Half of women will seek medical attention for a breast complaint in their lifetime.

History

duration of symptoms
change over time or related to menstrual cycle
previous breast complaints or surgeries
gyn history
family history
full medical and social history
GYN history

- gravidity and parity
- age at first delivery
- age at menarche
- age at menopause
- hormone use
  - OCP, HRT and fertility drugs
Family history

maternal and paternal familyimportant
breast, ovarian cancer
endometrial, pancreatic, etc
age at onset
**Physical Exam**

*Asymmetry*

*Skin changes*

  may be helpful to have hands on hips sitting up

**Palpate all breast tissue**

  pads of fingers
  circular motion or back and forth
  most important – examine the entire breast

**Masses**

  circumscribed
  mobile
  firmness

**Nodes**

  axillary, supraclavicular, infraclavicular
Standard Breast Imaging

Mammogram
  Screening
  Diagnostic
    with ultrasound as indicated

Ultrasound
  cystic vs solid
  image guided biopsy

MRI
  expensive
  false positives
  image-guided biopsy difficult
Digital breast tomosynthesis
- rotates the X-ray tube through a limited arc
- improves detection of masses that may have been obscured
- may improve staging

Contrast Enhanced Digital Mammography
- expensive
- contrast curves similar to MRI
- pairs of “low energy” and “high energy” images
- iodine not detected at low energy

Dual energy mammography
- photon counting
Tomosynthesis

Fig 1. (A) Medio-lateral oblique (MLO) mammograms showing dense breast tissue with asymmetry on the left (arrow). (B) The tomosynthesis clearly shows a spiculate mass.
Fig 2. (A) Left Medio-lateral oblique (MLO) mammogram showing a possible spiculate mass posteriorly (arrow). (B) The tomosynthesis view clearly shows this was due to superimposition of glandular tissue.
Fig 3. Dual-energy contrast-enhanced mammogram carried out for a possible area of distortion in the right breast on screening mammography. The subtraction views on the right of each set clearly show an enhancing irregular mass that was an invasive ductal cancer on biopsy (Arrows).
Advantages of digital mammography include all of the following except:

1. Lower radiation dose
2. Improved detection of malignancy in older women
3. Easier storage
4. Improved detection of malignancy in women with dense breasts
5. 2 and 4
Which of the following is true regarding BIRADS category?

1. BIRADS 1 means there is a finding, but it is probably benign, 1 yr f/u
2. BIRADS 2 means there is a finding, probably benign, 6 month f/u
3. BIRADS 3 means there is a suspicious finding, biopsy
4. BIRADS 4 means there is a suspicious finding, biopsy
5. BIRADS 5 means the lesion is cancer, proceed w/ therapy, no biopsy needed
<table>
<thead>
<tr>
<th>BIRADS Categories</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Needs additional views or old films</td>
</tr>
<tr>
<td>1</td>
<td>Normal – no findings, annual screening</td>
</tr>
<tr>
<td>2</td>
<td>Findings, benign, annual screening</td>
</tr>
<tr>
<td>3</td>
<td>Probably benign findings, short-term f/u</td>
</tr>
<tr>
<td>4</td>
<td>Suspect malignancy, biopsy</td>
</tr>
<tr>
<td>5</td>
<td>Highly suspicious for malignancy, biopsy</td>
</tr>
<tr>
<td>6</td>
<td>Known malignancy, treat</td>
</tr>
</tbody>
</table>
Masses
Cysts

Common in premenopausal women
Differentiated from solid by usg
No need for aspiration in asymptomatic women
Aspiration for symptomatic
  no need for cytology if not bloody
  core biopsy if the mass does not disappear
“Complex” cysts need biopsy or at least, short-term followup
Solid Masses

PE unreliable to differentiate benign vs malignant
Tissue diagnosis only reliable way
Fibroadenoma

Excision

- symptomatic – uncommon
- increase in size
- non-diagnostic needle biopsy
- needle biopsy with atypia or hypercellularity
- patient desire
Which of the following is true regarding phyllodes tumors?

1. 45% are malignant
2. ALND should be performed if malignant
3. Excision w/ 1 cm margin is the treatment of choice
4. Radiation therapy is an important component of Rx
Phyllodes Tumor

Clinically similar to fibroadenoma

Axillary mets rare

Tumor grade based on:

- stromal cellularity
- stromal atypia
- tumor margin on microscope exam
- mitoses per 10 high power fields
- tumor size
Other breast complaints
Suspicious characteristics of nipple discharge include:

1. Bloody or clear
2. Multiple ducts
3. Spontaneous
4. Bilateral
5. 1 and 3
Nipple Discharge

History and Physical Exam

Character
- bloody or clear vs milky or green

Location
- unilateral vs bilateral

Occurrence
- spontaneous vs expressed

Ducts
- single vs multiple
Nipple Discharge

Imaging

Mammogram
Ultrasound
  intraductal masses
Galactogram
  mass in duct or cutoff of duct

Other

Ductoscopy
Nipple Discharge

Treatment

Duct excision

major or microdochectomy
Mammogram and USG

Dilated ducts

Intraductal mass
Ductoscopy

normal

papilloma
Mastalgia

History and Physical exam

- location
- duration
- relation to menses
- malignancy increased likelihood in:
  - postmenopausal on no HRT
  - abnormal physical findings
Mastalgia

Differential Diagnosis

- Breast related
  - Mastitis
  - Trauma
  - Thrombophelbitis
  - Cysts
  - Benign tumors
  - Cancer

- Musculoskeletal
  - Chest wall pain
  - Costochondritis
  - Fibromyalgia
  - Cervical radiculopathy
  - Shoulder pain
  - Herpes zoster

- Miscellaneous
  - CAD/angina
  - Pericarditis
  - PE
  - Pleurisy
  - GERD
  - PUD
  - Cholelithiasis/cystitis
  - Sickle cell crisis
  - Psychological
  - Pregnancy
  - Medications
  - Methylxanthines
Mastalgia - cancer -

Overall 1.2 – 7%

With nl clinical and radiographic eval – 0.5%

Unilateral

Non-cyclic

Constant position

Negative clinical evaluation < 1%
Mastalgia

- medications -

NSAID’s
Evening Primrose oil
Hormonal
  Danazol
  Tamoxifen
  OCP
  Goserelin
Bromocriptine
Supportive bra
Surgery
Breast Infection and Inflammation

Non-lactational

may be associated with duct ectasia
multiple organisms
nipple inversion
chronic fistula

treatment

I&D with antibiotics for skin organisms for chronic, may require duct excision resection of NAC
Risk factors for breast cancer – which of the following is/are true?

1. 25% of breast cancers are hereditary
2. Smoking increases the risk of breast cancer
3. LCIS is considered an “obligate” precursor to invasive lobular cancer
4. In the majority of women with breast cancer, gender is their only risk factor
5. 2 and 4 are correct
High Risk Patients

Gene mutations
- BRCA 1 and 2
- also PTEN, p53

Family history
- 10% or less of breast cancers are hereditary

DCIS
LCIS
- either breast

ADH
Radiation exposure
Risk Factor Assessment

http://www.cancer.gov/bcrisktool

Risk Calculator

(Click a question number for a brief explanation, or read all explanations.)

1. Does the woman have a medical history of any breast cancer or ductal carcinoma in situ (DCIS) or lobular carcinoma in situ (LCIS)?

2. What is the woman's age? This tool only calculates risk for women 35 years of age or older.

3. What was the woman's age at the time of her first menstrual period?

4. What was the woman's age at the time of her first live birth of a child?

5. How many of the woman's first-degree relatives - mother, sisters, daughters - have had breast cancer?

6. Has the woman ever had a breast biopsy?

6a. How many breast biopsies (positive or negative) has the woman had?

6b. Has the woman had at least one breast biopsy with atypical hyperplasia?

7. What is the woman's race/ethnicity?
HEREDITARY BREAST AND/OR OVARIAN CANCER SYNDROME TESTING CRITERIA

- Individual from a family with a known deleterious BRCA1/BRCA2 mutation
- Personal history of breast cancer with one or more of the following:
  - Diagnosed age ≤ 45 y
  - Diagnosed age ≤ 50 y with ≥ 1 close blood relative with breast cancer ≤ 50 y and/or ≥ 1 close blood relative with epithelial ovarian cancer at any age
  - Two breast primaries when first breast cancer diagnosis occurred ≤ age 50 y
  - Diagnosed age ≤ 60 y with a triple negative breast cancer
  - Diagnosed age ≤ 50 y with a limited family history
  - Diagnosed at any age, with ≥ 2 close blood relatives with breast and/or epithelial ovarian cancer at any age
  - Diagnosed at any age with ≥ 2 close blood relatives with pancreatic cancer at any age
  - Close male blood relative with breast cancer
  - For an individual of ethnicity associated with higher mutation frequency (e.g., Ashkenazi Jewish) no additional family history may be required

- Personal history of epithelial ovarian cancer
- Personal history of male breast cancer
- Personal history of pancreatic cancer at any age with ≥ 2 close blood relatives with breast and/or ovarian cancer and/or pancreatic cancer at any age

Family history only
- Testing of unaffected family members should only be considered when no affected family member is available and then the unaffected family member with the highest probability of mutation should be tested. Significant limitations of interpreting test results should be discussed.
  - First- or second-degree blood relative meeting any of the above criteria
  - Third-degree blood relative with breast cancer and/or ovarian cancer with ≥ 2 close blood relatives with breast cancer (at least one with breast cancer ≤ 50 y) and/or ovarian cancer

See Follow-up (HBOC-2)
BRCA 1 and 2

- Carrier frequency: 1/500 to 1/1,000
- Ashkenazi Jewish: 1/40

<table>
<thead>
<tr>
<th>Cancer site</th>
<th>BRCA1 Lifetime risk %</th>
<th>BRCA2 Lifetime risk %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>55-85%</td>
<td>55-85%</td>
</tr>
<tr>
<td>Contralateral Breast</td>
<td>40-60%</td>
<td>40-60%</td>
</tr>
<tr>
<td>Ovary</td>
<td>20-45%</td>
<td>10-20%</td>
</tr>
<tr>
<td>Male Breast</td>
<td>1-2%</td>
<td>6-8%</td>
</tr>
<tr>
<td>Pancreatic</td>
<td>Variable depending on study</td>
<td>7%</td>
</tr>
<tr>
<td>Prostate, Melanoma, Gastric</td>
<td>Variable depending on study</td>
<td>Variable depending on study</td>
</tr>
<tr>
<td>Cancer Site (lifetime risk)</td>
<td>Management</td>
<td>Age of Initiation</td>
</tr>
<tr>
<td>----------------------------</td>
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</tr>
</tbody>
</table>
| Breast (55-85%)            | •Annual mammogram and breast MRI  
•Clinical Breast exam every 6 months  
•Discussion of prophylactic mastectomy  
•Chemoprevention (i.e. tamoxifen) for women electing breast conservation | 25y  
25y |
| Ovarian (20-45%)           | •Transvaginal ultrasound and CA-125 levels every 6 months  
•Recommend BSO  
•Chemoprevention (i.e. OCP) | 30y  
35-40y |
| Male Breast (6%)           | •Clinical Breast exam every 6-12 months  
•Consider baseline mammogram | 35y  
40y |
| Pancreatic (7%)            | •No recommendations |