protocol en iconografische drager die ontstaat na digitale beeldverwerking van de gegevens, ongeacht het aantal echogrammen : Van één of beide borsten, met inbegrip van de axilla	Echographie bidimensionnelle avec protocole écrit et support iconographique issu d'un traitement digital des données, quel que soit le nombre d'échogrammes : D'un sein ou des deux seins, y inclus la région axillaire
461134	461145	Echografie van beide borsten in het kader van opsporing van borstkanker bij asymptomatische vrouwen, met een sterk verhoogd risicoprofiel zoals bepaald in artikel 17, § 1, 1°bis	Echographie des deux seins dans le cadre du dépistage du cancer du sein chez des femmes asymptomatiques ayant un risque très élevé comme défini à l'article 17, § 1er, 1°bis
469394	469405	Bidimensionele echografie met geschreven protocol en iconografische drager die ontstaat na digitale beeldverwerking van de gegevens ongeacht het aantal echogrammen : Van één of beide borsten, met inbegrip van de axilla	Echographie bidimensionnelle avec protocole écrit et support iconographique issu d'un traitement digital des données quel que soit le nombre d'échogrammes : D'un ou des deux seins, y inclus la région axillaire

Table 122 – Nomenclature codes for CT, scintigraphy, SPECT and SPECT-CT

Outpatient	Inpatient	Dutch Description	French Description
458452	458463	Toeslag bij een computergestuurde tomografie van het abdomen bij middel van een multidetectorCT met minimum 4 detectoren, na CO2-insufflatie, met virtueel dubbelcontrastbeeld in minstens twee verschillende houdingen en endo 3D-beelden van minstens drie verschillende segmenten van het colon	Supplément à une tomographie commandée par ordinateur de l'abdomen au moyen d'un multidétecteur CT avec minimum 4 détecteurs, après insufflation CO2, avec image en double contraste virtuelle dans minimum deux positions différentes et images endo 3D de minimum trois segments différents du colon
458673	458684	Computergestuurde tomografie van de schedel met of zonder contrast, met registreren en clichés, minimum 10 coupes, voor het hele onderzoek	Tomographie du crâne commandée par ordinateur, avec ou sans moyen de contraste, avec enregistrement et clichés, 10 coupes au minimum pour l'ensemble de l'examen
458732	458743	Computergestuurde tomografie van de rotsbeenderen en/of sella torsica met of zonder contrastmiddel, met registreren en clichés, in een opeenvolgende reeks coupes, gelijk aan of minder dan 2 mm : minimum 20 coupes	Tomographie des rochers et/ou de la selle turcique, commandée par ordinateur, avec ou sans moyen de contraste, avec enregistrement et clichés, dans une série successive de coupes égales ou inférieures à 2 mm : 20 coupes au minimum
458813	458824	Computergestuurde tomografie van de hals (weke delen) met of zonder contrastmiddel, met registreren en clichés, minimum 15 coupes, voor het hele onderzoek	Tomographie commandée par ordinateur, du cou (parties molles) avec/ou sans moyen de contraste, avec enregistrement et clichés, 15 coupes au minimum, pour l'ensemble de l'examen
459550	459561	Computergestuurde tomografie van de thorax met of zonder contrastmiddel, met registreren en clichés, minimum 15 coupes, voor het hele onderzoek	Tomographie commandée par ordinateur, du thorax avec/ou sans moyen de contraste, avec enregistrement et clichés, 15 coupes au minimum, pour l'ensemble de l'examen
459572	459583	Computergestuurde tomografie van het abdomen, met of zonder contrastmiddel, met registreren en clichés, minimum 15 coupes, voor het hele onderzoek	Tomographie commandée par ordinateur, de l'abdomen, avec/ou sans moyen de contraste, avec enregistrement et clichés, 15 coupes au minimum, pour l'ensemble de l'examen
459594	459605	Computergestuurde tomografie van de hals en de thorax, met of zonder contrastmiddel, met registreren en clichés, minimum 30 coupes voor het hele onderzoek	Tomographie commandée par ordinateur du cou et du thorax, avec/ ou sans moyen de contraste, avec enregistrement et clichés, 30 coupes au minimum, pour l'ensemble de l'examen
459616	459620	Computergestuurde tomografie van de thorax en het abdomen, met of zonder contrastmiddel, met registreren en clichés, minimum 30 coupes voor het hele onderzoek	Tomographie commandée par ordinateur du thorax et de l'abdomen, avec/ou sans moyen de contraste, avec enregistrement et clichés, 30 coupes au minimum, pour l'ensemble de l'examen

459631	459642	Computergestuurde tomografie van de hals, de thorax en het abdomen, met of zonder contrastmiddel, met registreren en clichés, minimum 30 coupes voor het hele onderzoek	Tomographie commandée par ordinateur du cou, du thorax et de l'abdomen, avec/ou sans moyen de contraste, avec enregistrement et clichés, 30 coupes au minimum, pour l'ensemble de l'examen
442396	442400	Tomografisch onderzoek tijdens een scintigrafie, met verwerking op computer die ten minste twee niet-parallelle reconstructievlakken omvat, met protocol en iconografische documenten (Single-photon emission computed tomography - SPECT)	Examen tomographique lors d'une scintigraphie, avec traitement par ordinateur comprenant au moins deux plans non parallèles de reconstruction, avec protocole et documents iconographiques (Single-photon emission computed tomography - SPECT)
442514	442525	Tomografisch onderzoek van een streek van het lichaam tijdens een scintigrafie van het ganse lichaam, met computerverwerking, dat ten minste twee niet parallelle reconstructievlakken omvat, met protocol en iconografische documenten (Single-photon emission computed tomography - SPECT)	Examen tomographique d'une région du corps lors d'une scintigraphie du corps entier, avec traitement par ordinateur comprenant au moins deux plans non parallèles de reconstruction, avec protocole et documents iconographiques (Single-photon emission computed tomography - SPECT)
442536	442540	Bijkomend honorarium voor een lokalisatie CT opname, met beeldfusie, bij een SPECT onderzoek, uitgevoerd op een SPECT-CT toestel	Supplément d'honoraires pour l'enregistrement d'un CT de localisation, avec fusion d'images, lors d'un examen SPECT, réalisé au moyen d'un appareil SPECT-CT
459351	459362	Computergestuurde tomografie van het bekken en/of de wervelzuil, schedel, thorax, met of zonder contrastmiddel, met beeldfusie, bij SPECT-CT onderzoek, uitgevoerd op een SPECT-CT toestel	Tomographie commandée par ordinateur du bassin et/ou de la colonne vertébrale, du crâne ou du thorax, avec ou sans moyen de contraste, avec fusion d'images, lors d'un examen SPECT-CT, réalisé au moyen d'un appareil SPECT-CT
442411	442422	Scintigrafie van een orgaan, van een stelsel of van een deel van het lichaam	Scintigraphie d'un organe, d'un système ou d'une partie du corps
442455	442466	Scintigrafie van het ganse lichaam (de scintillogrammen moeten ten minste betrekking hebben op het hoofd, de romp, het abdomen, de schouder- en bekkengordels)	Scintigraphie du corps entier (les scintillogrammes doivent comporter la tête, le tronc, l'abdomen, les ceintures scapulaires et pelviennes au minimum)
442610	442621	Functioneel scintigrafisch onderzoek van een orgaan of stelsel van organen, met sequentiële (dynamische) inzameling van de gegevens die minstens drie opnames bevatten op verschillende tijdstippen, met kwantitatieve analyse ervan die activiteitscurven in de tijd en/of tabellen met cijfergegevens omvat, met protocol en iconografische documenten	Examen scintigraphique fonctionnel d'un organe ou système d'organes, avec acquisition séquentielle (dynamique) des données qui comprend au moins trois enregistrements à différents moments, avec leur analyse quantitative comprenant des courbes d'activité dans le temps et/ou des tableaux de données chiffrées, avec protocole et documents iconographiques

Table 123 – Nomenclature codes for PET(-CT)

Outpatient	Inpatient	Dutch Description	French Description
442595	442606	Functioneel scintigrafisch onderzoek van het hart dat twee opeenvolgende tomografische onderzoeken omvat, met verwerking op computer, die ten minste twee niet-parallelle reconstructievlakken omvat, met protocol en iconografische documenten	Examen scintigraphique fonctionnel du cœur comportant deux examens tomographiques successifs avec traitement par ordinateur comprenant au moins deux plans non parallèles de reconstruction, avec protocole et documents iconographiques
442750	442761	Positronentomografisch onderzoek, met protocol en documenten, voor andere indicaties dan deze vermeld bij de verstrekkingen 442971-442982, 442676-442680, 442691-442702, 442713-442724 of 442735-442746	Tomographie à émission de positons, avec protocole et documents, pour d'autres indications que celles mentionnées aux prestations 442971-442982, 442676-442680, 442691-442702, 442713-442724 ou 442735-442746
442971	442982	Positronentomografisch onderzoek met protocol en documenten, voor het geheel van het onderzoek, voor oncologische indicaties	Tomographie à émission de positons avec protocole et documents, pour l'ensemble de l'examen, pour des indications oncologiques
459874	459885	Computergestuurde tomografie van de hersenen met registreren en clichés, met of zonder contrastmiddel, tegelijkertijd uitgevoerd bij een PET onderzoek, voor diagnostische doeleinden	Tomographie du cerveau commandée par ordinateur, avec ou sans moyen de contraste, avec enregistrement et clichés, effectuée simultanément avec un examen PET, à des fins diagnostiques
459896	459900	Computergestuurde tomografie met registreren en clichés, met of zonder contrastmiddel, tegelijkertijd uitgevoerd bij een PET onderzoek dat tenminste een opname van de halsregio tot en met het abdomen omvat, voor diagnostische doeleinden	Tomographie commandée par ordinateur, avec ou sans moyen de contraste, avec enregistrement et clichés, effectuée simultanément avec un examen PET qui comprend au moins un cliché de la région du cou jusqu'à l'abdomen, à des fins diagnostiques
459911	459922	Computergestuurde tomografie met registreren en clichés, met of zonder contrastmiddel, tegelijkertijd uitgevoerd bij een PET onderzoek dat tenminste een opname van de thorax omvat, voor diagnostische doeleinden	Tomographie commandée par ordinateur, avec ou sans moyen de contraste, avec enregistrement et clichés, effectuée simultanément avec un examen PET qui comprend au moins la région du thorax, à des fins diagnostiques

Table 124 – Nomenclature codes for isotopes, when coded on the same day as codes from Table 122 and Table 123.

Outpatient	Inpatient	Dutch Description	French Description
745732	745743	Humaan albumine nanocolloïd deeltjes	Albumine humaine, nanocolloïdes
745754	745765	Humaan albumine nanocolloïd deeltjes	Albumine humaine, nanocolloïdes
746255	746266	Fludeoxyglucose (F-18)	Fludésoxyglucose (F-18)
746314	746325	Fluoride (F-18)	Fluorure (F-18)
746395	746406	Fludeoxyglucose (F-18)	Fludésoxyglucose (F-18)
746675	746686	Fludeoxyglucose (F-18)	Fludésoxyglucose (F-18)
746712	746723	Fludeoxyglucose (F-18)	Fludésoxyglucose (F-18)
746734	746745	Fludeoxyglucose (F-18)	Fludésoxyglucose (F-18)
746970	746981	Fludeoxyglucose (F-18)	Fludésoxyglucose (F-18)
747014	747025	Fludeoxyglucose (F-18)	Fludésoxyglucose (F-18)
747176	747180	Fludeoxyglucose (F-18)	Fludésoxyglucose (F-18)
747294	747305	Natriumfluoride (F-18)	Fluorure de sodium(F-18)
747552	747563	Radiofarmaceutische producten op basis van Isotopen O 15, N 13, C 11, F 18 met een laag atoomgewicht, vergoedingscategorie Ri-D7 - toepassingsgebied diagnostiek: PET scan: 1 toedieningen 20 ml oplossing voor injecite, 1850 MBq/ml	Produits radio-pharmaceutiques à base d'isotopes de poids atomique bas O 15, N 13, C 11, F 18, catégorie de remboursement Ri-D7 - domaine d'application diagnostique: TEP scan : 1 administration 20 ml solution injectable, 1850 MBq/ml
747574	747585	Radiofarmaceutische producten op basis van Isotopen O 15, N 13, C 11, F 18 met een laag atoomgewicht, vergoedingscategorie Ri-D9 - toepassingsgebied diagnostiek: PET scan: 1 toedieningen 20 ml oplossing voor injectie, 1850 MBq/ml	Produits radio-pharmaceutiques à base d'isotopes de poids atomique bas O 15, N 13, C 11, F 18, vatégorie de remboursement Ri-D9 - domaine d'application diagnostique: TEP scan
747633	747644	Humaan albumine nanocolloïd deeltjes	Albumine humaine, nanocolloïdes
747751	747762	Fludeoxyglucose (F-18)	Fludésoxyglucose (F-18)

747810	747821	Fludeoxyglucose (F-18)	Fludésoxyglucose (F-18)
747913	747924	RIZIV-forfait PET	forfait INAMI PET

Table 125 – Nomenclature codes for X-ray of thorax

Outpatient	Inpatient	Dutch Description	French Description
452690	452701	Radiografie van de thorax en de inhoud ervan, één cliché	Radiographie du thorax et de son contenu, un cliché
452712	452723	Radiografie van de thorax en de inhoud ervan, minimum twee clichés	Radiographie du thorax et de son contenu, minimum 2 clichés
455335(*)	455346(*)	Radiografie van het ribrooster, minimum twee clichés	Radiographie du gril costal, minimum 2 clichés
463691	463702	Radiografie van de thorax en de inhoud ervan, één cliché	Radiographie du thorax et de son contenu, un cliché
463713	463724	Radiografie van de thorax en de inhoud ervan, minimum twee clichés	Radiographie du thorax et de son contenu, minimum 2 clichés

(*) These nomenclature codes are added to the selection because it cannot be billed on the same day as the regular thorax X-ray codes and has a higher key value.

Table 126 – Nomenclature codes for MRI (except breast)

Outpatient	Inpatient	Dutch Description	French Description
457914	457925	NMR-onderzoek van de thoracale wervelzuil, minstens drie sequenties, met of zonder contrast, met registratie op optische of elektromagnetische drager	Examen d'IRM du rachis thoracique, minimum 3 séquences, avec ou sans contraste, avec enregistrement sur support, soit optique, soit électromagnétique
457936	457940	NMR-onderzoek van de lumbosacrale wervelzuil, minstens drie sequenties, met of zonder contrast, met registratie op optische of elektromagnetische drager	Examen d'IRM du rachis lombosacré, minimum 3 séquences, avec ou sans contraste, avec enregistrement sur support, soit optique, soit électromagnétique
457951	457962	NMR-onderzoek van de volledige wervelzuil of een combinatie van twee van de NMR-onderzoeken van de cervicale, de thoracale of de lumbosacrale wervelzuil, minstens drie sequenties, met of zonder contrast, met registratie op optische of elektromagnetische drager	Examen d'IRM du rachis entier ou combinaison de deux des examens d'IRM des rachis cervical, thoracique ou lombosacré , minimum 3 séquences, avec ou sans contraste, avec enregistrement sur support, soit optique, soit électromagnétique

459410	459421	NMR-onderzoek van de hals of van de thorax of van het abdomen of van het bekken, minstens drie sequenties, met of zonder contrast, met registratie op optische of elektromagnetische drager	Examen d'IRM du cou ou du thorax ou de l'abdomen ou du bassin, minimum 3 séquences, avec ou sans contraste, avec enregistrement sur support soit optique, soit électromagnétique
459491	459502	NMR-onderzoek van de cervicale wervelzuil, minstens drie sequenties, met of zonder contrast, met registratie op optische of elektromagnetische drager	Examen d'IRM du rachis cervical, minimum 3 séquences, avec ou sans contraste, avec enregistrement sur support, soit optique, soit électromagnétique
459395	459406	NMR-onderzoek van het hoofd (schedel, hersenen, rotsbeen, hypofyse, sinussen, orbita(e) of kaakgewrichten), minstens drie sequenties, met of zonder contrast, met registratie op optische of elektromagnetische drager	Examen d'IRM de la tête (crâne, encéphale, rocher, hypophyse, sinus, orbite(s) ou articulations de la mâchoire), minimum 3 séquences avec ou sans contraste, avec enregistrement soit sur support optique, soit électromagnétique

Table 127 – Nomenclature codes for abdominal and non specific ultrasound (except breast)

Outpatient	Inpatient	Dutch Description	French Description
Abdominal ultrasound			
459712	459723	Totaal abdominaal onderzoek (lever, galblaas, milt, pancreas, nieren of bijnieren, retroperitoneum) waarbij minstens acht verschillende sneden gedokumenteerd inclusief eventueel gebruik van dopplertechnieken	Examen abdominal total (foie, vésicule biliaire, rate, pancréas, reins ou surrénales, rétropéritoine) avec au minimum huit coupes différentes documentées, y compris l'usage éventuel de techniques doppler
460154	460165	Bidimensionele echografie met geschreven protocol en iconografische drager die ontstaat na digitale beeldverwerking van de gegevens, ongeacht het aantal echogrammen_Van het abdomen : Lever en/of galblaas, en/of galwegen	Echographie bidimensionnelle avec protocole écrit et support iconographique issu d'un traitement digital des données, quel que soit le nombre d'échogrammes_De l'abdomen : Le foie et/ou la vésicule biliaire et/ou les voies biliaires
469173	469184	Totaal abdominaal onderzoek (lever, galblaas, milt, pancreas, nieren of bijnieren, retroperitoneum) waarbij minstens acht verschillende sneden gedokumenteerd	Examen abdominal total (foie, vésicule biliaire, rate, pancréas, reins ou glandes surrénales, rétropéritoine) avec au moins huit coupes documentées différentes
469416	469420	Bidimensionele echografie met geschreven protocol en iconografische drager die ontstaat na digitale beeldverwerking van de gegevens ongeacht het aantal echogrammen - Van het abdomen : Lever en/of galblaas en/of galwegen	Echographie bidimensionnelle avec protocole écrit et support iconographique issu d'un traitement digital des données quel que soit le nombre d'échogrammes - De l'abdomen : Le foie et/ou la vésicule biliaire et/ou les voies biliaires

Other non specific ultrasound			
355913	355924	Bijkomend honorarium bij de verstrekkingen 355353-355364, 355375-355386, 355434-355445, 355456-355460, 355471-355482, 355552-355563, 355596-355600, 355611-355622, 355633-355644, 355670-355681, 355714-355725, 355751-355762, 355994-356005, 356016-356020, 356031-356042, 475930-475941, 475952-475963, 475974-475985 en 475996-476000, wanneer zij uitgevoerd worden onder echografische of radiologische controle	Supplément aux prestations 355353-355364, 355375-355386, 355434-355445, 355456-355460, 355471-355482, 355552-355563, 355596-355600, 355611-355622, 355633-355644, 355670-355681, 355714-355725, 355751-355762, 355994-356005, 356016-356020, 356031-356042, 475930-475941, 475952-475963, 475974-475985 et 475996-476000, lorsque celles-ci sont effectuées sous contrôle échographique ou radiologique
459756	459760	Bilateraal kleurenduplexonderzoek van de arteria carotis en van de arteria vertebralis en kleurenduplexonderzoek van de diepliggende thoracale en/of abdominale en/of pelvische bloedvaten en/of bloedvaten van de ledematen	Examen duplex couleur bilatéral des artères carotides et des artères vertébrales et examen duplex couleur des vaisseaux sanguins profonds thoraciques et/ou abdominaux et/ou pelviens et/ou des vaisseaux des membres
459771	459782	Bilateraal kleurenduplexonderzoek van de arteria carotis en van de arteria vertebralis en echografie van één van de volgende streken : schedelinhoud (transfontanellair), thorax, borsten, lever-galblaas, pancreas-milt, nieren-blaas, retroperitoneum, grote abdominale vaten, totale bovenbuik, mannelijk of vrouwelijk bekken	Examen duplex couleur bilatéral des artères carotides et des artères vertébrales et échographie d'une des régions suivantes : contenu du crâne (transfontanellaire), thorax, seins, foie-vésicule biliaire, pancréas-rate, reins-vessie, rétropéritoine, gros vaisseaux abdominaux, abdomen supérieur total, bassin masculin ou féminin
459815	459826	Bilateraal kleurenduplexonderzoek van de arteriële en/of oppervlakkige en diepe veneuze bloedvaten van de ledematen en echografie van één van de volgende streken : schedelinhoud (transfontanellair), thorax, borsten, lever-galblaas, pancreas-milt, nieren-blaas, retroperitoneum, grote abdominale vaten, totale bovenbuik, mannelijk of vrouwelijk bekken	Examen duplex couleur bilatéral des vaisseaux sanguins artériels et/ou veineux (superficiels et profonds) des membres et échographie d'une des régions suivantes : contenu du crâne (transfontanellaire), thorax, seins, foie-vésicule biliaire, pancréas-rate, reins-vessie, rétro-péritoine, gros vaisseaux abdominaux, abdomen supérieur total, bassin masculin ou féminin
460110	460121	Bidimensionele echografie met geschreven protocol en iconografische drager die ontstaat na digitale beeldverwerking van de gegevens, ongeacht het aantal echogrammen : Van de thorax	Echographie bidimensionnelle avec protocole écrit et support iconographique issu d'un traitement digital des données, quel que soit le nombre d'échogrammes : Du thorax
460412	460423	Transthoracale mono- en bidimensionele echografie (met respectievelijk ten minste 3 en 2 coupes en registratie op papier en/of magneetband)	Echographie mono- et bidimensionnelle transthoracale (avec respectivement au moins 3 et 2 coupes et enregistrement sur papier et/ou bande magnétique)

460633	460644	Kleurenduplexonderzoek van de diepliggende thoracale en/of abdominale en/of pelvische bloedvaten	Examen duplex couleur des vaisseaux sanguins profonds, thoraciques et/ou abdominaux et/ou pelviens
469291	469302	Echografie van het kleine bekken, ongeacht de toegangsweg, ongeacht de sonde, met of zonder kleurenduplexonderzoek van de pelvische bloedvaten, voorbehouden voor de gynaecologen	Echographie du petit bassin, quelle que soit la voie d'accès, quelle que soit la sonde, avec ou sans examen duplex couleur des vaisseaux sanguins pelviens, réservée aux gynécologues
469372	469383	Bidimensionele echografie met geschreven protocol en iconografische drager die ontstaat na digitale beeldverwerking van de gegevens ongeacht het aantal echogrammen : Van de thorax	Echographie bidimensionnelle avec protocole écrit et support iconographique issu d'un traitement digital des données quel que soit le nombre d'échogrammes : Du thorax
469755	469766	Kleurenduplexonderzoek van de diepliggende thoracale en/of abdominale en/of pelvische bloedvaten	Examen duplex couleur des vaisseaux sanguins profonds thoraciques et/ou abdominaux et/ou pelviens

Table 128 – Supplementary nomenclature codes for medical imaging (art.17, 18), when coded on the same day (*)

Outpatient	Inpatient	Dutch Description	French Description
	460703	Consultancehonorarium dat mag worden betaald per opneming in een of meer acute diensten A, C, D, E, G, H, I, K, L, M, NIC, Sp-cardiopulmonair, Sp-neurologie of Sp-locomotorisch van een algemeen ziekenhuis	Honoraires de consultance payables par admission dans un ou plusieurs services aigus A, C, D, E, G, H, I, K, L, M, NIC, Sp-cardiopulmonaire, Sp-neurologie ou Sp-locomoteur d'un hôpital général
	460784	Medische beeldvorming - Radiologie, artikel 17, forfaitair honorarium inzake medische beeldvorming per opneming	Imagerie médicale - Radiologie, article 17, honoraire forfaitaire d'imagerie médicale par admission
	460821	Consultancehonorarium van de geaccrediteerde geneesheer specialist voor röntgendiagnose, dat geldt onder dezelfde voorwaarden als die welke zijn gesteld voor de verstrekking nr. 460703 van dit artikel	Honoraires de consultance du médecin accrédité spécialiste en radiodiagnostic, applicables dans les mêmes conditions que celles prévues pour la prestation n° 460703 du présent article
460670		Consultancehonorarium van de geneesheer specialist voor röntgendiagnose, dat geldt voor de volgende verstrekkingen inzake medische beeldvorming die in de ambulante sector worden uitgevoerd : - In artikel 17 § 1 : 1) 450074, 450096 2) 450531 tot 450715 3) 451076, 451135, 451312 tot 451754 alsmede 451813 tot 451850 en 451894 5) 453154 tot 453176, 453235, 453272 tot	Honoraires de consultance du médecin spécialiste en radiodiagnostic, applicables aux prestations suivantes d'imagerie médicale pratiquées dans le secteur ambulatoire : - A l'article 17 § 1er :1) 450074, 450096 2) 450531 à 450715 3) 451076, 451135, 451312 à 451754 ainsi que 451813 à 451850 et 451894 5) 453154 à 453176, 453235, 453272 à 453294, 453471, 453316, 453390 à

		453294, 453471, 453316, 453390 tot 453412, 453331, 453515 tot 453530, 453552 alsmede 453574 tot 453596 6) 454016 tot 454075 7) 455711 11) 458570, 458592, 458673, 459675, 459690, 458732, 458813, 458835, 458850, 457855, 457870, 457892, 458872, 458894, 459550, 459572, 459594, 459616, 459631, 459896, 459874, 459911, 459351, 459373, 458953 12) 459196 13) 459395, 459410, 459432, 459454, 459476, 459491,457914, 457936, 457951, 459513, 459535, 458975 14) 459852, 459933, 459955, 458474, 458496 - In artikel 17 bis § 1 : 459712, 459734, 459756, 459771, 459793, 459815, 460051, 460073, 460095, 460110, 460132, 460154, 460176, 460191, 460235, 460250, 460272, 460294, 460316, 460331, 460375, 460412, 460456, 460493, 460574, 460611, 460633, 460832, 460854, 461156, 461215, 461230, 461355 en 461370, 461731, 461753, 461775, 461812, 461834	453412, 453331, 453515 à 453530, 453552 ainsi que 453574 à 453596 6) 454016 à 454075 7) 455711 11) 458570, 458592, 458673, 459675, 459690, 458732, 458813, 458835, 458850, 457855, 457870, 457892, 458872, 458894, 459550, 459572, 459594, 459616, 459631, 459896, 459874, 459911, 459351, 459373, 458953 12) 459196 13) 459395, 459410, 459432, 459454, 459476, 459491,457914, 457936, 457951, 459513, 459535, 458975 14) 459852, 459933, 459955, 458474, 458496 - A l'article 17 bis § 1er : 459712, 459734, 459756, 459771, 459793, 459815, 460051, 460073, 460095, 460110, 460132, 460154, 460176, 460191, 460235, 460250, 460272, 460294, 460316, 460331, 460375, 460412, 460456, 460493, 460574, 460611, 460633, 460832, 460854, 461156, 461215, 461230, 461355 et 461370, 461731, 461753, 461775, 461812, 461834
460795		Consultancehonorarium van de geaccrediteerde geneesheer specialist voor röntgendiagnose, dat geldt voor dezelfde verstrekkingen en onder dezelfde voorwaarden als die welke zijn gesteld voor de verstrekking nr. 460670 van dit artikel	Honoraires de consultance du médecin accrédité spécialiste en radiodiagnostic, applicables aux mêmes prestations et dans les mêmes conditions que celles prévues pour la prestation n° 460670 du présent article
460972(*)		Forfaitair honorarium per voorschrift en per dag voor alle technische verstrekkingen inzake medische beeldvorming van artikel 17,§ 1 die ambulant worden uitgevoerd behoudens wanneer minstens één van de verstrekkingen vermeld onder 460994 of 461016 uitgevoerd wordt	Honoraires forfaitaires par prescription et par jour pour toutes les prestations techniques d'imagerie médicale de l'article 17 §1er , exécutées en ambulatoire excepté lorsqu'il est exécuté au moins une des prestations reprises sous les n°s 460994 ou 461016
460994		Forfaitair honorarium per voorschrift en per dag voor alle technische verstrekkingen inzake medische beeldvorming die ambulant worden uitgevoerd waarvan minstens één van volgende verstrekkingen uit artikel 17 § 1 :1) 450074, 450096 2) 450531 tot 450715 3) 451076, 451312 tot 451754 alsmede 451813 tot 451850 en 451894 6) 455711 8) 459196	Honoraires forfaitaires par prescription et par jour pour toutes les prestations techniques d'imagerie médicale exécutées en ambulatoire dont au moins une des prestations suivantes de l'article 17, § 1er :1) 450074, 450096 2) 450531 à 450715 3) 451076, 451312 à 451754 ainsi que 451813 à 451850 et 451894 6) 455711 8) 459196
461016		Forfaitair honorarium per voorschrift en per dag voor alle technische verstrekkingen inzake medische beeldvorming die ambulant worden uitgevoerd waarvan minsten één van volgende verstrekkingen uit artikel 17, § 1 : 458570, 458592, 458673, 459675, 459690, 458732, 458813, 458835, 458850, 458872,	Honoraires forfaitaires par prescription et par jour pour toutes les prestations d'imagerie médicale exécutées en ambulatoire dont au moins une des prestations suivantes de l'article 17, § 1er : 458570, 458592, 458673, 459675, 459690, 458732, 458813, 458835, 458850, 458872, 458894, 459550, 457855, 457870,

		458894, 459550, 457855, 457870, 457892, 459572, 459594, 459616, 459631,459896, 459874, 459911, 459351, 459373, 458953 2) 453316 tot 453530 3) 453154 tot 453294 4) 454016 tot 454075 5) 459395 tot 459535, 458975 6) 459852, 459933, 459955, 457914, 457936, 457951, 458474, 458496	457892, 459572, 459594, 459616, 459631,459896, 459874, 459911, 459351, 459373, 458953 2) 453316 à 453530 3) 453154 à 453294 4) 454016 à 454075 5) 459395 à 459535, 458975 6) 459852, 459933, 459955, 457914, 457936, 457951, 458474, 458496
449912	449923	Bijkomend honorarium voor de verstrekkingen 442212 - 442223, 442234 - 442245, 442411 - 442422, 442455 - 442466, 442610 - 442621, 442632 - 442643, 442396 - 442400, 442514 - 442525, 442595 - 442606, 442676 - 442680, 442691 - 442702, 442713 - 442724, 442735 - 442746, 442750 - 442761, 442971 - 442982 die worden aangerekend door een geaccrediteerde geneesheer, specialist voor nucleaire geneeskunde. Diezelfde verstrekkingen geven geen aanleiding tot dat bijkomend honorarium als ze worden gecumuleerd met de verstrekking nr. 102535. Dat bijkomend honorarium wordt maximum één keer per dag en per patiënt toegekend.	Supplément d'honoraires pour les prestations 442212 - 442223, 442234 - 442245, 442411 - 442422, 442455 - 442466, 442610 - 442621, 442632 - 442643, 442396 - 442400, 442514 - 442525, 442595 - 442606, 442676 - 442680, 442691 - 442702, 442713 - 442724, 442735 - 442746, 442750 - 442761, 442971 - 442982 portées en compte par un médecin accrédité spécialiste en médecine nucléaire. Ces mêmes prestations ne donnent pas lieu à ce supplément d'honoraires lorsqu'elles sont cumulées avec la prestation n° 102535. Ce supplément d'honoraires n'est accordé au maximum qu'une fois par jour et par patient.

Table 129 – Nomenclature codes for blood tests

Outpatient	Inpatient	Dutch Description	French Description
125016	125020	Doseren van urinezuur #(Maximum 1)	Dosage de l'acide urique #(Maximum 1)
125031	125042	Doseren van bilirubine #(Maximum 1) (Cumulregel 5)	Dosage de la bilirubine #(Maximum 1) (Règle de cumul 5)
125053	125064	Doseren van glucose #(Maximum 1) (Cumulregel 3)	Dosage du glucose #(Maximum 1) (Règle de cumul 3)
125075	125086	Doseren van ureum #(Maximum 1) (Diagnoseregel 162)	Dosage de l'urée #(Maximum 1) (Règle diagnostique 162)
125090	125101	Doseren van aspartaat aminotransferasen #(Maximum 1) (Cumulregel 4)	Dosage des aspartate aminotransférases #(Maximum 1) (Règle de cumul 4)
125112	125123	Doseren van alanine aminotransferasen #(Maximum 1) (Cumulregel 4)	Dosage des alanine aminotransférases #(Maximum 1) (Règle de cumul 4)

125134	125145	Doseren van aspartaat aminotransferasen en alanine aminotransferasen #(Maximum 1) (Cumulregel 4)	Dosage des aspartate aminotransférases et des alanine aminotransférases #(Maximum 1) (Règle de cumul 4)
125171	125182	Per bijkomende dosering van glycemie tijdens een curve van verwekte hyper- of hypoglycemie (verstrekking 125156 - 125160) of van glucosedagcurve (verstrekking 125193 - 125204) #(Maximum 1) (Cumulregel 3)	Par dosage de glycémie supplémentaire lors d'une courbe d'hyper- ou d'hypoglycémie provoquée (prestation 125156 - 125160) ou lors de l'évolution circadienne de la glycémie (prestation 125193 - 125204) #(Maximum 1) (Règle de cumul 3)
126814	126825	Microscopisch onderzoek van etter, exsudaten, sputum, punktievloeistoffen, sperma met of zonder eenvoudige kleuring #(Maximum 1)	Examen microscopique de pus, d'exsudats, d'expectorations, de liquides de ponction, de sperme avec ou sans coloration simple #(Maximum 1)
126836	126840	Microscopisch onderzoek van etter, exsudaten, sputum, punktievloeistoffen, sperma, na dubbele kleuring #(Maximum 1)	Examen microscopique de pus, d'exsudats, d'expectorations, de liquides de ponction, de sperme, après coloration double #(Maximum 1)
127013	127024	Doseren van hemoglobine door elektrofotometrische methode #(Maximum 1)	Dosage de l'hémoglobine par méthode électrophotométrique #(Maximum 1)
127035	127046	Tellen van de erythrocyten en/of hematocriet #(Maximum 1)	Numération des globules rouges et/ou hématocrite #(Maximum 1)
127050	127061	Tellen van de leucocyten #(Maximum 1)	Numération des globules blancs #(Maximum 1)
127072	127083	Leucocytenformule vastgesteld met microscoop op minimum 100 cellen #(Maximum 1) (Cumulregel 102)	Formule leucocytaire établie au microscope sur un minimum de 100 cellules #(Maximum 1) (Règle de cumul 102)
127116	127120	Tellen van de thrombocyten #(Maximum 1)	Numération des plaquettes #(Maximum 1)
127131	127142	Tellen van de reticulocyten #(Maximum 1)	Numération des réticulocytes #(Maximum 1)
127153	127164	Meten van de snelheid van de globulaire sedimentatie #(Maximum 1) (Cumulregel 101, 354)	Mesure de la vitesse de sédimentation globulaire #(Maximum 1) (Règle de cumul 101, 354)
127175	127186	Vereenvoudigde leucocytenformule (lymfocyten, monocyten en granulocyten), afgeleid van de analyse van een differentieel volumetrisch histogram, verkregen na lytische reactie #(Maximum 1) (Cumulregel 102)	Formule leucocytaire simplifiée (lymphocytes, monocytes et granulocytes) dérivée de l'analyse d'un histogramme volumétrique différentiel obtenu après réaction lytique #(Maximum 1) (Règle de cumul 102)
127190	127201	Leucocytenformule (ten minste vijf populaties), vastgesteld met cellenteller en gebaseerd op criteria die niet alleen de celgrootte	Formule leucocytaire (au moins cinq populations) établie à l'aide de compteur cellulaire basée sur des critères ne comportant pas

		omvatten, inclusief de controles door microscopie #(Maximum 1) (Cumulregel 102)	uniquement la taille cellulaire, en ce compris les contrôles par microscopie #(Maximum 1) (Règle de cumul 102)
128052	128063	Meten van de geactiveerde coagulatietijd #(Maximum 1)	Mesure du temps de coagulation activée #(Maximum 1)
541774	541785	Doseren van melkzuurdehydrogenasen #(Maximum 1) (Cumulregel 10)	Dosage des déhydrogénases lactiques #(Maximum 1)(Règle de cumul 10)
542533	542544	Doseren van beta-2-microglobuline met een immunologische methode #(Maximum 1)	Dosage de beta 2 microglobuline par méthode immunologique #(Maximum 1)
548310	548321	Doseren van CA 15.3 met niet-isotopenmethode #(Maximum 1) (Cumulregel 201, 315) (Diagnoseregel 46)	Dosage de CA 15.3 par méthode non-isotopique #(Maximum 1) (Règle de cumul 201, 315) (Règle diagnostique 46)
548332	548343	Doseren van C.E.A. met niet-isotopenmethode #(Maximum 1) (Cumulregel 201, 317) (Diagnoseregel 46)	Dosage de C.E.A. par méthode non-isotopique #(Maximum 1) (Règle de cumul 201, 317) (Règle diagnostique 46)
548376	548380	Doseren van CA 125 met niet-isotopenmethode #(Maximum 1) (Cumulregel 201, 319) (Diagnoseregel 46)	Dosage de CA 125 par méthode non-isotopique #(Maximum 1) (Règle de cumul 201, 319) (Règle diagnostique 46)
554573	554584	Tromboplastinetijd (prothrombinetijd), inclusief de eventuele berekening van fibrinogeen #(Maximum 1) (Cumulregel 54) (Diagnoseregel 95)	Temps de thromboplastine (temps de prothrombine), y compris l'éventuel calcul du fibrinogène #(Maximum 1) (Règle de cumul 54) (Règle diagnostique 95)
554610	554621	Doseren van fibrinogeen #(Maximum 1) (Cumulregel 101) (Diagnoseregel 95)	Dosage du fibrinogène #(Maximum 1) (Règle de cumul 101) (Règle diagnostique 95)

Table 130 – Nomenclature codes for clinical biology, when coded on the same day as blood tests (Table 129)

Outpatient	Inpatient	Dutch Description	French Description
	591603	Forfaitair honorarium van de geaccrediteerde specialist voor klinische biologie of voor nucleaire geneeskunde betaalbaar per opname in een algemeen ziekenhuis met uitzondering van de T-diensten	Honoraires forfaitaires du spécialiste en biologie clinique accrédité ou du spécialiste en médecine nucléaire accrédité, payable par admission dans un hôpital général, à l'exception des services T
	592001	Forfaitair honorarium dat per verpleegdag wordt betaald voor de verstrekkingen inzake klinische biologie van de in een ziekenhuis opgenomen rechthebbenden	Honoraire forfaitaire payé par journée d'hospitalisation pour les prestations de biologie clinique aux bénéficiaires hospitalisés
591076	591080	Forfaitair honorarium, betaalbaar per opneming in een algemeen ziekenhuis, met uitzondering van de T-diensten of per dag die recht geeft op het maxiforfait of dagziekenhuisforfait voor één van onderstaande ingrepen uit de limitatieve lijst, voor zover het laboratorium : a) als medisch-technische dienst is opgenomen in een ziekenhuis of groepering van ziekenhuizen zoals gedefinieerd in hoofdstuk III van het koninklijk besluit van 30 januari 1989; b) als medisch-technische dienst is opgenomen in een ziekenhuis dat beschikt over een volgens hoofdstuk III van het koninklijk besluit van 21 maart 2003 erkend zorgprogramma oncologie; c) erkend is voor alle disciplines van de klinische biologie, eventueel met uitsluiting van de pathologische anatomie; d) 24 uur per dag de continuïteit verzekert in samenwerking met de eenheden voor intensieve verzorging en de wachtdienst van het ziekenhuis; e) in zijn personeelsformatie minstens 4 equivalent voltijdse biologen heeft, van wie minstens 1 geneesheer-specialist of een apotheker of een licentiaat in de wetenschappen die beiden een opleiding van ten minste vijf jaar moeten hebben gevolgd, overeenkomstig de bepalingen van de bijlage bij het ministerieel besluit van 3 september 1984 tot vaststelling van de criteria voor de machtiging en de erkenning van de apothekers die bevoegd zijn om verstrekkingen te verrichten die tot de klinische biologie behoren	Honoraires forfaitaires, payables par admission hospitalière, dans un hôpital général, à l'exception des services T ou par journée donnant droit au maxiforfait ou au forfait d'hospitalisation de jour pour une des prestations mentionnées dans la liste limitative, pour autant que le laboratoire : a) soit intégré comme service médico-technique dans un hôpital ou groupement d'hôpitaux tel que défini au chapitre III de l'arrêté royal du 30 janvier 1989; b) soit intégré comme service médico-technique dans un hôpital disposant d'un programme de soins d'oncologie agréé suivant le chapitre III de l'arrêté royal du 21 mars 2003; c) soit agréé pour l'ensemble des disciplines de la biologie clinique à l'exclusion éventuelle de l'anatomie pathologique; d) assure la continuité 24 heures chaque jour en collaboration avec les unités de soins intensifs et la garde de l'hôpital; e) soit encadré par au moins 4 biologistes équivalents plein-temps dont au moins 1 médecin spécialiste ou un pharmacien ou un licencié en sciences, ces deux derniers devant avoir reçu une formation de cinq ans au moins, conformément aux dispositions de l'annexe jointe à l'arrêté ministériel du 3 septembre 1984 fixant les critères d'habilitation et d'agréation des pharmaciens appelés à effectuer des prestations de biologie clinique
591091	591102	Forfaitair honorarium, betaalbaar per opneming in een algemeen ziekenhuis met uitzondering van de T-diensten of per dag die recht	Honoraires forfaitaires, payables par admission hospitalière, dans un hôpital général, à l'exception des services T ou par journée

Outpatient	Inpatient	Dutch Description	French Description
		geeft op het maxiforfait of dagziekenhuisforfait voor één van onderstaande ingrepen uit de limitatieve lijst	donnant droit au maxiforfait ou au forfait d'hospitalisation de jour pour une des prestations mentionnées dans la liste limitative;
591113	591124	Forfaitair honorarium, betaalbaar per opneming in een algemeen ziekenhuis met uitzondering van de T-diensten of per dag die recht geeft op het maxiforfait of dagziekenhuisforfait voor één van onderstaande ingrepen uit de limitatieve lijst, voor zover het laboratorium : a) als medisch-technische dienst is opgenomen in een ziekenhuis of groepering van ziekenhuizen zoals gedefinieerd in hoofdstuk III van het koninklijk besluit van 30 januari 1989; b) erkend is voor alle disciplines van de klinische biologie, eventueel met uitsluiting van de pathologische anatomie; c) 24 uur per dag de continuïteit verzekert in samenwerking met de eenheden voor intensieve verzorging en de wachtdienst van het ziekenhuis; d) in zijn personeelsformatie 3 equivalent voltijdse biologen heeft, van wie ten minste 1 geneesheer-specialist, of een apotheker, of een licentiaat in de wetenschappen die beiden een opleiding van ten minste vijf jaar moeten hebben gevolgd, overeenkomstig de bepalingen van de bijlage bij het ministerieel besluit van 3 september 1984 tot vaststelling van de criteria voor de machtiging en de erkenning van de apothekers die bevoegd zijn om verstrekkingen te verrichten die tot de klinische biologie behoren	Honoraires forfaitaires, payables par admission hospitalière, dans un hôpital général, à l'exception des services T ou par journée donnant droit au maxiforfait ou au forfait d'hospitalisation de jour pour une des prestations mentionnées dans la liste limitative, pour autant que le laboratoire : a) soit intégré comme service médico-technique dans un hôpital ou groupement d'hôpitaux tel que défini au chapitre III de l'arrêté royal du 30 janvier 1989; b) soit agréé pour l'ensemble des disciplines de la biologie clinique à l'exclusion éventuelle de l'anatomie pathologique; c) assure la continuité 24 heures chaque jour en collaboration avec les unités de soins intensifs et la garde de l'hôpital; d) soit encadré par 3 biologistes équivalents plein-temps dont au moins 1 médecin spécialiste ou un pharmacien ou un licencié en sciences, ces deux derniers devant avoir reçu une formation de cinq ans au moins, conformément aux dispositions de l'annexe jointe à l'arrêté ministériel du 3 septembre 1984 fixant les critères d'habilitation et d'agréation des pharmaciens appelés à effectuer des prestations de biologie clinique
591135	591146	Forfaitair honorarium, betaalbaar per opneming in een algemeen ziekenhuis met uitzondering van de T-diensten of per dag die recht geeft op het maxiforfait of dagziekenhuisforfait voor één van onderstaande ingrepen uit de limitatieve lijst, voor zover het laboratorium : a) als medisch-technische dienst is opgenomen in een ziekenhuis of groepering van ziekenhuizen zoals gedefinieerd in hoofdstuk III van het voornoemde koninklijk besluit van 30 januari 1989; b) erkend is voor alle disciplines van de klinische biologie, eventueel met uitsluiting van de pathologische anatomie; c) 24 uur per dag de continuïteit verzekert in samenwerking met de eenheden voor intensieve verzorging en de wachtdienst van het ziekenhuis; d) waarvan de basispersoneelsformatie 2 equivalent	Honoraires forfaitaires, payables par admission hospitalière dans un hôpital général, à l'exception des services T ou par journée donnant droit au maxiforfait ou au forfait d'hospitalisation de jour pour une des prestations mentionnées dans la liste limitative, pour autant que le laboratoire : a) soit intégré comme service médico-technique dans un hôpital ou groupement d'hôpitaux tel que défini au chapitre III de l'arrêté royal du 30 janvier 1989 susmentionné; b) soit agréé pour l'ensemble des disciplines de la biologie clinique à l'exclusion éventuelle de l'anatomie pathologique; c) assure la continuité 24 heures chaque jour en collaboration avec les unités de soins intensifs et la garde de l'hôpital; d) dont l'encadrement de base atteint 2 biologistes équivalents plein-temps constitué, soit de

Outpatient	Inpatient	Dutch Description	French Description
		voltijdse biologen bereikt, hetzij twee voltijdse biologen, hetzij één voltijdse en twee halftijdse biologen, hetzij één voltijdse, één halftijdse en twee vierdetijdse biologen	deux biologistes plein temps, soit d'un biologiste plein temps et deux mi-temps, soit d'un biologiste plein temps, un mi-temps et deux quart-temps
592815		Forfaitaire honoraria voor sommige verstrekkingen inzake klinische biologie, verleend aan niet in een ziekenhuis opgenomen rechthebbenden, alsmede de onderaanneming van deze verstrekkingen, en die zijn voorbehouden voor de geneesheren, specialist voor klinische biologie of voor nucleaire geneeskunde in vitro, voor de apothekers en de licentiaten in de wetenschappen die door de Minister die de Volksgezondheid onder zijn bevoegdheid heeft, zijn erkend om verstrekkingen inzake klinische biologie of nucleaire geneeskunde in vitro te verrichten, alsmede voor de geneesheren, bedoeld in artikel 19, § 5quater, van de bijlage bij het koninklijk besluit van 14 september 1984. Deze forfaitaire honoraria worden gesplitst in twee cumuleerbare delen : - een eerste volgnummer dat de verstrekkingen weergeeft die zijn bedoeld in artikel 1, tweede lid, 12°, van het koninklijk besluit van 29 december 1997 houdende de voorwaarden waaronder de toepassing van de wet betreffende de verplichte verzekering voor geneeskundige verzorging en uitkeringen, gecoördineerd op 14 juli 1994, tot de zelfstandigen en de leden van de kloostergemeenschappen wordt verruimd en dat de verstrekkingen vermeldt die zijn opgenomen in de artikelen 18 en 24 van de bijlage bij het koninklijk besluit van 14 september 1984 tot vaststelling van de nomenclatuur van de geneeskundige verstrekkingen inzake verplichte verzekering voor geneeskundige verzorging en uitkeringen ; indien de betrekkelijke waarde van het geheel van de voorgeschreven verstrekkingen lager is dan B 700	Honoraires forfaitaires pour certaines prestations de biologie clinique, dispensées à des bénéficiaires non hospitalisés ainsi qu'à la sous-traitance de ces prestations et réservés aux médecins spécialistes en biologie clinique ou en médecine nucléaire in vitro, aux pharmaciens et licenciés en sciences agréés par le Ministre ayant la Santé publique dans ses attributions pour effectuer des prestations de biologie clinique ou de médecine nucléaire in vitro ainsi qu'aux médecins visés à l'article 19, § 5quater de l'annexe à l'arrêté royal du 14 septembre 1984 précité. Ces honoraires forfaitaires sont scindés en deux parties cumulables : - un premier numéro d'ordre représentant les prestations visées à l'article 1er,2e alinéa, 12°, de l'arrêté royal du 29 décembre 1997, portant les conditions dans lesquelles l'application de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, est étendue aux travailleurs indépendants et aux membres des communautés religieuses, reprenant les prestations reprises aux articles 18 et 24 de l'annexe à l'arrêté royal du 14 septembre 1984 établissant la nomenclature des prestations de santé et indemnités ; si la valeur relative de l'ensemble des prestations prescrites est inférieure à B 700
592852		Forfaitaire honoraria voor sommige verstrekkingen inzake klinische biologie, verleend aan niet in een ziekenhuis opgenomen rechthebbenden, alsmede de onderaanneming van deze verstrekkingen, en die zijn voorbehouden voor de geneesheren, specialist voor klinische biologie of voor nucleaire geneeskunde in vitro, voor de apothekers en de licentiaten in de wetenschappen die door de Minister die de Volksgezondheid onder zijn	Honoraires forfaitaires pour certaines prestations de biologie clinique, dispensées à des bénéficiaires non hospitalisés ainsi qu'à la sous-traitance de ces prestations et réservés aux médecins spécialistes en biologie clinique ou en médecine nucléaire in vitro, aux pharmaciens et licenciés en sciences agréés par le Ministre ayant la Santé publique dans ses attributions pour effectuer des prestations de biologie clinique ou de médecine nucléaire in vitro

Outpatient	Inpatient	Dutch Description	French Description
		bevoegdheid heeft, zijn erkend om verstrekkingen inzake klinische biologie of nucleaire geneeskunde in vitro te verrichten, alsmede voor de geneesheren, bedoeld in artikel 19, § 5quater, van de bijlage bij het koninklijk besluit van 14 september 1984, als die zorgverleners geaccrediteerd zijn als bedoeld in artikel 1,§10, van de bijlage bij voormeld koninklijk besluit. Deze forfaitaire honoraria worden gesplitst in twee cumuleerbare delen : - een eerste volgnummer dat de verstrekkingen weergeeft die zijn bedoeld in artikel 1, tweede lid, 12°, van het koninklijk besluit van 29 december 1997 houdende de voorwaarden waaronder de toepassing van de wet betreffende de verplichte verzekering voor geneeskundige verzorging en uitkeringen, gecoördineerd op 14 juli 1994, tot de zelfstandigen en de leden van de kloostergemeenschappen wordt verruimd en dat de verstrekkingen vermeldt die zijn opgenomen in de artikelen 18 en 24 van de bijlage bij het koninklijk besluit van 14 september 1984 tot vaststelling van de nomenclatuur van de geneeskundige verstrekkingen inzake verplichte verzekering voor geneeskundige verzorging en uitkeringen ; indien de betrekkelijke waarde van het geheel van de voorgeschreven verstrekkingen lager is dan B 700	ainsi qu'aux médecins visés à l'article 19, § 5quater de l'annexe à l'arrêté royal du 14 septembre 1984 précité, lorsque ces dispensateurs de soins sont accrédités au sens de l'article 1er,§10, de l'annexe à l'arrêté royal précité. Ces honoraires forfaitaires sont scindés en deux parties cumulables : - un premier numéro d'ordre représentant les prestations visées à l'article 1er,2e alinéa, 12°, de l'arrêté royal du 29 décembre 1997, portant les conditions dans lesquelles l'application de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, est étendue aux travailleurs indépendants et aux membres des communautés religieuses, reprenant les prestations reprises aux articles 18 et 24 de l'annexe à l'arrêté royal du 14 septembre 1984 établissant la nomenclature des prestations de santé et indemnités ; si la valeur relative de l'ensemble des prestations prescrites est inférieure à B 700
592911		Forfaitaire honoraria voor sommige verstrekkingen inzake klinische biologie, verleend aan niet in een ziekenhuis opgenomen rechthebbenden, alsmede de onderaanneming van deze verstrekkingen en die zijn voorbehouden voor de geneesheren, specialist voor klinische biologie of voor nucleaire geneeskunde in vitro, voor de apothekers en de licentiaten in de wetenschappen die door de Minister die de Volksgezondheid onder zijn bevoegdheid heeft, zijn erkend om verstrekkingen inzake klinische biologie of nucleaire geneeskunde in vitro te verrichten alsmede voor de geneesheren, bedoeld in artikel 19, § 5quater van de bijlage bij het koninklijk besluit van 14 september 1984. Deze forfaitaire honoraria worden gesplitst in twee cumuleerbare delen : - een eerste volgnummer dat de verstrekkingen weergeeft die zijn	Honoraires forfaitaires pour certaines prestations de biologie clinique, dispensées à des bénéficiaires non hospitalisés ainsi qu'à la sous-traitance de ces prestations et réservés aux médecins spécialistes en biologie clinique ou en médecine nucléaire in vitro, aux pharmaciens et licenciés en sciences agréés par le Ministre ayant la Santé publique dans ses attributions pour effectuer des prestations de biologie clinique ou de médecine nucléaire in vitro ainsi qu'aux médecins visés à l'article 19, § 5quater de l'annexe à l'arrêté royal du 14 septembre 1984 précité. Ces honoraires forfaitaires sont scindés en deux parties cumulables : - un premier numéro d'ordre représentant les prestations visées à l'article 1er,2e alinéa, 12°, de l'arrêté royal du 29 décembre 1997, portant les conditions dans lesquelles l'application de la loi relative à

Outpatient	Inpatient	Dutch Description	French Description
		bedoeld in artikel 1, tweede lid, 12°, van het koninklijk besluit van 29 december 1997 houdende de voorwaarden waaronder de toepassing van de wet betreffende de verplichte verzekering voor geneeskundige verzorging en uitkeringen, gecoördineerd op 14 juli 1994, tot de zelfstandigen en de leden van de kloostergemeenschappen wordt verruimd en dat de verstrekkingen vermeldt die zijn opgenomen in de artikelen 18 en 24 van de bijlage bij het koninklijk besluit van 14 september 1984 tot vaststelling van de nomenclatuur van de geneeskundige verstrekkingen inzake verplichte verzekering voor geneeskundige verzorging en uitkeringen ; indien de betrekkelijke waarde van het geheel van de voorgeschreven verstrekkingen van B 700 tot minder dan B 1750 bedraagt	l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, est étendue aux travailleurs indépendants et aux membres des communautés religieuses, reprenant les prestations reprises aux articles 18 et 24 de l'annexe à l'arrêté royal du 14 septembre 1984 établissant la nomenclature des prestations de santé et indemnités ; si la valeur relative de l'ensemble des prestations prescrites se situe de B 700 à moins de B 1750
592955		Forfaitaire honoraria voor sommige verstrekkingen inzake klinische biologie, verleend aan niet in een ziekenhuis opgenomen rechthebbenden, alsmede de onderaanneming van deze verstrekkingen, en die zijn voorbehouden voor de geneesheren, specialist voor klinische biologie of voor nucleaire geneeskunde in vitro, voor de apothekers en de licentiaten in de wetenschappen die door de Minister die de Volksgezondheid onder zijn bevoegdheid heeft, zijn erkend om verstrekkingen inzake klinische biologie of nucleaire geneeskunde in vitro te verrichten, alsmede voor de geneesheren, bedoeld in artikel 19, § 5quater, van de bijlage bij het koninklijk besluit van 14 september 1984, als die zorgverleners geaccrediteerd zijn als bedoeld in artikel 1,§10, van de bijlage bij voormeld koninklijk besluit. Deze forfaitaire honoraria worden gesplitst in twee cumuleerbare delen : - een eerste volgnummer dat de verstrekkingen weergeeft die zijn bedoeld in artikel 1, tweede lid, 12°, van het koninklijk besluit van 29 december 1997 houdende de voorwaarden waaronder de toepassing van de wet betreffende de verplichte verzekering voor geneeskundige verzorging en uitkeringen, gecoördineerd op 14 juli 1994, tot de zelfstandigen en de leden van de kloostergemeenschappen wordt verruimd en dat de verstrekkingen vermeldt die zijn opgenomen in de artikelen 18 en 24 van de bijlage bij het koninklijk besluit van 14 september 1984 tot	Honoraires forfaitaires pour certaines prestations de biologie clinique, dispensées à des bénéficiaires non hospitalisés ainsi qu'à la sous-traitance de ces prestations et réservés aux médecins spécialistes en biologie clinique ou en médecine nucléaire in vitro, aux pharmaciens et licenciés en sciences agréés par le Ministre ayant la Santé publique dans ses attributions pour effectuer des prestations de biologie clinique ou de médecine nucléaire in vitro ainsi qu'aux médecins visés à l'article 19, § 5quater de l'annexe à l'arrêté royal du 14 septembre 1984 précité, lorsque ces dispensateurs de soins sont accrédités au sens de l'article 1er,§10, de l'annexe à l'arrêté royal précité. Ces honoraires forfaitaires sont scindés en deux parties cumulables : - un premier numéro d'ordre représentant les prestations visées à l'article 1er,2e alinéa, 12°, de l'arrêté royal du 29 décembre 1997, portant les conditions dans lesquelles l'application de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, est étendue aux travailleurs indépendants et aux membres des communautés religieuses, reprenant les prestations reprises aux articles 18 et 24 de l'annexe à l'arrêté royal du 14 septembre 1984 établissant la nomenclature des prestations de santé et indemnités ; si la valeur relative de l'ensemble des prestations prescrites se situe de B 700 à moins de B 1750

Outpatient	Inpatient	Dutch Description	French Description
		vaststelling van de nomenclatuur van de geneeskundige verstrekkingen inzake verplichte verzekering voor geneeskundige verzorging en uitkeringen ; indien de betrekkelijke waarde van het geheel van de voorgeschreven verstrekkingen van B 700 tot minder dan B 1750 bedraagt	
592992		bijkomend honorarium voor de verstrekkingen 592815, 592911, 593014 en 593110 die aangerekend worden door geaccrediteerde zorgverleners	supplément d'honoraires pour les prestations 592815, 592911, 593014 et 593110 portées en compte par les dispensateurs de soins accrédités
593014		Forfaitaire honoraria voor sommige verstrekkingen inzake klinische biologie, verleend aan niet in een ziekenhuis opgenomen rechthebbenden, alsmede de onderaanneming van deze verstrekkingen en die zijn voorbehouden voor de geneesheren, specialist voor klinische biologie of voor nucleaire geneeskunde in vitro, voor de apothekers en de licentiaten in de wetenschappen die door de Minister die de Volksgezondheid onder zijn bevoegdheid heeft, zijn erkend om verstrekkingen inzake klinische biologie of nucleaire geneeskunde in vitro te verrichten alsmede voor de geneesheren, bedoeld in artikel 19, § 5quater van de bijlage bij het koninklijk besluit van 14 september 1984. Deze forfaitaire honoraria worden gesplitst in twee cumuleerbare delen : - een eerste volgnummer dat de verstrekkingen weergeeft die zijn bedoeld in artikel 1, tweede lid, 12°, van het koninklijk besluit van 29 december 1997 houdende de voorwaarden waaronder de toepassing van de wet betreffende de verplichte verzekering voor geneeskundige verzorging en uitkeringen, gecoördineerd op 14 juli 1994, tot de zelfstandigen en de leden van de kloostergemeenschappen wordt verruimd en dat de verstrekkingen vermeldt die zijn opgenomen in de artikelen 18 en 24 van de bijlage bij het koninklijk besluit van 14 september 1984 tot vaststelling van de nomenclatuur van de geneeskundige verstrekkingen inzake verplichte verzekering voor geneeskundige verzorging en uitkeringen ; indien de betrekkelijke waarde van het	Honoraires forfaitaires pour certaines prestations de biologie clinique, dispensées à des bénéficiaires non hospitalisés ainsi qu'à la sous-traitance de ces prestations et réservés aux médecins spécialistes en biologie clinique ou en médecine nucléaire in vitro, aux pharmaciens et licenciés en sciences agréés par le Ministre ayant la Santé publique dans ses attributions pour effectuer des prestations de biologie clinique ou de médecine nucléaire in vitro ainsi qu'aux médecins visés à l'article 19, § 5quater de l'annexe à l'arrêté royal du 14 septembre 1984 précité. Ces honoraires forfaitaires sont scindés en deux parties cumulables : - un premier numéro d'ordre représentant les prestations visées à l'article 1er,2e alinéa, 12°, de l'arrêté royal du 29 décembre 1997, portant les conditions dans lesquelles l'application de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, est étendue aux travailleurs indépendants et aux membres des communautés religieuses, reprenant les prestations reprises aux articles 18 et 24 de l'annexe à l'arrêté royal du 14 septembre 1984 établissant la nomenclature des prestations de santé et indemnités ; si la valeur relative de l'ensemble des prestations prescrites se situe de B 1750 à moins de B 3500

Outpatient	Inpatient	Dutch Description	French Description
		geheel van de voorgeschreven verstrekkingen van B 1750 tot minder dan B 3500 bedraagt	
593051		Forfaitaire honoraria voor sommige verstrekkingen inzake klinische biologie, verleend aan niet in een ziekenhuis opgenomen rechthebbenden, alsmede de onderaanneming van deze verstrekkingen, en die zijn voorbehouden voor de geneesheren, specialist voor klinische biologie of voor nucleaire geneeskunde in vitro, voor de apothekers en de licentiaten in de wetenschappen die door de Minister die de Volksgezondheid onder zijn bevoegdheid heeft, zijn erkend om verstrekkingen inzake klinische biologie of nucleaire geneeskunde in vitro te verrichten, alsmede voor de geneesheren, bedoeld in artikel 19, § 5quater, van de bijlage bij het koninklijk besluit van 14 september 1984, als die zorgverleners geaccrediteerd zijn als bedoeld in artikel 1,§10, van de bijlage bij voormeld koninklijk besluit. Deze forfaitaire honoraria worden gesplitst in twee cumuleerbare delen : - een eerste volgnummer dat de verstrekkingen weergeeft die zijn bedoeld in artikel 1, tweede lid, 12°, van het koninklijk besluit van 29 december 1997 houdende de voorwaarden waaronder de toepassing van de wet betreffende de verplichte verzekering voor geneeskundige verzorging en uitkeringen, gecoördineerd op 14 juli 1994, tot de zelfstandigen en de leden van de kloostergemeenschappen wordt verruimd en dat de verstrekkingen vermeldt die zijn opgenomen in de artikelen 18 en 24 van de bijlage bij het koninklijk besluit van 14 september 1984 tot vaststelling van de nomenclatuur van de geneeskundige verstrekkingen inzake verplichte verzekering voor geneeskundige verzorging en uitkeringen ; indien de betrekkelijke waarde van het geheel van de voorgeschreven verstrekkingen van B 1750 tot minder dan B 3500 bedraagt	Honoraires forfaitaires pour certaines prestations de biologie clinique, dispensées à des bénéficiaires non hospitalisés ainsi qu'à la sous-traitance de ces prestations et réservés aux médecins spécialistes en biologie clinique ou en médecine nucléaire in vitro, aux pharmaciens et licenciés en sciences agréés par le Ministre ayant la Santé publique dans ses attributions pour effectuer des prestations de biologie clinique ou de médecine nucléaire in vitro ainsi qu'aux médecins visés à l'article 19, § 5quater de l'annexe à l'arrêté royal du 14 septembre 1984 précité, lorsque ces dispensateurs de soins sont accrédités au sens de l'article 1er,§10, de l'annexe à l'arrêté royal précité. Ces honoraires forfaitaires sont scindés en deux parties cumulables : - un premier numéro d'ordre représentant les prestations visées à l'article 1er,2e alinéa, 12°, de l'arrêté royal du 29 décembre 1997, portant les conditions dans lesquelles l'application de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, est étendue aux travailleurs indépendants et aux membres des communautés religieuses, reprenant les prestations reprises aux articles 18 et 24 de l'annexe à l'arrêté royal du 14 septembre 1984 établissant la nomenclature des prestations de santé et indemnités ; si la valeur relative de l'ensemble des prestations prescrites se situe de B 1750 à moins de B 3500
593110		Forfaitaire honoraria voor sommige verstrekkingen inzake klinische biologie, verleend aan niet in een ziekenhuis opgenomen rechthebbenden, alsmede de onderaanneming van deze verstrekkingen, en die zijn voorbehouden voor de geneesheren, specialist voor klinische biologie of voor nucleaire geneeskunde in	Honoraires forfaitaires pour certaines prestations de biologie clinique, dispensées à des bénéficiaires non hospitalisés ainsi qu'à la sous-traitance de ces prestations et réservés aux médecins spécialistes en biologie clinique ou en médecine nucléaire in vitro, aux pharmaciens et licenciés en sciences agréés par le Ministre

Outpatient	Inpatient	Dutch Description	French Description
		vitro, voor de apothekers en de licentiaten in de wetenschappen die door de Minister die de Volksgezondheid onder zijn bevoegdheid heeft, zijn erkend om verstrekkingen inzake klinische biologie of nucleaire geneeskunde in vitro te verrichten, alsmede voor de geneesheren, bedoeld in artikel 19, § 5quater, van de bijlage bij het koninklijk besluit van 14 september 1984. Deze forfaitaire honoraria worden gesplitst in twee cumuleerbare delen : - een eerste volgnummer dat de verstrekkingen weergeeft die zijn bedoeld in artikel 1, tweede lid, 12°, van het koninklijk besluit van 29 december 1997 houdende de voorwaarden waaronder de toepassing van de wet betreffende de verplichte verzekering voor geneeskundige verzorging en uitkeringen, gecoördineerd op 14 juli 1994, tot de zelfstandigen en de leden van de kloostergemeenschappen wordt verruimd en dat de verstrekkingen vermeldt die zijn opgenomen in de artikelen 18 en 24 van de bijlage bij het koninklijk besluit van 14 september 1984 tot vaststelling van de nomenclatuur van de geneeskundige verstrekkingen inzake verplichte verzekering voor geneeskundige verzorging en uitkeringen ; indien de betrekkelijke waarde van het geheel van de voorgeschreven verstrekkingen B 3500 of meer bedraagt	ayant la Santé publique dans ses attributions pour effectuer des prestations de biologie clinique ou de médecine nucléaire in vitro ainsi qu'aux médecins visés à l'article 19, § 5quater de l'annexe à l'arrêté royal du 14 septembre 1984 précité. Ces honoraires forfaitaires sont scindés en deux parties cumulables : - un premier numéro d'ordre représentant les prestations visées à l'article 1er,2e alinéa, 12°, de l'arrêté royal du 29 décembre 1997, portant les conditions dans lesquelles l'application de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, est étendue aux travailleurs indépendants et aux membres des communautés religieuses, reprenant les prestations reprises aux articles 18 et 24 de l'annexe à l'arrêté royal du 14 septembre 1984 établissant la nomenclature des prestations de santé et indemnités ; si la valeur relative de l'ensemble des prestations prescrites se situe à B 3500 ou plus
593154		Forfaitaire honoraria voor sommige verstrekkingen inzake klinische biologie, verleend aan niet in een ziekenhuis opgenomen rechthebbenden, alsmede de onderaanneming van deze verstrekkingen, en die zijn voorbehouden voor de geneesheren, specialist voor klinische biologie of voor nucleaire geneeskunde in vitro, voor de apothekers en de licentiaten in de wetenschappen die door de Minister die de Volksgezondheid onder zijn bevoegdheid heeft, zijn erkend om verstrekkingen inzake klinische biologie of nucleaire geneeskunde in vitro te verrichten, alsmede voor de geneesheren, bedoeld in artikel 19, § 5quater, van de bijlage bij het koninklijk besluit van 14 september 1984, als die zorgverleners geaccrediteerd zijn als bedoeld in artikel 1,§10, van	Honoraires forfaitaires pour certaines prestations de biologie clinique, dispensées à des bénéficiaires non hospitalisés ainsi qu'à la sous-traitance de ces prestations et réservés aux médecins spécialistes en biologie clinique ou en médecine nucléaire in vitro, aux pharmaciens et licenciés en sciences agréés par le Ministre ayant la Santé publique dans ses attributions pour effectuer des prestations de biologie clinique ou de médecine nucléaire in vitro ainsi qu'aux médecins visés à l'article 19, § 5quater de l'annexe à l'arrêté royal du 14 septembre 1984 précité, lorsque ces dispensateurs de soins sont accrédités au sens de l'article 1er,§10, de l'annexe à l'arrêté royal précité. Ces honoraires forfaitaires sont scindés en deux parties cumulables : - un premier

Outpatient	Inpatient	Dutch Description	French Description
		de bijlage bij voormeld koninklijk besluit. Deze forfaitaire honoraria worden gesplitst in twee cumuleerbare delen : - een eerste volgnummer dat de verstrekkingen weergeeft die zijn bedoeld in artikel 1, tweede lid, 12°, van het koninklijk besluit van 29 december 1997 houdende de voorwaarden waaronder de toepassing van de wet betreffende de verplichte verzekering voor geneeskundige verzorging en uitkeringen, gecoördineerd op 14 juli 1994, tot de zelfstandigen en de leden van de kloostergemeenschappen wordt verruimd en dat de verstrekkingen vermeldt die zijn opgenomen in de artikelen 18 en 24 van de bijlage bij het koninklijk besluit van 14 september 1984 tot vaststelling van de nomenclatuur van de geneeskundige verstrekkingen inzake verplichte verzekering voor geneeskundige verzorging en uitkeringen ; indien de betrekkelijke waarde van het geheel van de voorgeschreven verstrekkingen B 3500 of meer bedraagt	numéro d'ordre représentant les prestations visées à l'article 1er,2e alinéa, 12°, de l'arrêté royal du 29 décembre 1997, portant les conditions dans lesquelles l'application de la loi relative à l'assurance obligatoire soins de santé et indemnités, coordonnée le 14 juillet 1994, est étendue aux travailleurs indépendants et aux membres des communautés religieuses, reprenant les prestations reprises aux articles 18 et 24 de l'annexe à l'arrêté royal du 14 septembre 1984 établissant la nomenclature des prestations de santé et indemnités ; si la valeur relative de l'ensemble des prestations prescrites se situe à B 3500 ou plus

Table 131 – Nomenclature codes for multidisciplinary team meeting (MDT)

Outpatient	Inpatient	Dutch Description	French Description
350453	350464	Bijkomend honorarium bij de verstrekking 350372-350383, 350276-350280 en 350291-350302 aanrekenbaar door de arts-specialist in de medische oncologie, of houder van de bijzondere beroepstitel in de klinische hematologie of in de pediatrische hematologie en oncologie, wanneer deze het multidisciplinair oncologisch consult coördineert	Supplément d'honoraires à la prestation 350372-350383, 350276-350280 et 350291-350302, attestable par le médecin spécialiste en oncologie médicale ou porteur du titre professionnel particulier en hématologie clinique ou en hématologie et oncologie pédiatriques, lorsque celui-ci coordonne la consultation oncologique multidisciplinaire
350475	350486	Bijkomend honorarium bij de verstrekking 350394-350405 of 350416-350420 aanrekenbaar door de 350254-specialist in de medische oncologie, of houder van de bijzondere beroepstitel in de klinische hematologie of in de pediatrische hematologie en oncologie, wanneer deze het multidisciplinair oncologisch consult bijwoont	Supplément d'honoraires à la prestation 350394-350405 ou 350416-350420, attestable par le médecin spécialiste en oncologie médicale ou porteur du titre professionnel particulier en hématologie clinique ou en hématologie et oncologie pédiatriques, lorsque celui-ci assiste à la consultation oncologique multidisciplinaire

350372	350383	Eerste multidisciplinair oncologisch consult (eerste MOC), geattesteerd door de arts-coördinator	Première consultation oncologique multidisciplinaire (première COM), attestée par le médecin-coordinateur
350394	350405	Deelname aan multidisciplinair oncologisch consult	Participation à la concertation oncologique multidisciplinaire
350416	350420	° Deelname aan het multidisciplinair oncologisch consult door een arts die geen deel uitmaakt van de staf van ziekenhuisartsen	° Participation à la concertation oncologique multidisciplinaire par un médecin qui n'est pas membre de l'équipe de médecins hospitaliers
350070		Raadpleging van lange duur (minstens 30 minuten) in de spreekkamer door de arts-specialist die bij de patiënt minstens één van onderstaande ingrepen uit de limitatieve lijst van majeure oncologische ingrepen heeft uitgevoerd inclusief schriftelijk verslag aan de behandelende arts en aan de behandelende arts-specialist in de medische oncologie	Consultation de longue durée (au moins 30 minutes) au cabinet du médecin spécialiste qui a réalisé chez le patient au moins une des interventions reprises dans la liste limitative des interventions oncologiques majeures ci-dessous, y compris un rapport écrit au médecin traitant et au médecin spécialiste en oncologie médicale
350092		Raadpleging van lange duur (minstens 30 minuten) in de spreekkamer door de arts-specialist geaccrediteerd die bij de patiënt minstens één van onderstaande ingrepen uit de limitatieve lijst van majeure oncologische ingrepen heeft uitgevoerd inclusief schriftelijk verslag aan de behandelende arts en aan de behandelende arts-specialist in de medische oncologie	Consultation de longue durée (au moins 30 minutes) au cabinet du médecin spécialiste accrédité qui a réalisé chez le patient au moins une des interventions reprises dans la liste limitative des interventions oncologiques majeures ci-dessous, y compris un rapport écrit au médecin traitant et au médecin spécialiste en oncologie médicale
350232		Toelichting van de diagnose en van het voorstel van aanvullende onderzoeken, opvolging en behandelingsplan aan de patiënt volgens het verslag van het voorafgaand multidisciplinair oncologisch consult tijdens een afzonderlijk overleg met de patiënt : ° door de behandelend erkende huisarts	Explication du diagnostic et de la proposition d'examens complémentaires, suivi et plan de traitement communiqué au patient selon le rapport de la concertation oncologique multidisciplinaire préalable au cours d'une discussion séparée avec le patient : ° par le médecin généraliste agréé traitant
350254	350265	Toelichting van de diagnose en van het voorstel van aanvullende onderzoeken, opvolging en behandelingsplan aan de patiënt volgens het verslag van het voorafgaand multidisciplinair oncologisch consult tijdens een afzonderlijk overleg met de patiënt : door de behandelend arts-specialist die deelgenomen heeft aan het MOC	Explication du diagnostic et de la proposition d'examens complémentaires, suivi et plan de traitement communiqué au patient selon le rapport de la concertation oncologique multidisciplinaire préalable au cours d'une discussion séparée avec le patient : par le médecin spécialiste traitant qui a participé à la COM

350276	350280	Opvolgings-multidisciplinair oncologisch consult (opvolgings-MOC), geattesteerd door de arts-coördinator	Concertation oncologique multidisciplinaire de suivi (COM de suivi), attestée par le médecin-coordinateur
350291	350302	Bijkomend multidisciplinair oncologisch consult (bijkomende MOC) in een ander ziekenhuis dan dit van het eerste MOC, op doorverwijzing, geattesteerd door de arts-coördinator	Concertation oncologique multidisciplinaire supplémentaire (COM supplémentaire) dans un hôpital autre que celui de la première COM, sur renvoi, attestée par le médecin-coordinateur
350453	350464	Bijkomend honorarium bij de verstrekking 350372-350383, 350276-350280 en 350291-350302 aanrekenbaar door de arts-specialist in de medische oncologie, of houder van de bijzondere beroepstitel in de klinische hematologie of in de pediatrische hematologie en oncologie, wanneer deze het multidisciplinair oncologisch consult coördineert	Supplément d'honoraires à la prestation 350372-350383, 350276-350280 et 350291-350302, attestable par le médecin spécialiste en oncologie médicale ou porteur du titre professionnel particulier en hématologie clinique ou en hématologie et oncologie pédiatriques, lorsque celui-ci coordonne la consultation oncologique multidisciplinaire

Appendix 24.1.2. Surgery

Table 132 – Nomenclature codes for preoperative management

Outpatient	Inpatient	Dutch Description	French Description
101275		Raadpleging in de spreekkamer door een arts-specialist in de heelkunde, inclusief een eventueel schriftelijk verslag aan de behandelende arts	Consultation au cabinet par un médecin spécialiste en chirurgie, y compris un rapport écrit éventuel au médecin traitant
101290		Raadpleging in de spreekkamer door een geaccrediteerde arts-specialist in de heelkunde, inclusief een eventueel schriftelijk verslag aan de behandelende arts	Consultation au cabinet par un médecin spécialiste en chirurgie accrédité, y compris un rapport écrit éventuel au médecin traitant
469630	469641	Herhaling binnen het kalenderjaar van de verstrekking 469814 - 469825 of 460456 - 460460 voor één van de volgende indicaties. De opname en archivering van het onderzoek op magneetband of digitale drager is vereist, evenals een gedetailleerd protocol en het bijhouden van een register van de herhalingsonderzoeken	Répétition dans l'année civile de la prestation 469814 - 469825 ou 460456 - 460460 pour l'une des indications reprises ci-dessous. L'enregistrement et l'archivage de l'examen sur bande magnétique ou support digital, le protocole détaillé et la tenue d'un registre reprenant les indications de l'examen répété sont exigés
469814	469825	Volledig transthoracaal echografisch bilan van het hart, waarbij bidimensionele beelden bekomen worden in minstens drie verschillende snedevlakken, en kleuren-Doppler signalen en in	Bilan échographique transthoracique complet du coeur, comprenant l'acquisition d'images bidimensionnelles dans au moins trois plans de coupe différents, et de signaux Doppler en

		spectraal mode ter hoogte van minstens drie klepopeningen. De opname en archivering van het onderzoek op magneetband of digitale drager is vereist, evenals een gedetailleerd protocol	mode couleur et en mode spectral au niveau d'au moins trois orifices valvulaires. L'enregistrement et l'archivage de l'examen sur bande magnétique ou support digital et le protocole détaillé sont exigés
475075	475086	Elektrocardiografische onderzoekingen, met protocol, ten minste 12 verschillende derivaties	Examens électrocardiographiques avec protocole, 12 dérivations différentes au minimum
475812	475823	Inspannings- of hypoxieproef, met continue monitoring van minstens één afleiding vóór elke belastingsverandering, op het einde van de proef en gedurende minstens drie minuten na het beëindigen van de proef, meerdere elektrocardiografische registraties op verschillende afleidingen en bloeddrukmetingen, met uittreksels en gestandaardiseerd protocol	Epreuve d'effort ou d'hypoxie avec monitoring continu d'au moins une dérivation avant chaque changement de charge, à la fin de l'épreuve et pendant au moins trois minutes après la fin de l'épreuve, plusieurs enregistrements électrocardiographiques de différentes dérivations et mesures de tension artérielle, avec extraits et protocole standardisé

Table 133 – Nomenclature codes for resective breast surgery

Outpatient	Inpatient	Dutch Description	French Description
227732	227743	Borstsparende volledige resectie van een bewezen kwaadaardig borstletsel met macroscopisch voldoende veiligheidsmarge	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, avec résection d'une marge de sécurité macroscopiquement suffisante
227754	227765	Volledige, borstsparende, resectie van een bewezen kwaadaardig, niet voelbaar borstletsel met macroscopisch voldoende veiligheidsmarge, na localisatieprocedure	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, non-palpable, avec résection d'une marge de sécurité macroscopiquement suffisante, après procédure de localisation
227835	227846	Borstsparende volledige resectie van een bewezen kwaadaardig borstletsel met macroscopisch voldoende veiligheidsmarge, en een okseluitruiming	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, avec résection d'une marge de sécurité macroscopiquement suffisante, et un évidement ganglionnaire de l'aisselle
227776	227780	Borstsparende volledige resectie van een bewezen kwaadaardig borstletsel met macroscopisch voldoende veiligheidsmarge, en resectie van schildwachtlymfeklier	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, avec résection d'une marge de sécurité macroscopiquement suffisante et résection du ganglion sentinelle

227791	227802	Borstsparende volledige resectie van een bewezen kwaadaardig borstletsel met macroscopisch voldoende veiligheidsmarge, en resectie van schildwachtlymfeklier, met peroperatoir anatomo-pathologisch onderzoek van de schildwachtlymfeklier	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, avec résection d'une marge de sécurité macroscopiquement suffisante et résection du ganglion sentinelle avec examen anatomo-pathologique peropératoire du ganglion sentinelle
227813	227824	Borstsparende volledige resectie van een bewezen kwaadaardig borstletsel met macroscopisch voldoende veiligheidsmarge, en resectie van schildwachtlymfeklier, die wanneer tumoraal ingenomen bij peroperatoir anatomo-pathologisch onderzoek gevolgd wordt door een okseluitruiming	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, avec résection d'une marge de sécurité macroscopiquement suffisante et résection du ganglion sentinelle qui en cas d'envahissement tumoral démontré à l'examen anatomo-pathologique peropératoire est suivi d'un évidement ganglionnaire de l'aisselle
227850	227861	Volledige resectie van een goedaardig borstletsel	Résection complète d'une lésion bénigne du sein
227872	227883	Volledige resectie van een niet-voelbaar goedaardig borstletsel of met diagnostisch doeleinde, na localisatie procedure	Résection complète d'une lésion bénigne du sein non palpable ou à titre diagnostique, après procédure de localisation
227636	227640	Verwijderen van de volledige borstklier (mastectomie) voor kwaadaardige tumor	Résection complète du sein (mastectomie) pour tumeur maligne
227894	227905	Verwijderen van de volledige borstklier (mastectomie) zonder bewezen kwaadaardig letsel	Résection complète du sein (mastectomie) sans tumeur maligne démontrée
227695	227706	Verwijderen van de volledige borstklier (mastectomie) voor kwaadaardige tumor met okseluitruiming	Résection complète du sein (mastectomie) pour tumeur maligne avec évidement axillaire
227651	227662	Verwijderen van de volledige borstklier (mastectomie) voor kwaadaardige tumor en resectie van schildwachtlymfeklier	Résection complète du sein (mastectomie) pour tumeur maligne et résection du ganglion sentinelle
227673	227684	Verwijderen van de volledige borstklier (mastectomie) voor kwaadaardige tumor en resectie van schildwachtlymfeklier met peroperatoir anatomo-pathologisch onderzoek van de schildwachtlymfeklier	Résection complète du sein (mastectomie) pour tumeur maligne et résection du ganglion sentinelle avec examen anatomo-pathologique peropératoire du ganglion sentinelle
227710	227721	Verwijderen van de volledige borstklier (mastectomie) voor kwaadaardige tumor en resectie van schildwachtlymfeklier die wanneer tumoraal ingenomen bij peroperatoir anatomo-pathologisch onderzoek gevolgd wordt door een okseluitruiming	Résection complète du sein (mastectomie) pour tumeur maligne et résection du ganglion sentinelle qui en cas d'envahissement tumoral démontré à l'examen anatomo-pathologique peropératoire est suivi d'un évidement ganglionnaire de l'aisselle

Table 134 – Nomenclature codes for lymph node surgery (alone)

Outpatient	Inpatient	Dutch Description	French Description
226936	226940	Okseluitruiming in het kader van de behandeling voor een bewezen kwaadaardig borstgezwel	Evidement ganglionnaire de l'aisselle dans le cadre du traitement d'une tumeur maligne du sein, démontrée
226914	226925	Okseluitruiming in het kader van de behandeling voor een bewezen kwaadaardig gezwel met uitzondering van het borstgezwel	Evidement ganglionnaire de l'aisselle dans le cadre du traitement d'une tumeur maligne démontrée, à l'exception d'une tumeur du sein
227592	227603	Resectie van schildwachtlymfeklier	Résection du ganglion sentinelle
227614	227625	Resectie van schildwachtlymfeklier met peroperatoir anatomo-pathologisch onderzoek van de schildwachtlymfeklier	Résection du ganglion sentinelle avec examen peropératoire anatomo-pathologique du ganglion sentinelle

Table 135 – Nomenclature codes for mammoplasty

Outpatient	Inpatient	Dutch Description	French Description
251576	251580	Eénzijdige borstplastie door implantatie van een prothese of een weefselexpander	Plastie mammaire unilatérale avec insertion d'une prothèse ou d'un expanseur tissulaire
251591	251602	Eénzijdige wegneming van een borstprothese of een borstweefselexpander	Retrait unilatéral d'une prothèse mammaire ou d'un expanseur tissulaire mammaire
251613	251624	Reducerende borstplastie wegens borsthypertrofie die functionele hinder veroorzaakt	Plastie de réduction d'un sein pour hypertrophie mammaire entraînant une gêne fonctionnelle
251635	251646	Reducerende borstplastie	Plastie de réduction d'un sein
251650	251661	Eénzijdige borstplastie door implantatie van een prothese of een weefselexpander	Plastie mammaire unilatérale avec insertion d'une prothèse ou d'un expanseur tissulaire
252453	252464	Borstreconstructie door transpositiehuidlap	Reconstruction du sein par lambeau cutané de transposition
252475	252486	Borstreconstructie door middel van een gesteelde spier-huidflap die niet uit de rechte buikspier komt	Reconstruction du sein par lambeau musculocutané pédiculé autre que du muscle droit de l'abdomen
252490	252501	Reconstructie van de areola en de tepel	Reconstruction de la plaque aréolo-mamelonnaire

252512	252523	Plastie van de heterolaterale borst	Plastie du sein hétérolatéral
252534	252545	Borstreconstructie door middel van een gesteelde flap van de rechte buikspier (TRAM)	Reconstruction du sein par lambeau pédiculé du muscle droit de l'abdomen (TRAM)
252556	252560	Borstreconstructie door middel van een microchirurgische vrije flap	Reconstruction du sein par lambeau libre microchirurgical
252571	252582	Borstreconstructie door middel van een vrije perforatorflap (huid en vetweefsel)	Reconstruction du sein par lambeau (cutanéograisseux) libre à pédicule perforant)
252593	252604	Borstreconstructie door implantatie van een borstimplantaat of een borstweefselexpander	Reconstruction du sein avec insertion d'un implant mammaire ou d'un expanseur tissulaire mammaire
252615	252626	Tatoeage van de areolaire streek	Tatouage de la région aréolaire
252630	252641	Eénzijdige implantatie van een borstprothese of van een borstweefselexpander	Insertion unilatérale d'une prothèse mammaire ou d'un expanseur tissulaire mammaire
252652	252663	Unilaterale borstreconstructie door middel van een microchirurgische vrije perforatorflap (met inbegrip van het sluiten van de donorsite)	Reconstruction mammaire unilatérale par lambeau libre microchirurgical perforant (y compris la fermeture du site donneur)
252674	252685	Bilaterale borstreconstructie door middel van een microchirurgische vrije perforatorflap, (met inbegrip van het sluiten van de donorsite)	Reconstruction mammaire bilatérale par lambeau libre microchirurgical perforant, (y compris la fermeture du site donneur)
252696	252700	Unilaterale borstreconstructie door middel van een microchirurgische vrije perforatorflap (met inbegrip van het sluiten van de donorsite), na akkoord van het College van artsen-directeurs	Reconstruction mammaire unilatérale par lambeau libre microchirurgical perforant (y compris la fermeture du site donneur), après accord du Collège des médecins-directeurs
252711	252722	Bilaterale borstreconstructie door middel van een microchirurgische vrije perforatorflap (met inbegrip van het sluiten van de donorsite), na akkoord van het College van artsen-directeurs	Reconstruction mammaire bilatérale par lambeau libre microchirurgical perforant (y compris la fermeture du site donneur), après accord du Collège des médecins-directeurs
252733	252744	opnieuw modelleren van één of twee borsten door een borstplastie, inclusief eventuele implantatie van een borstimplantaat of een borstweefselexpander, met of zonder de unilaterale reconstructie van de areola en de tepel	remodelage d'un ou de deux seins par plastie mammaire, y compris l'implantation éventuelle d'un implant mammaire ou d'un expanseur tissulaire mammaire avec ou sans la reconstruction unilatérale de la plaque aréolo-mamelonnaire et du mamelon

252755	252766	opnieuw modelleren van één of twee borsten door een borstplastie, inclusief eventuele implantatie van een borstimplantaat of een borstweefselexpander, met of zonder bilaterale reconstructie van de areola en de tepel	remodelage d'un ou de deux seins par plastie mammaire, y compris l'implantation éventuelle d'un implant mammaire ou d'un expanseur tissulaire mammaire avec ou sans la reconstruction bilatérale de la plaque aréolo-mamelonnaire et du mamelon
252770	252781	Aanvullend opnieuw modelleren van één of twee borsten door een borstplastie, inclusief eventuele implantatie van een borstimplantaat of een borstweefselexpander	Remodelage complémentaire d'un ou de deux seins par plastie mammaire, y compris l'implantation éventuelle d'un implant mammaire ou d'un expanseur tissulaire mammaire
252792	252803	Unilaterale tatoeage van de areolaire streek door de plastisch chirurg of onder diens supervisie	Tatouage unilatéral de la région aréolaire par le chirurgien plasticien ou sous sa supervision
252814	252825	Bilaterale tatoeage van de areolaire streek door de plastisch chirurg of onder diens supervisie	Tatouage bilatéral de la région aréolaire par le chirurgien plasticien ou sous sa supervision
252836	252840	Flaprevisie binnen de 7 dagen volgend op één van de verstrekkingen 252652-252663, 252674-252685, 252696-252700 of 252711-252722, en uitgevoerd tijdens een andere operatietijd dan voornoemde verstrekkingen. De revisie bestaat uit de revascularisatie van de perforatorflap door middel van een microchirurgische anastomose	Révision du lambeau dans les 7 jours suivant une des prestations 252652-252663, 252674-252685, 252696-252700 ou 252711-252722, et exécuté dans un autre temps opératoire. La révision consiste en la revascularisation du lambeau perforateur au moyen d'une anastomose microchirurgicale

Table 136 – Nomenclature codes for breast implants

Outpatient	Inpatient	Dutch Description	French Description
162595	162606	Borstimplantaat of weefselexpander op maat	Implant mammaire ou expanseur tissulaire sur mesure
162610	162621	Rond borstimplantaat of ronde definitieve borstweefselexpander gevuld met silicone gel of met zoutoplossing, inclusief toebehoren	Implant mammaire rond ou expanseur tissulaire mammaire définitif rond, remplis d'un gel silicone ou d'une solution saline, y compris les accessoires
162632	162643	Anatomisch borstimplantaat of anatomische definitieve borstweefselexpander gevuld met silicone gel of met zoutoplossing, inclusief toebehoren	Implant mammaire anatomique ou expanseur tissulaire mammaire définitif anatomique, remplis d'un gel silicone ou d'une solution saline, y compris les accessoires

162654	162665	Rond borstimplantaat of ronde definitieve borstweefselexpander gevuld met silicone gel en met zoutoplossing, inclusief toebehoren	Implant mammaire rond ou expanseur tissulaire mammaire définitif rond, remplis d'un gel silicone et d'une solution saline, y compris les accessoires
162676	162680	Anatomisch borstimplantaat of anatomische definitieve borstweefselexpander gevuld met silicone gel en met zoutoplossing, inclusief toebehoren	Implant mammaire anatomique ou expanseur tissulaire mammaire définitif anatomique, remplis d'un gel silicone et d'une solution saline, y compris les accessoires
162691	162702	Niet-anatomische tijdelijke weefselexpander voor borstreconstructie, inclusief toebehoren	Expanseur tissulaire temporaire non-anatomique pour reconstruction mammaire, y compris les accessoires
162713	162724	Anatomische tijdelijke weefselexpander voor borstreconstructie, inclusief toebehoren	Expanseur tissulaire temporaire anatomique pour reconstruction mammaire, y compris les accessoires

Table 137 – Nomenclature codes for COVID-19-specific billing codes (to be excluded from surgery costs)

Outpatient	Inpatient	Dutch Description	French Description
101135		Advies met het oog op continuïteit van zorg	Avis en vue de la continuité des soins
101835		Advies met het oog op triage covid-19 tijdens de georganiseerde huisartsenwachtdienst	Avis en vue du triage COVID-19 pendant le service de garde organisé de médecins généralistes
101894		Zitting met een minimum duur van 30 minuten, zonder fysieke aanwezigheid, met het oog op een psychiatrische diagnose of een psychotherapeutische behandeling	Séance d'une durée de 30 minutes minimum, sans présence physique, en vue d'un diagnostic psychiatrique ou d'un traitement psychothérapeutique
101916		Zitting met een minimum duur van 45 minuten, zonder fysieke aanwezigheid, met het oog op het verzetten van de psychotherapeutische behandeling die voor de overheidsmaatregelen gestart waren	Séance d'une durée de 45 minutes minimum, sans présence physique, en vue de la poursuite d'un traitement psychothérapeutique débuté avant les mesures gouvernementales
101990		Advies met het oog op triage Covid-19	Avis en vue du triage COVID-19
419252		Bijkomend bedrag in aanvulling op een basisverstrekking / forfait PP	Montant complémentaire à la prestation de base / Forfait PP
419274		Bijkomend bedrag in aanvulling op een forfait A / forfait PA	Montant complémentaire au Forfait A / Forfait PA
419296		Bijkomend bedrag in aanvulling op een forfait B / forfait PB	Montant complémentaire au Forfait B / Forfait PB
419311		Bijkomend bedrag in aanvulling op een forfait C / forfait PC	Montant complémentaire au Forfait C / Forfait PC

	212063	Continu toezicht op de vitale en niet-vitale functies met een waaktoestel dat op zijn minst bestendig het elektrocardiogram volgt, inclusief de eventuele registraties, buiten de narcoses, de heelkundige en verloskundige bewerkingen en buiten de functionele harttests : vanaf de derde dag voor COVID-19-patiënten	Surveillance continue des fonctions vitales et non vitales à l'aide d'un appareil de surveillance qui suit de façon permanente au minimum l'électrocardiogramme y compris les enregistrements éventuels, en dehors des narcoses, des interventions chirurgicales et obstétricales et en dehors des tests fonctionnels cardiaques : à partir du troisième jour pour les patients COVID-19
	518103	Toeslag bij de verstrekking 560501 of 567206 voor een gehospitaliseerde COVID-19-patiënt die verblijft of verbleven heeft op intensieve zorg	Majoration pour la prestation 560501 ou 567206 pour un patient COVID-19 hospitalisé qui est ou a été aux soins intensifs
553954	553965	Genoomsequencing van het SARS-CoV-2-virus voor actieve surveillance	Séquençage génomique du virus Sars-Cov-2 pour la surveillance active
553976	553980	Genoomsequencing van het SARS-CoV-2-virus voor basis surveillance	Séquençage génomique du virus Sars-Cov-2 pour la surveillance de base
554831	554842	Staalafname voor het uitvoeren van een moleculaire test met het oog op het opsporen van het SARS-CoV-2 virus	Prélèvement d'échantillons pour l'exécution d'un test moléculaire en vue de la détection du virus Sars-CoV-2
554875	554886	Testmateriaal voor het opsporen van antigenen van het Sars-CoV-2-virus via snelle antigeentest	Matériel de test pour la détection des antigènes du virus Sars-CoV-2 par le biais de tests antigéniques rapides
554890	554901	Uitvoeren van snelle antigeentest	Exécution des tests antigéniques rapides
554912	554923	Staalafname voor het uitvoeren van snelle antigeentesten met het oog op het opsporen van het SARS-CoV-2 virus	Prélèvement d'échantillons pour l'exécution de tests antigéniques rapides en vue de la détection du virus Sars-CoV-2
554934	554945	Opsporen van minstens het SARS-CoV-2-virus door middel van een techniek van moleculaire amplificatie	Détection au moins du virus SARS-CoV-2 au moyen d'une technique d'amplification moléculaire
554956	554960	Opsporen van antigenen van het SARS-CoV-2-virus	Détection d'antigènes du virus SARS-CoV-2
554971	554982	Bepaling van antilichamen tegen het SARS-CoV-2-virus via immunoassay	Détermination d'anticorps contre le virus SARS-CoV-2 via immunoassay
	557900	Toeslag bij de verstrekking 558806 of 558423 voor een gehospitaliseerde COVID-19-patiënt die verblijft of verbleven heeft op intensieve zorg	Supplément pour la prestation 558806 ou 558423 pour un patient COVID-19 hospitalisé qui est ou a été aux soins intensifs

	597984	Bijkomend honorarium voor toezicht op de in een ziekenhuis opgenomen rechthebbende COVID-19-patiënt, per dag	Supplément d'honoraires pour la surveillance d'un patient COVID-19 hospitalisé, par jour
	793800	Identificatie COVID-19-patiënt	Identification patient COVID-19

Appendix 24.1.3. Radiotherapy

Table 138 – Nomenclature codes for radiotherapy preparation and management

Outpatient	Inpatient	Dutch Description	French Description
145272		Ingewikkeld dermatologisch verband voor uitgebreide letsels	Pansement dermatologique compliqué pour lésions étendues
444356	444360	Forfaitair honorarium voor de voorbereidingen met simulator van een behandeling met uitwendige bestraling of curietherapie, per bestralingsreeks voor een patiënt van categorie 1, 2, 3, 4, 4bis,5, 6, 7 of 8, eerste simulatie, behalve voor patiënten van categorie 8 met behandeling voor prostaatkanker door permanente implantatie van radioactieve jodiumzaadjes	Honoraires forfaitaires pour les préparations avec simulation d'un traitement par irradiation externe ou de curiethérapie, par série d'irradiation pour un patient de catégorie 1, 2, 3, 4, 4bis,5, 6, 7 ou 8, la première simulation, excepté pour les patients de catégorie 8 avec un traitement pour cancer de la prostate par implantation permanente de grains d'iode radioactifs
444371	444382	Forfaitair honorarium voor de voorbereidingen met simulator van een behandeling met uitwendige bestraling of curietherapie, per bestralingsreeks voor een patiënt van categorie 2, 3, 4, 4bis, 5, 6 of 8, tweede simulatie	Honoraires forfaitaires pour les préparations avec simulation d'un traitement par irradiation externe ou de curiethérapie, par série d'irradiation pour un patient de catégorie 2, 3, 4, 4bis, 5, 6 ou 8, deuxième simulation
444393	444404	Forfaitair honorarium voor de berekening van de individuele dosisverdeling van een behandeling met uitwendige bestraling of curietherapie voor patiënten van categorie 1, 2, 3, 4, 4bis, 5, 6, 7 of 8, eerste planning	Honoraires forfaitaires pour le calcul de la distribution de la dose individuelle d'un traitement par irradiation externe ou de curiethérapie chez des patients de catégorie 1, 2, 3, 4, 4bis, 5, 6, 7 ou 8, premier planning
444415	444426	Forfaitair honorarium voor de berekening van de individuele dosisverdeling van een behandeling met uitwendige bestraling of curietherapie voor patiënten van categorie 2, 3, 4, 4bis, 5, 6 of 8 , tweede planning	Honoraires forfaitaires pour le calcul de la distribution de la dose individuelle d'un traitement par irradiation externe ou de curiethérapie chez des patients de catégorie 2, 3, 4, 4bis, 5, 6 ou 8 , deuxième planning
444430	444441	Bijkomend honorarium bij de verstrekking 444393 - 444404 (eerste planning) voor de berekening van de individuele driedimensionele dosisverdeling voor uitwendige bestraling voor patiënten van categorie 3, 4, 4bis	Honoraires supplémentaires lors de la prestation 444393 - 444404 (premier planning) pour le calcul de la distribution tridimensionnelle de la dose individuelle pour irradiation externe chez des patients de catégorie 3, 4, 4bis

444452	444463	Bijkomend honorarium bij de verstrekking 444393 - 444404 (eerste planning) voor de individuele dosisberekening met gebruik van een intensiteitsmodulatieprogramma voor bestraling met multileafcollimator voor patiënten van categorie 3, 4, 4bis	Honoraires supplémentaires lors de la prestation 444393 - 444404 (premier planning) pour le calcul de la dose individuelle avec utilisation d'un programme de modulation d' intensité pour irradiation avec un collimateur multi-lames chez des patients de catégorie 3, 4, 4bis
444474	444485	Honorarium voor gammagrafie bij een patiënt behandeld met uitwendige bestraling van categorie 1, 2, 3 of 4, maximum 4 per bestralingsreeks	Honoraires pour gammagraphie chez un patient de catégorie 1, 2, 3 ou 4 traité par irradiation externe, maximum 4 par série d'irradiation
444496	444500	Honorarium voor on-line imaging bij een patiënt behandeld met uitwendige bestraling categorie 1, 2, 3, 4, 4bis, maximum 4 per bestralingsreeks	Honoraires pour imagerie portale en ligne chez un patient de catégorie 1, 2, 3, 4, 4bis traité par irradiation externe, maximum 4 par série d'irradiation
444511	444522	Honorarium voor in-vivo dosimetrie bij patiënten behandeld met uitwendige bestraling van categorie 1, 2, 3, 4, 4bis, maximum 4 per bestralingsreeks	Honoraires pour dosimétrie in vivo chez des patients de catégorie 1, 2, 3, 4, 4bis traités par irradiation externe, maximum 4 par série d'irradiation
444533	444544	Bijkomend honorarium voor bestraling met een multileafcollimator voor de patiënten van categorie 3, 4, 4bis per bestralingsreeks	Honoraires supplémentaires pour irradiation avec un collimateur multi-lames chez des patients de catégorie 3, 4, 4bis, par série d'irradiation
444570	444581	Maskers of individuele fixatiesystemen bij uitwendige bestraling voor de patiënten van categorie 1 voor de regio hoofd en hals en voor de patiënten van categorie 2, 3, 4, 4bis, per bestralingsreeks	Masques ou systèmes de fixation individuelle lors d'irradiation externe chez des patients de catégorie 1 pour localisations tête et cou et chez des patients de catégorie 2, 3, 4, 4bis, par série d'irradiation
444592	444603	Individuele blokken bij een behandeling met uitwendige bestraling en/of curietherapie van patiënten van categorie 1, 2, 3, 4, 5, 6, 7 of 8, per bestralingsreeks	Blocs individualisés pour traitement par irradiation externe et/ou par curiethérapie des patients de catégorie 1, 2, 3, 4, 5, 6, 7 ou 8, par série d'irradiation
444614	444625	Lokalisatie CT opname uitgevoerd bij de verstrekking 444356-444360 (eerste simulatie) en/of bij de verstrekking 444371-444382 (tweede simulatie)	CT de localisation effectuée lors de la prestation 444356-444360 (1re simulation) et/ou de la prestation 444371-444382 (2e simulation)
455895	455906	Onderzoek uitgevoerd met radiologische absorptiometrie met dubbele energie (Dual Energy X-ray Absorptiometry : DXA) om de	Examen réalisé par la technique de l'absorptiométrie radiologique à double énergie (Dual Energy X-ray Absorptiometry : DXA) pour déterminer le T-score, calculé au niveau de la colonne lombaire

		T-score te berekenen ter hoogte van de lumbale wervelkolom (L1-L4 of L2-L4) en van de heup (volledige zone of zone van de hals)	(L1-L4 ou L2-L4) et de la hanche (zone totale ou zone propre du col)
466616	466620	Onderzoek uitgevoerd met radiologische absorptiometrie met dubbele energie (Dual Energy X-ray Absorptiometry : DXA) om de T-score te berekenen ter hoogte van de lumbale wervelkolom (L1-L4 of L2-L4) en van de heup (volledige zone of zone van de hals)	Examen réalisé par la technique de l'absorptiométrie radiologique à double énergie (Dual Energy X-ray Absorptiometry : DXA) pour déterminer le T-score, calculé au niveau de la colonne lombaire (L1-L4 ou L2-L4) et de la hanche (zone totale ou zone propre du col)

Table 139 – Nomenclature codes for radiotherapy

Outpatient	Inpatient	Dutch Description	French Description
444113	444124	Forfaitair honorarium voor een eenvoudige uitwendige bestralingsreeks van 1 tot 10 fracties voor een patiënt die beantwoordt aan de criteria of lijdt aan een aandoening opgenomen in categorie 1	Honoraires forfaitaires pour une série d'irradiations externes simples de 1 à 10 fractions chez un patient qui répond aux critères ou pathologie repris en catégorie 1
444135	444146	Forfaitair honorarium voor een eenvoudige uitwendige bestralingsreeks van minstens 11 tot 35 fracties voor een patiënt die beantwoordt aan de criteria of lijdt aan een aandoening opgenomen in categorie 2	Honoraires forfaitaires pour une série d'irradiations externes simples de 11 à 35 fractions chez un patient qui répond aux critères ou pathologie repris en catégorie 2
444150	444161	Forfaitair honorarium voor een complexe uitwendige bestralingsreeks voor een patiënt die beantwoordt aan de criteria of lijdt aan een aandoening opgenomen in categorie 3	Honoraires forfaitaires pour une série d'irradiations externes complexes chez un patient qui répond aux critères ou pathologie repris en catégorie 3
444172	444183	Forfaitair honorarium voor een complexe uitwendige bestralingsreeks voor een patiënt die beantwoordt aan de criteria of lijdt aan een aandoening opgenomen in categorie 4	Honoraires forfaitaires pour une série d'irradiations externes complexes chez un patient qui répond aux critères ou pathologie repris en catégorie 4
444216	444220	Forfaitair honorarium voor exclusieve curietherapie voor een patiënt die beantwoordt aan de criteria of lijdt aan een aandoening opgenomen in categorie 7	Honoraires forfaitaires pour curiethérapie exclusive chez un patient qui répond aux critères ou pathologie repris en catégorie 7
444253	444264	Forfaitair honorarium voor exclusieve curietherapie voor een patiënt die beantwoordt aan de criteria of lijdt aan een aandoening opgenomen in categorie 8	Honoraires forfaitaires pour curiethérapie exclusive chez un patient qui répond aux critères ou pathologie repris en catégorie 8

444290	444301	Forfaitair honorarium voor curietherapie gecombineerd met uitwendige bestralingsreeks voor een patiënt die beantwoordt aan de criteria of lijdt aan een aandoening opgenomen in categorie 5	Honoraires forfaitaires pour curiethérapie combinée à une série d'irradiations externes chez un patient qui répond aux critères ou pathologie repris en catégorie 5
444312	444323	Forfaitair honorarium voor curietherapie gecombineerd met uitwendige bestralingsreeks voor een patiënt die beantwoordt aan de criteria of lijdt aan een aandoening opgenomen in categorie 6	Honoraires forfaitaires pour curiethérapie combinée à une série d'irradiations externes chez un patient qui répond aux critères ou pathologie repris en catégorie 6
444636	444640	Forfaitair honorarium voor een stereotactische bestralingsreeks voor een patiënt die beantwoordt aan de criteria of lijdt aan een aandoening opgenomen in categorie 4bis, primaire tumoren, uitgezonderd hersentumoren	Honoraires forfaitaires pour une série d'irradiations stéréotaxiques chez un patient qui répond aux critères repris dans la catégorie 4bis, tumeurs primaires, à l'exception de tumeurs cérébrales
444651	444662	Forfaitair honorarium voor een stereotactische bestralingsreeks voor een patiënt die beantwoordt aan de criteria opgenomen in categorie 4bis, oligometastasen, uitgezonderd hersenmetastasen	Honoraires forfaitaires pour une série d'irradiations stéréotaxiques chez un patient qui répond aux critères repris dans la catégorie 4bis, oligométastases, à l'exception de métastases cérébrales
444695	444706	Forfaitair honorarium voor een stereotactische bestralingsreeks voor een patiënt die beantwoordt aan de criteria opgenomen in categorie 4bis, niet maligne hersentumoren en arterioveneuze malformaties (AVM)	Honoraires forfaitaires pour une série d'irradiations stéréotaxiques chez un patient qui répond aux critères repris dans la catégorie 4bis, tumeurs cérébrales non malignes et malformations artério-veineuses (MAV)
444710	444721	Borstbestraling via hypofractionering (5 fracties) met gebruik van intensiteitsmodulatie (IMRT) in kader van COVID19	Irradiation du sein via hypofractionnement (5 fractions) avec modulation d'intensité (IMRT) dans le cadre du COVID19

Appendix 24.1.4. Systemic therapy

Table 140 – ATC codes for chemotherapy

ATC code	Substance name
Anthracycline based	
L01DB01	DOXORUBICIN
L01DB03	EPIRUBICIN
L01DB07	MITOXANTRONE

Taxanes	
L01CD01	PACLITAXEL
L01CD02	DOCETAXEL
Platinum based	
L01XA01	CISPLATIN
L01XA02	CARBOPLATIN
Other	
L01AA01	CYCLOPHOSPHAMIDE
*L01BA01** *(Excluding CNK codes 0710-566, 1092-857, 1174-481, 1174-499)*	METHOTREXATE
L01BC02 *(Excluding CNK codes 0038-521, 0706-044)*	FLUOROURACIL
L01BC05	GEMCITABINE
L01BC06	CAPECITABINE
L01CA04	VINORELBINE
L01XX41	ERIBULINE

Table 141 – ATC codes for targeted therapy

ATC code	**Substance name**
Anti-HER2 therapy	
L01XC03 (L01FD01 in IMA data since 2019)	Trastuzumab
L01XC13 (L01FD02 in IMA data since 2019)	Pertuzumab
L01XC14 (L01FD03 in IMA data since 2019)	Trastuzumab-emtansine
*L01XE07 (L01EH01 in IMA data since 2019)**	Lapatinib
CDK4/6 inhibitor	
L01XE33 (L01EF01 in IMA data since 2017)	Palbociclib

L01XE42 (L01EF02 in IMA data since 2019)	Ribociclib
L01XE50 (L01EF03 in IMA data since 2019)	Abemaciclib
Other	
L01XC07 (L01FG01 in IMA data since 2019)	Bevacizumab
L01XE10 (L01EG02 in IMA data since 2019) *(Excluding CNK codes : 0779-884, 0779-892, 0779-900, 2156-255, 2156-271, 2156-289, 7715-832, 7715-808, 7715-790, 7715-782, 7715-816, 7715-824)*	Everolimus

Table 142 – ATC code for immunotherapy

ATC code	Substance name
L01FF02	Prembrolizumab

Table 143 – ATC codes for endocrine therapy

ATC code	Substance name
Selective oestrogen receptor modulators	
L02BA01	Tamoxifen
L02BA02	Toremifene
L02BA03	Fulvestrant
G03XC01	Raloxifen
Aromatase inhibitors	
L02BG03	Anastrozole
L02BG04	Letrozole
L02BG06	Exemestane
GnRH (LHRH) receptor modulators	

L02AE03	Goserelin
L02AE04	Triptorelin
Other	
L02AB01	Megestrol (Acetate)

Table 144 – Ancillary codes for systemic therapy

Outpatient	Inpatient	Dutch Description	French Description
590181		Forfaitair honorarium voor de intramuraal aanwezige medische permanentie in een erkende functie voor gespecialiseerde spoedgevallenzorg in het ziekenhuis per opneming in een acute dienst A, C, D, E, G, H, (i), K, L, M of NIC van een algemeen ziekenhuis dat beschikt over een erkende functie voor gespecialiseerde spoedgevallen	Honoraires forfaitaires pour la permanence médicale intra-hospitalière dans une fonction reconnue de soins urgents spécialisés, par admission hospitalière dans un service aigu A, C, D, E, G, H, (i), K, L, M ou NIC, d'un hôpital général qui dispose d'une fonction reconnue de soins urgents spécialisés
590203		Forfaitair honorarium voor de intramuraal aanwezige medische permanentie in een erkende functie voor intensieve zorg in het ziekenhuis, per opneming in een acute dienst A, C, D, E, G, H, (i), K, L, M of NIC van een algemeen ziekenhuis dat beschikt over een erkende functie voor intensieve zorg	Honoraires forfaitaires pour la permanence médicale intra-hospitalière dans une fonction reconnue de soins intensifs par admission hospitalière dans un service aigu A, C, D, E, G, H, (i), K, L, M ou NIC d'un hôpital général qui dispose d'une fonction reconnue de soins intensifs
597800		Toezichtshonorarium voor het verblijf van een patiënt in een erkend dagziekenhuis voor de arts-specialist die een van onderstaande ingrepen uit de limitatieve lijst heeft verricht	Honoraires de surveillance pour le séjour d'un patient dans un hôpital de jour reconnu, pour le médecin spécialiste qui a effectué une des interventions de la liste limitative ci-dessous
598006		Honorarium voor toezicht op de in een ziekenhuis opgenomen rechthebbende, ongeacht de bekwaamheid van de arts aan wie het verschuldigd is : de eerste vijf dagen, per dag	Honoraires de surveillance du bénéficiaire hospitalisé, quelle que soit la qualification du médecin auquel ils sont dus : les cinq premiers jours, par jour
598124		Honorarium voor toezicht op de in een ziekenhuis opgenomen rechthebbende, ongeacht de bekwaming van de arts aan wie het verschuldigd is : door een geaccrediteerde arts, de eerste vijf dagen, per dag	Honoraires de surveillance du bénéficiaire hospitalisé, quelle que soit la qualification du médecin auquel ils sont dus : par un médecin accrédité, les cinq premiers jours, par jour
598146		Honorarium voor toezicht op de in een ziekenhuis opgenomen rechthebbende dat verschuldigd is aan de geaccrediteerde arts-specialist voor inwendige geneeskunde, voor cardiologie, voor pneumologie, voor gastroënterologie, voor neurologie, voor	Honoraires de surveillance du bénéficiaire hospitalisé dus au médecin accrédité spécialiste en médecine interne, en cardiologie en pneumologie, en gastro-entérologie, en neurologie, en

		neuropsychiatrie, voor psychiatrie, voor kindergeneeskunde, voor reumatologie, voor medische oncologie, voor geriatrie : eerste vijf dagen, per dag	neuropsychiatrie, en psychiatrie, en pédiatrie, en rhumatologie, en oncologie médicale, en gériatrie : les cinq premiers jours, par jour
598205		Toezicht door een arts die is erkend als specialist voor inwendige geneeskunde, voor cardiologie, voor gastro-enterologie, voor pneumologie, voor reumatologie, voor neurologie, voor neuropsychiatrie, voor psychiatrie , voor medische oncologie op een in een dienst D opgenomen zieke : door een geaccrediteerde arts-specialist, de eerste vijf dagen, per dag	Surveillance par un médecin agréé comme spécialiste en médecine interne, en cardiologie, en gastro-entérologie, en pneumologie, en rhumatologie, en neurologie, en neuropsychiatrie, en psychiatrie, en oncologie médicale d'un malade hospitalisé dans un service D : par un médecin spécialiste accrédité, les cinq premiers jours, par jour
598404		Honorarium voor toezicht op de in een ziekenhuis opgenomen rechthebbende dat verschuldigd is aan de arts-specialist voor inwendige geneeskunde, voor cardiologie, voor pneumologie, voor gastroënterologie, voor neurologie, voor neuropsychiatrie, voor psychiatrie, voor kindergeneeskunde, voor reumatologie, voor medische oncologie, voor geriatrie : eerste vijf dagen, per dag	Honoraires de surveillance du bénéficiaire hospitalisé dus au médecin spécialiste en médecine interne, en cardiologie, en pneumologie, en gastro-entérologie, en neurologie, en neuropsychiatrie, en psychiatrie , en pédiatrie, en rhumatologie, en oncologie médicale, en gériatrie : les cinq premiers jours, par jour
599082		Onderzoek van een in een ziekenhuis opgenomen patiënt door een arts-specialist	Examen d'un patient hospitalisé par un médecin spécialiste
599480		Coördinatiehonorarium voor het verblijf van een patiënt in een erkend dagziekenhuis	Honoraire de coordination pour le séjour d'un patient dans un hôpital de jour reconnu
590310		Forfaitair honorarium voor de intramuraal aanwezige medische permanentie in een erkende functie voor gespecialiseerde spoedgevallenzorg in een ziekenhuis, per dag die recht geeft op het maxiforfait of op een dagziekenhuisforfait voor één van onderstaande verstrekkingen uit de limitatieve lijst of op een bedrag voor chirurgisch dagziekenhuis van een algemeen ziekenhuis dat beschikt over een erkende functie voor gespecialiseerde spoedgevallenzorg	Honoraires forfaitaires pour la permanence médicale intrahospitalière dans une fonction reconnue de soins urgents spécialisés, par journée ouvrant le droit au maxiforfait ou à un forfait d'hospitalisation de jour pour une des prestations reprises ci-dessous dans la liste limitative ou à un montant pour chirurgie de jour d'un hôpital général qui dispose d'une fonction reconnue de soins urgents spécialisés
590332		Forfaitair honorarium voor de intramuraal aanwezige medische permanentie in een erkende functie voor intensieve zorg in het ziekenhuis, per dag die recht geeft op het maxiforfait of op een dagziekenhuisforfait voor één van onderstaande verstrekkingen uit de limitatieve lijst of op een bedrag voor chirurgisch dagziekenhuis	Honoraires forfaitaires pour la permanence médicale intrahospitalière dans une fonction reconnue de soins intensifs, par journée ouvrant le droit au maxiforfait ou à un forfait d'hospitalisation de jour pour une des prestations reprises ci-dessous dans la liste limitative ou à un montant pour chirurgie de

		van een algemeen ziekenhuis dat beschikt over een erkende functie voor intensieve zorg	jour d'un hôpital général qui dispose d'une fonction reconnue de soins intensifs
597295		Honorarium voor toezicht op de rechthebbende die verblijft in een functie “niet-chirurgische daghospitalisatie”, zoals bedoeld in het koninklijk besluit van 10 februari 2008 houdende vaststelling van de normen waaraan de functie “niet-chirurgische daghospitalisatie"" moet voldoen om te worden erkend, voor de geaccrediteerde arts-specialist in de medische oncologie, de geaccrediteerde arts-specialist met de bijzondere beroepsbekwaamheid in de oncologie, of de geaccrediteerde arts-specialist in de kindergeneeskunde, houder van bijzondere beroepstitel in de pediatrische hematologie en oncologie	Honoraires de surveillance pour le séjour d’un bénéficiaire dans une fonction “hospitalisation non chirurgicale de jour”, visée à l’arrêté royal du 10 février 2008 fixant les normes auxquelles la fonction “hospitalisation non chirurgicale de jour” doit répondre pour être agréée, pour le médecin spécialiste accrédité en oncologie médicale, le médecin spécialiste accrédité porteur de la qualification professionnelle particulière en oncologie, ou le médecin spécialiste accrédité en pédiatrie, porteur du titre professionnel particulier en hématologie et oncologie pédiatriques

Table 145 – ATC codes for supportive therapy

ATC code	Substance name
L03AA10	Lenograstim
L03AA13	Pegfilgrastim
L03AA14	Lipegfilgrastim
M05BA08	Zoledronic acid
M05BX04	Denosumab
N02BE01	Paracetamol
N05AH03	Olanzapine
R06AX29	Bilastine
V03AF01	Mesna
V07AB40	Diluting agents for injections

Appendix 24.1.5. Palliative care

Table 146 – Nomenclature codes for palliative care

Outpatient	Inpatient	Dutch Description	French Description
109701		Bezoek, in een Sp-dienst (palliatieve zorg) door de huisarts op verzoek van de patiënt of van één van zijn naastbestaanden	Visite dans un service Sp (soins palliatifs) par le médecin généraliste à la demande du patient ou d'un de ses proches
597763		Honorarium voor toezicht op de rechthebbende die in een Sp-dienst (palliatieve zorg) is opgenomen vanaf de eerste dag hospitalisatie in deze dienst : vanaf de eenendertigste dag tot het einde van de zesde maand per dag	Honoraires de surveillance du bénéficiaire hospitalisé dans un service Sp (soins palliatifs) à partir du premier jour d'hospitalisation dans ce service : du trente-et-unième jour jusqu'à la fin du sixième mois, par jour
599782		Honorarium voor toezicht op de rechthebbende die in een Sp-dienst (palliatieve zorg) is opgenomen vanaf de eerste dag hospitalisatie in deze dienst : van de 1ste tot de 30ste dag, per dag	Honoraires de surveillance du bénéficiaire hospitalisé dans un service Sp (soins palliatifs) à partir du premier jour d'hospitalisation dans ce service : du 1er au 30e jour, par jour
599804		Honorarium voor toezicht op de rechthebbende die in een Sp-dienst (palliatieve zorg) is opgenomen vanaf de eerste dag hospitalisatie in deze dienst : door een geaccrediteerde arts, van de 1ste tot de 30ste dag, per dag	Honoraires de surveillance du bénéficiaire hospitalisé dans un service Sp (soins palliatifs) à partir du premier jour d'hospitalisation dans ce service : par un médecin accrédité, du 1er au 30e jour, par jour
785245		Regularisaties : Palliatieve zorgen (patiënt)	Régularisations : Soins palliatifs (patient)
103692		Opstellen en opvolgen van de Advance Care Planning (ACP) bij patiënten die als palliatief werden geïdentificeerd volgens de identificatieschaal van de palliatieve patiënt (PICT)	Rédaction et suivi de l'Advance Care Planning (ACP) chez des patients qui ont été identifiés palliatifs suivant l'échelle d'identification du patient palliatif (PICT)
427011		Forfaitair honorarium PC, dat één keer per verzorgingsdag wordt toegekend voor het geheel van de verpleegkundige verzorging, verleend aan een rechthebbende : • wiens fysieke afhankelijkheidstoestand beantwoordt aan de volgende criteria : - afhankelijkheid wegens het criterium zich wassen (score 4) en het criterium zich kleden (score 4), en - afhankelijk wegens het criterium transfer en verplaatsingen (score 4) en om het criterium toiletbezoek (score 4), en - afhankelijkheid wegens het criterium continentie en het criterium eten (waarvoor één van de twee criteria een score 4 heeft en het andere criterium een score van	Honoraires forfaitaires PC, accordés une seule fois par journée de soins pour l'ensemble des soins infirmiers effectués au bénéficiaire : • dont l'état de dépendance physique répond aux critères suivants : - dépendance pour le critère se laver (score 4) et le critère s'habiller (score 4), et - dépendance pour le critère transfert et déplacements (score 4) et le critère aller à la toilette (score 4), et - dépendance pour le critère continence et pour le critère manger (pour laquelle un des deux critères obtient un score de 4, et l'autre un score de minimum 3) • et qui répond à la définition du patient palliatif reprise au § 5bis, 1°

Outpatient	Inpatient	Dutch Description	French Description
		minimum 3) • en die beantwoordt aan de definitie van palliatieve patiënt, zoals bedoeld in § 5bis, 1°	
427033		Forfaitair honorarium PB, dat één keer per verzorgingsdag wordt toegekend voor het geheel van de verpleegkundige verzorging, verleend aan een rechthebbende : • wiens fysieke afhankelijkheidstoestand beantwoordt aan de volgende criteria : - afhankelijkheid wegens het criterium zich wassen en het criterium zich kleden (score 3 of 4), en - afhankelijk wegens het criterium transfer en verplaatsingen en het criterium toiletbezoek (score 3 of 4), en - afhankelijkheid wegens het criterium continentie en/of het criterium eten (score 3 of 4) • en die beantwoordt aan de definitie van palliatieve patiënt, zoals bedoeld in § 5bis, 1°	Honoraires forfaitaires PB, accordés une seule fois par journée de soins pour l'ensemble des soins infirmiers effectués au bénéficiaire : • dont l'état de dépendance physique répond aux critères suivants : - dépendance pour le critère se laver et le critère s'habiller (score 3 ou 4), et - dépendance pour le critère transfert et déplacements et le critère aller à la toilette (score 3 ou 4), et - dépendance pour le critère continence et/ou pour le critère manger (score 3 ou 4). • et qui répond à la définition du patient palliatif reprise au § 5bis, 1°
427055		Forfaitair honorarium PA, dat één keer per verzorgingsdag wordt toegekend voor het geheel van de verpleegkundige verzorging, verleend : • aan een rechthebbende wiens fysieke afhankelijkheidstoestand beantwoordt aan de volgende criteria : - afhankelijk wegens het criterium zich wassen en het criterium zich kleden (score 3 of 4), en - afhankelijk wegens het criterium transfer en verplaatsingen en/of het criterium toiletbezoek (score 3 of 4) • op voorwaarde dat deze rechthebbende beantwoordt aan de definitie van palliatieve patiënt, zoals bedoeld in § 5bis, 1°	Honoraires forfaitaires PA, accordés une seule fois par journée de soins pour l'ensemble des soins infirmiers effectués : • au bénéficiaire dont l'état de dépendance physique répond aux critères suivants : - dépendance pour le critère se laver et le critère s'habiller (score 3 ou 4), et - dépendance pour le critère transfert et déplacements et/ou le critère aller à la toilette (score 3 ou 4) • sous la condition que le bénéficiaire répond à la définition de patient palliatif reprise au § 5bis, 1°
427070		Supplementair honorarium, forfait PN, genoemd, dat één keer per verzorgingsdag wordt toegekend voor het geheel van de verpleegkundige verzorging, verleend aan een rechthebbende : . in wiens hoofde één of meer verstrekkingen bedoeld sub I of sub III van deze rubriek worden aangerekend, zonder dat het dagplafond bedoeld in § 4, 6° wordt bereikt ; . en die beantwoordt aan de definitie van palliatieve patiënt, zoals bedoeld in § 5bis, 1°	Honoraires supplémentaires, dits forfaits PN, accordés une seule fois par journée de soins pour l'ensemble des soins infirmiers effectués au bénéficiaire : . pour lequel une ou plusieurs prestations visées sous I ou sous III de la présente rubrique ont été attestées, sans que le plafond journalier visé au § 4, 6° n'ait été atteint ; . et qui répond à la définition de patient palliatif reprise au § 5bis 1°
427092		Forfaitair honorarium PC, dat één keer per verzorgingsdag wordt toegekend voor het geheel van de verpleegkundige verzorging, verleend aan een rechthebbende : • wiens fysieke afhankelijkheidstoestand beantwoordt aan de volgende criteria : - afhankelijkheid wegens het criterium zich wassen (score 4) en het criterium zich kleden (score 4), en - afhankelijk wegens het	Honoraires forfaitaires PC, accordés une seule fois par journée de soins pour l'ensemble des soins infirmiers effectués au bénéficiaire : • dont l'état de dépendance physique répond aux critères suivants : - dépendance pour le critère se laver (score 4) et le critère s'habiller (score 4), et - dépendance pour le critère transfert et déplacements (score 4) et le critère aller à la toilette (score 4), et

Outpatient	Inpatient	Dutch Description	French Description
		criterium transfer en verplaatsingen (score 4) en om het criterium toiletbezoek (score 4), en - afhankelijkheid wegens het criterium continentie en het criterium eten (waarvoor één van de twee criteria een score 4 heeft en het andere criterium een score van minimum 3) • en die beantwoordt aan de definitie van palliatieve patiënt, zoals bedoeld in § 5bis, 1°	- dépendance pour le critère continence et pour le critère manger (pour laquelle un des deux critères obtient un score de 4, et l'autre un score de minimum 3) • et qui répond à la définition du patient palliatif reprise au § 5bis, 1°
427114		Forfaitair honorarium PB, dat één keer per verzorgingsdag wordt toegekend voor het geheel van de verpleegkundige verzorging, verleend aan een rechthebbende : • wiens fysieke afhankelijkheidstoestand beantwoordt aan de volgende criteria : - afhankelijkheid wegens het criterium zich wassen en het criterium zich kleden (score 3 of 4), en - afhankelijk wegens het criterium transfer en verplaatsingen en het criterium toiletbezoek (score 3 of 4), en - afhankelijkheid wegens het criterium continentie en/of het criterium eten (score 3 of 4) • en die beantwoordt aan de definitie van palliatieve patiënt, zoals bedoeld in § 5bis, 1°	Honoraires forfaitaires PB, accordés une seule fois par journée de soins pour l'ensemble des soins infirmiers effectués au bénéficiaire : • dont l'état de dépendance physique répond aux critères suivants : - dépendance pour le critère se laver et le critère s'habiller (score 3 ou 4), et - dépendance pour le critère transfert et déplacements et le critère aller à la toilette (score 3 ou 4) et - dépendance pour le critère continence et/ou pour le critère manger (score 3 ou 4). • et qui répond à la définition du patient palliatif reprise au § 5bis, 1°
427136		Forfaitair honorarium PA, dat één keer per verzorgingsdag wordt toegekend voor het geheel van de verpleegkundige verzorging, verleend • aan een rechthebbende wiens fysieke afhankelijkheidstoestand beantwoordt aan de volgende criteria : - afhankelijk wegens het criterium zich wassen en het criterium zich kleden (score 3 of 4), en - afhankelijk wegens het criterium transfer en verplaatsingen en/of het criterium toiletbezoek (score 3 of 4) • op voorwaarde dat deze rechthebbende beantwoordt aan de definitie van palliatieve patiënt, zoals bedoeld in § 5bis, 1°	Honoraires forfaitaires PA, accordés une seule fois par journée de soins pour l'ensemble des soins infirmiers effectués : • au bénéficiaire dont l'état de dépendance physique répond aux critères suivants : - dépendance pour le critère se laver et le critère s'habiller (score 3 ou 4), et - dépendance pour le critère transfert et déplacements et/ou le critère aller à la toilette (score 3 ou 4) • sous la condition que le bénéficiaire répond à la définition de patient palliatif reprise au § 5bis, 1°
427151		Supplementair honorarium forfait PN genoemd, dat één keer per verzorgingsdag wordt toegekend voor het geheel van de verpleegkundige verzorging, verleend aan een rechthebbende : . in wiens hoofde één of meer verstrekkingen bedoeld sub I of sub III van deze rubriek worden aangerekend, zonder dat het dagplafond bedoeld in § 4, 6° wordt bereikt ; . en die beantwoordt aan de definitie van palliatieve patiënt, zoals bedoeld in § 5bis, 1°	Honoraires supplémentaires, dits forfaits PN, accordés une seule fois par journée de soins pour l'ensemble des soins infirmiers effectués au bénéficiaire : . pour lequel une ou plusieurs prestations visées sous I ou sous III de la présente rubrique ont été attestées, sans que le plafond journalier visé au § 4, 6° n'ait été atteint ; . et qui répond à la définition de patient palliatif reprise au § 5bis, 1°

Outpatient	Inpatient	Dutch Description	French Description
427173		Forfaitair honorarium PP, dat één keer per verzorgingsdag wordt toegekend voor het geheel van de verpleegkundige verzorging, verleend: • aan een rechthebbende in wiens hoofde de bepalingen in § 4, 6° van toepassing zijn; • op voorwaarde dat deze rechthebbende beantwoordt aan de definitie van palliatieve patiënt, zoals bedoeld in § 5bis, 1°	Honoraires forfaitaires PP, accordés une seule fois par journée de soins pour l'ensemble des soins infirmiers effectués : • au bénéficiaire pour qui s'appliquent les dispositions du § 4, 6°; sous la condition que le bénéficiaire répond à la définition de patient palliatif reprise au § 5bis, 1°
427195		Forfaitair honorarium PP, dat één keer per verzorgingsdag wordt toegekend voor het geheel van de verpleegkundige verzorging, verleend : • aan een rechthebbende in wiens hoofde de bepalingen in § 4, 6° van toepassing zijn; • op voorwaarde dat deze rechthebbende beantwoordt aan de definitie van palliatieve patiënt, zoals bedoeld in § 5bis, 1°	Honoraires forfaitaires PP, accordés une seule fois par journée de soins pour l'ensemble des soins infirmiers effectués : • au bénéficiaire pour qui s'appliquent les dispositions du § 4, 6°. • sous la condition que le bénéficiaire répond à la définition de patient palliatif reprise au § 5bis, 1°
564211		Individuele kinesitherapiezitting waarbij de persoonlijke betrokkenheid van de kinesitherapeut per rechthebbende een globale gemiddelde duur van 30 minuten heeft	Séance individuelle de kinésithérapie dans laquelle l'apport personnel du kinésithérapeute par bénéficiaire atteint une durée globale moyenne de 30 minutes
564233		Individuele kinesitherapiezitting waarbij de persoonlijke betrokkenheid van de kinesitherapeut per rechthebbende een globale gemiddelde duur van 15 minuten heef: 2de zitting van de dag	Séance individuelle de kinésithérapie dans laquelle l'apport personnel du kinésithérapeute par bénéficiaire atteint une durée globale moyenne de 15 minutes : 2ème séance de la journée
639111		Toeslag bij de verstrekkingen bij palliatieve patiënt thuis	Indemnité pour les prestations effectuées au domicile de patients palliatifs
740213		Forfait palliatieve thuispatiënten	Forfait patients palliatifs à domicile
774056		Overeenkomsten met de multidisciplinaire begeledingsequipes voor palliatieve verzorging : palliatieve verzorging, eenmalig forfaitair bedrag	Conventions avec les équipes d'accompagnement multidisciplinaires pour les soins palliatifs : soins palliatifs, montant forfaitaire unique
774071		Overeenkomsten met de multidisciplinaire begeledingsequipes voor palliatieve verzorging : palliatieve verzorging, verminderd forfaitair bedrag	Conventions avec les équipes d'accompagnement multidisciplinaires pour les soins palliatifs : soins palliatifs, montant forfaitaire réduit
775530	775541	Overeenkomsten, overschrijding van de ""normale facturatiecapaciteit"" (facturatie aan een verminderde prijs),	Conventions, dépassement de la ""capacité normale de facturation"" (facturation d'un prix réduit), centres de jour pour

Outpatient	Inpatient	Dutch Description	French Description
		dagcentra voor palliatieve verzorging, revalidatieprogramma voor psychotici	soins palliatifs, programmes de rééducation fonctionnelle pour psychotiques
775611	775622	Overeenkomsten, overschrijding van de ""normale facturatiecapaciteit"" (facturatie aan een verminderde prijs), dagcentra voor palliatieve verzorging, motorische revalidatie	Conventions, dépassement de la ""capacité normale de facturation"" (facturation d'un prix réduit), centres de jour pour soins palliatifs, rééducation motrice
775633	775644	Overeenkomsten, overschrijding van de ""normale facturatiecapaciteit"" (facturatie aan een verminderde prijs), dagcentra voor palliatieve verzorging, psychosociale revalidatie	Conventions, dépassement de la ""capacité normale de facturation"" (facturation d'un prix réduit), centres de jour pour soins palliatifs, rééducation psychosociale
784092		Inhaalforfait voor de multidisciplinaire begeleidingsequipes voor palliatieve verzorging	Forfait de rattrapage pour les équipes d'accompagnement multidisciplinaires de soins palliatifs
785234		Regularisaties : Palliatieve zorgen	Régularisations : Soins palliatifs

Appendix 24.1.6. Miscellaneous

Table 147 – Nomenclature codes for external prostheses

Outpatient	Inpatient	Dutch Description	French Description
642213	642224	Postoperatieve borstprothese	Prothèse mammaire postopératoire
642235		Eerste volledige niet-klevende borstprothese, ten vroegste 6 weken na de ingreep of in geval van unilaterale agenesie	Première prothèse mammaire complète non adhésive au moins 6 semaines après l'intervention ou en cas d'agénésie unilatérale
642250		Eerste gedeeltelijke niet-klevende borstprothese, ten vroegste 6 weken na de ingreep of in geval van unilaterale agenesie	Première prothèse mammaire partielle non adhésive, au moins 6 semaines après l'intervention ou en cas d'agénésie unilatérale
642272		Volledige niet-klevende borstprothese	Prothèse mammaire complète non adhésive
642294		Volledige niet-klevende meerlagige borstprothese	Prothèse mammaire complète non adhésive à plusieurs couches
642316		Volledige zelfklevende borstprothese	Prothèse mammaire complète auto-adhésive
642331		Volledige borstprothese met kleefstripsysteem	Prothèse mammaire complète avec bandes adhésives

Outpatient	Inpatient	Dutch Description	French Description
642353		Gedeeltelijke niet-klevende borstprothese	Prothèse mammaire partielle non adhésive
642375		Gedeeltelijke zelfklevende borstprothese	Prothèse mammaire partielle auto-adhésive
642390		Forfaitaire tegemoetkoming voor de verzorgingsset voor de zelfklevende borstprothese, bestaande uit een reinigingsmiddel voor de prothese en een huidreinigingsmiddel # Dotatie voor de verzorgingsset : - 1 set/3 maanden voor de volledige borstprothese (verstrekkingen 642530 en 642316) ; - 1 set/6 maanden voor de gedeeltelijke borstprothese (verstrekkingen 642596 en 642375)	Intervention forfaitaire pour le set de soins pour prothèse mammaire auto-adhésive, composé d'un produit d'entretien de la prothèse et d'un produit d'entretien de la peau # Dotation pour le set de soins : - 1 set/3 mois pour la prothèse mammaire complète (prestations 642530 et 642316) ; - 1 set/6 mois pour la prothèse mammaire partielle (prestations 642596 et 642375)
642412		Forfaitaire tegemoetkoming voor de kleefstrips voor de volledige borstprothese, voorzien van een huidbeschermer en van een ophangsysteem, inclusief alle bijkomende productattributen # Dotatie voor de kleefstrips : 1 keer/3 maanden voor de volledige borstprothese (verstrekkingen 642552 en 642331) (minimum 8 stuks)	Intervention forfaitaire pour les bandes adhésives de la prothèse mammaire complète munies d'un film protecteur de la peau et d'un système de soutien, y compris les autres accessoires # Dotation pour les bandes adhésives : 1 fois/3 mois pour la prothèse mammaire complète (prestations 642552 et 642331) (minimum 8 pièces)
642434		Armkous wegens lymfoedeem # Dotatie : 2 stuks/jaar	Gaine de bras lymphoedème # Dotation : 2 pièces/an
642456		Handschoen wegens lymfoedeem # Dotatie : 4 stuks/jaar	Gant pour lymphoedème # Dotation : 4 pièces/an
642471		Individueel vervaardigde armkous wegens lymfoedeem # Dotatie : 2 stuks/jaar	Gaine de bras pour lymphoedème confectionnée individuellement # Dotation : 2 pièces/an
642493		Individueel vervaardigde handschoen wegens lymfoedeem # Dotatie : 4 stuks/jaar	Gant pour lymphoedème confectionné individuellement # Dotation : 4 pièces/an
642515		Eerste volledige niet-klevende meerlagige borstprothese, ten vroegste 6 weken na de ingreep of in geval van unilaterale agenesie	Première prothèse mammaire complète non adhésive à plusieurs couches, au moins 6 semaines après l'intervention ou en cas d'agénésie unilatérale
642530		Eerste volledige zelfklevende borstprothese, ten vroegste 6 weken na de ingreep of in geval van unilaterale agenesie	Première prothèse mammaire complète auto-adhésive , au moins 6 semaines après l'intervention ou en cas d'agénésie unilatérale
642552		Eerste volledige borstprothese met kleefstripsysteem, ten vroegste 6 weken na de ingreep of in geval van unilaterale agenesie	Première prothèse mammaire complète avec bandes adhésives , au moins 6 semaines après l'intervention ou en cas d'agénésie unilatérale

Outpatient	Inpatient	Dutch Description	French Description
642574		Eerste volledige borstprothese op maat, ten vroegste 6 weken na de ingreep of in geval van unilaterale agenesie	Première prothèse mammaire complète sur mesure, au moins 6 semaines après l'intervention ou en cas d'agénésie unilatérale
642596		Eerste gedeeltelijke zelfklevende borstprothese, ten vroegste 6 weken na de ingreep of in geval van unilaterale agenesie	Première prothèse mammaire partielle auto-adhésive, au moins 6 semaines après l'intervention ou en cas d'agénésie unilatérale
642611		Volledige borstprothese op maat	Prothèse mammaire complète sur mesure
654054		Armkous zonder handschoen	Gaine de bras sans gant
654076		Armkous zonder handschoen	Gaine de bras sans gant
654172		Armkous met handschoen zonder vingers/vingeraanzetten in één stuk	Gaine de bras avec gant sans doigts en une pièce
654194		Armkous met handschoen zonder vingers/vingeraanzetten in één stuk	Gaine de bras avec gant sans doigts en une pièce
654253		Handschoen zonder vingers/vingeraanzetten	Gant sans doigts
654275		Handschoen zonder vingers/vingeraanzetten	Gant sans doigts
654334		Handschoen met vingers/vingeraanzetten	Gant avec doigts ouverts/fermés
654356		Handschoen met vingers/vingeraanzetten	Gant avec doigts ouverts/fermés
654452		Individueel vervaardigde armkous zonder handschoen	Gaine de bras confectionnée individuellement sans gant
654474		Individueel vervaardigde armkous zonder handschoen	Gaine de bras confectionnée individuellement sans gant
654872		Individueel vervaardigde armkous met handschoen zonder vingers/vingeraanzetten in één stuk	Gaine de bras confectionnée individuellement avec gant sans doigts en une pièce
654894		Individueel vervaardigde armkous met handschoen zonder vingers/vingeraanzetten in één stuk	Gaine de bras confectionnée individuellement avec gant sans doigts en une pièce
654916		Individueel vervaardigde armkous met handschoen met vingers/vingeraanzetten in één stuk	Gaine de bras confectionnée individuellement avec gant avec doigts ouverts/fermés en une pièce

Outpatient	Inpatient	Dutch Description	French Description
654931		Individueel vervaardigde armkous met handschoen met vingers/vingeraanzetten in één stuk	Gaine de bras confectionnée individuellement avec gant avec doigts ouverts/fermés en une pièce
654953		Individueel vervaardigde handschoen zonder vingers/vingeraanzetten	Gant confectionné individuellement sans doigts
654975		Individueel vervaardigde handschoen zonder vingers/vingeraanzetten	Gant confectionné individuellement sans doigts
655211		Individueel vervaardigde handschoen met vingers/vingeraanzetten	Gant confectionné individuellement avec doigts ouverts/fermés
655233		Individueel vervaardigde handschoen met vingers/vingeraanzetten	Gant confectionné individuellement avec doigts ouverts/fermés

Table 148 – Nomenclature codes for catheterisation (including anaesthesia)

Outpatient	Inpatient	Dutch Description	French Description
161556	161560	Getunneliseerde centraal veneuze single of multi lumen katheter type Hickman-Broviac voor langdurig gebruik, inclusief het introductiemateriaal	Cathéter veineux central tunnellisé simple ou multi-lumière, de type Hickman-Broviac pour usage prolongé, y compris le matériel d'introduction
161593	161604	Perifeer ingebracht centraal veneuze katheter (PICC) voor langdurig gebruik, inclusief het introductiemateriaal	Cathéter veineux central inséré par voie périphérique (PICC) pour utilisation prolongée, y compris le matériel d'introduction
161615	161626	Implanteerbare poort met één of twee kamers met katheters voor herhaalde transcutane injecties voor intraveneuse, intraärteriële, epidurale, intrathecale of intraperitoneale injecties, inclusief het introductiemateriaal	Réservoir implantable avec une ou deux chambres avec cathéters, pour injections transcutanées répétées, pour injections intraveineuses, intra-artérielles, épidurales, intrathécales ou intrapéritonéales, y compris le matériel d'introduction
354056	354060	Implantatie van onderhuids geneesmiddelen-reservoir in verbinding met een katheter voor continue toediening van medicatie via een pompsysteem	Implantation d'un réservoir de médicaments sous-cutané lié à un cathéter pour l'administration continue de médicaments via un système de pompe
354196	354200	Tunnellisatie van een centrale veneuze catheter type Hickman - Broviac voor langdurig gebruik	Tunnellisation d'un cathéter veineux central type Hickman - Broviac pour usage de longue durée.
354351	354362	Implantatie van een volledig onderhuids veneus poortsysteem (type port-a-cath)	Implantation d'un système porte veineux totalement sous-cutané (type port-à-cath)

355552	355563	Punctie van de vena jugularis, de vena subclavia of vena femoralis (buiten narcose) voor het inbrengen van een catheter of plaatsing van een perifeer ingebrachte centrale veneuze katheter (PICC)	Ponction de la veine jugulaire, sous-clavière ou fémorale (en dehors de la narcose) pour mise en place de cathéter ou la mise en place d'un cathéter veineux central inséré par voie périphérique (PICC)
when billed on the same day as the above codes			
200255	200266	Anesthesie verricht tijdens een verstrekking: Gerangschikt in categorie K 120 of N 200	Anesthésie pratiquée au cours d'une prestation : Classée dans la catégorie K 120 ou N 200
201110	201121	Gerangschikt in een categorie gelijk aan of lager dan K 75 of N 125 of I 125 en hoger dan K 24 of N 40 of I 40	Classée dans une catégorie égale ou inférieure à K 75 ou N 125 ou I 125 et supérieure à K 24 ou N 40 ou I 40
202915	202926	Bijkomend honorarium voor de verstrekkingen inzake anesthesie vermeld in de rubrieken a), b) en c) die worden verricht tijdens heelkundige of verloskundige verstrekkingen, bedoeld in de artikelen 9, c), 11, § 1, en 14, of tijdens percutane interventionele verstrekkingen onder medische beeldvormingscontrole, bedoeld in artikel 34, met een betrekkelijke waarde gelijk aan of hoger dan K 120, N 200 of I 200 en de verstrekkingen inzake anesthesie vermeld in de rubriek e) met een waarde gelijk aan of hoger dan K 120, geven voor de geaccrediteerde geneesheer specialist voor anesthesie - reanimatie, aanleiding tot een bijkomend honorarium voor accreditering Q 105, aanrekenbaar maximaal eenmaal per zitting. Dat bijkomend honorarium wordt maximum één keer per operatiezitting toegekend.	Supplément d'honoraires pour les prestations d'anesthésie mentionnées dans les rubriques a), b) et c) qui sont pratiquées au cours de prestations chirurgicales ou d'obstétrique visées aux articles 9, c), 11, § 1er, et 14, ou au cours de prestations interventionnelles percutanées sous contrôle d'imagerie médicale visées à l'article 34, d'une valeur relative égale ou supérieure à K 120, N 200 ou I 200, et les prestations d'anesthésie mentionnées dans la rubrique e) d'une valeur égale ou supérieure à K 120, donnent lieu, pour le médecin accrédité spécialiste en anesthésie – réanimation au supplément d'honoraires de l'accréditation Q 105, attestable au maximum une fois par séance. Ce supplément d'honoraires n'est accordé au maximum qu'une fois par séance opératoire.
619673	619684	Afleveringsmarge van implantaten : implantaten en invasieve medische hulpmiddelen uit "de lijst"	Marge de délivrance des implants : implants et dispositifs médicaux invasifs de la "liste"

Table 149 – Nomenclature codes for hair prostheses

Outpatient	Inpatient	Dutch Description	French Description
754154	754165	Haarprothese in geval van kaalhoofdigheid door cicatriciële alopecia van radiotherapeutische oorsprong	Prothèse capillaire en cas de calvitie par alopécie cicatricielle d'origine radio-thérapeutique
755414	755425	Tegemoetkoming voor haarprothesen, haarprothese in geval van kaalhoofdigheid door radiotherapie en/of antimitotische chemotherapie	Intervention pour les prothèses capillaires, prothèse capillaire en cas de calvitie suite à une radiothérapie et/ou une chimiothérapie antimitotique
755451	755462	Haarprothese in geval van kaalhoofdigheid door cicatriciële alopecia van fysisch-chemische, raumatische of inflammatoire oorsprong	Prothèse capillaire en cas d'alopécie cicatricielle d'origine physico-chimique, traumatique ou inflammatoire

Table 150 – Nomenclature code for coordination medical fee

Outpatient	Inpatient	Dutch Description	French Description
598581		Coördinatiehonorarium in het kader van het zorgprogramma oncologie voor het verblijf van een patiënt in het dagziekenhuis voor een antitumorale medicamenteuze behandeling	Honoraires de coordination dans le cadre d'un programme de soins d'oncologie pour le séjour d'un patient en hôpital de jour pour y recevoir un traitement médicamenteux anti-tumoral

Table 151 – Nomenclature codes: lump sums for mono- or combination oncology therapies

Outpatient	Inpatient	Dutch Description	French Description
767874	767885	Maxiforfait monotherapie	Maxiforfait monothérapie
767896	767900	Maxiforfait combitherapie	Maxiforfait combithérapie

Table 152 – Nomenclature code for patient travel costs

Outpatient	Inpatient	Dutch Description	French Description
598581		Coördinatiehonorarium in het kader van het zorgprogramma oncologie voor het verblijf van een patiënt in het dagziekenhuis voor een antitumorale medicamenteuze behandeling	Honoraires de coordination dans le cadre d'un programme de soins d'oncologie pour le séjour d'un patient en hôpital de jour pour y recevoir un traitement médicamenteux anti-tumoral

Appendix 24.2. Nomenclature codes registered in the DD database (Medical acts in screening population database)

Type intervention	Outpatient	Inpatient	Dutch Description	French Description
Diagnostic mammography	450096	450100	Mammografie per borst, inclusief de eventuele okselclichés (ongeacht het aantal clichés)	Mammographie par sein y compris les clichés axillaires éventuels (quel que soit le nombre de clichés)
	461090	461101	Mammografie per borst, inclusief de eventuele okselclichés (ongeacht het aantal clichés)	Mammographie par sein y compris les clichés axillaires éventuels (quel que soit le nombre de clichés)
Screeningsmammography	450192	450203	Mammografie van beide borsten, in het kader van een door een overheid georganiseerd bevolkingsonderzoek	Mammographie des deux seins dans le cadre d'un examen de masse organisé par une autorité
	450214	450225	Tweede lezing van een screeningsmammografie van beide borsten, in het kader van een door een overheid georganiseerd bevolkingsonderzoek	Deuxième lecture de mammographie de dépistage, des deux seins, dans le cadre d'un examen de masse organisé par une autorité
	450354	450365	Mammografie van beide borsten in het kader van opsporing van borstkanker bij asymptomatische vrouwen met een sterk verhoogd risicoprofiel	Mammographie des deux seins effectuée dans le cadre du dépistage du cancer du sein chez les femmes asymptomatiques ayant un profil de risque très élevé
Echography	460132	460143	Bidimensionele echografie met geschreven protocol en iconografische drager die ontstaat na digitale beeldverwerking van de gegevens, ongeacht het aantal echogrammen : Van één of beide borsten, met inbegrip van de axilla	Echographie bidimensionnelle avec protocole écrit et support iconographique issu d'un traitement digital des données, quel que soit le nombre d'échogrammes : D'un sein ou des deux seins, y inclus la région axillaire
	469394	469405	Bidimensionele echografie met geschreven protocol en iconografische drager die ontstaat na digitale beeldverwerking van de gegevens ongeacht het aantal echogrammen : Van één of beide borsten, met inbegrip van de axilla	Echographie bidimensionnelle avec protocole écrit et support iconographique issu d'un traitement digital des données quel que soit le nombre d'échogrammes : D'un ou des deux seins, y inclus la région axillaire

	459793	459804	Echografie van minstens twee verschillende anatomische regio's : schedelinhoud (transfontanellair), thorax, borsten, lever-galblaas, pancreas-milt, nieren-blaas, retroperitoneum, grote abdominale vaten, mannelijk of vrouwelijk bekken	Echographie d'au moins deux régions anatomiques différentes : contenu du crâne (transfontanellaire), thorax, seins, foie-vésicule biliaire, pancréas-rate, reins-vessie, rétropéritoine, gros vaisseaux abdominaux, bassin masculin ou féminin
	461134	461145	Echografie van beide borsten in het kader van opsporing van borstkanker bij asymptomatische vrouwen, met een sterk verhoogd risicoprofiel zoals bepaald in artikel 17, § 1, 1°bis	Echographie des deux seins dans le cadre du dépistage du cancer du sein chez des femmes asymptomatiques ayant un risque très élevé comme défini à l'article 17, § 1er, 1°bis
MRI	459476	459480	NMR-onderzoek van één of beide mammae, minstens drie sequenties, met of zonder contrast, met registratie op optische of elektromagnetische drager	Examen d'IRM d'un ou des deux seins, minimum 3 séquences, avec ou sans contraste, avec enregistrement sur support soit optique, soit électromagnétique
	459830	459841	NMR van beide borsten in het kader van opsporing van borstkanker bij asymptomatische vrouwen met een verhoogd risicoprofiel, zoals bepaald in artikel 17, § 1, 1°bis	IRM des deux seins dans le cadre du dépistage du cancer du sein chez des femmes asymptomatiques ayant un profil de risque très élevé, comme défini à l'article 17, § 1er, 1°bis
Biopsy	355670	355681	Punctie van de borstklier voor cytologisch onderzoek of inspuiting	Ponction de la glande mammaire pour examen cytologique ou injection
	355213	355224	Cilinderbiopsie van de borstklier voor histologisch onderzoek	Biopsie en cylindre de la glande mammaire pour examen histologique
	355235	355246	Vacuümgeassisteerde biopsie van de borstklier voor histologisch onderzoek	Biopsie assistée par aspiration de la glande mammaire pour examen histologique
	355250	355261	Vacuümgeassisteerde biopsie van de borstklier voor histologisch onderzoek onder stereotactische geleiding	Biopsie assistée par aspiration de la glande mammaire pour examen histologique, effectuée sous guidance stéréotaxique
	355272	355283	Intralesionele plaatsing van één of meerdere markeerders met het oog op chirurgisch ingrijpen op de borstklier	Mise en place intralésionnelle d'un ou plusieurs marqueurs en vue d'une intervention chirurgicale sur la glande mammaire
	227091	227102	Incisie voor biopsie van de borstklier	Biopsie incisionnelle de la glande mammaire
Mastectomy	226951(*)	226962(*)	Ingreep volgens Urban	Intervention selon Urban

	226973(*)	226984(*)	Ingreep volgens Halsted of Pattey met ex tempore pathologisch-anatomisch onderzoek	Intervention selon Halsted ou Pattey avec examen anatomo-pathologique extemporané
	226995(*)	227006(*)	Ingreep volgens Halsted of Pattey	Intervention selon Halsted ou Pattey
	227010(*)	227021(*)	Verwijderen van een gezwel uit de weke weefsels boven de spierfascia maar met volledige resectie van het orgaan waarin het gezwel is gelegen	Exérèse d'une tumeur située au-dessus du fascia dans les parties molles mais avec résection totale de l'organe dans lequel se situe la tumeur
	227636	227640	Okseluitruiming in het kader van de behandeling voor een bewezen kwaadaardig borstgezwel	Evidement ganglionnaire de l'aisselle dans le cadre du traitement d'une tumeur maligne du sein, démontrée
	227651	227662	Verwijderen van de volledige borstklier (mastectomie) voor kwaadaardige tumor en resectie van schildwachtlymfeklier	Résection complète du sein (mastectomie) pour tumeur maligne et résection du ganglion sentinelle
	227673	227684	Verwijderen van de volledige borstklier (mastectomie) voor kwaadaardige tumor en resectie van schildwachtlymfeklier met peroperatoir anatomo-pathologisch onderzoek van de schildwachtlymfeklier	Résection complète du sein (mastectomie) pour tumeur maligne et résection du ganglion sentinelle avec examen anatomo-pathologique peropératoire du ganglion sentinelle
	227695	227706	Verwijderen van de volledige borstklier (mastectomie) voor kwaadaardige tumor met okseluitruiming	Résection complète du sein (mastectomie) pour tumeur maligne avec évidement axillaire
	227710	227721	Verwijderen van de volledige borstklier (mastectomie) voor kwaadaardige tumor en resectie van schildwachtlymfeklier die wanneer tumoraal ingenomen bij peroperatoir anatomo-pathologisch onderzoek gevolgd wordt door een okseluitruiming	Résection complète du sein (mastectomie) pour tumeur maligne et résection du ganglion sentinelle qui en cas d'envahissement tumoral démontré à l'examen anatomo-pathologique peropératoire est suivi d'un évidement ganglionnaire de l'aisselle
	227894	227905	Verwijderen van de volledige borstklier (mastectomie) zonder bewezen kwaadaardig letsel	Résection complète du sein (mastectomie) sans tumeur maligne démontrée
Tumorectomy	227032(*)	227043(*)	Verwijderen van een gezwel of cyste uit de borstklier	Exérèse d'une tumeur ou d'un kyste de la glande mammaire

	227054(*)	227065(*)	Gedeeltelijke mammectomie of tumorectomie, geassocieerd met een curage van de okselklieren	Mammectomie partielle ou tumorectomie associée à un curage ganglionnaire axillaire
	227732	227743	Borstsparende volledige resectie van een bewezen kwaadaardig borstletsel met macroscopisch voldoende veiligheidsmarge	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, avec résection d'une marge de sécurité macroscopiquement suffisante
	227754	227765	Volledige, borstsparende, resectie van een bewezen kwaadaardig, niet voelbaar borstletsel met macroscopisch voldoende veiligheidsmarge, na localisatieprocedure	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, non-palpable, avec résection d'une marge de sécurité macroscopiquement suffisante, après procédure de localisation
	227776	227780	Borstsparende volledige resectie van een bewezen kwaadaardig borstletsel met macroscopisch voldoende veiligheidsmarge, en resectie van schildwachtlymfeklier	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, avec résection d'une marge de sécurité macroscopiquement suffisante et résection du ganglion sentinelle
	227791	227802	Borstsparende volledige resectie van een bewezen kwaadaardig borstletsel met macroscopisch voldoende veiligheidsmarge, en resectie van schildwachtlymfeklier, met peroperatoir anatomo-pathologisch onderzoek van de schildwachtlymfeklier	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, avec résection d'une marge de sécurité macroscopiquement suffisante et résection du ganglion sentinelle avec examen anatomo-pathologique peropératoire du ganglion sentinelle
	227813	227824	Borstsparende volledige resectie van een bewezen kwaadaardig borstletsel met macroscopisch voldoende veiligheidsmarge, en resectie van schildwachtlymfeklier, die wanneer tumoraal ingenomen bij peroperatoir anatomo-pathologisch onderzoek gevolgd wordt door een okseluitruiming	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, avec résection d'une marge de sécurité macroscopiquement suffisante et résection du ganglion sentinelle qui en cas d'envahissement tumoral démontré à l'examen anatomo-pathologique peropératoire est suivi d'un évidement ganglionnaire de l'aisselle
	227835	227846	Borstsparende volledige resectie van een bewezen kwaadaardig borstletsel met macroscopisch voldoende veiligheidsmarge, en een okseluitruiming	Résection complète, conservatrice du sein, d'une tumeur maligne démontrée, avec résection d'une marge de sécurité macroscopiquement suffisante, et un évidement ganglionnaire de l'aisselle
	227850	227861	Volledige resectie van een goedaardig borstletsel	Résection complète d'une lésion bénigne du sein

	227872	227883	Volledige resectie van een niet-voelbaar goedaardig borstletsel of met diagnostisch doeleinde, na localisatie procedure	Résection complète d'une lésion bénigne du sein non palpable ou à titre diagnostique, après procédure de localisation
Histological analysis	588416	588420	Cytologisch onderzoek naar neoplastische cellen op afnames niet gespecifieerd in de verstrekkingen 589853-589864 en 588394-588405, ongeacht het aantal preparaten, per afname	Recherche cytologique de cellules néoplasiques sur des prélèvements non précisés dans les prestations 589853-589864 et 588394-588405, quel que soit le nombre de lames, par prélèvement
	588011	588022	Histologisch onderzoek door inclusie en coupe, ongeacht het aantal coupes en ongeacht het aantal onderzochte organen, en met inbegrip van het eventueel macroscopisch onderzoek, van afnames die niet overeenkomen met de verstrekkingen 588232-588243, 588254-588265, 588276-588280, 588291-588302 of 587112-587123	Examen histologique par inclusion et coupe, quel que soit le nombre de coupes et quel que soit le nombre d'organes examinés, en ce compris l'examen macroscopique éventuel, des prélèvements ne correspondant pas aux prestations 588232-588243, 588254-588265, 588276-588280, 588291-588302 ou 587112-587123
	588033	588044	Peroperatoir pathologisch-anatomisch extempore onderzoek, ongeacht het aantal afnames, volgens de vriesmethode of depmethode en ongeacht het aantal verrichte controle-onderzoeken na inclusie en coupe	Examen peropératoire extemporané quel que soit le nombre de prélèvements par la technique de congélation ou d'apposition sur lame quel que soit le nombre de contrôles effectués après inclusion et coupe
	588254	588265	Histologisch onderzoek door inclusie en coupe, ongeacht het aantal coupes en ongeacht het aantal onderzochte organen, en met inbegrip van het eventueel macroscopisch onderzoek, van de biopten van volgende diepe organen: - lever, - nier, - nierbekken, - bijnier, - prostaat, - borst, - lymfeklier, - beenmerg, - bot, - schildklier, - speekselklier, - pleura, - long, - testikel, - peritoneum, - retroperitoneum, - mediastinum, - hersenen en ruggenmerg, - hart, - pancreas	Examen histologique par inclusion et coupe, quel que soit le nombre de coupes et quel que soit le nombre d'organes examinés, en ce compris l'examen macroscopique éventuel, pour les biopsies des organes profonds suivants: - foie, - rein, - bassinet, - surrénale, - prostate, - sein, - ganglion lymphatique, - moelle osseuse, - os, - glande thyroïde, - glande salivaire, - plèvre, - poumon, - testicule, - péritoine, - rétropéritoine, - médiastin, - cerveau et moelle épinière, - coeur, - pancreas
	588276	588280	Histologisch onderzoek, door inclusie en coupe, ongeacht het aantal coupes en ongeacht het aantal	Examen histologique par inclusion et coupe, quel que soit le nombre de coupes et quel que soit le

			onderzochte organen, en met inbegrip van het eventueel macroscopisch onderzoek, van volgende operatiestukken : - lymfeklierexerese, - eenzijdige lymfeklier oksel, - eenzijdige lymfeklier lies, - heelkundige longbiopsie voor niet-oncologische indicatie, - partiële of totale thymectomie, - resectie van subfasciale tumoren, - partiële hepatectomie, - cholecystectomie, - splenectomie, - mesenteriale tumorectomie, - retroperitoneale tumorectomie, - oogbol resectie, - speekselklierresectie (met uitzondering van de accessoire speekselklieren), - partiële of totale glossectomie, - thyroidectomie, - parathyroidectomie, - pharyngectomie, - incisionele borstbiopsie, - borsttumorectomie, - partiële cystectomie (met uitzondering van de endoscopische blaasresectie), - prostaatadenomectomie, - epididymectomie, - orchidectomie, - partiële penis amputatie, - diepe hals tumorectomie, - partiële nefrectomie, - adnexectomie, - ovariectomie, - salpingectomie, - partiële vulvectomie, - baarmoederhals conisatie of -resectie, - bijnier resectie, - zenuwbiopsie, - spierbiopsie, - hersen-, ruggenmerg- of hypofyse-tumor resectie, - bottumor resectie, - tonsillectomie (> 18 jaar), - adenoidectomie (> 18 jaar)	nombre d'organes examinés, en ce compris l'examen macroscopique éventuel des pièces opératoires suivantes : - exérèse de ganglion lympathique, - évidement ganglionnaire axillaire unilatéral, - évidement ganglionnaire inguinal unilatéral - biopsie pulmonaire chirurgicale pour indication non-oncologique, -thymectomie partielle ou totale, - résection de tumeur sous-fasciale, - hépatectomie partielle, - cholécystectomie , - splénectomie, - tumorectomie mésentérique, - tumorectomie rétropéritonéale, - résection du globe oculaire, - résection d'une glande salivaire (à l'exception des glandes salivaires accessoires), - glossectomie partielle ou totale, - thyroïdectomie,- parathyroïdectomie, - pharyngectomie, - biopsie par incision du sein, - tumorectomie du sein, - cystectomie partielle (à l'exception de la résection vésicale endoscopique), - adénomectomie prostatique, - épididymectomie, - orchidectomie, - amputation partielle du pénis, - tumorectomie profonde du cou, - néphrectomie partielle, - annexectomie, - ovariectomie, - salpingectomie, - vulvectomie partielle, - conisation ou résection du col de l'utérus, - résection de la glande surrénale, - biopsie nerveuse- biopsie musculaire, - résection d'une tumeur du cerveau, de la moelle épinière ou de l'hypophyse - résection de tumeur osseuse, - amygdalectomie (> 18 ans), - adénoïdectomie (> 18 ans)
	588291	588302	Histologisch onderzoek, door inclusie en coupe, ongeacht het aantal coupes en ongeacht het aantal onderzochte organen, en met inbegrip van het eventueel macroscopisch onderzoek, van volgende operatiestukken : - partiële mastectomie met okselklier(en), -totale mastectomie met of zonder okselklier(en), - partiële of totale pneumectomie voor niet-oncologische indicatie, - partiële of totale slokdarmresectie voor niet-oncologische indicatie, -	Examen histologique par inclusion et coupe, quel que soit le nombre de coupes et quel que soit le nombre d'organes examinés, en ce compris l'examen macroscopique éventuel des pièces opératoires suivantes : - mastectomie partielle avec ganglion(s) axillaire(s), - mastectomie totale avec ou sans ganglion(s) axillaire(s), - pneumectomie partielle ou totale pour indication non-oncologique, - résection partielle ou totale de l'oesophage pour

			bilaterale liesklieruitruiming, - lymfeklier uitruiming van twee of meerdere groepen halsklieren, - tumorectomie van de mondbodem of het verhemelte, - maxillectomie, - partiële of totale gastrectomie voor niet-oncologische indicatie, - dunne darm resectie, - partiële of totale colectomie, - pancreatectomie voor niet-oncologische indicatie, - hysterectomie voor niet-oncologische indicatie, - abdominoperineale resectie voor niet-oncologische indicatie, - totale cystectomie voor niet-oncologische indicatie, - totale penisamputatie, - totale nefrectomie, - hartresectie, - hart long blok, - totale hepatectomie, - totale pelvectomie, - totale vulvectomie, - foetus van 14 tot en met 24 weken	indication nononcologique, - évidement ganglionnaire inguinal bilatéral, - évidement de deux ou plusieurs groupes de ganglions du cou, - tumorectomie du plancher buccal ou du palais, - maxillectomie, - gastrectomie partielle ou totale pour indication non-oncologique, - résection de l'intestin grêle, - colectomie partielle ou totale, - pancréatectomie pour indication non-oncologique, - hystérectomie pour indication non-oncologique, - résection abdominopérinéale pour indication non-oncologique, - cystectomie totale pour indication non-oncologique, - amputation totale du pénis, - néphrectomie totale, - résection cardiaque, - bloc coeur poumon(s), - hépatectomie totale, - pelvectomie totale, - vulvectomie totale, - foetus de 14 à 24 semaines y compris

(*) valid until 30 November 2008.

APPENDIX 25. SCREENING PROGRAMME RESULTS

Table 153 – Evolution of organised screening programme results, 2015-2022

	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Negative	234 741 (97.05%)	231 781 (96.85%)	231 973 (96.97%)	229 707 (97.17%)	231 783 (97.03%)	204 024 (96.81%)	249 807 (96.38%)	217 161 (96.35%)	247 057 (96.40%)	**2 078 034 (96.77%)**
Positive	7 134 (2.95%)	7 534 (3.15%)	7 246 (3.03%)	6 685 (2.83%)	7 103 (2.97%)	6 717 (3.19%)	9 371 (3.62%)	8 226 (3.65%)	9 235 (3.60%)	**69 251 (3.23%)**
Total	**241 875**	**239 315**	**239 219**	**236 392**	**238 886**	**210 741**	**259 178**	**225 387**	**256 292**	**2 147 285**

Table 154 – Organised screening programme results per age group, 2020

	50-54 years	55-59 years	60-64 years	65-69 years	Total
Negative	54 882 (95.74%)	53 463 (97.23%)	53 164 (97.30%)	42 515 (97.08%)	**204 024 (96.81%)**
Positive	2 441 (4.26%)	1 524 (2.77%)	1 475 (2.70%)	1 277 (2.92%)	**6 717 (3.19%)**
Total	**57 323**	**54 987**	**54 639**	**43 792**	**210 741**

APPENDIX 26. LITERATURE REVIEW ON ETHICS

Appendix 26.1. Search strategy

A structured literature search was conducted in MEDLINE and the Cochrane Database of Systematic Reviews, covering the period 2015–2025. The search strategy combined the text words and controlled vocabulary used in the clinical chapter with ethics-related keywords (see below). The selection process was managed using the Covidence® tool.

Appendix 26.1.1. Results for Cochrane and Medline

COCHRANE

Date	**19/05/2025 14:57:41**	
Database	Cochrane	
Search strategy		
#1	[mh "Breast neoplasms"[mj]]	13823
#2	(breast* NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	34612
#3	(mammary NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	93
#4	(lobular NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	39
#5	((duct or ductal) NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):ti	721
#6	(breast* NEAR/3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)):SO	2530
#7	(hboc NEAR/3 syndrome?):ti	1
#8	#2 or #3 or #4 or #5 or #6 or #7	35815
#9	#1 or #8	38383
#10	[mh "Mass Screening"[mj]]	2516
#11	[mh "population surveillance"[mj]]	195
#12	[mh "Mammography"[mj]]	520
#13	#10 or #11 or #12	3120
#14	screening:ti	12247
#15	screened:ti	219
#16	testing:ti	10120
#17	tested:ti	244
#18	test?:ti	17908
#19	profil*:ti	12331
#20	diagnosis:ti	7656
#21	detection:ti	6854

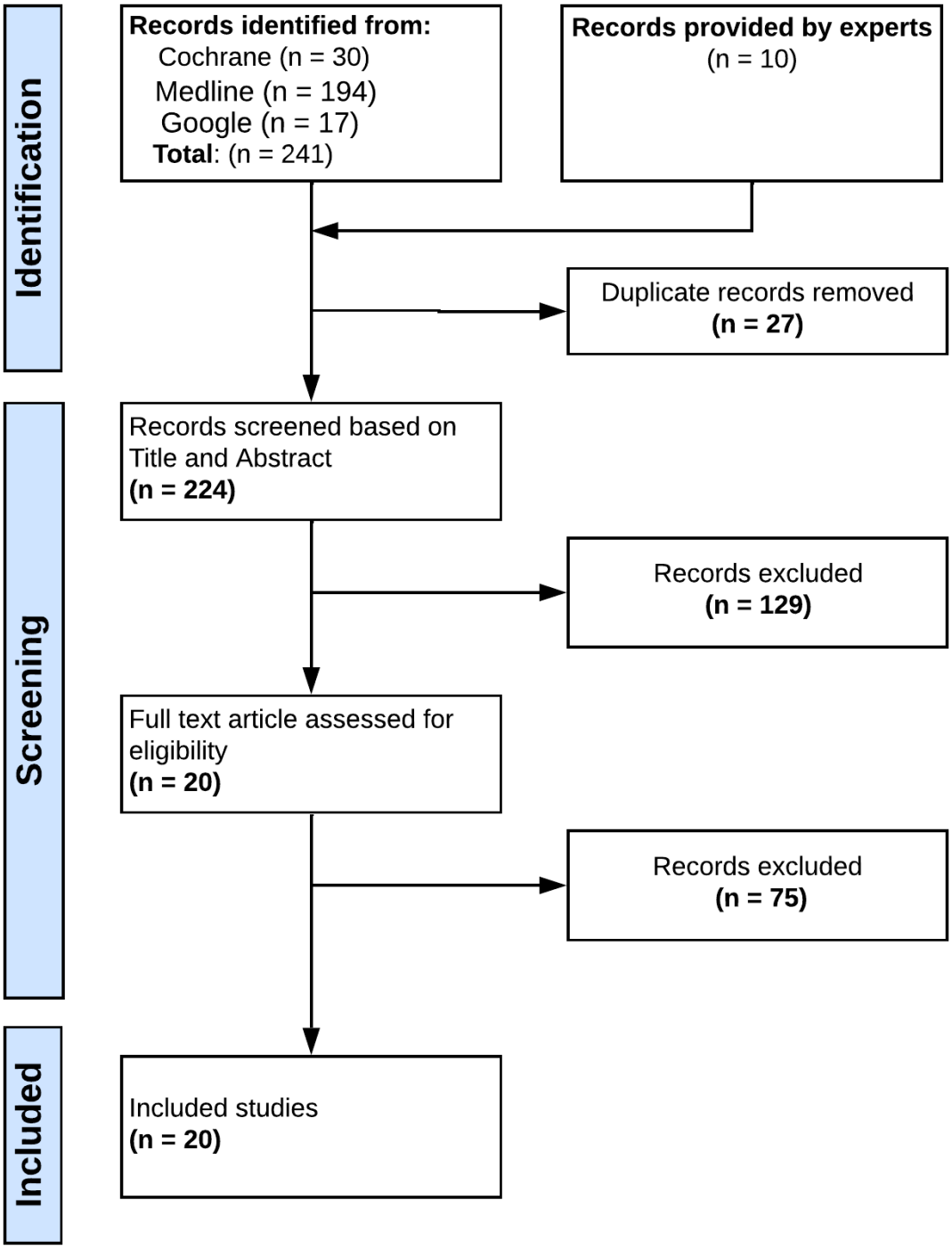
#22	mammography:ti	797
#23	#14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22	64751
#24	#13 OR #23	65468
#25	#9 AND #24	2240
#26	(screen NEAR/3 ("breast neoplasm" or "breast cancer" or "mammary cancer" or "mammary tumor" or "mammary tumour" or "breast tumor" or "breast tumour" or "mammary neoplasm")):ti	6
#27	(screen NEAR/3 ("breast neoplasms" or "breast cancers" or "mammary cancers" or "mammary tumors" or "mammary tumours" or "breast tumors" or "breast tumours" or "mammary neoplasms")):ti	5
#28	#25 or #26 or #27	2245
#29	[mh "ethics"[mj]]	210
#30	[mh "Ethics, medical"[mj]]	49
#31	[mh "Informed Consent"[mj]]	381
#32	[mh "Patient Education as Topic"[mj]]	4477
#33	#29 or #30 or #31 or #32	5003
#34	ethics:ti,so	504
#35	ethical:ti,so	449
#36	bioethics:ti,so	143
#37	"informed consent":ti	729
#38	"informed choice":ti	63
#39	(patient? NEAR/3 (choice? or preference? or consent? or inform* or decision? or values)):ti	2825
#40	#34 OR #35 OR #36 OR #37 OR #38 OR #39	4480
#41	#33 or #40	9028
#42	#28 AND #41	50
#43	#42 with Cochrane Library publication date Between Jan 2015 and Dec 2025	30
#44	#43 in Cochrane Reviews	0
#45	#43 in Trials	30
Comments		

26.1.1.1.Medline

Date	May 16, 2025	
Database	Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to May 16, 2025>	
Search strategy		
1	exp *Breast neoplasms/	320715
2	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	309361
3	(mammary adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	15543
4	(breast* adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).jw.	23300
5	(lobular adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	2397
6	((duct or ductal) adj3 (neoplasm* or cancer* or carcinoma* or adenocarcinoma* or tumour* or tumor* or malignan* or sarcoma*)).ti,kf.	20659
7	(hboc adj3 syndrome?).ti,kf.	38
8	2 or 3 or 4 or 5 or 6 or 7	343584
9	1 or 8	414961
10	screening.ti,kf.	252061
11	screened.ti,kf.	2726
12	testing.ti,kf.	168539
13	test?.ti,kf.	357535
14	tested.ti,kf.	4873
15	profil*.ti,kf.	247250
16	diagnosis.ti,kf.	564805
17	detection.ti,kf.	416310
18	early detection.ti,kf.	18534
19	mammography.ti,kf.	14692
20	10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19	1900470
21	exp *Mass Screening/	78358
22	exp *population surveillance/	27840
23	exp *Mammography/	19894
24	21 or 22 or 23	121993
25	20 or 24	1950224
26	9 and 25	50704
27	(screen adj3 (breast neoplasm? or breast cancer? or mammary cancer? or mammary tumo?r? or breast tumo?r? or mammary neoplasm?)).ti,kf.	170

28	26 or 27	50778
29	*ethics/	4983
30	*Ethics, Medical/	29476
31	*Informed Consent/	18784
32	*Patient Education as Topic/	42153
33	29 or 30 or 31 or 32	93125
34	ethics.ti,kf,jw.	77158
35	ethical.ti,kf,jw.	34536
36	bioethics.ti,kf,jw.	26810
37	informed consent.ti,kf.	10712
38	informed choice.ti,kf.	450
39	(patient? adj3 (choice? or preference? or consent? or inform* or decision? or values)).ti,kf.	21187
40	34 or 35 or 36 or 37 or 38 or 39	144012
41	33 or 40	203709
42	28 and 41	463
43	limit 42 to yr="2015-2025"	194
Comments		

Appendix 26.1.2. Selection of relevant references for ethical considerations in breast cancer screening (flow chart)



Appendix 26.2. Inclusion and exclusion criteria

Table 155 – Inclusion and exclusion criteria applied in the literature selection process

Criteria	Inclusion	Exclusion
Topic	Articles addressing ethical considerations related to cancer screening, with a focus on breast cancer screening	Articles not addressing ethical aspects of cancer screening
Screening modality	Studies focusing on breast cancer screening, particularly mammography-based screening or mammography combined with ultrasound	Studies focusing on other screening modalities (e.g. CT-based screening)
Type of analysis	Articles providing substantive ethical analysis (conceptual, empirical, or applied ethics)	Articles that are purely theoretical/philosophical without link to screening practice
Study focus	Articles addressing ethical issues in general populations or relevant subgroups (e.g. older adults, frail populations, cognitive impairment)	Articles focusing exclusively on decision aids or implementation tools without ethical analysis or reflection
Study design	Reviews, empirical studies, and analytical papers with discussion of ethical principles	All the other studies
Language	English, French, Dutch	Other languages

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