Diagnosis and Treatment of Patients with early and advanced Breast Cancer

Guidelines Breast
Version 2022.1E

Early Detection and Diagnosis

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Early Detection and Diagnosis

- **Versions 2005–2021:**
  Albert / Blohmer / Fallenberg / Fersis / Gerber / Junkermann / Maass / Müller-Schimpfle / Scharl / Schreer

- **Version 2022:**
  Fallenberg / Wöckel

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Early Detection with Mammography

Age	Interval	Oxford LOE	Oxford GR	Oxford AGO
< 40	na	-	-	--
40-44	na	1b	B	-
45–49	24-36	1a	B	+#
50–69*	24	1a	A	++
70–74	24	1a	A	+#
> 75**	24	4	C	+/-#

* National Mammography-Screening-Program
** health status + life expectancy more than 10 years
# clear indication necessary

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Early Detection in Asymptomatic Women
Digital Breast Tomosynthesis

	Oxford		
	LOE	GR	AGO
Digital Breast Tomosynthesis (DBT ± SM)*	1a	B	+
Replacing FFDM by synthetic MG in addition to DBT**	1a	B	++

The complete DBT dataset of images has to be available for judgment / reporting, the synthetic mammography only is not sufficient.

* Sign. higher sensitivity, heterogeneous specificity, and higher costs [machine, evaluation, archiving] of DBT in comparison to Full-Field Digital Mammography (FFDM)
Dose reduction due to calculated synthetic 2D mammography (SM) instead of FFDM

** Evaluation for Germany in a randomized prospective trial (TOSYMA)

Brustkrebs Mortalitätsreduktion

Metaanalyses	RR 95% CI
Independent UK Panel, 2012 13-year metaanalysis	0.80 (0.73–0.89)
Cochrane Review, 2011 Fixed-effect metaanalysis of 9 RCT-trials	0.81 (0.74–0.87)
As above, but excluding women <50 years	0.77 (0.69–0.86)
Canadian Task Force, 2011 Women aged 50–69 years	0.79 (0.68–0.90)
Duffy et al, 2012 Review of all trials and age groups	0.79 (0.73–0.86)
Duffy et al, 2020 Review of 549,091 Women (30% eligible Swedish screening population)	0.59 (0.51-0.68) mortality 0.75 (0.66-0.84) advanced BC

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Brustkrebs Mortalitätsreduktion

Metaanalyses		RR 95% CI
Case-Control Studies		
Broeders et al	Screening Mx Corr. for self selection Invited for screening	0.46 (0.4 – 0.54) 0.52 (0.42–0.65) 0.69 (0.57–0.83)
Incidence-based Mortality Studies		
Broeders et al	Screening Mx Invited to screening	0.62 (0.56–0.69) 0.75 (0.69–0.81)
Randomized Clinical Trials		
Gotsche and Jorgenson	Screening Mx	0.81 (0.74–0.87)
ECIBC	**Screening MX**	
	45-49	0.88 (0.76 - 1.02)
	50-69	0.77 (0.66 - 0.90)
	70-75	0.77 (0.54 - 1.09)

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Breastcancer: incidence and mortality

- **Annual incidence of breast cancer and mortality in the EU (GLOBOCAN 2012)**

Age	Incidence / 1000	Mortality / 1000
40 to 44	1.2	0.1
45 to 49	1.7	0.2
50 to 69	2.7	0.5
70 to 74	3.0	0.8

From: http://gco.iarc.fr/

Mammography-Screening
Benefit and Harm

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Data background: Breast Cancer Surveillance Consortium Registry Data per 10.000 Women screened over 10 years

Age	40-49	50-59	60-69	70-74
Breast cancer death avoided (CI 95%)	3 (0-9)	8 (2-17)	21 (11-32)	13 (0-32)
False-positive (n)	1212	932	808	696
Breast biopsies (n)	164	159	165	175
False-negative (n)	10	11	12	13

Siu Al on behalf of the USPSTF 2016, 164:279–296

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Early Detection (normal risk) Sonography / MRI

	Oxford LoE	Oxford GR	AGO
▪ Screening-Breast sonography allone	5	D	--
▪ Automated 3D-sonography	3a	C	--
▪ Breast sonography as an adjunct:			
▪ Dense mammogram (heterogeneously dense, extremely dense)	2a	B	++
▪ Elevated risk	1b	C	++
▪ Mammographic lesion	2b	B	++
▪ Second-look US (MRI-only detected lesions)	2b	C	++
▪ MRI if screening MG is negative and breast composition: extremely dense* 50–75 LJ	1b	B	+

* Definition of extremely dense corresponds to BIRADS-density category D, heterogeneously dense to BIRADS-category C according to ACR BI-RADS-Atlas 5th ed. 2013

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Early Detection (normal risk)
Clinical Breast Examination (CBE)

	Oxford LoE	Oxford GR	AGO
As stand alone procedure			
▪ Self-examination	1a	A	-*
▪ Clinical breast examination (CBE) by health professionals outside checkup for cancer	1a	C	-*
▪ Clinical breast examination (CBE) by health professionals during checkup for cancer	1a	B	++
▪ Medical palpation by blind / visually impaired persons	3b	C	-
CBE because of mammographic / sonographic lesion	5	D	++
CBE in combination with imaging	1a	A	++

* May increase breast awareness

Assessment of Breast Symptoms or Lesions

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	Oxford		
	LoE	GR	AGO
▪ Clinical examination	3b	B	++
▪ Mammography	1b	A	++
▪ Tomosynthesis***	2a	B	+
▪ Contrast-enhanced mammography (alone or as adjunct)	2a	B	+
▪ Sonography	2b	B	++
▪ Elastography (shear-wave) *	2b	B	+
▪ Automated 3D-sonography	3b	B	+/-
▪ Minimally invasive biopsy	1b	A	++
▪ MRI**	3a	B	+

* Adjunct assessment

** If clinical examination, mammography and sonography incl. needle biopsy do not allow a definite diagnosis

*** Replacement of FFDM with SM

Pre-therapeutic Assessment of Breast and Axilla

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	Oxford LoE	GR	AGO
▪ Clinical examination	5	D	++
▪ Mammography	2b	B	++
▪ + Tomosynthesis (DBT)***	2b	B	+
▪ Contrast-enhanced mammography (alone or as adjunct)	2a	B	+
▪ Sonography (breast/axilla*)	2b/2a*	B	++
▪ MRI*	1b	B	+
▪ Minimally invasive biopsy**	1b	A	++
▪ Axilla CNB, if lymph node is suspect	2b	B	++
▪ Breast-CT	5	D	-
▪ Axillary PET	2b	B	-

* MRI-guided vacuum biopsy is mandatory in case of MRI-detected additional lesions (in house or with cooperations).
Individual decision for patients at high familiar risk, with dense breast (density C / D), lobular invasive tumors, suspicion of multilocular disease.
No reduction in re-excision rate.

** Histopathology of additional lesions if relevant for treatment

*** Replacement of FFDM with SM

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Sensitivities CESM

Author	n	MG	CESM	MRI	US	Analyse
Dromain 2011	110	78	92			Per patient
Fallenberg 2014	118	77.9	94.7			Per patient
Mokhtar 2014	60	93.2	97.7			Per patient
Lobbes 2014*	113	96.9	100			Per patient
Perez 2015 ECR	98		78		66	Per lesion
Luczinska 2014	152	91	100			
Jochelson 2012	52	81 59	96 83	96 93		Per patient Per lesion
Fallenberg 2013	80	81	100	97		Per patient
Fallenberg 2016	155	81 55	94 72	95 76		Index Per Lesion
Lalji 2016*	199	93	96,9			Per patient 10 reader
Tennant 2016	100	84	95			
Luczynska 2016	116	90	100		92	
Xing 2019	235		91,5	91,5		Per lesion

CESM is comparable to MRI regarding index, a bit inferior for additional lesions

* Recall from Screening

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Pre-therapeutic Staging

	Oxford		
	LoE	GR	AGO
▪ History and clinical examination	5	D	++

Only in case of high metastatic potential and/or symptoms and/or indication for (neo-) adjuvant chemotherapy and/or antibody-therapy:

▪ CT scan of thorax / abdomen	2a	B	+
▪ Bone scan	2b	B	+
▪ Chest X-ray	5	C	+/-
▪ Liver ultrasound	5	D	+/-
▪ Further investigation in case of additonal suspicious lesions (e.g. liver-MRI, CEUS*, biopsy etc.)	2a	B	+
▪ FDG-PET or FDG-PET / CT**	2b	B	+/-
▪ Whole body MRI	4	C	+/-

* Contrast enhanced ultrasound

** especially in patients with high tumor stage (III) if available