Diagnostik und Therapie früher und fortgeschrittener
Mammakarzinome

Früherkennung und Diagnostik
Früherkennung und Diagnostik

- **Versionen 2005–2019:**
  Albert / Blohmer / Fersis / Junkermann /
  Maass / Müller-Schimpfle / Scharl / Schreer

- **Version 2020**
  Fallenberg / Maass

**Screened data bases**

<table>
<thead>
<tr>
<th>Database</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pubmed</td>
<td>2013 - 2019</td>
</tr>
<tr>
<td>Medline</td>
<td>2013 - 2019</td>
</tr>
<tr>
<td>Cochrane</td>
<td>2013 - 2019</td>
</tr>
</tbody>
</table>

**Guidelines**

S3 Diagnostik, Therapie und Nachsorge des Mammakarzinoms:


Wöckel A, Festl J, Stüber T et al. Interdisciplinary Screening, Diagnosis, Therapy and Follow-up of Breast

2015 ACS Update Breast Cancer Screening for women at average risk
IARC Handbook 2016
European Commission 2016
( http://ecibc.jrc.ec.europa.eu/recommendations/list/3;Update 24.11.2016, Abruf 20122016)

Screened: Metaanalyses/ Systematic reviews / RCT / Cohort studies


---

**Früherkennung bei asymptomatischen Frauen**

**Mammographie (normales Risiko)**

<table>
<thead>
<tr>
<th>Alter</th>
<th>Intervall (Monate)</th>
<th>Oxford</th>
<th>AGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40</td>
<td>na</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>40–49</td>
<td>12–24</td>
<td>1b</td>
<td>B</td>
</tr>
<tr>
<td>50–69*</td>
<td>24</td>
<td>1a</td>
<td>A</td>
</tr>
<tr>
<td>70–74</td>
<td>24</td>
<td>1a</td>
<td>A</td>
</tr>
<tr>
<td>&gt; 75**</td>
<td>24</td>
<td>4</td>
<td>C</td>
</tr>
</tbody>
</table>

* Nationales Mammographie-Screening-Programm
** Abhängig von Gesundheitszustand + Lebenserwartung mehr als 10 Jahre


24. Walter LC, Schonberg MA Screening mammography in older women: a review. JAMA 2014;311(13):1336-1347


Tomosynthese


Radiation Dose

Mammography density assessment


Breast cancer mortality reduction


Brustkrebsinzidenz und Mortalität

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

<table>
<thead>
<tr>
<th>Age</th>
<th>Incidence/1000</th>
<th>Mortality/1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 to 44</td>
<td>1,2</td>
<td>0,1</td>
</tr>
<tr>
<td>45 to 49</td>
<td>1,7</td>
<td>0,2</td>
</tr>
<tr>
<td>50 to 69</td>
<td>2,7</td>
<td>0,5</td>
</tr>
<tr>
<td>70 to 74</td>
<td>3,0</td>
<td>0,8</td>
</tr>
</tbody>
</table>

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

http://gco.iarc.fr/
### Mammographie-Screening

**Vor- und Nachteile**

**Grundgesamtheit: per 10.000 gescreente Frauen über 10 Jahre**

<table>
<thead>
<tr>
<th>Lebensjahr</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70-74</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vermiedene Brustkrebstodesfälle (95%)</td>
<td>3 (0-9)</td>
<td>8 (2-17)</td>
<td>21 (13-32)</td>
<td>13 (0-32)</td>
</tr>
<tr>
<td>Falsch-positive Fälle (n)</td>
<td>1212</td>
<td>932</td>
<td>808</td>
<td>696</td>
</tr>
<tr>
<td>Brustbiopsien (n)</td>
<td>164</td>
<td>159</td>
<td>165</td>
<td>175</td>
</tr>
<tr>
<td>Falsch-negative Fälle (n)</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

Siu AL, on behalf of the U.S. Preventive Services Task Force

Screening for Breast Cancer: U.S. Preventive Services Task Force

Breast ultrasound as an adjunct to screening mammography


<table>
<thead>
<tr>
<th>Screening-Mammasonographie alleine</th>
<th>Oxford LoE</th>
<th>AGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autom. 3D-Sonographie</td>
<td>3a</td>
<td>C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mammonasography als Ergänzung bei:</th>
<th>Oxford LoE</th>
<th>AGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichtem Parenchym (inhomogen dicht-extrem dicht)</td>
<td>2a</td>
<td>B</td>
</tr>
<tr>
<td>Erhöhtem Risiko</td>
<td>1b</td>
<td>C</td>
</tr>
<tr>
<td>Mammographischer Läsion</td>
<td>2b</td>
<td>B</td>
</tr>
<tr>
<td>Zur Abklärung susp. Läsionen im MRT</td>
<td>2b</td>
<td>C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MRT bei neg. MG und extrem dichter Brust* 50-75 LI</th>
<th>Oxford LoE</th>
<th>AGO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1b</td>
<td>B</td>
</tr>
</tbody>
</table>

* Definition von extrem dicht entspricht BIRADS-Dichtekategorie D inhomogen dicht Kategorie C nach ACR BI-RADS-Atlas 5. ed. 2013


ABUS/AVUS


US-Screening


Dense Breast


Elevated Risk


Recommendations International


MRI-Screening:


Combined DM + DBT + US + MRI


US-Axilla +FNA/CNB


**Biopsie**


2. Lourenco AP, Mainiero MB Incorporating imaging into the locoregional management of breast cancer. Semin Radiat Oncol 2016;26(1)


**MRT**


15. Houssami N, Turner RM, Morrow M. Meta-analysis of pre-operative magnetic resonance imaging (MRI) and surgical


Reviews CESM:


CESM Originalarbeiten:


Prätherapeutische Mamma- und Axilladiagnostik

<table>
<thead>
<tr>
<th>Oxford</th>
<th>LoE</th>
<th>GR</th>
<th>AGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klinische Untersuchung</td>
<td>5</td>
<td>D</td>
<td>++</td>
</tr>
<tr>
<td>Mammographie</td>
<td>2b</td>
<td>B</td>
<td>++</td>
</tr>
<tr>
<td>+ Tomosynthese</td>
<td>2a</td>
<td>B</td>
<td>+</td>
</tr>
<tr>
<td>+ Kontrastmittelmammographie</td>
<td>3a</td>
<td>B</td>
<td>+/-</td>
</tr>
<tr>
<td>Sonographie (Mamma und Axilla)</td>
<td>2b</td>
<td>B</td>
<td>++</td>
</tr>
<tr>
<td>MRT*</td>
<td>1b</td>
<td>B</td>
<td>+</td>
</tr>
<tr>
<td>Minimalinvasive Biopsie Mamma** (CNB, VAB)</td>
<td>1b</td>
<td>A</td>
<td>++</td>
</tr>
<tr>
<td>Axilla CNB, wenn auffälliger Lymphknotenbefund</td>
<td>2b</td>
<td>B</td>
<td>++</td>
</tr>
<tr>
<td>Mamma-CT</td>
<td>5</td>
<td>D</td>
<td>-</td>
</tr>
</tbody>
</table>

** Histologische Sicherung von Zusatzerkrankungen im Fall therapeutischer Relevanz.

Combined DM + DBT + US + MRI


US-Axilla +FNA/CNB


Localisation techniques for guided surgical excision of non-palpable breast lesions. Cochrane Database of Systematic reviews 2015;vol 12

Incorporating imaging into the locoregional management of breast cancer. Semin Radiat Oncol 2016;26(1)


15. Houssami N, Turner RM, Morrow M. Meta-analysis of pre-operative magnetic resonance imaging (MRI) and surgical


Reviews CESM:

CESM Originalarbeiten:
4. Fellenberg, E.M., et al., Contrast-enhanced spectral mammography vs. mammography and MRI - clinical performance


MRT: Präoperatives Staging

- 9 ausgewählte Studien
  (2 randomisiert; 7 Kohortenstudien)
- 3112 Patientinnen mit Mammakarzinom
- MRT versus kein-MRT:
  - Initiale Mastektomie 16,4% versus 8,1%
    [OR, 2,22 (P < 0,001); adjusted OR, 3,06 (P < 0,001)]
  - Nachresektion nach initialer BET 11,6% versus 11,4%
    [OR, 1,02 (P = 0,87); adjustierte OR, 0,95 (P = 0,71)]
  - Gesamt Mastektomierate 25,5% versus 18,2%
    [OR, 1,54 (P < 0,001); adjustierte OR, 1,51 (P < 0,001)]


# Sensitivities CESM

<table>
<thead>
<tr>
<th>Author</th>
<th>N</th>
<th>MQ</th>
<th>CESM</th>
<th>MRI</th>
<th>US</th>
<th>Analyse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drennan 2011</td>
<td>110</td>
<td>78</td>
<td>92</td>
<td></td>
<td></td>
<td>Per patient</td>
</tr>
<tr>
<td>Fallenberg 2014</td>
<td>118</td>
<td>77.9</td>
<td>94.7</td>
<td></td>
<td></td>
<td>Per patient</td>
</tr>
<tr>
<td>Moblit 2014</td>
<td>90</td>
<td>93.2</td>
<td>97.7</td>
<td></td>
<td></td>
<td>Per patient</td>
</tr>
<tr>
<td>Lobbes 2014*</td>
<td>113</td>
<td>95.9</td>
<td>100</td>
<td></td>
<td></td>
<td>Per patient</td>
</tr>
<tr>
<td>Perez 2015 ECR</td>
<td>98</td>
<td>78</td>
<td></td>
<td></td>
<td>66</td>
<td>Per lesion</td>
</tr>
<tr>
<td>Luzumaksa 2014</td>
<td>152</td>
<td>91</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jochelson 2012</td>
<td>52</td>
<td>81</td>
<td>96</td>
<td>96</td>
<td></td>
<td>Per patient</td>
</tr>
<tr>
<td>Fallenberg 2013</td>
<td>90</td>
<td>81</td>
<td>97</td>
<td>97</td>
<td></td>
<td>Per patient</td>
</tr>
<tr>
<td>Fallenberg 2016</td>
<td>150</td>
<td>81</td>
<td>94</td>
<td>95</td>
<td>76</td>
<td>Index Per Lesion</td>
</tr>
<tr>
<td>Laaji 2016*</td>
<td>199</td>
<td>93</td>
<td>96.9</td>
<td></td>
<td></td>
<td>Per patient</td>
</tr>
<tr>
<td>Tennant 2016</td>
<td>100</td>
<td>84</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luzumaksa 2016</td>
<td>116</td>
<td>90</td>
<td>100</td>
<td>92</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Recall from Screening

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

<table>
<thead>
<tr>
<th>Oxford LoE</th>
<th>GR</th>
<th>AGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>D</td>
<td>++</td>
</tr>
</tbody>
</table>

Anamnese und klinische Untersuchung
- Nur bei hohem Risiko für Fernmetastasen und / oder Symptomen oder bei geplanter Entscheidung zur (neo-)adjuvanten Chemo-/Antikörpertherapie:
  - CT Thorax/Abdomen
  - Skelettszintigraphie
  - Rö-Thorax
  - Lebersonographie
  - Weiterführende Diagnostik je nach Befund (z.B. Leber-MRT/CEUS*/Biopsie etc.)
  - FDG-PET oder FDG-PET/CT
  - Ganzkörper MRT

* Contrast enhanced Ultrasound

Statement: history and physical examination
1. GCP

Statement: high metastatic potential / symptoms


