

# Surgery: Breast

## Question: 1

A 54-year-old woman presents to her GP asking if she can be screened for breast cancer, as her friend has recently died from the condition. She has just moved to the UK from abroad and is unsure whether she is eligible for screening and what this might involve.

What breast cancer screening, if any, is she eligible for?

Breast examination every 3 years	17%
Breast examination every 5 years	9%
Mammography every 3 years	46%
Mammography every 5 years	15%
Screening starts at the age of 55	14%

Breast cancer screening is offered to all women aged 47-73 years (mammogram every 3 years)

Important for me [Less important](#)

In the UK, all women are offered breast cancer screening with mammography every 3 years between the ages of 50 and 70 years. In many areas, this has recently been extended to include women aged 47-50 and 70-73 as a trial on the NHS.

### Explanation:

## Breast cancer: screening

The NHS Breast Screening Programme is being expanded to include women aged 47-73 years from the previous parameter of 50-70 years. Women are offered a mammogram every 3 years. After the age of 70 years women may still have mammograms but are 'encouraged to make their own appointments'.

The effectiveness of breast screening is regularly debated although it is currently thought that the NHS Breast Screening Programme may save around 1,400 lives per year.

## Familial breast cancer

NICE published guidelines on the management of familial breast cancer in 2013, giving guidelines on who needs referral.

If the person concerned only has one first-degree or second-degree relative diagnosed with breast cancer they do NOT need to be referred unless any of the following are present in the family history:

- age of diagnosis < 40 years
- bilateral breast cancer
- male breast cancer
- ovarian cancer
- Jewish ancestry
- sarcoma in a relative younger than age 45 years
- glioma or childhood adrenal cortical carcinomas
- complicated patterns of multiple cancers at a young age
- paternal history of breast cancer (two or more relatives on the father's side of the family)

Women who are at an increased risk of breast cancer due to their family history may be offered screening from a younger age. The following patients should be referred to the breast clinic for further assessment:

- one first-degree female relative diagnosed with breast cancer at younger than age 40 years, or
- one first-degree male relative diagnosed with breast cancer at any age, or
- one first-degree relative with bilateral breast cancer where the first primary was diagnosed at younger than age 50 years, or
- two first-degree relatives, or one first-degree and one second-degree relative, diagnosed with breast cancer at any age, or
- one first-degree or second-degree relative diagnosed with breast cancer at any age and one first-degree or second-degree relative diagnosed with ovarian cancer at any age (one of these should be a first-degree relative), or
- three first-degree or second-degree relatives diagnosed with breast cancer at any age

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### Question: 2

You are working in general practice. An 87-year-old lady complains that her right nipple is exquisitely itchy. On examination, you note that the nipple is erythematous and there is some blood-stained

discharge on the inside of her bra. What is the most appropriate management?

Hydrocortisone cream	9%
DiproBase emollient cream	7%
Ciprofloxacin for 5 days	8%
Imaging and biopsy	69%
Evening primrose oil	7%

Paget's disease of the nipple can present with skin changes suggestive of eczematous skin changes, but is associated with breast malignancy. The most appropriate management would therefore be imaging and biopsy to exclude underlying malignancy in this elderly patient.

Emollients and hydrocortisone are used in eczema. Evening primrose oil is sometimes used for breast pain.

**Explanation:**

## Paget's disease of the nipple

Paget's disease is an eczematoid change of the nipple associated with an underlying breast malignancy and it is present in 1-2% of patients with breast cancer. In half of these patients, it is associated with an underlying mass lesion and 90% of such patients will have an invasive carcinoma. 30% of patients without a mass lesion will still be found to have an underlying carcinoma. The remainder will have carcinoma in situ.

Paget's disease differs from eczema of the nipple in that it involves the nipple primarily and only latterly spreads to the areolar (the opposite occurs in eczema).

Diagnosis is made by punch biopsy, mammography and ultrasound of the breast.

Treatment will depend on the underlying lesion.

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### Question: 3

Which one of the following statements regarding the NHS Breast Screening Programme is correct?

Women are given a 'triple assessment' at each screening cycle	14%
It is targeted at women aged 40-70 years	20%
Women with a family history of cervical cancer should be offered more regular and/or earlier screening	16%
Women are screened every 3 years	40%
Women over the age of 70 years are not eligible for screening	11%

**Explanation:**

## Breast cancer: screening

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- one first-degree male relative diagnosed with breast cancer at any age, or
- one first-degree relative with bilateral breast cancer where the first primary was diagnosed at younger than age 50 years, or
- two first-degree relatives, or one first-degree and one second-degree relative, diagnosed with breast cancer at any age, or
- one first-degree or second-degree relative diagnosed with breast cancer at any age and one first-degree or second-degree relative diagnosed with ovarian cancer at any age (one of these should be a first-degree relative), or
- three first-degree or second-degree relatives diagnosed with breast cancer at any age

#### Question: 4

A 65-year-old lady presents with a lesion affecting her right breast. On examination she has a weeping, crusting lesion overlying the right nipple, the areolar region is not involved. There is no palpable mass lesion in the breast, there is a palpable axillary lymph node. The patient's general practitioner has tried treating the lesion with 1% hydrocortisone cream, with no success. What is the most likely diagnosis?

Infection with	<i>Staphylococcus aureus</i>	11%
Paget's disease of the nipple		62%
Phyllodes tumour		9%
Nipple eczema		9%
Basal cell carcinoma		9%

A weeping, crusty lesion such as this is most likely to represent Paget's disease of the nipple (especially since the areolar region is spared). Although no mass lesion is palpable, a proportion of patients will still have an underlying invasive malignancy (hence the lymphadenopathy).

**Explanation:**

## Paget's disease of the nipple

Paget's disease is an eczematoid change of the nipple associated with an underlying breast malignancy and it is present in 1-2% of patients with breast cancer. In half of these patients, it is associated with an underlying mass lesion and 90% of such patients will have an invasive carcinoma. 30% of patients without a mass lesion will still be found to have an underlying carcinoma. The remainder will have carcinoma in situ.

Paget's disease differs from eczema of the nipple in that it involves the nipple primarily and only latterly spreads to the areolar (the opposite occurs in eczema).

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### Question: 5

A 30 year old lady presents with a 3 week history of worsening erythema over her left breast. She is not breastfeeding and feels otherwise well. She says that it is not painful but is concerned as it has not resolved. On examination the breast is swollen with marked erythema but no discharge, no nipple changes and no mass palpable. Her vitals are within normal range and she is afebrile. Results of blood tests are outlined below.

White cell count	$6 \times 10^9/L$
C-reactive protein	4 mg/L
CA 15-3 level	57 Units/ml (normal range <30 Units/ml)

What is the most likely diagnosis?

Mastitis

12%

Cellulitis

9%

Inflammatory breast cancer	48%
Paget's disease of the breast	22%
Fibroadenoma	9%

This unfortunate lady has inflammatory breast cancer (IBC) as evidenced by the typical appearance (progressive, erythema and oedema of the breast in the absence signs of infection such as fever, discharge or elevated WCC and CRP) and an elevated CA 15-3.

Both mastitis and cellulitis would present with fever or elevated WCC and CRP. Paget's disease of the breast involves the nipple from onset and spreads to the areola and breast. It presents with an eczema-like rash over the nipple with discharge and/or nipple inversion. A fibroadenoma presents as a firm mobile lump in an otherwise normal breast.

IBC is a rare but rapidly progressive form of breast cancer caused by obstruction of lymph drainage causing erythema and oedema. It is usually a primary cancer and is managed with neo-adjuvant chemotherapy first-line, followed by total mastectomy +/- radiotherapy.

#### Explanation:

## Breast cancer

Breast cancer is commoner in the older age group

- **Invasive ductal carcinomas** are the most common type. Some may arise as a result of **ductal carcinoma in situ (DCIS)**. There are associated carcinomas of special type e.g. Tubular that may carry better prognosis.
- The pathological assessment involves assessment of the tumour and lymph nodes, sentinel lymph node biopsy is often used to minimise the morbidity of an axillary dissection.
- Treatment, typically this is either wide local excision or mastectomy
- Whatever operation is contemplated the final cosmetic outcome does have a bearing. A women with small breasts and a large tumour will tend to fare better with mastectomy, even if clear pathological and clinical margins can be obtained. Conversely a women with larger breasts may be able to undergo breast conserving surgery even with a relatively large primary lesion (NB tumours >4cm used to attract recommendation for mastectomy). For screen detected and impalpable tumour image guidance will be necessary.

- Reconstruction is always an option following any resectional procedure. However, its exact type must be tailored to age and co-morbidities of the patient. The main operations in common use include latissimus dorsi myocutaneous flap and sub pectoral implants. Women wishing to avoid a prosthesis may be offered TRAM or DIEP flaps.

## Surgical options

### Mastectomy vs Wide local excision

Mastectomy	Wide Local Excision
Multifocal tumour	Solitary lesion
<i>Central tumour</i>	Peripheral tumour
Large lesion in small breast	Small lesion in large breast
DCIS >4cm	DCIS <4cm
Patient Choice	Patient choice

*Central lesions may be managed using breast conserving surgery where an acceptable cosmetic result may be obtained, this is rarely the case in small breasts*

*A compelling indication for mastectomy, a larger tumour that would be unsuitable for breast conserving surgery*





Image sourced from [Wikipedia](#)



Whatever surgical option is chosen the aim should be to have a local recurrence rate of 5% or less at 5 years [1].

## Nottingham Prognostic Index

The Nottingham Prognostic Index can be used to give an indication of survival. In this system the tumour size is weighted less heavily than other major prognostic parameters.

Calculation of **NPI**

**Tumour Size**  $\times 0.2$  + **Lymph node score**(From table below)+**Grade score**(From table below).

Score	Lymph nodes involved	Grade
1	0	1
2	1-3	2
3	>3	3

## Prognosis

Score	Percentage 5 year survival
2.0 to 2.4	93%
2.5 to 3.4	85%
3.5 to 5.4	70%
>5.4	50%

This data was originally published in 1992. It should be emphasised that other factors such as vascular invasion and receptor status also impact on survival and are not included in this data and account for varying prognoses often cited in the literature.

## References

Surgical guidelines for the management of breast cancer, Association of Breast Surgery at BASO 2009, Eur J Surg Oncol (2009), doi:10.1016/j.ejso.2009.01.008

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## Question: 6

A 45-year-old office-clerk had come in to see her GP regarding a rash around the right nipple area. She complains that the areola region is itchy and sore. Further questioning also reveals that the rash has been there for 6 weeks and has not improved with E45 cream. She has a history of eczema that is well controlled with E45 only. She also reported that the rash started on the nipple and spreads outwards to the areola On examination the rash looks erythematous and crusty, it does not extend beyond the nipple-areola complex. What further steps should be taken?

Prescribe emollient with higher moisturising properties	9%
Breast clinic referral to be seen urgently by breast specialist	68%
Lifestyle changes	6%
Carry on with E45 cream and observe for another 2 weeks	6%
Refer for routine dermatology opinion	10%

The key to this question is in the history, the rash started on the nipple and spreads outwards involving the areola. Even if she has a history of eczema, this needs urgent attention by a breast consultant to rule out Paget's disease.

**Explanation:**

## Paget's disease of the nipple

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Treatment will depend on the underlying lesion.

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### Question: 7

A 19-year-old female presents to the GP with her mother, she is reporting a growing breast lump that is causing her distress. You offer to examine her and ask if she would like a chaperone. She says that she doesn't want a stranger there so would rather have her mum as the chaperone, what do you do?

Explain that family members cannot be used for chaperones and reoffer the patient someone at the practice to chaperone

45%

Accept the mother as a chaperone but ensure you have documented this in the notes

33%

Explain that family members cannot be chaperones and ask her to re-book for 2 weeks time

7%

Explain that family members cannot be chaperones and document this in her notes, continue with the examination on your own

9%

Explain that it isn't her choice who the chaperone is, continue with the examination on your own

6%

The GMC guidelines in Good Medical Practice Intimate examinations and chaperones states; 'When you carry out an intimate examination, you should offer the patient the option of having an impartial observer (a chaperone) present wherever possible. This applies whether or not you are the same gender as the patient. A chaperone should usually be a health professional and you must be satisfied that the chaperone will:

- be sensitive and respect the patients dignity and confidentiality
- reassure the patient if they show signs of distress or discomfort
- be familiar with the procedures involved in a routine intimate examination
- stay for the whole examination and be able to see what the doctor is doing, if practical
- be prepared to raise concerns if they are concerned about the doctors behaviour or actions.'

'A relative or friend of the patient is not an impartial observer and so would not usually be a suitable chaperone, but you should comply with a reasonable request to have such a person present as well as a chaperone. If either you or the patient does not want the examination to go ahead without a chaperone present, or if either of you is uncomfortable with the choice of chaperone, you may offer to delay the examination to a later date when a suitable chaperone will be available, as long as the delay would not adversely affect the patients health. If you don't want to go ahead without a chaperone present but the patient has said no to having one, you must explain clearly why you want a chaperone present. Ultimately the patients clinical needs must take precedence. You may wish to consider referring the patient to a colleague who would be willing to examine them without a chaperone, as long as a delay would not adversely affect the patients health. You should record any discussion about chaperones and the outcome in the patients medical record. If a chaperone is present, you should record that fact and make a note of their identity. If the patient does not want a chaperone, you should record that the offer was made and declined.'

You should not perform this examination without a chaperone or with the mother as one, thus the only option is to reoffer the chaperone or ask her to come back at a time when someone can do this. Making a patient with a growing breast lump wait for 2 weeks would be unreasonable.

**Explanation:**

## Benign breast lesions

Lesion	Features	Treatment
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Lesion	Features	Treatment
Fibroadenoma	<ul style="list-style-type: none"> <li>• Develop from a whole lobule</li> <li>• Mobile, firm breast lumps</li> <li>• 12% of all breast masses</li> <li>• Over a 2 year period up to 30% will get smaller</li> <li>• No increase in risk of malignancy</li> </ul>	If >3cm surgical excision is usual, Phyllodes tumours should be widely excised (mastectomy if the lesion is large)
Breast cyst	<ul style="list-style-type: none"> <li>• 7% of all Western females will present with a breast cyst</li> <li>• Usually presents as a smooth discrete lump (may be fluctuant)</li> <li>• Small increased risk of breast cancer (especially if younger)</li> </ul>	Cysts should be aspirated, those which are blood stained or persistently refill should be biopsied or excised
Sclerosing adenosis, (radial scars and complex sclerosing lesions)	<ul style="list-style-type: none"> <li>• Usually presents as a breast lump or breast pain</li> <li>• Causes mammographic changes which may mimic carcinoma</li> <li>• Cause distortion of the distal lobular unit, without hyperplasia (complex lesions will show hyperplasia)</li> <li>• Considered a disorder of involution, no increase in malignancy risk</li> </ul>	Lesions should be biopsied, excision is not mandatory

Lesion	Features	Treatment
Epithelial hyperplasia	<ul style="list-style-type: none"> <li>• Variable clinical presentation ranging from generalised lumpiness through to discrete lump</li> <li>• Disorder consists of increased cellularity of terminal lobular unit, atypical features may be present</li> <li>• Atypical features and family history of breast cancer confers greatly increased risk of malignancy</li> </ul>	If no atypical features then conservative, those with atypical features require either close monitoring or surgical resection
Fat necrosis	<ul style="list-style-type: none"> <li>• Up to 40% cases usually have a traumatic aetiology</li> <li>• Physical features usually mimic carcinoma</li> <li>• Mass may increase in size initially</li> </ul>	Imaging and core biopsy
Duct papilloma	<ul style="list-style-type: none"> <li>• Usually present with nipple discharge</li> <li>• Large papillomas may present with a mass</li> <li>• The discharge usually originates from a single duct</li> <li>• No increase risk of malignancy</li> </ul>	Microdochectomy

A 68-year-old woman is assessed in the breast clinic after having an abnormal mammogram. Clinical exam of the breast reveals a small fixed lump in the right breast. What is the most common type of breast cancer?

Invasive lobular carcinoma	20%
Inflammatory breast cancer	8%
Invasive ductal carcinoma (no special type)	58%
Paget's disease of the nipple	6%
Tubular breast cancer	8%

Invasive ductal carcinoma (no special type) is the most common type of breast cancer

[Important for me](#) [Less important](#)

### Explanation:

## Breast cancer: types and classification

The terminology surrounding breast cancer can sometimes be confusing and has changed over recent years. It is useful to start by considering basic breast anatomy

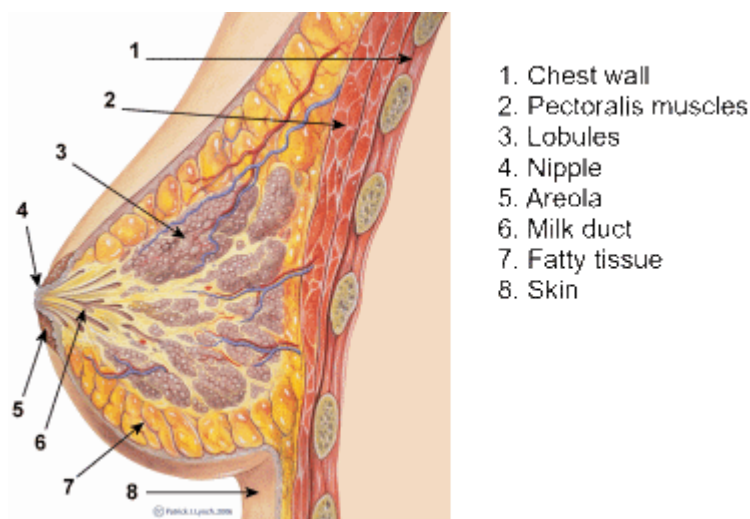


Image sourced from [Wikipedia](#)



## Basic breast anatomy

Most breast cancers arise from duct tissue followed by lobular tissue, described as **ductal** or **lobular carcinoma** respectively. These can be further subdivided as to whether the cancer hasn't spread beyond the local tissue (described as **carcinoma-in-situ**) or has spread (described as **invasive**). Therefore, common breast cancer types include:

- **Invasive ductal carcinoma.** This is the most common type of breast cancer. To complicate matters further this has recently been renamed '**No Special Type (NST)**'. In contrast, lobular carcinoma and other rarer types of breast cancer are classified as 'Special Type'
- **Invasive lobular carcinoma**
- **Ductal carcinoma-in-situ (DCIS)**
- **Lobular carcinoma-in-situ (LCIS)**

Rarer types of breast cancer are shown in the following list. These are classed as 'Special Type' but as noted previously remember that a relatively common type of breast cancer (lobular) is also Special Type:

- Medullary breast cancer
- Mucinous (muroid or colloid) breast cancer
- Tubular breast cancer
- Adenoid cystic carcinoma of the breast
- Metaplastic breast cancer
- Lymphoma of the breast
- Basal type breast cancer
- Phyllodes or cystosarcoma phyllodes
- Papillary breast cancer

Other types of breast cancer include the following (although please note they may be associated with the underlying lesions seen above, rather than completely separate subtypes):

**Paget's disease of the nipple** is an eczematoid change of the nipple associated with an underlying breast malignancy and it is present in 1-2% of patients with breast cancer. In half of these patients, it is associated with an underlying mass lesion and 90% of such patients will have an invasive carcinoma. 30% of patients without a mass lesion will still be found to have an underlying carcinoma. The remainder will have carcinoma in situ.

**Inflammatory breast cancer** where cancerous cells block the lymph drainage resulting in an inflamed appearance of the breast. This accounts for around 1 in 10,000 cases of breast cancer.



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### Question: 9

A 38-year-old lady who smokes heavily presents with recurrent episodes of infection in the right breast. On examination, she has an indurated area at the lateral aspect of the nipple areolar complex. Imaging shows no mass lesions. What is the most likely diagnosis?

Duct ectasia	20%
Periductal mastitis	39%
Paget's disease of the nipple	23%
Mondor's disease of the breast	13%
Radial scar	5%

Periductal mastitis is common in smokers and may present with recurrent infections. Treatment is with co-amoxiclav. Mondor's disease of the breast is a localised thrombophlebitis of a breast vein.

#### **Explanation:**

## Mastitis

Mastitis affects around 1 in 10 breastfeeding women.

### **Management**

The first-line management of mastitis is to continue breastfeeding.

The BNF advises treating 'if systemically unwell, if nipple fissure present, if symptoms do not improve after 12-24 hours of effective milk removal or if culture indicates infection'. The first-line antibiotic is flucloxacillin for 10-14 days, reflecting the fact that the most common organism causing infective mastitis is *Staphylococcus aureus*. Breastfeeding or expressing should continue during treatment.

If left untreated, mastitis may develop into a breast abscess. This generally requires incision and drainage.

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### Question: 10

A 45 year old woman presents with a 3cm breast lump. She undergoes a mammogram, biopsy and CT scan for staging. Investigations reveal this to be a single ER+ve, HER2-ve tumour, confined to the breast. What is the next stage of management?

Mastectomy	20%
Radiotherapy	7%
Wide local excision	42%
Tamoxifen	25%
Herceptin	7%

Surgery is the first line management for breast cancer. If the tumour is less than 4cm a wide local excision (breast conserving surgery) is favoured.

Herceptin would not be an option for this lady as she is HER2-receptor negative however hormonal therapy with tamoxifen would be an option after surgery as the tumour is oestrogen receptor (ER) positive.

#### **Explanation:**

## Breast cancer: management

The management of breast cancer depends on the staging, tumour type and patient background. It may involve any of the following:

- surgery
- radiotherapy
- hormone therapy
- biological therapy
- chemotherapy

### **Surgery**

The vast majority of patients who have breast cancer diagnosed will be offered surgery. An exception may be a very frail, elderly lady with metastatic disease who may be better managed with hormonal therapy.

Prior to surgery, the presence/absence of axillary lymphadenopathy determines management:

- women with no palpable axillary lymphadenopathy at presentation should have a pre-operative axillary ultrasound before their primary surgery
  - if positive then they should have a sentinel node biopsy to assess the nodal burden
- in patients with breast cancer who present with clinically palpable lymphadenopathy, axillary node clearance is indicated at primary surgery
  - this may lead to arm lymphedema and functional arm impairment

Depending on the characteristics of the tumour women either have a wide-local excision or a mastectomy. Around two-thirds of tumours can be removed with a wide-local excision. The table below lists some of the factors determining which operation is offered:

<b>Mastectomy</b>	<b>Wide Local Excision</b>
Multifocal tumour	Solitary lesion
Central tumour	Peripheral tumour
Large lesion in small breast	Small lesion in large breast
DCIS > 4cm	DCIS < 4cm

Women should be offered breast reconstruction to achieve a cosmetically suitable result regardless of the type of operation they have. For women who've had a mastectomy this may be done at the initial operation or at a later date.

## **Radiotherapy**

Whole breast radiotherapy is recommended after a woman has had a wide-local excision as this may reduce the risk of recurrence by around two-thirds. For women who've had a mastectomy radiotherapy is offered for T3-T4 tumours and for those with four or more positive axillary nodes

## **Hormonal therapy**

Adjuvant hormonal therapy is offered if tumours are positive for hormone receptors. For many years this was done using tamoxifen for 5 years after diagnosis. Tamoxifen is still used in pre- and peri-menopausal women. In post-menopausal women, aromatase inhibitors such as anastrozole are used for this purpose\*. This is important as aromatisation accounts for the majority of oestrogen production in post-menopausal women and therefore anastrozole is used for ER +ve breast cancer in this group.

Important side-effects of tamoxifen include an increased risk of endometrial cancer, venous thromboembolism and menopausal symptoms.

## Biological therapy

The most common type of biological therapy used for breast cancer is trastuzumab (Herceptin). It is only useful in the 20-25% of tumours that are HER2 positive.

Trastuzumab cannot be used in patients with a history of heart disorders.

## Chemotherapy

Cytotoxic therapy may be used either prior to surgery ('neoadjuvant' chemotherapy) to downstage a primary lesion or after surgery depending on the stage of the tumour, for example, if there is axillary node disease - FEC-D is used in this situation.

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## Question: 11

You are a junior doctor working in a surgical firm. One of your patients is a 53-year-old female with metastatic breast cancer who has been admitted with worsening abdominal swelling and ascites. Over the last 6 weeks, she has been refusing her chemotherapy as she has decided to opt for a herbal treatment. Her disease is worsening and she is in a lot of pain. What do you do?

Advise her to continue with the herbal medication	6%
Advise them to discuss this with their oncologist and offer to ask the oncologist to see her on the ward	66%
Inform her that the herbal medication is pointless	7%
Inform her she must restart chemotherapy for any of the doctors to take her seriously	8%
Make the decision that if she doesn't want more chemotherapy she is to start end of life	

The GMC good medical practice states that you should treat patients fairly and with respect whatever their beliefs or life choices.

It wouldn't be fair or treating this lady with respect to respond with either answer 3 or 4. Answer 5 is highly inappropriate, just because she is refusing chemotherapy doesn't mean you should withdraw all care and place her just on symptomatic relief, she is only 53 and thus there may be other options available for her.

This leaves you with answer 1 and 2, answer 1 wouldn't be ideal, although you are respecting her there may be other options available to her that, if you explained would be beneficial.

**Explanation:**

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The management of breast cancer depends on the staging, tumour type and patient background. It may involve any of the following:

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- radiotherapy
- hormone therapy
- biological therapy
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### Surgery

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### Question: 12

A 22 year old lady presents with lump in the right breast. She reports it has been present for around 4 months but she has grown increasingly concerned as it has not gone away. On examination there is a 2cm smooth lump in the right breast. It is mobile and not fixed to the skin. There are no nipple or skin changes. What is the most likely diagnosis?

Breast cyst	9%
Ductal carcinoma-in-situ	6%
Fat necrosis	6%
Fibroadenoma	73%
Breast abscess	5%

Fibroadenomas are the most common breast lumps in women aged 15-25. They are typically less than 3cm in size, are firm and mobile. They are not concerning and tend to resolve over a few years.

Fat necrosis occurs after trauma to the breast e.g. from a sports injury or following procedures such as core needle biopsy. The area may be tender with visible bruising. It is usually self-resolving and unlikely to persist for this long.

### Explanation:

## Benign breast lesions

Lesion	Features	Treatment
Fibroadenoma	<ul style="list-style-type: none"> <li>• Develop from a whole lobule</li> <li>• Mobile, firm breast lumps</li> <li>• 12% of all breast masses</li> <li>• Over a 2 year period up to 30% will get smaller</li> <li>• No increase in risk of malignancy</li> </ul>	If >3cm surgical excision is usual, Phyllodes tumours should be widely excised (mastectomy if the lesion is large)
Breast cyst	<ul style="list-style-type: none"> <li>• 7% of all Western females will present with a breast cyst</li> <li>• Usually presents as a smooth discrete lump (may be fluctuant)</li> <li>• Small increased risk of breast cancer (especially if younger)</li> </ul>	Cysts should be aspirated, those which are blood stained or persistently refill should be biopsied or excised
Sclerosing adenosis, (radial scars and complex sclerosing lesions)	<ul style="list-style-type: none"> <li>• Usually presents as a breast lump or breast pain</li> <li>• Causes mammographic changes which may mimic carcinoma</li> <li>• Cause distortion of the distal lobular unit, without hyperplasia (complex lesions will show hyperplasia)</li> <li>• Considered a disorder of involution, no increase in malignancy risk</li> </ul>	Lesions should be biopsied, excision is not mandatory



Lesion	Features	Treatment
Epithelial hyperplasia	<ul style="list-style-type: none"> <li>• Variable clinical presentation ranging from generalised lumpiness through to discrete lump</li> <li>• Disorder consists of increased cellularity of terminal lobular unit, atypical features may be present</li> <li>• Atypical features and family history of breast cancer confers greatly increased risk of malignancy</li> </ul>	If no atypical features then conservative, those with atypical features require either close monitoring or surgical resection
Fat necrosis	<ul style="list-style-type: none"> <li>• Up to 40% cases usually have a traumatic aetiology</li> <li>• Physical features usually mimic carcinoma</li> <li>• Mass may increase in size initially</li> </ul>	Imaging and core biopsy
Duct papilloma	<ul style="list-style-type: none"> <li>• Usually present with nipple discharge</li> <li>• Large papillomas may present with a mass</li> <li>• The discharge usually originates from a single duct</li> <li>• No increase risk of malignancy</li> </ul>	Microdochectomy

A 44-year-old woman is diagnosed with breast cancer. She has no past medical history of note, is pre-menopausal and has no family history of breast or ovarian cancer. Staging suggests early disease and she has a wide-local excision followed by whole-breast radiotherapy. Pathology results show that the tumour is oestrogen receptor positive, HER2 negative. Which one of the following adjuvant treatments is she most likely to be offered?

Anastrozole	14%
Letrozole	6%
Tamoxifen	63%
Trastuzumab (Herceptin)	10%
Cytotoxic therapy with epirubicin, cyclophosphamide and fluorouracil	7%

Tamoxifen is used as the woman is pre-menopausal. There is ongoing debate about whether therapy should be for 5 years or longer.

**Explanation:**

## Breast cancer: management

The management of breast cancer depends on the staging, tumour type and patient background. It may involve any of the following:

- surgery
- radiotherapy
- hormone therapy
- biological therapy
- chemotherapy

### Surgery

The vast majority of patients who have breast cancer diagnosed will be offered surgery. An exception may be a very frail, elderly lady with metastatic disease who may be better managed with hormonal therapy.

Prior to surgery, the presence/absence of axillary lymphadenopathy determines management:

- women with no palpable axillary lymphadenopathy at presentation should have a pre-operative axillary ultrasound before their primary surgery
  - if positive then they should have a sentinel node biopsy to assess the nodal burden
- in patients with breast cancer who present with clinically palpable lymphadenopathy, axillary node clearance is indicated at primary surgery
  - this may lead to arm lymphedema and functional arm impairment

Depending on the characteristics of the tumour women either have a wide-local excision or a mastectomy. Around two-thirds of tumours can be removed with a wide-local excision. The table below lists some of the factors determining which operation is offered:

<b>Mastectomy</b>	<b>Wide Local Excision</b>
Multifocal tumour	Solitary lesion
Central tumour	Peripheral tumour
Large lesion in small breast	Small lesion in large breast
DCIS > 4cm	DCIS < 4cm

Women should be offered breast reconstruction to achieve a cosmetically suitable result regardless of the type of operation they have. For women who've had a mastectomy this may be done at the initial operation or at a later date.

## **Radiotherapy**

Whole breast radiotherapy is recommended after a woman has had a wide-local excision as this may reduce the risk of recurrence by around two-thirds. For women who've had a mastectomy radiotherapy is offered for T3-T4 tumours and for those with four or more positive axillary nodes

## **Hormonal therapy**

Adjuvant hormonal therapy is offered if tumours are positive for hormone receptors. For many years this was done using tamoxifen for 5 years after diagnosis. Tamoxifen is still used in pre- and peri-menopausal women. In post-menopausal women, aromatase inhibitors such as anastrozole are used for this purpose\*. This is important as aromatisation accounts for the majority of oestrogen production in post-menopausal women and therefore anastrozole is used for ER +ve breast cancer in this group.

Important side-effects of tamoxifen include an increased risk of endometrial cancer, venous thromboembolism and menopausal symptoms.

## Biological therapy

The most common type of biological therapy used for breast cancer is trastuzumab (Herceptin). It is only useful in the 20-25% of tumours that are HER2 positive.

Trastuzumab cannot be used in patients with a history of heart disorders.

## Chemotherapy

Cytotoxic therapy may be used either prior to surgery ('neoadjuvant' chemotherapy) to downstage a primary lesion or after surgery depending on the stage of the tumour, for example, if there is axillary node disease - FEC-D is used in this situation.

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## Question: 14

A 49-year-old woman presents with a 2 week history of left nipple itching. There has been no discharge from the nipple and there is no personal or family history of breast disease. The patient's history is remarkable for asthma and eczema.

On examination, the left nipple and surrounding areola are reddened and the skin appears thickened. Examination of both breasts is otherwise unremarkable.

What is the most appropriate next step in management?

Routine referral to breast clinic	15%
Topical emollient	18%
Topical emollient + antibiotic	10%
Topical steroid	10%
Urgent referral to breast clinic	47%

Reddening and thickening of nipple and areola â†’ think Paget's disease of the breast

Important for me Less important

This may well be nipple eczema, as the patient has a history of atopy and no personal or family history of breast disease. However, it is crucial to exclude the diagnosis of Paget's disease of the breast, which presents in a very similar way, particularly as the problem is unilateral.

Additional symptoms that may be present in Paget's disease are bloody nipple discharge and an underlying breast lump.

**Explanation:**

## Paget's disease of the nipple

Paget's disease is an eczematoid change of the nipple associated with an underlying breast malignancy and it is present in 1-2% of patients with breast cancer. In half of these patients, it is associated with an underlying mass lesion and 90% of such patients will have an invasive carcinoma. 30% of patients without a mass lesion will still be found to have an underlying carcinoma. The remainder will have carcinoma in situ.

Paget's disease differs from eczema of the nipple in that it involves the nipple primarily and only latterly spreads to the areolar (the opposite occurs in eczema).

Diagnosis is made by punch biopsy, mammography and ultrasound of the breast.

Treatment will depend on the underlying lesion.

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### Question: 15

A 57-year-old woman with a recent diagnosis of breast cancer is found to be positive for a BRCA1 mutation on genetic screening. She has a strong family history of breast cancer, with both her mother and aunt receiving treatment for the condition at a young age.

She is concerned that she may have passed the gene onto her son and daughter. She is also concerned that her sister may have the gene, given her family history.

In counselling this lady, which of the following is the most appropriate statement with regards to the risk of her family inheriting the BRCA1 gene?

Sister and daughter have a 50% chance of inheriting the gene while her son has a 25% risk	23%
Both children and her sister have a 25% chance of inheriting the gene	14%
Both children and her sister have a 50% chance of inheriting the gene	34%
Both children have 25% chance of inheriting the gene while her sister has a 50% chance	20%
Both children and her sister have a 100% chance of inheriting the gene	10%

There is a 50/50 chance of siblings and children of BRCA1 carrier to also have the gene

[Important for me](#) [Less important](#)

While BRCA1 and 2 mutations only account for 5-10% of breast cancers, it is reasonable to suspect a genetic component when there is a strong family history of any form of malignancy. BRCA gene mutations are almost always heterozygous and are inherited in an autosomal dominant fashion. As such, having one parent with the mutation results in a 50% chance of that gene being passed on to a child.

1) Gender differences in inheritance can only occur if the mutation in question is X or Y linked, which is not the case with BRCA1. Additionally, if this would be the case, it could not be a 25% risk for the son.

2) A 25% risk is only possible if a causative mutation is autosomal recessive, and then it would only be true for the development of the condition. The risk of inheriting a faulty gene is still 50%, which is what the question is asking.

3) is correct

4) As for 2, it is only possible to have a 25% risk in the context of autosomal recessive mutations.

5) It would only be possible to have a 100% risk for everyone if both the patient and her mother were homozygous for the BRCA1 mutation, and her father was at least a carrier. As the vast majority of BRCA1 mutations are heterozygous, this is an unlikely scenario.

**Explanation:**

# Breast cancer: risk factors

## Predisposing factors

- BRCA1, BRCA2 genes - 40% lifetime risk of breast/ovarian cancer
- 1st degree relative premenopausal relative with breast cancer (e.g. mother)
- nulliparity, 1st pregnancy > 30 yrs (twice risk of women having 1st child < 25 yrs)
- early menarche, late menopause
- combined hormone replacement therapy (relative risk increase \* 1.023/year of use), combined oral contraceptive use
- past breast cancer
- not breastfeeding
- ionising radiation
- p53 gene mutations
- obesity
- previous surgery for benign disease (?more follow-up, scar hides lump)

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## Question: 16

A 56-year-old lady initially presented with a hard painless lump in her left breast and was recently diagnosed with invasive ductal carcinoma following a core biopsy. Her last menstrual period was over 7 years ago and she has no history of ovarian/endometrial cancer. Hormone receptor studies from the biopsy came back as:

Oestrogen receptor (ER)	positive
Progesterone receptor (PR)	positive
Her-2 receptor (HER-2)	negative

She had left mastectomy and axillary node clearance followed by radiotherapy. She is seen in breast clinic 1 month later and is making a good recovery, with no signs of recurrence.

What mode of hormonal therapy should she be offered?

None	11%
Tamoxifen for 5 years	43%
Trastuzumab	9%

Anastrozole	28%
Tamoxifen for 10 years	10%

Adjuvant hormonal therapy for ER +ve breast cancer: anastrozole in post-menopausal women

Important for me [Less important](#)

Anastrozole is an aromatase inhibitor that reduces peripheral oestrogen synthesis. This is important as aromatisation accounts for the majority of oestrogen production in post-menopausal women and therefore anastrozole is used for ER +ve breast cancer in this group.

### **Explanation:**

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