

Diagnosis and Treatment of Patients with Primary and Metastatic Breast Cancer

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Version 2009.1.0

Early Detection and Diagnosis



Early Detection and Diagnosis

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- **Version 2005:
Junkermann**
- **Version 2006–2008:
Schreer / Albert**
- **Version 2009:
Schreer / Albert**

Further
Information

References

Early Detection Mammography

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| Age | Interval | Oxford | | AGO |
|--------|----------|--------|----|-----|
| | | LOE / | GR | |
| < 40 | na | - | - | -- |
| 40–50 | 12–18 | 1b | B | + |
| 50–70* | 24 | 1a | A | ++ |
| >70 | 24 | 4 | C | + |

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* National Mammography-Screening-Program

Mortality Reduction for Women Ages 40–49 years

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| Trials | Follow-up (years) | Mortality reduction (%) |
|-----------------------|------------------------------|------------------------------------|
| All 8 RCT's | 10.5–18.0 | 18 |
| 7 RCT's | 7.0–18.0 | 24 |
| Five Swedish RCT's | 11.4–15.2 | 29 |
| HIP | 18 | 24 |
| Malmo | 15.5 | 36 |
| Gothenburg | 14.0 | 45 |
| UK Age Trial | 7–14 | 17/24* (n.s.) |

*adjusted for non compliance

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Early Detection Sonography

Oxford / AGO
LOE / GR

➤ Screening

5 D --

As an adjunct:

➤ Dense mammogram (ACR 3–4)

3b B ++

➤ Elevated risk

1b C** ++

➤ Mammographic lesion

3b B ++

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Studies on Ultrasound (US) in Asymptomatic Women (n > 1000)

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| Author | No. Examinations | Cancer/ 1000 examinations | Positive results with US only (%) | Needle biopsies (%) [°] | PPV of biopsies (%) |
|------------|------------------|---------------------------------|---|--|---------------------------|
| Buchberger | 8103 | 4,1 | 5 | 3,3 | 14 |
| Crystal* | 1199 | 4,6 | 6 | 1,8 | 25 |
| Corsetti | 6449 | 4,4 | - | 7,5 | 3 |
| Kaplan | 1862 | 2,6 | 13,40 | 5,3 ^a | 10,5 |
| Kolb | 13547 | 2,7 | - | 2,6 | 10,3 |

[°] No explicit information concerning surgical biopsies

* no risk elevation

^a FNAC, core biopsy and surgical biopsy

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Early Detection Clinical Examination

**Oxford / AGO
LOE / GR**

As stand alone procedure:

- | | | | |
|--|-----------|----------|-----------|
| ➤ Self-examination | 1a | A | -* |
| ➤ Clinical breast examination (CBE) by health professionals | 3b | C | -* |
| ➤ CBE because of mammo/sonographic lesion | 5 | D | ++ |

CBE in combination with imaging:

GCP **+**

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Assessment of Breast Symptoms or Lesions

Oxford / AGO
LOE / GR

| | | | |
|------------------------------------|-----------|----------|------------|
| ➤ Clinical examination | 3b | B | ++ |
| ➤ Mammography | 1b | A | ++ |
| ➤ Sonography | 3b | B | ++ |
| ➤ MRT* | 3b | D | +/- |
| ➤ Minimally invasive biopsy | 1c | A | ++ |

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Pretherapeutic Assessment of Lesion Extension

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| | Oxford / LOE / GR | AGO |
|--------------------------------------|----------------------|------------|
| ➤ Clinical examination | 5 D | ++ |
| ➤ Mammography | 2b B | ++ |
| ➤ Sonography | 2b B | ++ |
| ➤ MRT (in special cases*) | 3b B | +/- |
| ➤ Minimally invasive biopsy** | 1c A | + |

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* e.g. dense breast, lobular invasive tumors, suspicion of multilocular disease

** If clinical examination, mammography and sonography (e.g. plus MRI)
do not allow assessment of lesion extension

Addition of MRI to Conventional Imaging in High Risk Women

| Author | No. MRI | No. cancers detected | Detection rate/ 1000 examinations | Sensitivity of all methods | Sensitivity MRI | Sensitivity Mx (+US)* |
|---------------------------|---------|----------------------|-----------------------------------|----------------------------|-----------------|-----------------------|
| Hagen ^a | 867 | 25 | 29 | 95 % | 86 % | 52 % |
| Kriege ^a | 4.169 | 51 | 12 | 90 % | 79 % | 33 % |
| Kuhl ^{a *} | 1.542 | 43 | 28 | 93 % | 91 % | 49 % |
| Leach ^a | 1.881 | 35 | 19 | 94 % | 77 % | 40 % |
| Sardanelli ^{a *} | 377 | 18 | 48 | 100 % | 94 % | 66 % |
| Warner ^{a *} | 457 | 22 | 48 | 94 % | 77 % | 36 % |
| Lehman ^b | 962 | 33 | 34 | NA | 91 % | NA |

*Studies including ultrasound

a = intermediate to high risk women

b = Unilateral breast cancer (contralateral MRI)

NA = not applicable (selection of asymptomatic high risk women and inconspicuous mammography 3-6 mo before MRI)

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Specificity and Assessment Rate after MRI in High Risk Women

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| Author | Specificity of MRI | Recall-Rate | Needle biopsies and surgical biopsies following positive MRI (% of all MRI'S) | BI-RADS-3 recommendation following MRI |
|-------------------------|-----------------------|-------------|---|---|
| Hagen ^a | - | - | - | - |
| Kriege ^a | 90 %* | - | - | - |
| Kuhl ^a | 97 % ^{oo} | - | 5 % | 11,5 % |
| Leach ^a | 81 % | 11 % | 6 % | 7,3 % |
| Sardanelli ^a | - | - | 7 % | - |
| Warner ^{a *} | (95 %) ^{oo} | - | 11 % | 13,0 % |
| Lehman ^b | (88 %) ^{oo} | - | 12,5 % | - |

a = History-based medium to high risk; b = positive own history (MRI of the contralateral breast)

• Calculated based on numerical data of the publication

^{oo} Without recall and without short-term follow-up

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Cancer Yield of MRI in Screening the Contralateral Breast

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| Study | Mean age (years) | No of cancers/total no. screened | Cancer yield MRI alone (%) |
|---------------------|---------------------|--|----------------------------------|
| Rieber et al 1997 | - | 3/34 | 3 (9) |
| Fischer et al 1999 | 54 | 19/463 | 15 (3) |
| Slanetz et al 2002 | 49 | 4/17 | 4 (24) |
| Lee et al 2003 | 50 | 7/182 | 7 (4) |
| Liberman et al 2003 | 48 | 12/223 | 12 (5) |
| Viehweg et al 2004 | - | 11/119 | 4 (3) |
| Lehman et al 2005 | 52 | 4/103 | 4 (4) |
| Lehman et al 2007 | 53 | 30/969 | 30 (3,1) |

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| Study | No. Cases | Overall accuracy (%) | Sens. (%) | Spec. (%) |
|----------------------|-----------|----------------------|-----------|-----------|
| Gilles et al 1995 | 172 | 70 | 95 | 51 |
| Westerhof et al 1998 | 63 | 56 | 45 | 72 |
| Bazzocchi et al 2006 | 112 | 80 | 79 | 68 |
| Kuhl et al 2007 | 75 | - | 88 | - |

Further Information

References

„Negative breast MRI findings should not be considered a sure marker of benignancy.“