Female Breast

Breast cancer

Panos Economou

Clinical Professor of Surgery

Acknowledgements

- Principles and Practice of Surgery – Garden and Parks, 7th edition
- Google images
- Oxford Handbook of Surgery

This is an interactive session. In some slides you will see yellow bands like this, with questions. When the colour changes, you can pause the recording, try to answer the question and then proceed.

Teaching objectives

- Breast cancer – we will discuss in turn
  - Main facts
  - Risk factors
  - Pathology
  - Clinical features
  - Diagnosis and investigation
  - Treatment – Surgical & Medical
  - Breast cancer screening
  - Referral from General Practice

Main facts

Main facts for breast cancer

- What is the lifetime risk for women to develop breast Ca?
- In which regions of the world is it commonest?
- In which regions is it least common?
- How is the incidence affected by age?
- What is the percentage of men affected?
- What percentage is related to an identifiable genetic anomaly?
- 60% symptomatic and 40% on screening

Risk factors

Risk factors

- Can you think of some risk factors?

Risk factors

Genetic factors

- BRCA1 mutation (chromosome 17)
- BRCA2 mutation (chromosome 13)
- Li-Fraumenni syndrome
- Cowden syndrome

Pathology

Pathology

- 80% ductal
- 20% lobular, mucinous tubular, medullary adenocarcinoma
- Most believed to originate as in-situ before becoming invasive
- 70% express oestrogen or progesterone receptors

Clinical features

Clinical features

- Breast lump
- Nipple anomalies
- Skin changes
- Systemic features

Clinical features

- **Breast lump**
  - The commonest presentation
  -
  -
  -
  -

Can you think of some characteristics of a lump that will suggest malignancy?

- **Nipple anomalies**
- **Skin changes**
- **Systemic features**

Clinical features

- Breast lump
- **Nipple anomalies**
  - May be the prime site (Paget's disease)
  -
  -

Can you think of some changes that will suggest malignancy?

- Skin changes
- Systemic features

Clinical features

- Breast lump
- Nipple anomalies
- **Skin changes**

Can you think of some skin changes that will suggest malignancy?

- Systemic features

Clinical features

- Breast lump
- Nipple anomalies
- Skin changes
- **Systemic features**
  - Weight loss
  - Anorexia
  - Bone pain
  - Jaundice
  - Malignant effusions (pleural, pericardial)
  - Anaemia

Diagnosis and investigation

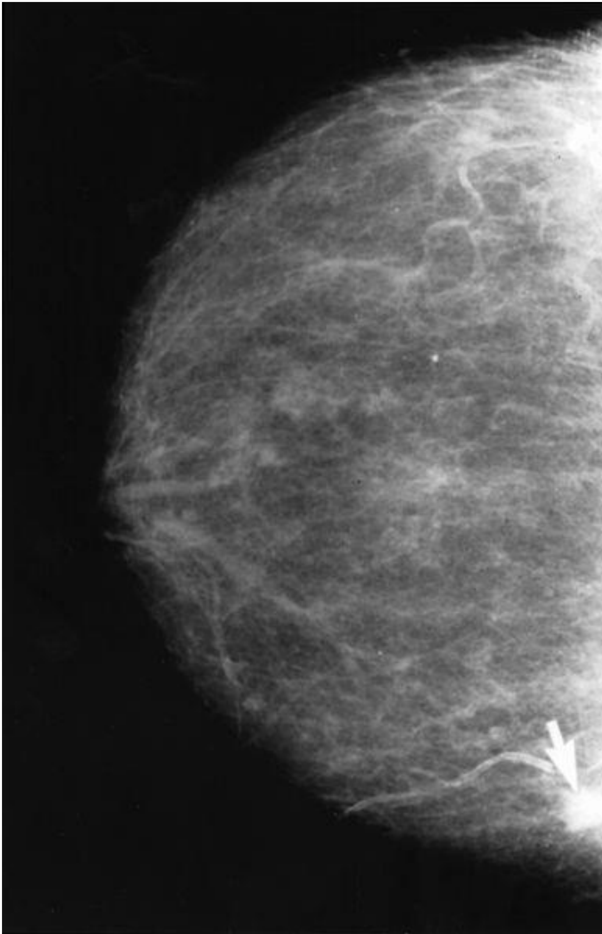
Diagnosis and investigation

Triple assessment

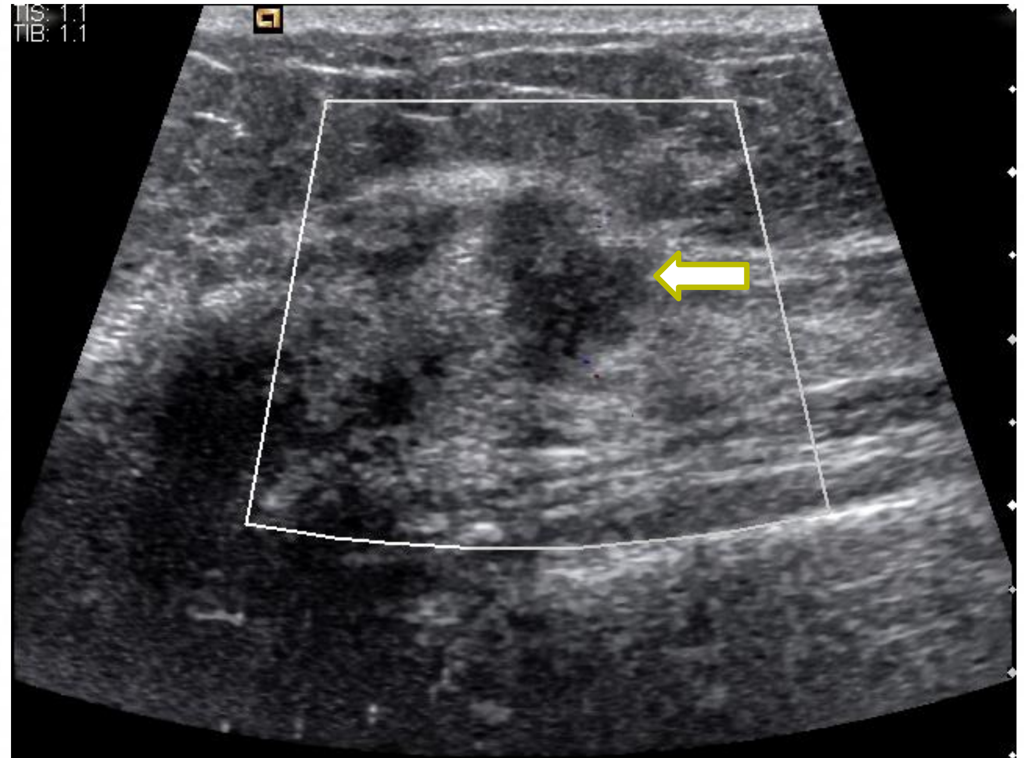
- What does triple assessment involve?
-
-

Diagnosis and investigation

Mammography showing breast cancer - arrow



Ultrasound scan showing breast cancer - arrow



Diagnosis and investigation

Staging investigations (patients at risk of systemic disease)

- CT chest, abdomen and pelvis
- Liver ultrasound
- Chest X-ray
- Bone scan
- LFTs, serum calcium
- Further investigation in specific organs for suspected metastases

Treatment

Treatment

- **Surgical**

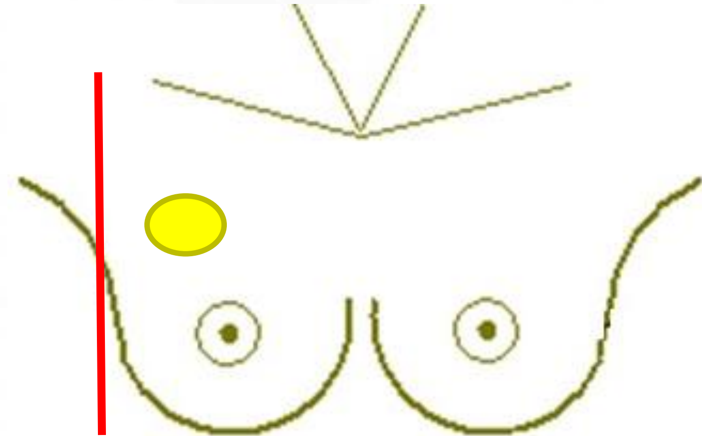
  and

- **Medical**

Treatment - Surgical

Surgery is the mainstay for non-metastatic disease

- **Primary tumour**
- **Regional lymph nodes**



Surgery also needed for

- **Metastatic disease** – symptomatic control of local disease
- **In situ carcinoma - Ductal (DCIS), Lobular (LCIS)**

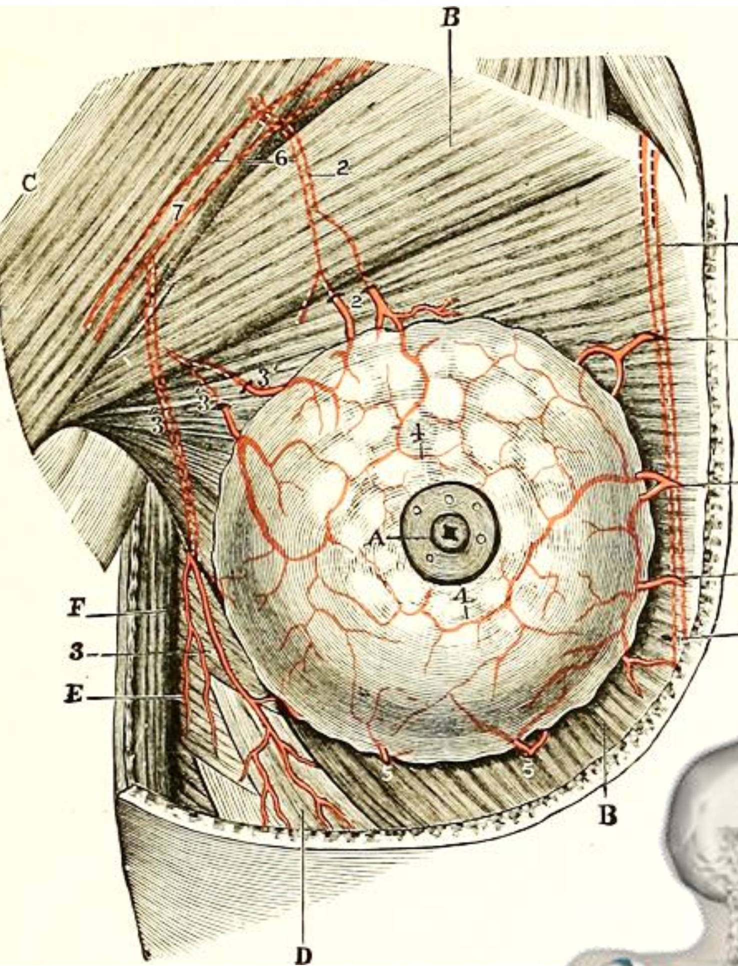
Treatment - Surgical

- **Primary tumour**
  - **Wide local excision** – ensure clear margins – commonest procedure – breast conserving
    - Breast of adequate size
    - Tumour location not central / retro-areolar
    - Usually combined with local radiotherapy to reduce risk of local recurrence
  - **Simple mastectomy (**radiotherapy usually not necessary)
    - Patient's choice
    - Late presentations and where local excision is not possible
    - Multifocal or widespread in-situ changes
    - With reconstruction immediate or at later stage (see below)

Treatment - Surgical

- **Regional lymph nodes**
  - **Sentinel node biopsy**
    - One or two nodes primarily draining the tumour identified with radioactive tracer and or dye injected around the tumour
    - Avoids major axillary surgery where not necessary
    - If positive nodes identified then full axillary clearance
  - **Axillary node clearance**
    - Optimizes diagnosis and treatment of axilla
    - Increases risk of lymphoedema considerably
  - **Axillary node sampling**
    - At least 4 nodes – inadequate for treatment of axilla

Axilla



Anterior humeral circumflex

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II

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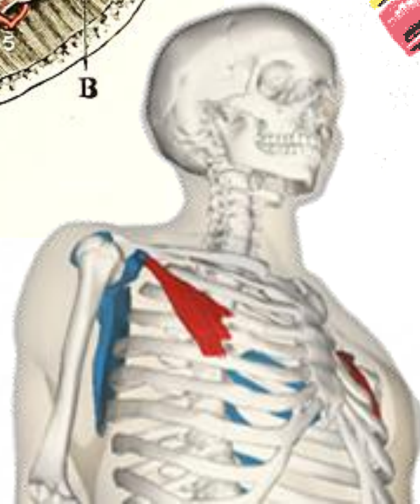
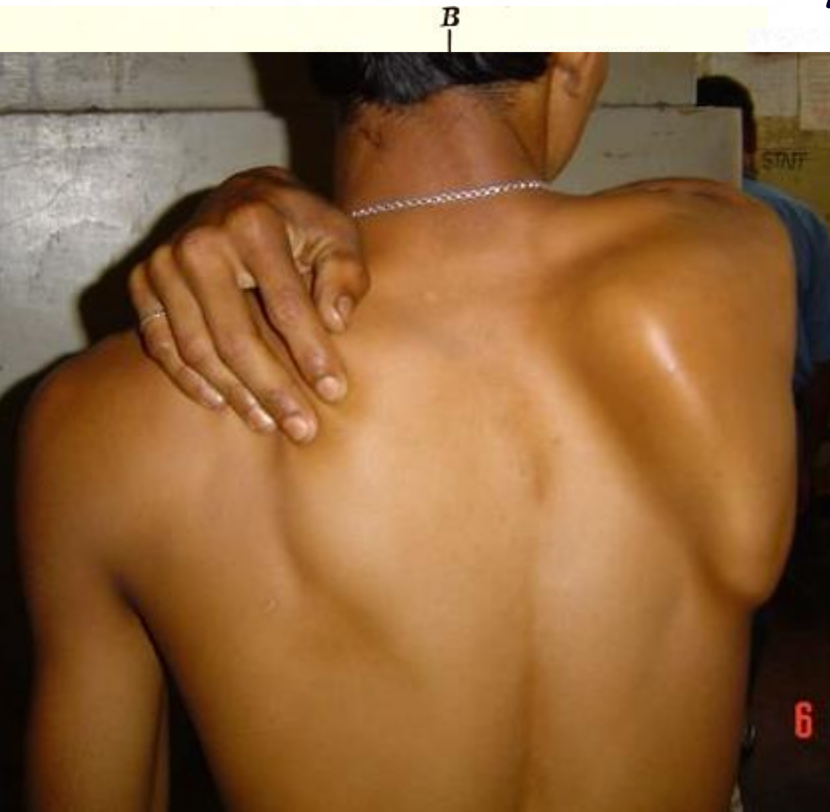


Anatomical 3 levels in relation to pectoralis minor

Axilla



Thoracodorsal – latissimus dorsi

Long thoracic – serratus anterior

Damage – winging of scapula

Treatment - Surgical

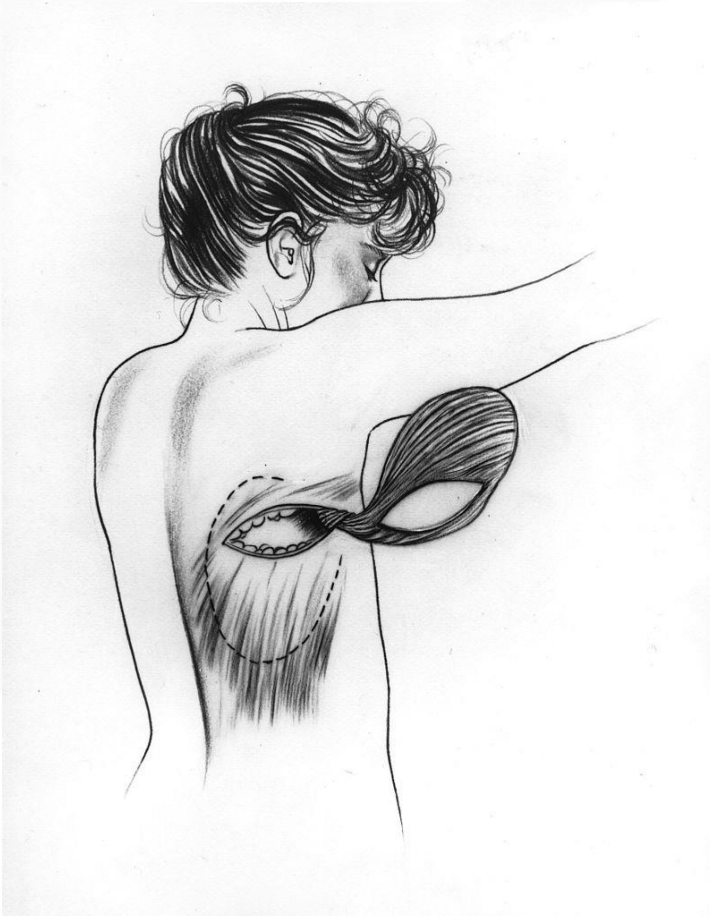
- **Ductal carcinoma in situ (DCIS)**
  - Precancerous – 10-15% develop invasive ductal cancer
  - Microcalcification on mammography
  - Pathologically graded to low, intermediate and high grade
  - Treated with wide local excision with clear margins
  - Mastectomy needed for multifocal or extensive disease
  - High grade – need post-operative radiotherapy after wide local excision
  - Axillary surgery not needed – no potential for lymph node metastases

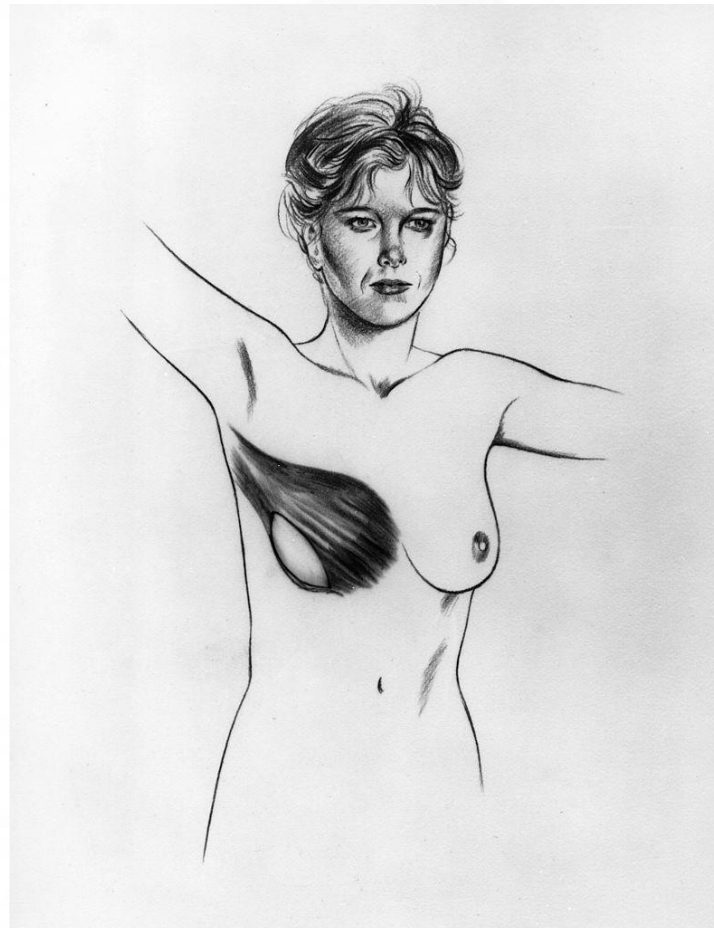
Breast Reconstruction

- Primarily perform oncoplastic surgery to minimize cosmetic side effects
- Latissimus dorsi flap
- TRAM (Transverse Rectus Abdominis Myocutaneous) flap
- Prosthesis

Breast Reconstruction

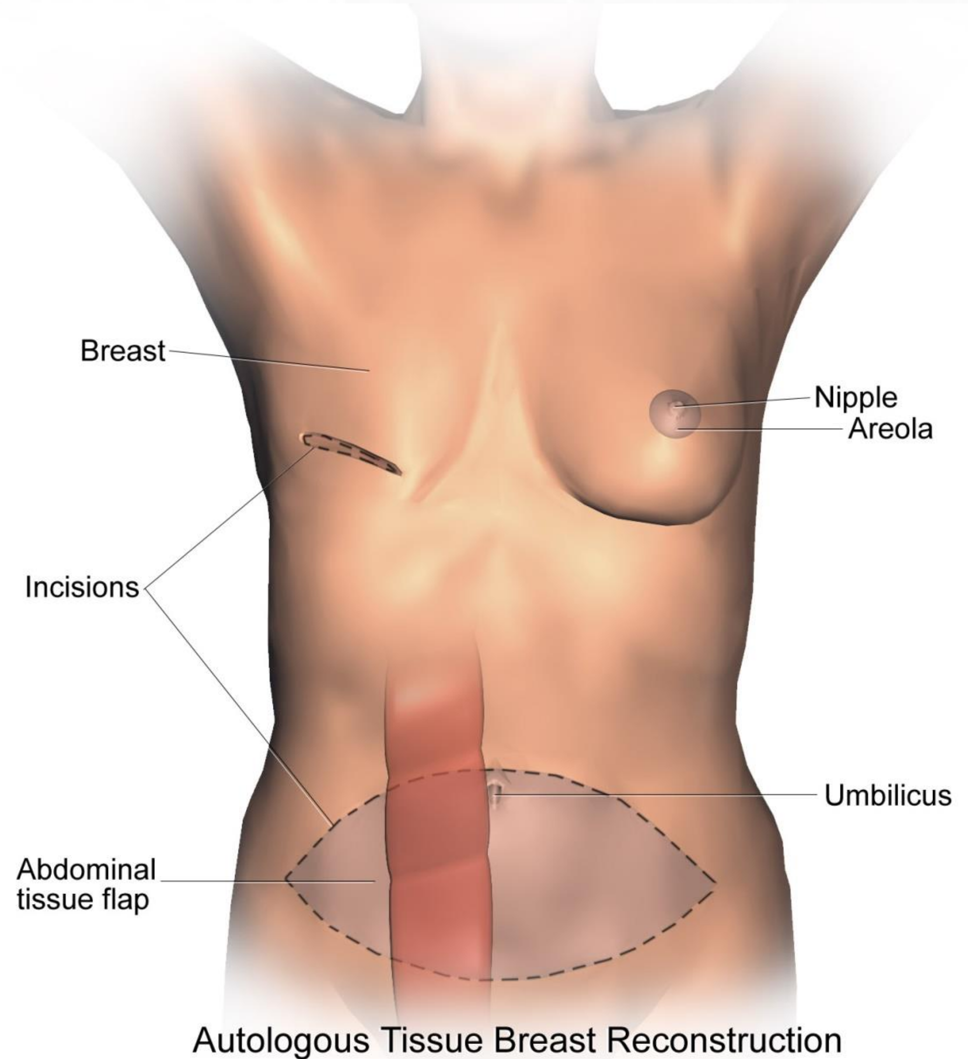
- Latissimus dorsi flap





Breast Reconstruction

- TRAM (Transverse Rectus Abdominis Myocutaneoous) flap



Autologous Tissue Breast Reconstruction

Treatment - Medical

- In those unfit for surgery - treatment of choice
- In non-metastatic disease – adjuvant to reduce risk of systemic relapse, usually after surgery
- In metastatic disease – palliative to increase survival time

Treatment - Medical

- Which medical treatments can you think of?
-
-
-

Treatment - Medical

- **Radiotherapy**
  - To reduce risk of local recurrence in wide excision
  - Targeted to foci of metastases in some patients e.g. bony, cerebral and liver metastases – reduce pain and symptoms
  - Destruction of ovaries (like surgical oophorectomy) in pre-menopausal women

Treatment - Medical

- **Endocrine** – in oestrogen receptor (ER) +ve patients
  - Anti-oestrogens – tamoxifen
  - Aromatase inhibitors – anastrozole, letrozole, exemestane
  - Gonadotropin-releasing hormone (GnGH) analogues - goserelin
  - Premenopausal – usually tamoxifen
  - Post-menopausal – usually letrozole (danger of osteoporosis)

Treatment - Medical

- **Chemotherapy**
  - Usually necessary if no hormone receptors - adjuvant
  - High risk cases like +ve nodes, poor grade, young
  - Neoadjuvant – can be used before surgery to shrink the tumour
  - e.g. anthracyclines, cyclophosphamide, 5-FU, methotrexate
- **Monoclonal antibody therapy**
  - Monoclonal antibodies – Trastuzumab (Herceptin) for Her-2 receptor +ve patients

Breast cancer screening

Breast cancer screening

- **Aims**
  - Identify asymptomatic (early) invasive cancer
  - Identify asymptomatic carcinoma in situ
- **Practice**
  - Since 1988 – population based screening offered
  - Centrally activated postal invitation
  - Ages 50 – 70
  - Plans to extend screening ages to 47 – 74
  - 2 view (lateral and oblique) mammogram of both breasts
  - Suspicious or malignant looking lesions – invited for triple assessment

Breast cancer screening

- **Results**
  - 70 % accept it
  - 10% of invasive carcinoma not radiologically detectable (false negative)
  - False positive risk is 20-25% over 10 years of screening
  - Studies suggest up to 30% reduction in mortality from screen detected early breast cancer

Referral

Referral

NICE guidelines

https://www.nice.org.uk/guidance/ng12/chapter/1-Recommendations-organised-by-site-of-cancer#breast-cancer

Refer people using a "suspected cancer pathway referral" (for an appointment within 2 weeks) for breast cancer if they are:

- aged 30 and over and have an unexplained breast lump with or without pain **or**
- aged 50 and over with any of the following symptoms in one nipple only:
  - discharge
  - retraction
  - other changes of concern.

If outside the UK and no "referral pathway" is available, contact the specialist and arrange for an early appointment.

Referral

NICE guidelines

https://www.nice.org.uk/guidance/ng12/chapter/1-Recommendations-organised-by-site-of-cancer#breast-cancer

Consider a suspected cancer pathway referral (for an appointment within 2 weeks) for breast cancer in people:

- with skin changes that suggest breast cancer **or**
- aged 30 and over with an unexplained lump in the axilla.

Consider non-urgent referral in people aged under 30 with an unexplained breast lump with or without pain. See also recommendations

Further reading

Further reading

- General

  https://patient.info/doctor/breast-cancer-pro
- Familial

  https://patient.info/doctor/familial-breast-cancer
- Lumps and examination

  https://patient.info/doctor/breast-lumps-and-breast-examination
- Breast pain

  https://patient.info/doctor/breast-pain-pro
- Screening

  https://patient.info/doctor/breast-screening-with-mammography

Further reading

- Suspected cancer: recognition and referral: NICE guideline [NG12] June 2015 updated July 2017 (https://www.nice.org.uk/guidance/ng12)
- Early and locally advanced breast cancer: diagnosis and management: NICE guideline [NG101] (July 2018) (https://www.nice.org.uk/guidance/ng101)
- Advanced breast cancer: Diagnosis and treatment; NICE Clinical Guideline (July 2014, updated Aug 2017) (https://www.nice.org.uk/guidance/cg81)

Further reading

- Familial breast cancer: classification, care and managing breast cancer and related risks in people with a family history of breast cancer; NICE Clinical Guideline (June 2013) (https://www.nice.org.uk/guidance/cg164)
- BRCA in breast cancer: ESMO Clinical Practice Guidelines; European Society for Medical Oncology (2011)
- Adjuvant Chemotherapy Guided by a 21-Gene Expression Assay in Breast Cancer; Sparano JA et al, New England Journal of Medicine (June 2018)

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Thank you