



# **Breast Procedure Manual**

**Georgia Department of Public Health  
Division of Health Promotion  
Chronic Disease Prevention Section  
Breast and Cervical Cancer Program**

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# Forward

Georgia has a history of more than fifty years of cancer control activities and is committed to prevention and early detection. Statewide services at local health departments and contracted providers include comprehensive breast and cervical cancer screening and referral for breast imaging, (mammogram &/or ultrasound). The Georgia Breast and Cervical Cancer Program, a component of the Chronic Disease Prevention Section under the Health Promotion Division of the Department of Public Health, using state and federal funds works to provide clinical breast examinations, mammogram referrals, pelvic examinations, Pap tests, and diagnostic follow up. These programs assure quality services and case management.

In a joint effort to continue to provide state of the art clinical services to eligible patients, the Georgia Breast and Cervical Cancer Program, BCCP, has drawn from the expertise of public health nurses, the BCCP's Medical Advisory Committee, and current recommendations from the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) and the CDC. This manual provides current breast information and clinical practice guidelines.

## Introduction

Breast cancer is the second leading cause of cancer deaths in Georgia. Aside from non-melanoma skin cancer, breast cancer is the most common form of cancer in women and is the leading cause of cancer incidence among females in Georgia. It is estimated that more than 5,000 new invasive breast cancers and 1,250 in situ breast cancers will be diagnosed annually in Georgia. Approximately one percent of breast cancer cases will occur in males.

Georgia has participated in the National Breast and Cervical Cancer Early Detection Program, NBCCEDP, since 1995. With money received from both the state and federal grants, the Georgia Breast and Cervical Cancer Program, BCCP, serves about 15-18%, (15,000 – 18,000 women annually), of the eligible population in Georgia.

With the increase in early detection of breast cancer through regular screening, the mortality rate has decreased 1.9% per year from 1998-2006. Diagnosis at an early stage, “in situ”, can result in a 97% survival rate. According to the Georgia Behavioral Risk Factor Surveillance System, (GABRFSS), 83.2% of women age 40-64 received mammogram screening in Georgia in 2011, which exceeds the Healthy People 2020 objective of 81.1%. However, there are still women who do not follow the breast screening guidelines. Reasons women have given for not being screened are:

- Doctor never recommended a mammogram
- Feel they don't need screening because of no family history
- Fear of doctors, pain, radiation, and cancer
- Cost since they do not have insurance
- No symptoms or no prior breast problems
- Lack of time

Unfortunately, many women are not receiving recommended screenings. Women in rural areas of the state, older women, and low-income women of all races are less likely to be screened. Low-income women age 40-64 with less than \$15,000 annual income have a screening rate of 73.6% according to the 2011 GABRFSS. However, the higher than state average breast cancer mortality rate has been noted in the urban areas such as Fulton, Clayton, DeKalb, and Columbus. To meet the needs of all communities in Georgia, the main objectives of the Georgia BCCP are to identify those never or rarely screened women and to recruit them into the program through outreach efforts. Secondly, to encourage completion of the screening, diagnostic studies and initiation of treatment in a timely manner to reduce the mortality rate thereby improving the survival rate.

Georgia plans to achieve these objectives through state and local partnerships and a focus on education on the effectiveness of mammography, clinical breast examination, breast self-exam, and the removal of barriers to screening and diagnosis. The purpose of this manual is to provide information regarding breast conditions, early detection, risk factors, screening, diagnosis, and treatment. Its purpose is to serve as a procedure guide and resource for the delivery of quality services to Georgia's women in need.

# **Anatomy and Physiology of the Breast**

## **Section I**

# The Normal Breast

## Anatomy and Physiology

The breast is a mass of glandular tissue, composed of epithelial cells, and is arranged into 15-20 lobes per breast that radiate from the nipple. Each of these lobes is composed of lobules, made up of acini, which produce milk during pregnancy and lactation. Lobules are drained by small ducts that empty into larger ducts. These large ducts expand into lactiferous sinuses located behind the areola. These sinuses contribute to feeling granularity under the areola on physical examination. The ducts carry the milk to the nipple.

The nipple areolar complex consists of the nipple, areola, and areola sinuses. Eighteen percent of breast cancers are found in the subareolar region. This region is not easily palpated unless using a technique that permits palpation to the chest wall. Supernumerary nipples and/or breast and inverted nipples are congenital conditions that occur in about 10% of the population. Supernumerary nipples occur along the imaginary line from the axillary to the umbilicus and should be screened and diagnosed in the same manner as any breast cancer.

There are no muscles inside the breast except the circular muscles around the nipple that assist with lactation. The subcutaneous and retromammary fat compose most of the bulk of the breast. The proportions of each of these tissue components vary with age, nutritional status, pregnancy, lactation, and genetic predisposition.

The consistency of breast lobes varies from woman to woman and may even vary in an individual from side to side. However, in general the glandular portion of the breast has a firm, slightly nodular feel to it. Surrounding the lobes is breast fat. Unlike the lobes, the fat is almost always soft. The discrepancies in textures between these two components allow one to outline the lobes by carefully palpating the breast. The difference in density between glandular breast tissue and breast fat is also the basis for mammographic imaging. In contrast, the ducts of the breast are usually not palpable unless they are engorged with milk, inflamed, or contain a tumor.

The breasts are positioned over the pectoral muscles of the chest wall and are supported by Cooper's ligaments, fibrous bands attached beneath the skin that extend to the pectoralis major muscle. Breast tissue extends from the second rib near the clavicle, to the mammary ridge, inferiorly, and from the edge of the sternum to the latissimus dorsi. At the lower border is a normal crescent shaped thickening called the inframammary ridge. The upper outer quadrant of the breast that may extend into the axillary area is called the "Tail of Spence". This quadrant contains a preponderance of glandular tissue and is the site of almost 50% of all breast cancers.

The breasts of younger women are primarily composed of glandular tissue with only a small percentage of fat. Thus, they are firmer and denser on mammography than in older counterparts. As women age, especially with the loss of estrogen at menopause,

the lobes involute and are replaced by fat. The breasts become softer, less dense, and lose their support. Physical examination and mammography are easier to interpret due to the decreased density of the breast.

Whereas all components of the breast are influenced by female hormones, the glandular tissue is most sensitive. Very dramatic and very normal changes can occur in the consistency of the breasts during the menstrual cycle. During the follicular phase, between days one and seven of a woman's menstrual cycle, estrogen levels are low and progesterone is not present. Days 5-10 of the cycle are when the breasts are the least tender. Estrogen increases until about day 14 when ovulation results in the production of progesterone or the luteal phase. Blood vessels, stromal tissue, and ducts become engorged resulting in breast tenderness. These changes are most evident just prior to menstruation when levels of estrogen and progesterone are peaking. Therefore, the recommended time to perform breast self-exam and to have a mammogram is about 5-10 days after the onset of menses.

Progesterone promotes the development of lobules and alveoli causing the alveolar cells to become secretory. The actual secretion of milk results from stimulation of prolactin production by the pituitary gland, which usually occurs after delivery.

Most lymphatic vessels in the breast drain into a network of lymph nodes located around the breast's edges, in the underarm, and near the collarbone, infraclavicular and supraclavicular nodal groups. These lymph nodes are embedded within fat, which complicates their removal. Axillary lymph nodes are often the first site of cancer metastasis.

### **The Breasts:**

- Located between the 2nd and 6th rib.
- Frontal View
  - The Tail of Spence is the most common site for breast tumors and cancer, (approximately one-half of all breast cancers). This is because half of the glandular tissue is located in the upper outer quadrant.
    - Nipple
    - Areola
    - Montgomery Glands
  - Consist of 3 tissue types:
    - Glandular
    - Fibrous
    - Adipose



# Internal Breast Anatomy

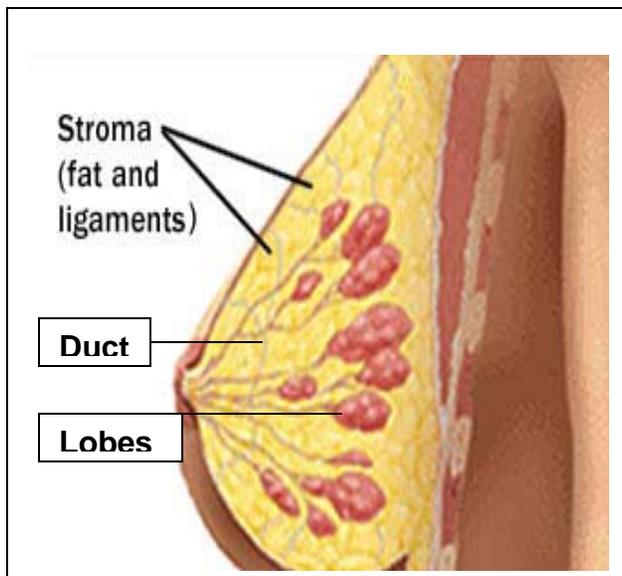
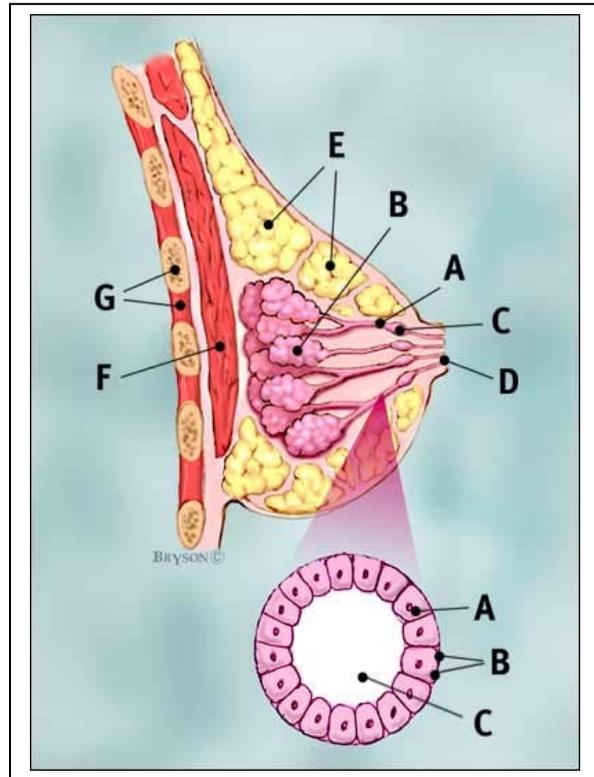
## Image - Breast Anatomy

### Breast profile:

- A - ducts
- B - lobules
- C - dilated section of duct to hold milk
- D - nipple
- E - fat
- F - pectoralis major muscle
- G - chest wall/rib cage

### Enlargement:

- A - normal duct cells
- B - basement membrane
- C - lumen (center of duct)



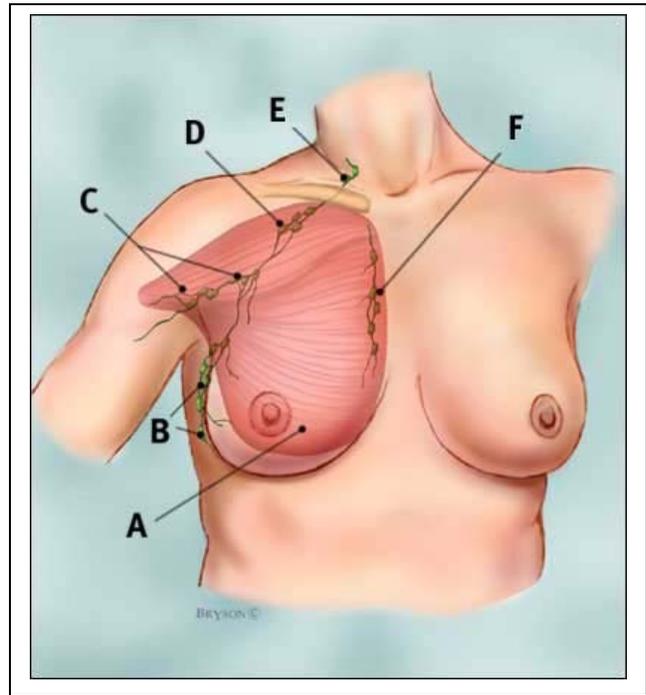
## Lobes, Ducts, Stoma and Connective Tissue

Spaces around the lobules and ducts are filled with fatty tissue and ligaments (stroma). The amount of fat in your breasts is largely what determines how big they are. The actual milk-producing structures are nearly the same in all women.

Fatty tissue is usually very soft feeling

**Axillary Lymph Node Profile:** Lymph node areas adjacent to breast area.

- **A** pectoralis major muscle
- **B** axillary lymph nodes: levels I
- **C** axillary lymph nodes: levels II
- **D** axillary lymph nodes: levels III
- **E** supraclavicular lymph nodes
- **F** internal mammary lymph nodes



<b>Normal Breast Development by Life Stages</b>	
<b>Prior to Puberty</b>	Ducts are present but non-functional. Breasts are in a resting state.
<b>Onset of Puberty</b>	Production of estrogen causes the ducts to elongate. Breast buds form around the areolae.
<b>Pregnancy</b>	Breasts enlarge, areolae become darker, and mammary blood flow increases. Hypervascularity may cause bloody nipple discharge that regresses. During lactation, lobules are dilated and engorged with milk
<b>Mature Adult</b>	After many cycles, mature breasts become more pendulous. Lobular elements are well formed and in a resting state. In perimenopausal women, the lobules begin to recede leaving mostly ducts, fat, and fibroconnective tissue. At this time, cysts often develop.

# **Breast Screening**

## **Section II**

## Breast Screening

### Overview:

The detection of breast cancer uses three main modalities: Breast self-examination (BSE), clinical breast examination (CBE), and imaging techniques, primarily mammography. Endorsement of mammographic screening guidelines is based on review of scientific evidence as well as economic and political factors.

### Breast Screening Guidelines: American Cancer Society (ACS) Recommendations

- Women 20 years of age and older should perform Breast Self-Exam (BSE) periodically (“Know Your Breast”) about 4-6 days after the onset of their menses.
- Women age 20-39 should have a physical exam of the breast or Clinical Breast Exam (CBE) at least every 3 years, performed by a health care professional. Women age 40 and above should have a CBE by a health care professional annually. These exams are usually performed during the annual GYN exam. Women should also continue doing periodic BSE along with CBE.
- Women age 40 and above should have a screening mammogram in addition to a Clinical Breast Exam annually
- Mammograms should be continued, regardless of a woman’s age, as long as she does not have serious, chronic health problems such as congestive heart failure, end-stage renal disease, chronic obstructive pulmonary disease, and moderate to severe dementia.

The Georgia BCCP follows the National Breast and Cervical Cancer Early Detection Program Guidelines and the American Cancer Society Breast Screening Guidelines.

The Georgia Breast and Cervical Cancer Program standards state that women who are enrolled in the program will receive a comprehensive health history, blood pressure evaluation, body mass index determination, and a physical exam, which will include the clinical breast exam and mammography beginning at 40 years of age. It also requires an assessment of tobacco use and referral to the Georgia Quit Line as indicated and appropriate.

The recommended screening interval for mammography varies among the different medical authorities. In November 2009, the U.S. Preventive Services Task Force (USPSTF) recommended that women aged 50-74 years receive routine breast cancer screening every one to two years using mammography alone or combined with a Clinical Breast Exam, (“current evidence is insufficient to assess the additional benefit

and harms of the clinical breast exam beyond screening mammography”<sup>1</sup>). As of December 2014, the USPSTF is currently in the process of updating its recommendations on breast cancer screening. The American Cancer Society (ACS), American College of Radiology (ARC), American Medical Association (AMA), U.S. Department of Health and Human Services (HHS), American College of Obstetricians and Gynecologists (ACOG), and a number of other organizations recommend screening with mammography including the CBE annually beginning at age 40. (See Ga BCCP Guidelines)

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<sup>1</sup> US Prevention Services Task Force, “Screening for Breast Cancer Recommendations”, *Annals of Internal Medicine*, 2009;151:716-726.

## The Georgia Breast and Cervical Cancer Program Breast Screening Guidelines

	Georgia Breast and Cervical Cancer <sup>2</sup> Program and the NBCCEDP <sup>3</sup>	American Cancer Society (ACS, September 2014) <sup>4</sup>	US Preventive Services Task Force <sup>5</sup>	American College of Obstetrics and Gynecology <sup>6</sup>
<b>Breast Self Exam ages 20 and older</b>	Monthly	Monthly	Does not recommend Breast Self exam	BSE has the potential to detect palpable breast cancer and can be recommended.
<b>Clinical Breast Exam Ages 20-39</b> <b>Ages 40 and older</b>	every three (3) years Annually	every three (3) years Annually	Insufficient evidence to assess the additional benefits and harm of CBE beyond screening mammography in women 40 years of age or older	Every 1-3 years Annually
<b>Screening Mammography Ages 40 and older</b>	NBCCEDP recommends every 1-2 years	Annually	Decision to start regular biennial screening before the age of 50 should be individual one including benefits and harms of mammography	Annually
<b>Digital or Analog Mammography</b>	Either analog or digital mammography are acceptable methods.	No recommendation	Current evidence is insufficient to assess the additional benefits and harms of either digital mammography or MRI instead of film mammography as screening modalities for breast cancer	No recommendation

<sup>2</sup> Georgia Breast and Cervical Cancer Program, Health Promotion Disease Prevention Program, Department of Community Health, Policy Manual Revised September 2010

<sup>3</sup> Centers for Disease Control (CDC), National Breast and Cervical Cancer Early Detection Program, Policy Manual April 2006

<sup>4</sup> American Cancer Society Recommendations for Early Breast Cancer Detection in Women Without Breast Symptoms, September 2014.

<sup>5</sup> US Prevention Services Task Force, "Screening for Breast Cancer Recommendations", Annals of Internal Medicine, 2009;151:716-726.

<sup>6</sup> Breast Cancer Screening. (ACOG Practice Bulletin: no. 122). American College of Obstetricians and Gynecologists. 2011, August

## Breast Cancer Screening – Patient Health and Family History

The single most important way to promote breast health is with regular breast cancer screening. Screening means looking for signs of disease in women without symptoms. Some of these screening techniques may be done by the woman herself while others will be performed by her health care professional. Use of multiple modalities such as the breast self-exam, the clinical breast exam, and breast imaging have been found to be helpful in finding breast cancer early when it can be treated most successfully.

As noted from the previous table, breast cancer screening recommendations about the type and timing of screening by health care professionals have been debated by the medical community. As stated earlier, the Georgia BCCP has elected to follow the guidelines of the NBCCEDP and the American Cancer Society.

### Breast Cancer Risk Factors

Two of the greatest risk factors for breast cancer are being female and getting older. All women are at risk for breast cancer. The current incidence of breast cancer is 1 in 8 (12%) women will develop this disease. Although the exact cause of breast cancer has not been identified, it is known that certain risk factors are linked to the disease. Some risk factors, such as alcohol intake, can be controlled. Others, like a person's age or family history, cannot be changed.

Breast cancer screening should begin with knowing the patient's risk factors for breast cancer. One or more of the following conditions place a woman at higher than average risk for breast cancer:

- Personal history of breast cancer
- Evidence of a specific genetic change that increases susceptibility to breast cancer. Currently BRCA 1 and BRCA 2 genotypes account for approximately 5-10% of all breast cancer cases.
- Women of Ashkenazi Jewish descent have an increased prevalence of BRCA 1 and BRCA 2 mutation carriers (Cancer Facts and Figures, 2009).
- Family history may include:
  - 2 or more relatives with breast or ovarian cancer (maternal or paternal),
  - Breast cancer occurred before age 50 in a relative (mother, sister, grandmother, aunt or cousin) on either side of the family, and
  - Prostate cancer and Male Breast Cancer in either side of the family.
- A diagnosis of a breast condition that may predispose a woman to breast cancer (i.e., atypical hyperplasia), or a history of two or more breast biopsies for benign breast disease.
- Use of hormone replacement therapy for more than 5 years.
- Age of menarche especially if earlier than 12 years of age.
- Delayed pregnancy until after 30 years of age.
- Never breastfed.
- Obesity resulting in higher breast tissue density especially post menopause

- Alcoholism
- History of smoking
- DES exposure in utero
- Chest radiation for conditions such as Hodgkin's disease at age 30 or younger.

Worldwide, breast cancer incidence rates appear to correlate with variations in diet, especially fat intake, however, a causal role of dietary factors has not been firmly established. Additional factors that may be related to breast cancer risk (increased or decreased) that are currently being studied include exposure to pesticide and other chemical exposures, weight gain, physical inactivity, and selective estrogen-receptor modulators (SERMs) such as Tamoxifen and Raloxifene.

## **Patient History**

As with any clinical examination, breast cancer screening should begin with a focused breast history. The history should include the following areas:

- Breast lumps or thickening, skin changes, breast pain, nipple discharge;
- Prior history of breast cancer or surgery (i.e., breast reduction);
- Personal history of other cancers which may increase the risk of breast cancer (endometrial and/or ovarian cancer);
- Family history of breast cancer in mother, sister, or daughter, especially if cancer was bilateral and perimenopausal;
- History of fibrocystic changes of the breast;
- Past mammograms, date and results of most recent mammograms;
- Past breast biopsies or radiation exposures;
- Current medication;
- Hormone therapy, type and dates used;
- Presence of breast implants, type of implants, date of augmentation, complications and additional surgeries related to augmentation;
- Current health status: pregnancy, chronic disease, medication, tobacco and alcohol use, etc.; and
- Menstrual history.

In summary, the health history plays a vital role in screening for breast cancer. The health and family history including parameters such as Body Mass Index, (BMI), and blood pressure evaluation will provide the examining health care professional with necessary information to interpret clinical findings and determine the patient's risk of developing breast cancer, especially in providing breast health education.

## **Breast Self Exam (BSE)**

Regularly examining her own breasts allows a woman to become familiar with how her breasts normally look and feel and can help her more readily detect changes that may occur. The key to breast self-exam is to learn how to find changes in the breast that persist over time.

Medical opinion varies regarding the benefits of the BSE. The American College of Obstetricians and Gynecologists (ACOG) recommends the exam because of the potential to detect palpable breast cancers. The US Preventive Services Task Force recommends that BSE not be taught as they feel the harm from false positive findings outweighs the benefits. However, both the NBCCEDP and the ACS recommend teaching women to perform this exam periodically so as to know their breast and are then able to detect early changes.

Periodic BSE includes both inspection and palpation over the entire breast and chest area. Women should examine the breast in the same manner each time. They should be instructed to examine the entire breast and axillary area at approximately the same time in their menstrual cycle. It might be helpful to encourage the patient to keep a written record of her BSE as a reminder of when to perform her next exam.

The BSE exam can be taught to the patient at the same time the Clinical Breast Exam (CBE), is being performed. During the CBE exam, the health care professional can demonstrate the best positions for the BSE. Inspection of the breasts looking for changes in symmetry, contour, color, skin texture, nipple positioning, and skin retraction or dimpling usually requires the patient to be in a sitting or standing position. Palpation of the breast is best accomplished in the supine position which allows for stability of the breast being examined, better access to areas of the breast, and the ability to press the breast tissue between the examining hand and the chest wall. Palpation techniques, levels of pressure to apply, perimeter of breast area to be examined, and the pattern of search can easily be taught and demonstrated while the CBE is being accomplished.

The patient should be encouraged to repeat this exam periodically, usually 5-10 days after the onset of the menstrual cycle, or if no longer menstruating, about the same time of the month. Breast changes or warning signs should be explained to the patient so that she is aware of when to report a possible problem. Educational brochures such as shower cards or pamphlets may help demonstrate the techniques and the signs or symptoms she should report.

## **Clinical Breast Exam (CBE)**

The purpose of the CBE is to assess breast health status and to determine an appropriate breast health plan of action for a woman. It is a good method for finding tumors in the breast. It has been suggested that for younger women, who typically have denser breasts, the clinical breast exam may have an advantage over mammography. In 2003, Bancej, D. et al. reported that 15% of women with palpable cancers have a mammogram that does not detect abnormal findings, and on average, the CBE increased the detection of small invasive cancers by 2-6%. However, the CBE and mammography are most accurate at finding cancer when combined. For this reason, the NBCCEDP mandates that a CBE be performed no more than 90 days prior to the screening mammogram.

Detection of breast cancer can be improved if health care professionals perform the CBE in a standardized way. To insure quality in the clinical breast exam performed, the Georgia Department of Public Health has elected to utilize the **California Model** for the CBE. This model utilizes the vertical strip method, which better defines the area of the breast to be examined. It utilizes 3 levels of pressure for the exam and due to the overlapping technique, it reduces the number of missed abnormal findings. Average time to examine each breast is usually 5 minutes.

The California Model for the CBE defines the patient **positioning**, the **perimeter** of the entire breast area to be examined, the **pattern** of search, the method of **palpation**, the levels of **pressure**, **prudent** documentation of clinical findings, and the development of a **plan** of action and education for the patient. This model also incorporates the health history, the lymph node exam, and visual inspection of the breast as part of its core competencies (figure 6).

In preparation for the CBE, the following should be considered:

- Schedule the examination when the breasts are least tender.
- Provide a private setting
- Discuss the patient's fears/concerns prior to the exam
- Examine lactating patient after emptying the breasts
- Provide proper draping and avoid unnecessary exposure
- Observe and examine the supra/infraclavicular areas, the breast and the axillary
- Position the patient properly to maximize distribution of the breast tissue
- Use the vertical strip pattern with the pads of the 3 middle fingers applying 3 levels of pressure in dime-sized circles.

### **Examination of the Lymph Nodes (figures 1, 2, 3 & 4)**

Positioning for this exam is best with the patient seated facing the examiner. This position allows for optimal visualization and optimal deep palpation.

#### **Supraclavicular and Infraclavicular Nodes**

- ◆ Use the pads of the 3 middle fingers in a circular motion
- ◆ Using firm pressure in small circular movements palpate above and below the clavicle.

#### **Axillary Nodes**

- ◆ Support the patient's arm and elbow with the non-examining hand to maintain optimal relaxation
- ◆ Using the pads of the fingers and a circular motion, examine all four aspects of the axilla in a diamond pattern.

Assess the lymph nodes for size, shape, firmness and mobility. Identify any enlargements, areas of tenderness or thickening, and other abnormal findings.

## EXAMINATION OF THE LYMPH NODES

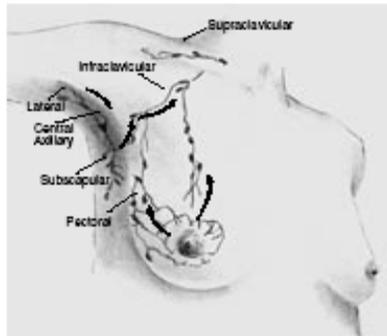


Figure 1

### Lymph Drainage of the Breast (Figure 1)

Seventy-five percent of the lymphatic drainage from the breast is into the axillary nodes. Lymph from 3 groups of axillary nodes, the lateral, the subscapular and the pectoral, drain into the central nodes that are high in the axillae. These nodal groups are also referred to as **Level I** (low axilla), **Level II** (mid-axilla) and **Level III** (apical axilla), as described in surgical or pathology reports.

### Positioning for the Exam

The patient should be in a seated position for both the clavicular and axillary exam to optimize deep palpation. Lying down with the hand over the head tenses the axilla. Before examining the patient, explain the rationale and what you are looking for.



Figure 2

### Palpation of the Supraclavicular and Infraclavicular Nodes (Figure 2)

- Using firm pressure in small circular movements, palpate above and below the clavicle.



Figure 3

### Palpating the Axillary Nodes (Figure 3)

- Instruct the patient to drop the shoulder and take a deep breath to facilitate relaxation.
- Support the patient's arm and elbow with the non-examining hand to maintain optimal relaxation.

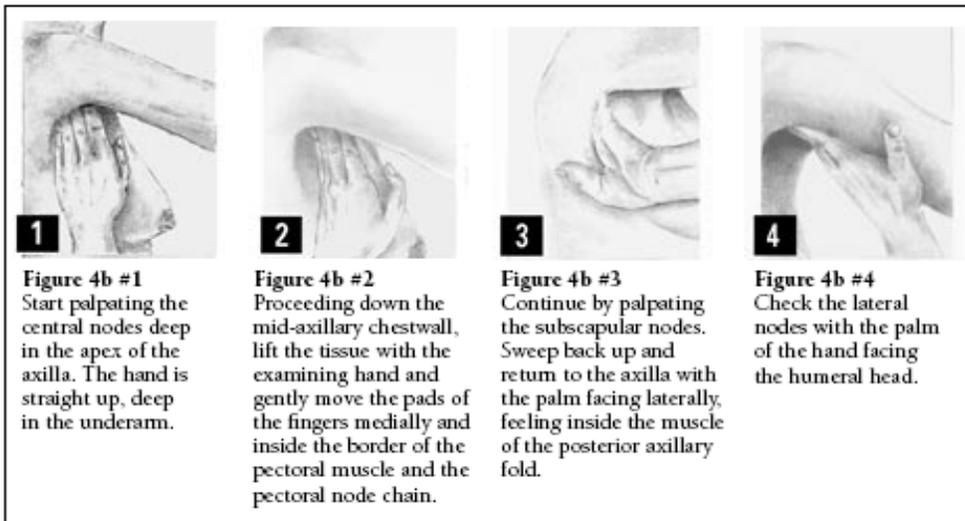




**Palpation of the Axillary Nodes  
(Figure 4a)**

Axillary nodes are palpated at deep pressure using a circular motion with the pads of the three middle fingers of the examining hand, in all four aspects of the axilla. Note that this pattern resembles a *diamond*.

Figure 4a



**Figure 4b #1**  
Start palpating the central nodes deep in the apex of the axilla. The hand is straight up, deep in the underarm.

**Figure 4b #2**  
Proceeding down the mid-axillary chestwall, lift the tissue with the examining hand and gently move the pads of the fingers medially and inside the border of the pectoral muscle and the pectoral node chain.

**Figure 4b #3**  
Continue by palpating the subscapular nodes. Sweep back up and return to the axilla with the palm facing laterally, feeling inside the muscle of the posterior axillary fold.

**Figure 4b #4**  
Check the lateral nodes with the palm of the hand facing the humeral head.

Figure 4b

**Findings**

Shotty nodes are usually small and less than 1cm, soft, mobile and of little clinical significance. Nodes that suggest inflammation or infection, or are fixed, matted or persistent, should be considered a suspicious finding. Note the size, shape, firmness and mobility. Appropriate follow-up may include mammography, ultrasound or other tests as indicated by history and clinical findings.

**References**

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Gray, Henry. (2000). *Gray's Anatomy In Chapter: Lymphatics of the Upper Extremity*, 15<sup>th</sup> Edition. New York, Barnes& Noble Publishers.

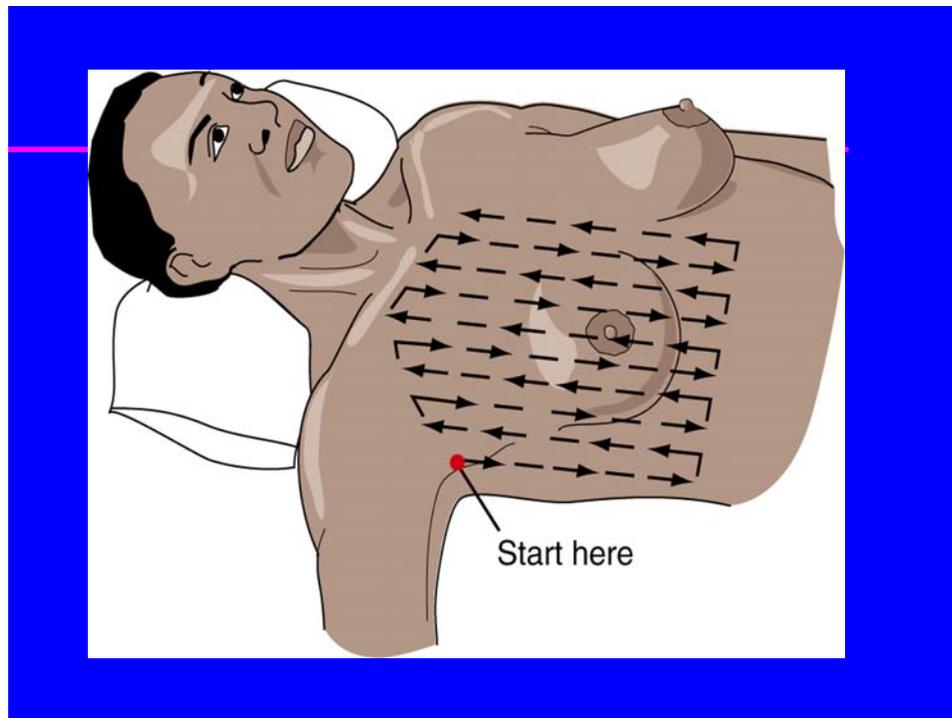
Harris, J; Lippman, M; Morrow, M & Hellman, S. (1996). *Diseases of the Breast*. In Chapter 1: Breast Development & Anatomy. Philadelphia, Lippincott-Raven



- ◆ Assist the patient into a supine **position** and adjust her position to best centralize breast tissue.
- ◆ Identify the perimeter and pattern of search

- **Perimeter** – clavicle, sternum, inframammary ridge (bra line), mid-axilla and imaginary line from the tip of the axilla to the outer edge of the clavicle
- **Pattern of Search** – vertical strip
- ◆ Starting in the upper outer quadrant, **palpate** the entire breast using the pads of the 3 middle fingers moving in a dime sized circular, overlapping motion using light, moderate, and deep **pressure**.

Figure 5



# Core Competencies of Clinical Breast Examination

## HISTORY



- ⌘ Health history questions regarding age, family history, personal history, reproductive history
- ⌘ Review patient's concerns or symptoms
- ⌘ Assess actual and perceived risk

## LYMPH NODE EXAM



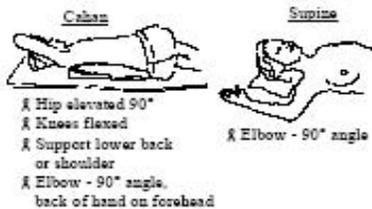
- Clavicular**  
Palpate deep above & below the clavicle
- Axillary**  
Palpate in a diamond pattern  
⌘ Deep at the apex  
⌘ Medially along pectoralis muscle  
⌘ Laterally along subcapular muscle  
⌘ High under humeral head

## VISUAL INSPECTION



- In sitting position check for:
- ⌘ Symmetry
  - ⌘ Skin changes
  - ⌘ Nipple changes
  - ⌘ Dimpling
  - ⌘ Venous Pattern

## PATIENT POSITIONING



- Coban**
- ⌘ Hip elevated 90°
  - ⌘ Knees flexed
  - ⌘ Support lower back or shoulder
  - ⌘ Elbow - 90° angle, back of hand on forehead

- Supine**
- ⌘ Elbow - 90° angle

## PERIMETER & PATTERN (VERTICAL STRIP)



## PALPATION



Pads of three middle fingers



Dime size circles

SMMA, V14 202, 03, 04, 1999



Slide or walk between palpations without lifting fingers

## PRESSURE



SMMA, V14 202, 03, 04, 1999

## PLAN OF ACTION & PATIENT ED



- ⌘ Determine next steps for abnormal results
- ⌘ Stress importance of adherence to E/U
- ⌘ Emphasize re-screening
- ⌘ Impart cultural sensitivity
- ⌘ Discuss/teach BSE

## DOCUMENTATION

- ⌘ Patient concerns
- ⌘ Exam findings
- ⌘ Plan of action
- ⌘ Referrals made
- ⌘ Patient education
- ⌘ Results notification (tests/procedures)



### Discreet Mass

- ✓ Location
- ✓ Size
- ✓ Shape
- ✓ Margins
- ✓ Mobility
- ✓ Consistency
- ✓ Tenderness

For more professional education information log on to: [qap.sdsu.edu](http://qap.sdsu.edu)  
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## Documentation of Clinical Findings

Findings from the CBE must be documented in the patient medical record. When no significant findings are noted, the exam may be summarized as a normal breast exam, bilaterally. If a screening mammogram is indicated, this information should be included in the referral sent to the radiologist reading the mammogram.

Abnormal clinical findings should be documented in the medical record and should include the following descriptive information describing the finding. Information regarding the date discovered and any other subjective data obtained from the patient should also be included in the documentation.

### Abnormal Breast Findings:

#### Skin

- ◆ Color or warmth
- ◆ Unusual pigmentation
- ◆ Thickening or edema
- ◆ Venous pattern prominence
- ◆ Dimpling or retracting (over area of mass)

#### Nipple

- ◆ Retracted, inverted, or displaced
- ◆ Discharge (spontaneous or expressed)
  - Color and amount
  - Spontaneous or expressed
  - Unilateral or bilateral
  - Consistency
- ◆ Scaling

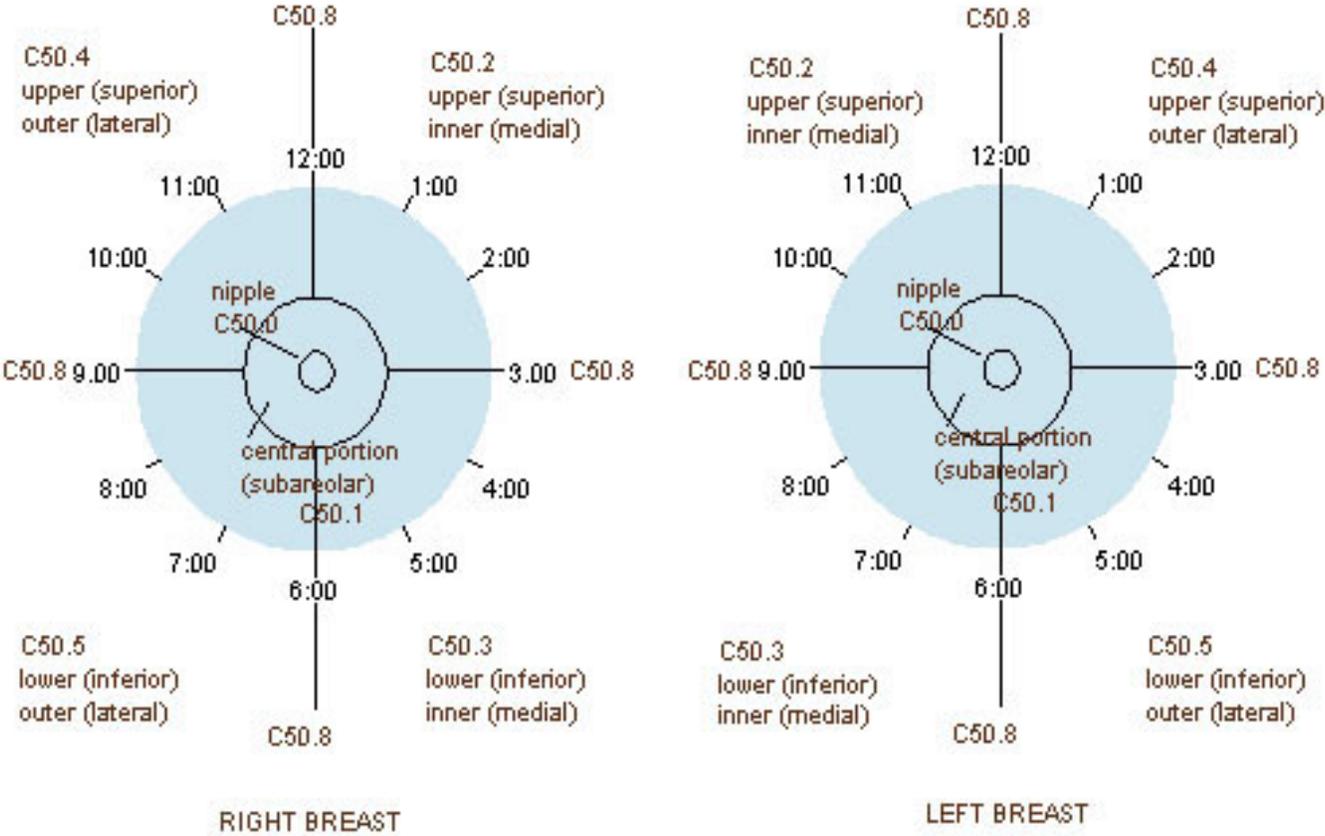
#### Lump or lesion

- ◆ Size (use of centimeters)
- ◆ Shape and borders
- ◆ Consistency
- ◆ Mobility (movable or fixed)
- ◆ Solitary or multiple lesions
- ◆ Tenderness or warmth

#### Enlarged (palpable) or tender regional lymph nodes (axillary or supra/infraclavicular)

Abnormal findings should be documented with description as to its location in the breast. Use of the clock face is one of the best and universal means to communicate where the abnormal finding was located. Using this method of documentation allows the following caregivers (radiologist or surgeon), to have a more precise location of the areas of concern. Including the distance from the nipple in centimeters will also aid the breast specialist and radiologist in evaluation of this finding. .

### "Clock" Positions, Quadrants and ICD-O Codes of the Breast



### Plan of Action

Review and discuss with the patient:

- ◆ All findings from the health history and the clinical breast exam

- ◆ Development of a personal plan for early breast cancer detection based on her health history and risk factors.
- ◆ Provide education regarding the BSE
  - Recommend patient perform periodically 4-6 days after the onset of menses.
  - Begin with inspection of the breast in front of a mirror for visual observation of the breast.
  - Use the vertical strip method for palpation of the breast, and include information regarding pressure, parameter, positioning, and pattern of search.
  - Review and encourage her to report any findings suggestive of a breast problem/cancer which may include:
    - Thickened spot or lump in the breast or under the arm
    - Changes in color of the skin, redness or bruising
    - Dimpling or retraction of the skin over an area
    - A raised “knot” or sore
    - Changes in the look of the nipple especially if it pulls and/or inverts
    - Nipple discharge
  - Most importantly, report any persistent change in her breast as soon as possible and not wait for next screening exam.
- ◆ If appropriate, order a screening mammogram, and explain to the patient that the CBE is required by the NBCCEDP to be done within 3 months of her mammogram screening.



## Mammography

A screening mammography is a low dose x-ray procedure designed specifically to locate abnormalities of the breast. It is the single most effective method for detection of early breast cancer. The value of the mammogram, however, is dependent on the quality of the mammogram and the interpreter.

As reported by the U.S. Preventive Services Task Force in 1996, seven randomized controlled trials evaluated the effectiveness of screening for breast cancer in women by either mammography alone or combined with a CBE compared to no periodic screening. The age of participants at date of first participation ranged from 40-74. The six trials that included women

50 and older showed a reduction in breast cancer mortality of 20-30% in the intervention group<sup>7</sup>.

In 2002, the US Preventive Services Task Force demonstrated in a randomized, controlled trial of breast screening that film mammography is the standard for detecting breast cancer with convincing evidence of its adequate sensitivity and specificity. There was sufficient evidence that screening with film mammography reduced breast cancer mortality especially in women 50-74 years of age.

The American Cancer Society, ACS, reports that regular mammography screening can identify an abnormality that may be cancer at an early stage before physical symptoms develop. They further state that mammography has been shown to reduce breast cancer mortality by at least 30% in asymptomatic women aged 50 and older. Mammography also decreases the morbidity of treatment by offering women more treatment possibilities, particularly breast conservation surgery.

Recent recommendations from the US Preventive Services Task Force, November 2009, have created a controversy regarding when to initiate and frequency of routine mammography screening. The USPSTF later modified their original recommendation regarding when to start regular biennial screening before the age of 50. The revised recommendation regarding the decision to begin screening mammography for the women under 50 should be an individual one and take patient context into account, including the patient's values regarding specific benefits and harms. For women 50-74, the USPSTF recommended biennial screening mammography.

In response to the USPSTF recommendation, the American College of Obstetricians and Gynecologists, American Cancer Society and Komen for the Cure recommend women have a screening mammogram yearly beginning at age 40.

The Georgia BCCP and the ACS recommend mammography screening begin for all women at 40 years of age. For women 40-49, the Ga BCCP recommends mammography screening should be performed every one to two years based on the woman's health history and CBE, which is similar to the ACOG recommendations. For women 50 and older, the ACS, ACOG and the Ga BCCP recommend annual screening mammography.

The role of screening mammography is early detection of breast cancer in asymptomatic women. The procedure usually involves the performance of two views of each breast, a mediolateral-oblique and a craniocaudal views. In some instances such as increased density (increased in younger women), the sensitivity of the mammogram to identify breast cancer is decreased and could result in false-positives. Additional views and/or a breast ultrasound may be needed to get a clear picture.

Pregnant or lactating women are not candidates for mammogram screening. Due to changes that occur in the breast during lactation, an abnormality may be obscured which could result

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<sup>7</sup> Guide to Clinical Preventive Services, US Dept. of H.H.S., Office of Disease Prevention and Health Promotion. 1996: 2<sup>nd</sup> Edition. P73-88.

in a wrong diagnosis. Pregnant women are not candidates for screening mammography because of the possible exposure of the fetus to radiation. However, mammography can be done on pregnant women if a palpable mass is discovered.

It should be emphasized that a normal mammogram at any age does not eliminate the need for further evaluation of a palpable mass.

***“A negative mammogram does not trump an abnormal CBE”***

Women with an abnormal CBE, previous breast problems, recommended short term follow up following benign breast biopsy, or breast implants should be scheduled for a diagnostic mammogram. These imaging studies may be followed by a breast ultrasound, which will further evaluate the breast for abnormalities or cancer.

## **Mammography Report**

The American College of Radiology (ACR) has designated five categories in the reporting system for mammograms. The system categorizes the overall composition of the breast and then describes lesions by their basic geometry, border characteristics and density. Calcifications, calcium deposits indicative of rapidly dividing cells, injuries, inflammation or normal aging of tissue, are described according to size, number, morphology, and distribution. These findings are then interpreted and an assessment made that includes the degree of concern and any recommendations.

The mammogram report is divided into the following categories:

- ◆ Breast Composition
- ◆ Findings
- ◆ Overall assessment, which is classified into the 5 categories.
  - Normal (BI RADS 1)
  - Benign (BI RADS 2)
  - Probably Benign (BI RADS 3) \*\*\*Short term follow-up for established patients or additional diagnostic studies if new patient.\*\*\*
  - Suspicious abnormality (BI RADS 4)
  - Highly suggestive of malignancy (BI RADS 5)
  - Assessment Incomplete (BI RADS 0) – Radiologist recommends additional imaging evaluation before an opinion can be made. Further actions on the part of the patient, radiologist, and the case manager are required.
    - ◆ An unsatisfactory mammogram requires a repeat mammogram before an assessment can be made.

- The radiology facility must notify the health care professional within 3 days for any mammogram with a BI RADS 4 or 5

## **Responsibilities of Radiology Facilities**

The final Mammography Quality Standards Act (MQSA) became effective April 28, 1999. The purpose of the MQSA, passed by Congress in 1992, was to provide the potential for early detection and treatment of breast cancer. The regulations required a national certification and inspection program to ensure that women received high-quality mammograms. Responsibility for complying with all MQSA requirements rests with the radiology facility.

MQSA requires each facility conducting mammography to:

- ◆ Meet quality standards for personnel, equipment, maximum allowable radiation dose, quality assurance, patient interaction, medical audit and outcome analysis, medical record-keeping and reporting requirements;
- ◆ Maintain its certified status by having an annual survey and reapply for accreditation every 3 years;
- ◆ Be certified to perform mammography by the Food and Drug Administration (FDA). Each certified facility must display its certificate in a prominent site where it can be viewed by mammography patients;
- ◆ Include in each mammography report an overall assessment of findings classified into one of the five categories listed previously: Negative, Benign, Probably Benign, Suspicious, Highly Suggestive of Malignancy, and Incomplete: Need additional Imaging Evaluation;
- ◆ Communicate the report results written in lay terms to all patients receiving mammography services and to the referring provider in the appropriate timeframe.

### **Locating Certified Mammography Facilities**

- ◆ The names and locations of nearby mammography facilities that meet quality standards and are FDA certified are available by calling your district BCCP Coordinator.
- ◆ Information on mammography facilities is available through the Cancer Information Services, ([www.cancer.gov](http://www.cancer.gov)) which is primarily targeted to the public, but the service also will respond to information needs of physicians and other health professionals.

## **Responsibilities of the Health Care Professional**

Federal guidelines provide an outline of the responsibilities of health care professionals in assuring high quality mammograms. Under these guidelines, referring health care professionals are responsible for:

- ◆ Establishing protocols with the mammography facility to ensure that the communication loop is closed and that the health care professional and facility understand the process for communicating results and tracking compliance.
- ◆ Educating patients about the need for regular screening.
- ◆ Referring patients for screening mammograms on a regular on-going basis.
- ◆ Providing written results of CBE to the mammography facility.
- ◆ Informing patients that mammography is the most sensitive and specific screening test for breast cancer available.
- ◆ Informing patients on how to prepare for a mammogram.
- ◆ Informing patients that a negative mammogram does not rule out malignancy in the presence of a palpable mass or other breast abnormality, and that a biopsy of an abnormality may be needed despite a negative mammogram.
- ◆ Explaining that a lump or other abnormal finding that develops after a negative screening examination should be evaluated as soon as possible and not delayed until the next screening examination.
- ◆ Explaining the possibility of a recommendation for short-term follow-up, additional special views, or diagnostic procedures promptly.
- ◆ Notifying patient of results promptly.
- ◆ Providing the patient an opportunity to ask questions, express concern, and receive a culturally sensitive, language appropriate response.

## **Patient Education**

Clinicians should stress to their patients the importance of mammograms. It is important that the women understand the need for periodic mammograms, not just one mammogram. Studies have shown the number of women who follow the recommended guidelines for regular screening is low. Women who are members of racial and ethnic minority groups, have less than a high school education, are older, or live below the poverty level are generally less likely to obtain mammograms.

The most important variables in influencing a woman to be screened are clinician belief in mammography and recommendations for screening. Reasons women give for not having a mammogram include lack of physician referral, fear and/or worry of the procedure, the belief in not being at risk for breast cancer, fear of possible discomfort, lack of financial resources, fear of learning that one has cancer, and not having a family history of breast cancer.

In preparation for the mammogram, the health care professional should advise the patient of any specific instructions of the mammogram facility where the mammogram is to be done. In general, preparation for the patient involves the following:

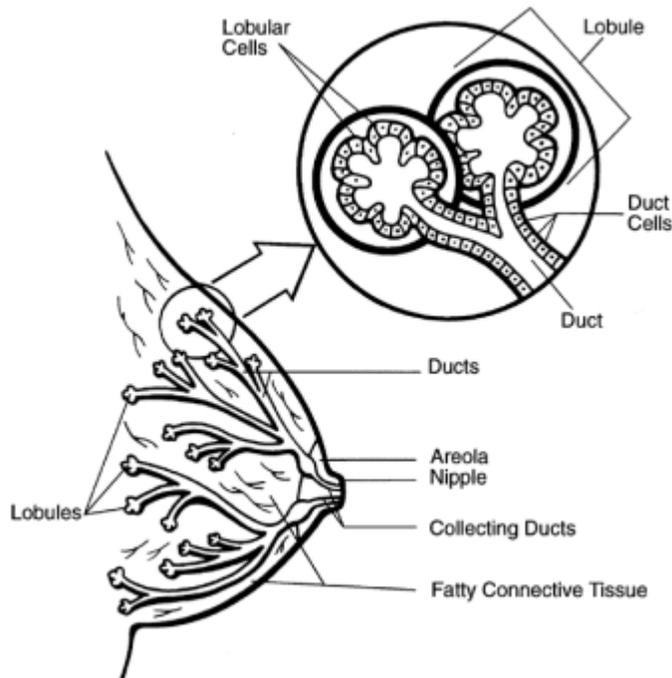
- ◆ She should not wear deodorant, perfume, powders, or ointments of any kind in the underarm area or on the breast on the day of the exam. These products may cause shadows to appear on the mammogram.
- ◆ She will have to undress above the waist for the exam. Recommend that she wear a blouse with a skirt or slacks, rather than a dress to the mammography facility.
- ◆ If possible, do not schedule the mammogram immediately before her menstrual period since the breasts may be more tender than usual at that time. The exam should not be painful, but the compression of the breast during the exam may cause some discomfort.
- ◆ Help the patient to reduce her fears regarding the discomfort she might experience during the mammogram. Explain that the discomfort will be brief, and the compression of the breast is necessary for the following reasons:
  - Adequate compression is necessary for quality film/screening mammography.
  - Compression decreases radiation dose by decreasing the thickness of the breast.
  - Compression increases image contrast by decreasing scatter radiation.
  - Compression increases image resolution by decreasing motion through immobilization.
  - Compression decreases geometric blurring by decreasing object image distance.
  - Compression may cause temporary discomfort, but it is not harmful and should last only for a few seconds for each exposure.

# **Benign Breast Disease**

## **Section III**

## Benign Breast Conditions

The breast has three main tissue types – **glandular** tissue, supporting **stromal** tissue, and **adipose** tissue. The glandular part of the breast includes the lobules and ducts. In women who are breastfeeding, the cells of the lobules produce milk, which is carried via the ducts to the nipple. The supporting tissue of the breast includes fatty tissue and fibrous connective tissue (ligaments that support the breast).



Any area of the breast can undergo changes that cause symptoms. The two main groups of breast changes are benign breast conditions and breast cancer. A benign breast condition is any non-cancerous breast abnormality. According to the American Cancer Society, when breast tissue is examined under a microscope, some type of abnormality is common in nine out of ten women. However, not life threatening, benign conditions may cause pain or discomfort for some patients. However, some benign conditions can signal an increased risk for development of breast cancer.

Evaluation and management will be discussed as it relates to the patient's presentation of symptoms and/or clinical findings. Thorough communication with the patient about all management options and their associated risks, all test results, as well as written documentation of these discussions, is of the utmost importance to providing quality care.

## **Mastalgia (Breast Pain) and Nodularity**

The most common breast complaint with which patients present is mastalgia (70%) and nodularity. Nodularity may be felt by the patient, her partner, or detected during the CBE by the health care professional. Mastalgia has been classified as cyclical or non-cyclical.

### **Cyclical (75%)**

Nodularity and swelling occurs prior to menses when the breast lobules, stroma, and ducts become engorged secondary to the level of gonadotropic and ovarian hormones. With the onset of menses, the ducts regress and epithelial cells desquamate and are maintained until the second week of the cycle when proliferation begins again. Some physicians feel that there may be a decreased ratio of progesterone to estrogen while others feel that there may be an abnormality in the hormone prolactin, which can affect breast pain. Further research has been recommended to study this problem.

Cyclical breast pain occurs the week preceding menses and is relieved with menstruation though pain of varying degrees may persist throughout the menstrual cycle. It is most common in women 30-50 years of age and commonly resolves in postmenopausal women.

Hormone effect: Even though combined oral contraceptives may be responsible for some increased breast pain initially, they may be of benefit to women with a history of mild to moderate cyclic pain with continued use. It is not uncommon for the breast pain to subside after the first cycle of oral contraceptives with evident clinical improvement after 6 months. For those patients who experience mastalgia or nodularity after starting oral contraceptives, withdrawal of the pill or change to a higher progestin pill may decrease symptoms. Women on estrogen replacement therapy with mastalgia may benefit from a change to a low-dose estrogen/progesterone preparation.

For significant, persistent cyclic mastalgia, the first line of treatment is usually conservative such as:

- ◆ Sports Bra (no underwire bra)
- ◆ Dietary changes especially low-fat
- ◆ Although still controversial, some health care professionals advocate eliminating dimethylxanthines (e.g., caffeine and theophyllin) and nicotine from the diet.
- ◆ Vitamin E (400-600) units daily has been reported to reduce symptoms
- ◆ Evening Primrose Oil taken orally

In some cases, various supplemental hormones and hormone blockers are prescribed. These may include:

- ◆ Combined Oral Contraceptive pills,
- ◆ Bromocriptine which blocks the prolactin in the hypothalamus,
- ◆ Thyroid hormones, and
- ◆ Tamoxifen as an estrogen blocker.

If the breast pain does not respond to treatment or pain is associated with skin changes, this could be clinically suspicious for inflammatory carcinoma. Surgical referral is indicated with anticipation of core biopsy and skin biopsy.

### **Non-Cyclical**

This condition occurs most often in pre- and post- menopausal women and does not coincide with the events in the menstrual cycle. Nodularity is much less prominent than in the cyclical pain pattern. Radiological abnormalities consistent with coarse calcification and ductal dilatation are commonly seen. There is no histological evidence, however, that non-cyclical pain results from the pathological changes of duct ectasia.

Numerous causes for the non-cyclical mastalgia have been suggested. The following is a list of the most common reasons for breast pain.

- Prior breast injury (fat necrosis) or biopsy site
- Arthritis of the sternum or ribs
- Fibrocystic disease
- Weight gain
- Under wire or poorly fitting bras
- Tumors/cysts especially fibroadenomas
- Engorgement with lactation
- Inflammatory breast cancer

If a patient is anxious or concerned especially regarding nodularity, repeat the CBE every 2-4 months until the patient and examiner are convinced of the benign nature of the change. The repeat CBE should be scheduled to be done at mid cycle for menstruating patients. Also, recommend the patient keep a pain chart on a calendar for a minimum of 3 months including information regarding her menstrual period. This will help to identify if this pain is hormonally related. Cyclical mastalgia may coexist with cyclical nodularity, but each may occur independently. Generally, nodularity, alone, usually does not require treatment. However, reassurance that the condition is benign and normal should be offered.

Surgical consult may also be indicated to determine the cause of the mastalgia. FNA, mammogram, and/or ultrasound should be considered. Imaging should be accomplished prior to the aspiration, which may cause bleeding and distort the film image.

## **Non-Breast Pain**

Non-breast pain may be felt as breast pain, but may be caused by a painful costochondral junction syndrome (Tietze's Syndrome). This pain is a chronic condition, often unilateral, and can occur at any age. The pain emanates from the area of the breast that overlies the tender costocartilage. In the absence of a dominant mass, no specific diagnostic test is recommended.

## **Dominant Lumps/Breast Masses**

### **Cyst: Simple and Complex**

A **Simple** cyst is a fluid filled sac that most likely occurs in the fourth and fifth decades of life. On ultrasound examination, the simple cyst will be seen as a well-defined sac like structure without echoes. These cysts may vary in size and number in the breast and small cysts may not be palpated with the CBE.

A **Complex** cyst will appear on the ultrasound exam as having internal echoes, which will make it difficult to differentiate it as a cyst versus a solid mass. They are generally non-cancerous, but may be a cause of breast pain. This structure may or may not be palpated during the CBE.

Since it will not be possible in a complex cyst to distinguish a solid mass from a cystic mass by the CBE or imaging studies, and as with all palpable masses excluding a simple cyst, a follow up evaluation by a physician, preferably a surgeon is required. Recommend 6 month rescreening for simple cyst.

Diagnostic evaluation for a Complex cyst may include a fine needle aspiration of the mass to confirm fluid filled or solid mass. If the cyst collapses with the breast aspiration as noted on ultrasound, this would confirm the diagnosis of a cyst. If cyst does not collapse completely or a solid mass is noted, a core biopsy of the mass or cyst wall may be performed. If the fluid obtained from the aspiration is clear, the physician may decide to discard the specimen. However, if the fluid is cloudy, contains particulates, or is bloody, a pathology study or culture may be indicated.

## **Fibrocystic Breast Disease**

Fibrocystic Breast Disease is the most common benign breast disorder. It is usually a result of changes in the glandular and stromal tissues of the breast, and usually occurs bilaterally. Fibrocystic breast changes affect at least 50% of all women, and are the most common cause of solid breast lumps, **fibroadenoma**, in young women. Young women in their teens and twenties with a palpable breast mass are most likely to be a fibroadenoma. These women need to be referred to a surgeon for diagnostic evaluation to rule out breast cancer. A palpable fibroadenoma is unusual in the post-menopausal woman.

Fibrocystic changes can also cause cystic like structures, scar-like connective tissue, diffuse lumpiness, areas of thickening, and breast pain and tenderness. A fibrocystic mass refers to an array of pathological diagnoses that can result in asymmetrical palpable findings between one breast and the other. Most women who have had pregnancies or had several years of menstruation will have some degree of fibrocystic change, although it may not be clinically significant. In diffuse changes, frequently reassurance is all that is necessary.

For patients with a normal/benign CBE, symptoms of fibrocystic breast disease may be relieved with:

- ◆ Wearing a supportive or sports bra (avoid under wire bras)
- ◆ Avoid caffeine (sodas, coffee, tea, and chocolate)
- ◆ Taking Vitamin E, Evening Primrose oil, or Flaxseed oil
- ◆ OTC medications such as Aspirin, Tylenol, or Ibuprofen unless contraindicated
- ◆ Low fat diet
- ◆ Application of low heat to the affected breast
- ◆ Decrease Salt intake
- ◆ Use of oral contraceptives
- ◆ Surgical removal of breast lumps

## **Fibroadenomas**

As noted above, the fibroadenoma is the most common benign tumors found in young women. Studies suggest that use of oral contraceptives before the age of 20 is linked to an increased risk for development of a fibroadenoma.

The fibroadenoma tends to be round “marble like” with distinct borders and usually mobile under the skin. Whether they are palpated during the CBE or noted on the imaging studies, these patients must receive a surgical evaluation to rule out a malignancy. They are usually diagnosed by a core biopsy. The simple fibroadenomas are not associated with an increased risk of breast cancer. However, the complex fibroadenoma contains other components (macrocyts, sclerosing adenosis, calcifications, or apocrine changes), which is associated with a slight increased risk of breast cancer.

## **Adenosis**

In Adenosis, the breast lobules are enlarged and contain more glands than usual. Aggregate adenosis, tumoral adenosis or adenosis tumor are names used for this benign condition.

Sclerosing adenosis is a condition in which the enlarged lobules are distorted by scar-like fibrous tissue. Some studies have found that women with sclerosing adenosis have a slight risk of developing breast cancer (See Section V).

Fine needle aspiration of these lumps can usually show whether they are benign. A core needle biopsy can usually identify the mass as adenosis, but sometimes a surgical biopsy is needed to ensure it is not cancer.

### **Phyllodes tumors**

Phyllodes or Phyllodes tumors are rare breast tumors. Like fibroadenomas, they contain 2 types of breast tissue (stromal and glandular). The difference between the Phyllodes and fibroadenoma is that Phyllodes tumors have an overgrowth of connective tissue.

Phyllodes tumors are usually benign, but in rare cases may be cancerous. They are usually felt as a painless lump and often hard to distinguish from a fibroadenoma on the CBE, imaging studies, and biopsies. They tend to grow quickly thereby stretching the skin.

Malignant Phyllodes tumors do not respond to hormone therapy and have a decreased response to chemotherapy and radiation compared to other breast cancers. Metastatic Phyllodes tumors are often treated like sarcomas (soft-tissue cancers) rather than breast cancer.

### **Solid Breast Mass**

However, any palpable, discrete, solid mass (abnormal CBE), must be investigated to rule out cancer. This diagnostic process will include breast imaging and a surgical evaluation. Diagnostic mammography is indicated for any dominant mass in the breast. Additionally, an ultrasound may be done to distinguish between a cystic or solid mass. Due to increased density in the breast of younger women (<30), an ultrasound may reveal more beneficial information than a mammogram. The surgeon or the radiologist may decide which imaging modality will provide the best information.

**All palpable breast masses should be referred to a surgeon/breast specialist even if the mammogram is negative. Surgical biopsy is the procedure of choice for any solid, dominant, and/or persistent mass. If biopsy of breast mass is performed by the breast specialist and the results are benign, a surgical consult may not be needed. However, if the area of concern is not identified and biopsied by the breast specialist (except a simple cyst), the patient should be referred to a surgeon for further evaluation.**

### **Hyperplasia**

Hyperplasia is an overgrowth of cells that line either the ducts or the lobules. When hyperplasia is located in the ducts, it is called ductal hyperplasia, or lobular hyperplasia if located in the lobules. Atypical hyperplasia is a benign condition used to describe cells that are slightly distorted in how they are arranged.

Hyperplasia is usually diagnosed with a core needle biopsy or surgical biopsy. Hyperplasia cells are grouped as mild, usual and atypical. Mild hyperplasia is not associated with an increased risk of breast cancer. Usual hyperplasia has a slight increased risk for the development of breast cancer, but Atypical hyperplasia has a 4-5 times higher risk for breast cancer when compared with a woman with no breast anomalies.

## **Fat Necrosis**

Fat Necrosis occurs when fatty breast tissue swells or becomes tender. This swelling can occur spontaneously or as a result of a trauma to the breast. They will often palpate as a solid breast mass and have a cancerous appearance on mammography. Surgical biopsy is necessary to rule out a breast malignancy. Most fat necrosis areas will resolve spontaneously over time. Periodic repeat CBE should be performed to monitor the regression of the mass.

## **Nipple Discharge**

Nipple discharge is the third most common finding or complaint from women. A woman's breast has some degree of fluid secretion activity throughout most of the adult life. Usually, discharge that is clear, milky, yellow, cloudy, or greenish in color and is noted from both breasts is not associated with breast cancer. Most milky discharge is caused by lactation or increased mechanical stimulation of the nipple due to fondling, suckling or irritation from clothing during exercise or activity, is rarely associated with pathology and reflects normal physiology.

The majority of nipple discharges are associated with non-cancerous changes in the breast such as hormonal imbalances or **intraductal papillomas** (non-cancerous wart-like tumor that has grown inside the breast duct). Other benign conditions that may cause nipple discharge are fibrocystic conditions, or **duct ectasia** (widening and hardening of the duct due age or damage). Most opalescent discharge is due to duct ectasia or cyst.

However, a small percentage of nipple discharge can indicate breast/nipple cancer. The following features of nipple discharge are suspicious for neoplasm and necessitate prompt referral to a surgeon:

- ◆ Spontaneous
- ◆ Unilateral or single breast duct
- ◆ Occurring in women over age 50
- ◆ Confined to one duct
- ◆ Clear, serous, bloody, serosanguineous discharge
- ◆ Associated with a breast mass

If nipple discharge is suspicious, the area of the breast/nipple can usually be determined by careful palpation over the quadrants of the areola. Both the identification of the nature and location of the lesion can be determined by duct mammogram (Galactogram). A spontaneous, bloody nipple discharge occurring in the third trimester of pregnancy may be regarded as a physiologic event that does not require evaluation unless it persists for several

months after delivery. A bloody discharge in the early days of breast feeding is not unusual and is usually a result of trauma caused by the infant's sucking pattern.

Cytological analysis of nipple discharge is rarely useful and is not cost effective. **The patient with a suspicious nipple discharge should be referred to a surgeon, even in the absence of a palpable mass and/or a negative/benign mammogram.**

## **Galactorrhea**

Milky discharge (cloudy, whitish or almost clear in color, thin, non-sticky) is the most common type of discharge. Galactorrhea is defined as the continuation of milk secretion at intervals before pregnancy or after lactation has ceased and is often due to stimulated secretion of the hormone, Prolactin. Drugs or hormones that stimulate prolactin secretion can cause spontaneous, persistent production of milk in non-lactating women. Galactogogues is a classification of drugs and herbal supplements that may increase milk production. Galactorrhea itself isn't a disease, but a sign of an underlying problem.

Excessive breast stimulation, medication side effects, or disorders of the hypothalamus or pituitary glands can cause an increase in the prolactin level. Prolactin is produced by the pituitary gland, a marble-sized gland at the base of the brain that secretes and regulates several hormones. Prolactin is the hormone that starts the growth of the mammary glands and triggers the production of milk. Some pituitary tumors cause excess prolactin secretions and lead to a milky nipple discharge, usually from both breasts.

Recommended follow up for 3 basic causes of galactorrhea:

- ◆ If suspect the nipple discharge is a result of excessive stimulation from sexual activity, from running or jogging especially if the discharge is noted coming from multiple ducts, and ceases or decreases with temporary cessation of the activity, no treatment is indicated.
- ◆ A history of recent drug use (see following table) and cessation of nipple discharge results when drug is temporarily discontinued confirms that it is of a benign nature. Mammography is not indicated.
- ◆ Hypothalamic-pituitary disorders. New onset galactorrhea, especially if accompanied by menstrual abnormalities and no drug history, requires referral to a physician. Serum prolactin levels as well as x-rays, (MRI), of the chest and sella turcica to rule out bronchogenic carcinoma and /or pituitary adenoma should be done before an endocrinologist is consulted.

## **Causes of Galactorrhea**

### **Physiologic Causes:**

1. Pregnancy puerperium
2. Intercourse
3. Stimulation of the breast/nipple
4. Exercise
5. Emotional stress

### **Pharmacological Causes:**

1. Medications, such as certain tranquilizers, antidepressants and high blood pressure drugs (see following table)
2. Herbal supplements, such as fennel, anise or fenugreek seed
3. Numerous psychotropic drugs
4. Cimetidine
5. Some antihypertensives
6. Opiates
7. Estrogens/oral contraceptives/progestins
8. Antiemetics
9. Alcohol (chronic abuse)
10. Marijuana
11. Danazol
12. Isoniazid (INH)

### **Pathological Causes**

1. Breast tumors
2. Pituitary and Hypothalamic lesions
3. Chronic Renal Disease
4. Infections
5. Empty sella syndrome
6. Thyroid Disorders
7. Polycystic ovaries
8. Benign intraductal papilloma
9. Lesions involving the chest wall (e.g. Breast Surgery, Trauma, Burns, Herpes Zoster, Spinal Cord Injury)

*(Source: American Family Physicians, 2012)*

## **Mammary Duct Ectasia**

Mammary duct ectasia is a condition that affects women nearing menopause (40s and 50s). It occurs when a breast duct beneath the nipple widens and its walls thicken, which can cause it to become blocked and inflamed. Mammary duct ectasia can be painful, and it can produce a thick and sticky discharge that is gray to green in color. The nipple may pull inward or appear inverted. Sometimes scar tissue around the abnormal duct causes a palpable hard lump that may be felt during the CBE. The area around the lump or nipple may also appear red and inflamed. The etiology of the condition is unknown. The theory of an initial inflammatory process leading to destruction of the elastic network and secondary ductal ectasia and periductal fibrosis is favored.

Duct ectasia does not increase a woman's risk for breast cancer. In early stages of inflammation, no intervention may be necessary. The patient is advised to keep the nipples clean. However, this condition can be complicated by severe inflammation causing significant morbidity. Patients with severe inflammation should be referred for further evaluation and treatment.

## **Intraductal Papillomas**

Papillomas are frondlike or fingerlike growths with a fibrovascular core (gland tissue along with fibrous tissue and blood vessels). This is always associated hyperplasia of varying degrees.

Papillomas can occur anywhere along the ductal structure, but the **solitary**, which are more common, tend to occur near the nipple. Papillomas, like cancers that can cause a nipple discharge, produce a discharge from one duct only. The nipple discharge is serous, serosanguineous, or bloody. This single-duct secretion can usually be confirmed by "milking" the duct on examination, and is enough to send the patient for surgical evaluation.

Multiple papillomas may also be found in small ducts in areas of the breast periphery, and are less likely to have a nipple discharge. There are often several growths and have a much higher incidence of malignant degeneration.

## **Infection/Inflammation (Mastitis)**

Continuous symptoms of pain, redness, and swelling are almost always due to an inflammatory process. Mastitis most often affects women who are breast feeding. If this is clinically an infectious process (Mastitis), of short duration, referral of the patient is indicated for treatment usually with antibiotics.

Mastitis does not increase the risk of breast cancer. However, a rare and aggressive form of breast cancer known as **Inflammatory breast cancer** has symptoms that are similar to

mastitis. If antibiotic therapy does not improve the suspected mastitis, a skin biopsy may be needed to rule out a malignant process.

Lymph node enlargement is most commonly caused by inflammation. The patient must be carefully checked for obvious and occult sources of infection (e.g., hidradenitis suppurativa, folliculitis, and cat scratch fever). If there is no apparent cause, neoplastic disease such as Lymphogenic malignancies must be considered and the patient should be referred for evaluation. A patient with moderate to severe inflammation and /or periareolar mass or abscess should be referred for further evaluation.

## **Radial Scars**

A radial scar, sometimes called a complex sclerosing lesion, is often found when following a previous breast biopsy. It may distort the normal breast tissue, but does not usually cause symptoms. However, if it is large enough, it may look like cancer on the mammogram, and the presence of a scar has been associated with a slight increased risk of developing breast cancer. Many physicians recommend removal of the radial scar.

## **BENIGN BREAST CONDITIONS AND THEIR RELATIVE RISK FOR DEVELOPMENT OF INVASIVE BREAST CANCER**

Nonproliferative changes: Relative risk = to normal risk

- ◆ Fibrosis
- ◆ Cysts
- ◆ Mild Hyperplasia
- ◆ Adenosis (non-sclerosing)
- ◆ Simple fibroadenoma
- ◆ Phyllodes tumor (benign)
- ◆ A single papilloma
- ◆ Fat Necrosis
- ◆ Mastitis
- ◆ Duct ectasia
- ◆ Benign lumps or tumors (lipoma, hamartoma, hemangioma, hematoma, neurofibroma)

Proliferative disease without atypia: Relative risk = 1.5 -2 times higher than the normal risk:

- ◆ Usual ductal hyperplasia (without atypia)
- ◆ Complex fibroadenoma
- ◆ Sclerosing adenosis
- ◆ Several papillomas or papillomatosis
- ◆ Radial scar

Proliferative disease with Atypia: Relative risk = 4-5 times higher than normal risk for the development of invasive breast cancer:

- ◆ Atypical ductal hyperplasia
- ◆ Atypical lobular hyperplasia

## INDICATIONS FOR REFERRAL

The signs and symptoms of breast conditions are diverse. It is essential that evaluation and follow up be pursued. Indications for referral to a surgeon should be made in appropriate and timely manner.

### **Absolute indications for referral include:**

- ◆ Discrete palpable mass
- ◆ Cystic mass or cysts that recur within six weeks of aspiration
- ◆ Asymmetric mass or thickening that persists after a menstrual cycle in an ovulating woman
- ◆ Any asymmetrical mass or thickening in a non-ovulating woman
- ◆ Changes in the contour of the breast, skin dimpling
- ◆ Changes in the appearance of the skin such as peau-de orange, ulceration and/or inflammation
- ◆ Single duct, spontaneous nipple secretion
- ◆ Palpable axillary or supra/infraclavicular nodes
- ◆ Nipple/areola changes

Some patients may not have absolute indications for referral. The following is a list of other concerns where referral may be appropriate:

- ◆ Patients with bilateral multiple-duct nipple discharge
- ◆ Women at high risk for developing breast cancer
- ◆ Worried patients with negative work-ups
- ◆ Patients who do not have effective clinician-patient relationships

**IF A PATIENT HAS A CBE WITH SUSPICIOUS FINDINGS, REFER THE PATIENT WITH HER CBE FINDINGS TO A SURGEON/BREAST SPECIALIST FOR EVALUATION WHETHER THE RESULTS OF THE MAMMOGRAM ARE POSITIVE OR NEGATIVE.**

# Pathophysiology

## Section IV

# BREAST CANCER

## Pathophysiology

The breast is a complex organ composed of glandular and fibrous tissue and subcutaneous and retromammary fat. The response of the epithelium, fibrous tissue, and fat to hormonal stimulation varies. Areas may overgrow causing thickening and lumpiness. This overgrowth or hyperplasia may involve the fibrous tissue alone or can include the epithelial cells of the ducts and glands that lead to the formation of fibroadenomas or ductal dysplasia. Lumps can also be caused by the collection of fluids, colostrums, or cellular debris, which form microcysts or macrocysts.

Although the response of the breast tissue to hormonal stimulation is responsible for most breast tumors, there are other causative factors. Infection, usually associated with duct obstruction, can result in an inflammatory tumor. Mammary duct ectasia can result in infection and sometimes simulates cancer because it produces nipple discharge or inversion. Blunt trauma can lead to a hematoma that may result in a necrotic change to the tissue and subsequent formation of an irregular tumor.

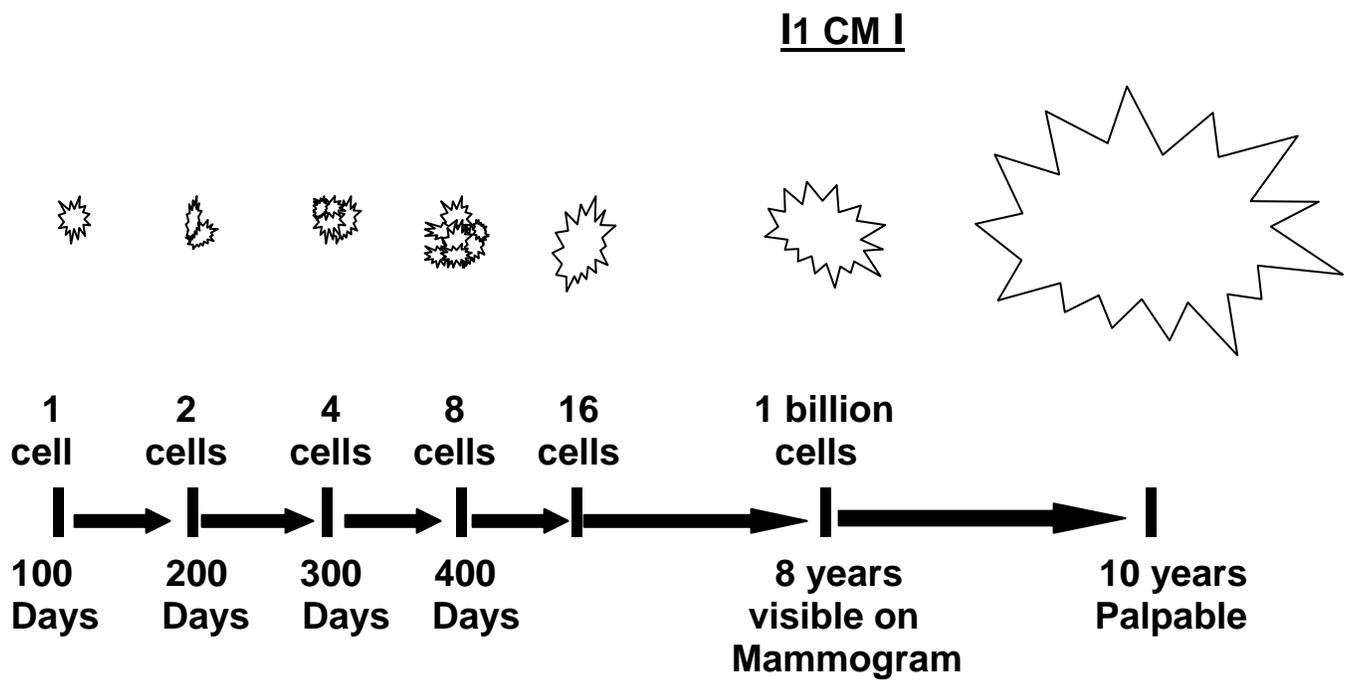
The precise role of female hormones in the development of breast cancer is unclear. Various roles for estrogen have been examined, including: estrogen as an initiator when it interacts with the cellular DNA and causes development of the malignant state; estrogen as a promoter when it acts to promote the carcinogenic action of other carcinogens; or estrogen as permissive of various carcinogenic events. It is clear however, the hormones are involved in some way in the growth of most breast tumors.

Breast cancers are usually slow-growing tumors. It has been calculated that when the first cell becomes malignant, it may take up to 7-8 years for the tumor to reach a diameter of 1cm and up to 10 years to become palpable. However, there are tumors that spread more rapidly than others.

Breast tumors are spread via the lymph system and bloodstream through the right side of the heart to the lungs, the other breast, chest wall, liver, bone, and brain. The time between initiation and diagnosis can give ample time for metastasis to occur. Therefore, a diagnosis of breast cancer should always be considered a chronic condition.

Breast cancer typically presents as a painless, unilateral mass. Early on it may be a mobile mass that later becomes fixed. Nipple retraction, recent onset of a nipple inversion, any non-healing skin or surface lesion of the breast, or axillary lymph gland enlargement may also be indicators of an underlying cancer. Signs of more advanced disease include skin retraction, changes in breast contour, thickening or dimpling of the skin, and fixation of a mass to the chest wall. A ductal carcinoma can present with a serosanguineous nipple discharge with or without a palpable mass.

# Cancer Cell Growth Rate



# BREAST CANCER

**Cancer:** In the healthy body, a control process of cell generation, growth, and death (apoptosis) occurs to regulate all cell growth. Cancer is a condition where the natural regulators do not work correctly and cell growth exceeds cell death. As the cell growth continues to exceed the cell deaths, a mass is formed. As the mass/tumor grows larger, angiogenesis occurs allowing for new blood vessels to form providing oxygen and nutrients to the tumor site. As these cells proliferate, they become increasingly abnormal and require more of the body's metabolic output. Damage caused by their invasion of healthy tissue results in the organ's malfunction. These cells can travel and invade other areas of the body via the bloodstream and the lymphatic system.

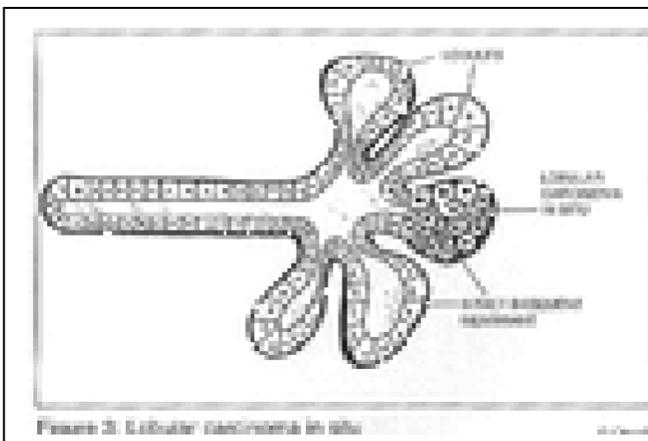
## Breast Cancer

There are many types of breast cancers that can develop in any area of the breast. However, approximately 50% of breast cancers will develop in the upper outer quadrant of the breast (*Tail of Spence*). Breast cancers are described as either in situ (*in place*), or invasive. When only the epithelial cells of the ducts or lobules are affected and the basement membrane has not been infiltrated, the carcinoma is considered in situ. When this membrane is infiltrated, the carcinoma is considered invasive.

## Non-Invasive Breast Cancer (Carcinoma in situ)

### Lobular Carcinoma in Situ (LCIS)

When the normal cell lining of the lobules begins to grow, they begin to appear on microscopic exam as filling the lobule(s). Lobular carcinoma in situ is the least serious breast tissue abnormality and is seen more often in younger women. The presence of these abnormal cells, even after successful treatment, places the patient in a higher than normal risk of later developing an invasive breast cancer. Without treatment, the risk of developing an Invasive breast cancer is 15-20%. The majority of cases may be followed with careful monitoring with mammography and CBE. In special circumstances, bilateral mastectomy may be indicated since LCIS is more often found in both breasts than other types of breast cancer.



Note Lobule filled with abnormal cells, but cell membrane is intact.



## Ductal Carcinoma in situ (DCIS)

Approximately 24% of all new breast cancers diagnosed in the United States are DCIS, with one case of DCIS detected per 1300 screening mammograms in North America. DCIS tends to be more prominent in older women. DCIS describes the inappropriate growth of “abnormal” cells that line the breast ducts. In situ indicates that these cells are inside the basement membrane of the duct. They have not spread to surrounding fatty breast tissue or to any part of the body. Another name for DCIS is intraductal carcinoma of the breast because the carcinoma stays “within” the ducts.

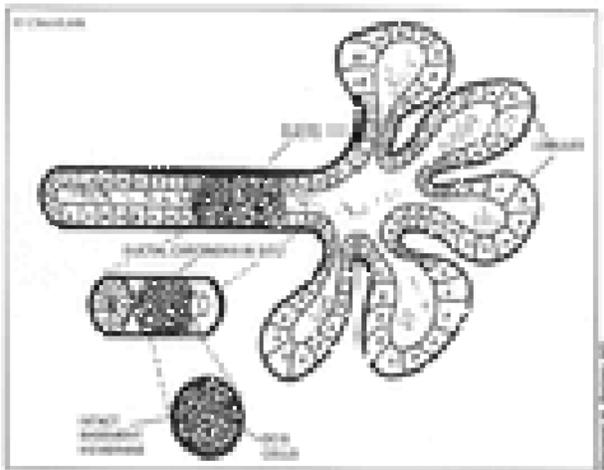
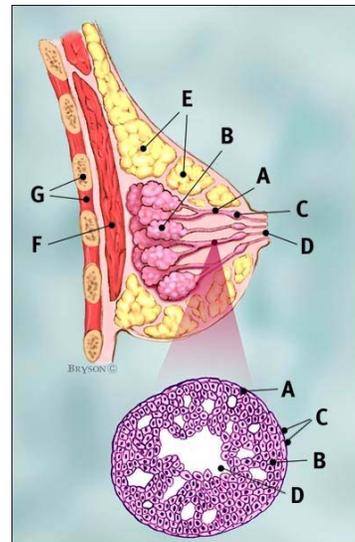


Figure 4: Ductal carcinoma in situ and cross-up part of duct breast section

### Ductal Carcinoma in situ



Data suggests that ductal carcinoma in situ represents a stage in the development of breast cancer. The individual cells that are growing in DCIS are believed to be malignant cells. If left untreated or if treated inappropriately, these malignant cells may eventually develop the ability to invade through the basement membrane and become an invasive (or infiltrating) carcinoma with the ultimate ability to spread through the body.

In DCIS, the clinical breast exam is usually normal/benign. However, the screening mammogram will usually reflect microcalcifications. Microcalcifications are tiny mineral deposits within the breast tissue. Coarse or larger calcium deposits are most likely changes in the breast caused by aging of the breast arteries, old injuries, or inflammation, and are found in about half of women over 50. The shape and layout of the microcalcifications provide the radiologist and/or surgeon with information to determine if they have characteristics associated with malignancy.

Diagnosis is made utilizing a fine needle aspiration, a core biopsy with ultrasound or stereotactic guidance to the area of concern or an open incisional biopsy.

There are two categories of DCIS: non-comedo and comedo. The term, comedo, describes the appearance of the cancer. When comedo type breast tumors are cut, the dead cells inside of them (necrosis) can be expressed out just like a comedo or blackhead on the skin. Comedo type DCIS (also referred to as Comedocarcinoma) tends to be more aggressive than the non-comedo types of DCIS. Pathologists are able to distinguish between comedo type DCIS and other non-comedo types when examining the cells under a microscope because comedo type DCIS tends to plug the center of the breast ducts with necrosis (dead cells). When necrosis is associated with cancer, it often means that the cancer is able to grow quickly.

## Invasive Breast Cancer

### Invasive Ductal Carcinoma

This is the most common type of invasive breast cancer (80%). Invasive or infiltrating ductal carcinoma (IDC) starts in the ducts of the breast and has broken through the cell basement membrane and grown into the fatty tissue of the breast. At this point, the cancer cells are now able to metastasize to other parts of the body by way of the lymphatic system and the bloodstream. Infiltrating ductal carcinoma consists of tumors that palpate as “hard” masses that may be “fixed” to the skin or chest wall, and the nipple may retract. These tumors may be so small that they may not be palpable. Once the cancer cells have left their site of origin, there is a less favorable prognosis. Treatment and prognosis are dependent on the size of the tumor and the extent of metastasis.

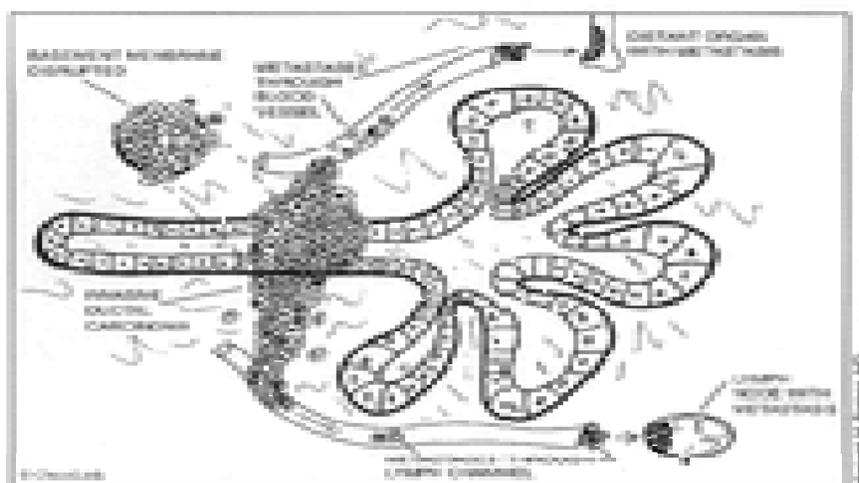


Figure 5: Infiltrating ductal carcinoma with duct cross section and metastasizes through blood and lymph systems

## **Invasive Lobular Carcinoma**

Invasive or infiltrating lobular carcinoma (ILC), consist of tumors that arise in the small end lobules (milk-producing glands). It is similar in appearance and behavior to infiltrating ductal carcinoma in that it breaks through the wall of the duct, and grows into the fatty tissue of the breast. At this point, it may spread (metastasize) to other parts of the body through the bloodstream and/or the lymphatic system. The CBE usually does not identify a lump or a mass, but thickening of the tissue or a fullness of the breast may be noted. In addition, a change in the texture or appearance of the skin over the breast, such as dimpling may be a finding suspicious for invasive disease. ILC represents about 5-10% of all invasive breast cancer. It tends to have a similar prognosis to infiltrating ductal carcinoma.

## **Less Common Types of Breast Cancer**

### **Inflammatory Breast Cancer**

Inflammatory breast cancer (IBC) is a rare but very aggressive type of breast cancer in which the cancer cells block the lymph vessels in the skin of the breast. This type of cancer is called “inflammatory” because the breast often looks swollen and red, inflamed, and is often warm to the touch; this is often initially mistaken for mastitis and treated with antibiotics. The skin may also have ridges or appear pitted, *peau d'orange*, which is caused by a buildup of fluid and edema in the breast. Usually there is not a palpable “lump” or tumor. The IBC diagnosis is based primarily on the clinical examination, with a biopsy of the skin, mammogram and ultrasound used to confirm the clinical findings.

IBC accounts for approximately 1-5% of all breast cancers. It is more frequently diagnosed in younger women compared to non-IBC breast cancers. It occurs more frequently and at a younger age in African Americans than in Whites. This type of breast cancer tends to metastasize faster and more frequently with a worse outlook than typical invasive ductal or lobular cancer.

### **Paget Disease**

Paget disease of the nipple, also called Paget disease of the breast is an uncommon type of cancer that forms in or around the nipple. One theory regarding the cause of Paget Disease proposes that cancer cells break off from a tumor inside the breast and move through the milk ducts to the surface of the nipple. This theory is supported by the fact that 97% of patients with Paget disease of the nipple also have an underlying invasive breast cancer or DCIS. A few rare cases of Paget disease of the nipple have been reported for women in their 20s, most cases of Paget disease are found in women over age 50.

Early symptoms of Paget disease of the nipple may include redness, mild scaling or flaking of the nipple skin. More advanced disease may show more destruction of the nipple and may include nipple discharge. In about half of the women with Paget disease, a lump or mass may

be palpated in the nipple or areola area. Although rare, Paget disease of the nipple can occur in both breasts.

Diagnosis of Paget disease of the nipple is usually accomplished via a tissue biopsy of the nipple and microscopic examination of nipple discharge for the presence of Paget cells. In addition, because of the close association with an underlying breast cancer, the CBE and mammogram are essential for a complete diagnosis.

### **Medullary Carcinoma**

Medullary carcinoma is a ductal tumor that takes its name from its color, which is close to the color of brain tissue, or medulla. It has a rather well defined boundary between tumor tissue and normal tissue. Other characteristics of the invasive cancer include a larger size cancer cell with the presence of the immune cells at the edges of the tumor, which may grow quite large. Medullary carcinoma accounts for about 3% of breast cancers. Medullary carcinoma tends to be a high-grade (fast growing) type of breast cancer but usually does not metastasize to the lymphatic system as often as other types of invasive breast cancer. The prognosis for this breast cancer tends to be generally better than for the more common types of invasive breast cancer. The treatment for this cancer is similar to that of invasive ductal breast cancer.

### **Colloid or Mucinous Carcinoma**

This rare type of invasive breast cancer is a ductal tumor formed by mucus-producing cancer cells. It is responsible for about 2% of invasive breast cancers. Even though treatment will be similar to invasive breast cancers, the prognosis for colloid (mucinous) breast cancer is usually favorable.

### **Tubular (Orderly) Carcinoma**

Tubular carcinoma has a tubular structure because of the way the cells are arranged when seen under the microscope. It is unusual for this carcinoma to spread far beyond the original tumor site or to the lymph nodes. This rare type of breast cancer accounts for about 1-2% of all breast cancers and has a favorable prognosis.

### **Adenoid Cystic Carcinoma (Adenocystic carcinoma)**

This cancer has both glandular (adenoid) and cylinder-like (cystic) features when seen under the microscope. This type makes up less than 1% of breast cancers. It rarely spreads to the lymph nodes or distant areas, and tends to have a very good prognosis.

# **Diagnostic and Treatment Procedures**

## **Section V**

## DIAGNOSTIC AND TREATMENT PROCEDURES

### MAMMOGRAPHY FINDINGS

The type of diagnostic procedure required is based on the significance of mammographic and clinical findings. The major clinically significant mammographic findings are as follows:

**Circumscribed masses** are the most common abnormality found by mammography. It is most often a benign lesion such as a cyst or fibroadenoma. Differentiation between a cystic and solid mass can be made by supplementary ultrasound and/or aspiration.

**Cystic lesions** can easily be identified by ultrasound. For those non-palpable cysts that meet the ultrasound criteria for a **simple cyst**, it is appropriate to continue observation without intervention. For **complicated cyst** (echoes internal debris on ultrasound), aspiration with cytological examination of the fluid will usually resolve the problem. Aspiration may be carried out with ultrasound guidance.

**Solid Masses** require differentiation, either by fine needle aspiration, needle core biopsy, serial mammograms or excisional biopsy. A solid tumor that increases in size or in new masses must be considered suspicious.

**Coarse calcifications** such as those found in fibroadenomas are rarely malignant. Diffuse calcifications throughout the breast may represent a benign condition.

**Pleomorphic fine calcifications** especially if linear or segmented distribution consisting of five or more calcifications, require diagnosis that is more definitive. This finding has become one of the most common indicators of early breast cancer, particularly ductal carcinoma in situ.

**Stellate lesions** with a sunburst appearance are the most characteristic findings of invasive cancer. Skin retraction or thickening may be seen radiographically with this type of lesion. It must be noted that certain types of cancer, such as medullary, may present as circumscribed lesions.

### DIAGNOSTIC PROCEDURES

The management of breast lesions continues to improve as it has over the past few years, primarily because of : 1) better diagnostic modalities which changes significantly the stage at which the disease is treated; 2) a better understanding of the types and behaviors of malignant tumors; 3) the trend toward breast conservation and early reconstruction; and 4) the evolving management of advanced breast disease. Changes in treatment modalities and protocols continue to develop as more information, especially in drug therapies and genetic understanding of cancer, becomes available.

While there is general agreement on certain principles of management, it is important to understand and appreciate these facts, as they are essential to proper management of breast disease and underscore the need for proper consideration of each individual. There are a number of diagnostic tools available for confirmation of a clinical diagnosis. The utilization will depend on the judgment of the clinician and the presentation.

## **Diagnostic Mammography**

A diagnostic mammogram is a low dose x-ray examination to evaluate patients with an: abnormal CBE or unusual breast changes, such as a breast mass, pain, nipple discharge or inversion, or a change in breast size or shape, that may be suggestive of breast cancer; a questionable or abnormal screening mammogram; or for women with augmented or reconstructed breasts. This procedure may help to characterize a mass. For palpable masses, the role of diagnostic mammography is to examine the ipsilateral breast for evaluation of the extent of disease and the contralateral breast for additional disease.

Diagnostic mammogram should be performed under the supervision of a qualified radiologist and correlated with known physical findings and symptoms. Multiple views may be indicated. The diagnostic mammogram may indicate that there is need for additional imaging modalities in some patients.

Mammography of patients with breast implants should always be considered diagnostic even when patients are asymptomatic. Silicone implants are not transparent on X-ray; they can obscure a clear view of the tissue behind them. This is especially true if the implant has been placed in front rather than beneath the chest muscle.

Diagnostic mammograms of patients with breast implants require special positioning and should include both implant-included and implant-displaced views. In the implant-displaced views, the radiologic technologist manually displaces the implant toward the chest wall while bringing breast tissue forward for adequate compression.

## **Breast Ultrasound**

An ultrasound image of the breast is created by high frequency sound waves in a non-invasive manner. The pattern of echoes from these sound waves is converted, by computer, into a visual image of the interior of the breast. Ultrasound is not used for routine screening. It is part of a breast diagnostic evaluation of palpable or ambiguous densities. It is helpful in examining younger women who have normally glandular or dense breasts and in lactating and pregnant women.

The indications for breast ultrasound are:

- To distinguish cysts from solid masses
- To perform the initial examination of a palpable lump in young women

- To diagnose a simple cyst. The criteria for the cyst are:
  - round or oval shape
  - smooth walled density
  - sharply defined margins
  - lack of echoes
  - posterior acoustic enhancement
- To localize a lesion seen only in one view.
- To visualize a palpable mass partially or poorly seen on mammogram.
- To apply diagnostic analytic criteria to a solid tumor to better assess its probability of being benign or malignant.
- To visualize a mural nodule, arousing suspicion of the rare diagnosis of intracystic carcinoma or carcinoma adjacent to a cyst.
- To provide a less invasive means to intervene with an indeterminate lesion, i.e., ultrasound guided needle aspiration and/or core needle biopsy.

### **Ductogram, Galactogram or Duct Mammogram**

All three names refer to the opacification of the duct system with radiographic contrast medium to delineate intraluminal abnormalities. This procedure may be used for evaluating clinical suspicious nipple discharge, for accurate preoperative localization of a discharging duct, and to identify any intraductal tumors.

### **Fine Needle Aspiration**

FNA for cytological analysis represents a useful extension of the clinical evaluation of a palpable mass. FNA can accomplish cyst aspiration, in which the intent is both diagnostic and therapeutic, by eliminating a fluid-filled cyst, or can be diagnostic for solid masses, by aspirating tissue for cytological evaluation. Every palpable mass should be considered for needle aspiration to diagnose and treat cysts and to submit aspirated cellular material for cytological aspiration.

Physicians and patients need to understand the limitations of FNA. The false-positive rate is negligible but the **false-negative rate may be as high as 15-20%**. Any residual must be excised if not eliminated by aspiration of cyst.

## Needle Core Biopsy

A cutting type needle is used to remove a core of tissue, which can be examined for malignant changes. This procedure can provide a specific benign diagnosis such as fibroadenoma, in addition to histological confirmation of a malignancy.

There are special instruments and techniques that may be used to guide the needle and to assist with the biopsy procedure. The most common of these are described below.

### Mammatome

The core biopsy procedure may be assisted by the use of a Mammatome device to performed the vacuum-assisted biopsy. This device can be used to biopsy a range of breast abnormalities including microcalcifications. Usually using imaging guidance, a special, flatter needle is inserted into the breast mass or area of concern and breast tissue is gently suctioned into the tube as a rotating knife removes the tissue. The size and shape of this device allows for a larger area of biopsy than the simple core biopsy needle can accommodate.

### Ultrasound Guidance

Ultrasound guidance for needle placement is a technique that uses a computer and a transducer that sends out ultrasonic sound waves to create images of the breast lump or mass.

### Biopsy Guidance

**Stereotactic Localization Guidance** uses a computer and mammogram to create a three dimensional location of a breast lesion. The computer calculates the location of the lesion so that the core needle can be introduced and advanced to the proximal edge of the lesion. The proper alignment of the needle with the lesion can be checked by the stereo-mammography and a core sample is obtained. This mammogram can also determine the penetration of the biopsy needle into the lesion from which the core sample is obtained. In some cases to insure adequate biopsy sampling has been accomplished, a **radiological examination of the surgical specimen** may be done to insure microcalcifications are present.

**Ultrasound-Guided Biopsy** is a technique that uses a computer and ultrasonic sound waves to create imaging of the breast lump or mass for biopsy needle placement.

Both of these procedures provide minimal invasive means to provide a histological diagnosis without sacrificing accuracy. The physician would choose the most appropriate imaging method for performing the needle core biopsy procedure.

## **Surgical Biopsy**

A surgeon removes part or all of the breast lesion area through an incision into the breast. There are two types of surgical biopsies. During an **incisional** biopsy, a small part of the lesion is removed. Whereas during an **excisional** biopsy, the entire lesion is removed. In some instances, when the non-palpable abnormality is very small, deep, and difficult to locate, the **Needles or Wire Localization** may be inserted using imaging guidance prior to or during surgery to provide a precise location of the area to be sampled for the biopsy. The surgical biopsy may be performed using local with sedation or general anesthesia. Once the breast lesion biopsy is obtained, the specimen is sent to the laboratory pathologist for a microscopic exam of the specimen to determine the presence of malignant cells.

## **Sentinel Node Biopsy (SNB)**

**SNB** has gained acceptance as an appropriate diagnostic tool for determining whether breast cancer has spread from the breast to surrounding lymph nodes. This surgical procedure may be performed during the initial diagnostic period to aid in staging of the breast cancer. This procedure involves injecting a blue dye and/or radioactive substance into or near the tumor. Lymphatic vessels will carry these substances into the sentinel node[s]. This injection will help to identify the lymph node[s] (sentinel node[s]) by detecting radioactivity in the node[s] or look for nodes that have turned blue. The sentinel node[s] is felt to be the one most likely to have cancer cells present if the cancer has metastasized. When the sentinel node is identified, it is surgically removed and sent for pathology studies to determine the presence of malignant cells. If there is no cancer in the sentinel node(s), it's very unlikely that the cancer has spread to other lymph nodes, so no further lymph node surgery is needed.

## **BREAST CANCER STAGING**

Staging is the process of determining how much cancer is in the body and where it is located. Staging is used to describe the extent of the original (primary) tumor and the extent of spread in the body. Knowing the state of the disease is of paramount importance in determining the most effective treatment options and prognosis. In addition, knowing the stage is important in identifying clinical trials that may be suitable for a particular patient.

For most cancers, the stage is based on these main factors:

- Location of primary tumor
- Tumor size and number of tumors
- Lymph node involvement
- Presence or absence of metastasis

There are two modes of staging breast cancer. Clinical staging is done before any type of surgery and is critical knowledge for the physicians involved and for discussing treatment options with patients and their families. Pathological staging is determined after surgery when

the actual tumor dimensions and number of positive nodes are determined histologically. The pathology stage can differ significantly from the clinical stage. The following are tests used for staging by a physician and/or a cancer registrar:

**Clinical Staging** determines how much cancer there is based on the physical examination, imaging tests and biopsies of affected area.

- Mammogram – to rule out multifocal disease in other areas of the breast and contralateral breast.
- Clinical Breast Exam
- Imaging tests such as x-rays, CT scans, and MRI scans produce pictures of areas inside the body and can show the location and size of the tumor and whether the cancer has spread.
- Chemistry panel including liver function test to help detect liver metastases with alkaline phosphatase and calcium to screen for bone metastases.
- Other laboratory studies as indicated may include:
  - ❖ **Cancer Antigen 15-3 (CA 15-3)** is a blood test that is given during or after treatment for breast cancer. It is most useful as a baseline to monitor response to treatment and as an indicator of recurrent or metastatic disease. CA 15-3 is not a blood test that screens for breast cancer. It is a tumor marker test that is helpful in tracking cancers that overproduce CA 15-3. This antigen will only be elevated in a small percentage of stage I or stage II disease.
  - ❖ **Hormone Receptor Assay:** Hormone influences cells by binding to high-affinity receptor proteins that are specific for a given hormone (usually estrogen) then initiating a series of biochemical steps that lead to an alteration in cellular metabolism or growth. The presence or absence of the hormone receptor will provide prognostic information and will help in the clinical decision making regarding treatment. Women with estrogen receptor-positive breast cancer have longer disease-free survival, slower growing tumors and longer overall survival.

**Pathologic Staging** can only be done after patients have had surgery to explore the extent of the cancer. This type of staging combines the results of both the clinical staging with the results of surgery.

- ❖ Surgical reports will provide information regarding tissue removed including its size and appearance, observations regarding other organ and lymph node involvement.

- ❖ Pathology reports may include information about the size of the tumor, the growth into other tissues and organs, the type of cancer cell and the grade of tumor (how closely the cancer cells resemble normal tissue). Microscopic examination of tumor fragments is used to confirm the diagnosis of cancer and also to stage the cancer.

**Restaging** is used to determine the extent of the disease if a cancer comes back after treatment. This is done to determine what the best treatment option would be at the time. This type of staging is not common.

## TNM STAGING SYSTEM

This system was developed and maintained by the American Joint Committee on Cancer (AJCC), and the International Union Against Cancer (UICC). The TNM classification system was developed as a tool to stage different types of cancer based on certain standard criteria.

The **TNM** Staging System is based on the extent of the tumor (**T**), the extent of the spread to lymph nodes (**N**), and the presence of metastasis to distant organs (**M**).

### Primary Tumor (T)

<b>TX</b>	Primary tumor cannot be assessed
<b>T0</b>	No evidence of primary tumor
<b>Tis</b>	Carcinoma in situ (DCIS, LCIS, or Paget disease of the nipple with no associated tumor mass or invasion)
<b>T1</b>	Tumor is 2 cm or less across
<b>T2</b>	Tumor is more than 2cm, but not more than 5 cm across
<b>T3</b>	Tumor is more than 5 cm across
<b>T4</b>	Tumor of any size growing into the chest wall or skin. This includes inflammatory breast cancer

## Nearby Lymph Nodes (N)

<b>NX</b>	Nearby lymph nodes cannot be assessed (previously removed)
<b>N0</b>	Cancer has not spread to nearby lymph nodes
<b>N1</b>	Cancer has spread to 1-3 ipsilateral axillary lymph node(s) or tiny amounts of cancer are found in internal lymph nodes on sentinel lymph node biopsy
<b>N2</b>	Cancer has spread to 4-9 ipsilateral axillary nodes and has enlarged the internal mammary lymph nodes
<b>N3</b>	One of the following applies: <ul style="list-style-type: none"><li>❖ Cancer has spread to 10 or more axillary lymph nodes</li><li>❖ Cancer has spread to the lymph nodes under the clavicle</li><li>❖ Cancer has spread to the lymph nodes above the clavicle</li><li>❖ Cancer involves axillary lymph nodes and has enlarged the internal mammary lymph nodes</li><li>❖ Cancer involves 4 or more axillary lymph nodes, and evidence of cancer found in internal mammary lymph nodes on sentinel lymph node biopsy</li></ul>

## Metastasis (M)

<b>MX</b>	Presence of distant metastasis cannot be assessed
<b>M0</b>	No distant metastasis
<b>M2</b>	Metastasis to distant organs is present (most common sites are bone, lung, brain, and liver)

## Breast Cancer Stage Grouping

Once the T, N, and M categories are determined, the information is combined in a process called **stage grouping**. Cancers with similar stages tend to have a similar outlook and thus are often treated in a similar way. Stage is expressed in Roman numerals from Stage 1 (the least advanced stage) to Stage IV (the most advanced stage). Non-invasive cancer is listed as Stage 0.

The formal “stage” of cancer does not change over time, even if the cancer progresses. A cancer that returns or spreads is still referred to by the stage it was given when first diagnosed. In some cases after a period of remission, certain cancers might be restaged based on treatment plan.

## BREAST CANCER TREATMENT

There have been dramatic changes in the treatment of breast cancer over the past four decades and with current research, more changes will be developing. Today, a multidiscipline team of surgeons, medical and radiation, oncologist, plastic surgeons, oncology nurses, and social workers treat breast cancer patients. A woman newly diagnosed with breast cancer should be evaluated thoroughly to determine the clinical stage of her disease and appropriate treatment options should be discussed. Several therapeutic choices may be available to her. She should be given information regarding all treatment options and allowed to choose her treatment.

Secondary Diagnostic Studies may be needed to determine the best treatment options based on the cancer staging.

- ❖ **Hormone Receptor Assay:** Breast cancers with hormone receptors (usually estrogen) which can lead to an alteration in cellular metabolism or growth are called hormone-receptor positive. These receptors respond well to hormone therapies like **Tamoxifen** (prevents estrogen from attaching to the cancer cell surface) and aromatase inhibitors, such as Arimidex, **Femara** and **Aromasin** (which lowers the level of estrogen in the body therefore preventing the cancer cell from getting the estrogen they need).

The presence or absence of the hormone receptor will provide prognostic information and will help in the clinical decision making regarding treatment. Women with estrogen receptor-positive breast cancer have longer disease-free survival, slower growing tumors and longer overall survival.

- ❖ **HER/neu (human epidermal growth factor receptor) or ErbB2** is a protein involved in normal cell growth and can be found on the surface of some breast cancer cells promoting the growth of cancer cells. Testing for HER2/ErbB2 provides important prognostic information and may be able to predict response to certain treatments. In about 1 of every 5 breast cancers, the cancer cells make an excess of HER2 due to a

gene mutation. HER2-positive breast cancer (also called HER2/neu over expression), is associated with more aggressive disease and are less responsive to hormone therapy. However, treatments that specifically targets HER2 ( **Herceptin** and **Tykerb**), are very effective. In addition, standard chemotherapy agents such as Adriamycin have been effective in treating HER2-positive breast cancers although these drugs do not specifically target the HER2 protein.

Studies have suggested that women with breast cancer who are HER2-positive will benefit from anthracycline chemotherapy. Whereas, women who are HER2-negative may be spared these drugs which carry a rare risk of potentially severe side effects.

Routine testing for HER2 is recommended for most all women diagnosed with breast cancer because the results will directly affect treatment recommendations. In addition, whenever breast cancer recurs or metastasizes, retesting for HER2 should be done because the hormone receptive status can change in up to 20-30% of the cases.

- ❖ **Ki-67** Tumor Marker test has been a common way to measure cancer cell proliferation rate. The proliferation rate could be a good predictor of prognosis. During cell growth and division, proteins called proliferation antigens are produced. The antibody i-67 attaches itself to the proliferation antigen and measuring the number of cells this antibody attaches to from the tissue sample provides information regarding the growth of the cancer cells.

A breast tumor that scores high for Ki-67 can be treated with chemotherapy that targets cells that are growing beyond the normal rate. Knowing the Ki-67 score can assist in determining the more appropriate treatment plan.

- ❖ **CEP17**, an abnormality on chromosome 17, is a highly significant indicator that the tumor will respond to chemotherapy drugs call anthracyclines (a class of drugs used in cancer chemotherapy). Those patients with CEP17 duplication were more likely to experience better recurrence –free survival and overall survival if they were treated with anthracyclines.
- ❖ For other Tumor Markers that may affect or detect cancer cell growth. (See appendix A).

## **SURGERY TREATMENT**

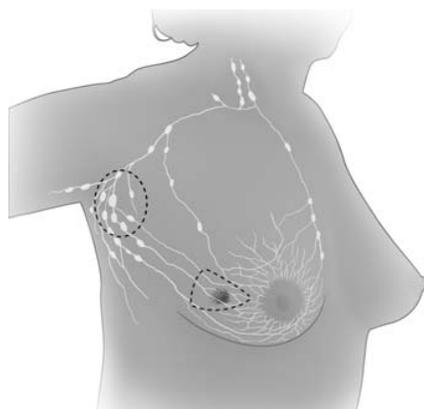
Surgery remains the fundamental curative treatment for breast cancer. Historically, it was usually the initial treatment approach. Most women with breast cancer have some type of surgery. Options for this include breast-conserving surgery and mastectomy. Breast reconstruction can be done at the same time as the mastectomy or done later on. Surgery is also used to check the lymph nodes under the arm to determine if metastasis has occurred and to what extent. Options for this include a sentinel node biopsy and an axillary lymph node dissection.

## BREAST-CONSERVING SURGERY

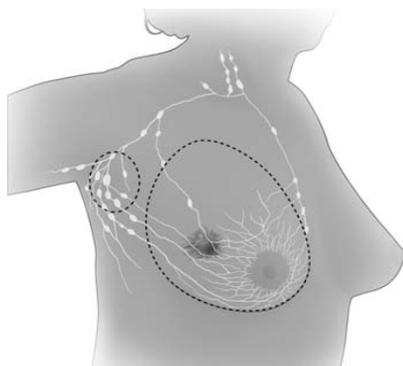
The National Institute of Health 1990 Consensus Development Conference states “breast conservation treatment is an appropriate method of primary therapy for the majority of women with Stage I and II breast cancers and is preferable because it provides survival equivalent to total mastectomy and also preserves the breast.”

In these types of surgery, only a part of the affected breast is removed, although how much is removed depends on the size and location of the tumor and other factors. If radiation therapy is to be given after surgery, small metallic clips (which will show up on x-rays) may be placed inside the breast during surgery to mark the area for the radiation treatments.

**Lumpectomy** removes the entire breast lump and a surrounding margin of normal tissue. Radiation therapy is usually given after a lumpectomy. If adjuvant chemotherapy is to be given as well, radiation is usually delayed until the chemotherapy is completed.



**Partial (segmental) mastectomy or quadrantectomy** removes more breast tissue than a lumpectomy. For a quadrantectomy, one-quarter of the breast is removed. It may or may not include axillary dissection. Radiation therapy is usually given after surgery. The radiation treatments may be delayed if chemotherapy is to be given as well. The major drawback to this procedure is that it may result in sub-optimal cosmetic results.



If cancer cells are found at any of the edges of the piece of tissue removed, it is said to have *positive margins*. When no cancer cells are found at the edges of the tissue, it is said to have *negative* or *clear margins*. The presence of positive margins means that some cancer cells may have been left behind after surgery. If the pathologist finds positive margins in the tissue removed by breast-conserving surgery, the surgeon may need to go back and remove more tissue. This operation is called a *re-excision*. If the surgeon can't remove enough breast tissue to get clear surgical margins, a mastectomy may be needed.

For most women with stage I or II breast cancer, breast-conservation therapy (lumpectomy/partial mastectomy plus radiation therapy) is as effective as mastectomy. Survival rates of women treated with these 2 approaches are the same. For many women this is more appealing because the surgery is less radical and allows them to maintain their natural breast tissue and contour. Good candidates for breast conservation therapy are women with average breast size and tumors less than 5 cm in size. The success of this method of treatment is based on the woman's willingness to complete the radiation component of the therapy.

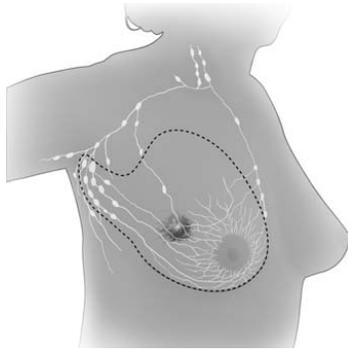
**Possible side effects:** Side effects of these operations can include pain, temporary swelling, tenderness, and hard scar tissue that form in the surgical site. As with all operations, bleeding and infection at the surgery site are also possible.

The larger the portion of breast removed, the more likely it is that there will be a noticeable change in the shape of the breast afterward. If the breasts look very different after surgery, it may be possible to have some type of reconstructive surgery or to have the unaffected breast reduced in size to make the breasts more symmetrical. It may even be possible to have this done during the initial surgery.

However, breast-conservation therapy is not an option for all women with breast cancer. The **Mastectomy** involves removing all of the breast tissue, sometimes along with other nearby tissues.

**Simple Mastectomy** is a procedure in which the surgeon removes the entire breast, usually including the nipple. It may be performed in "situ disease" when nodal involvement is not expected, but may include a sentinel node biopsy to insure metastasis has not occurred. Sometimes this is done for both breasts (a double mastectomy), especially when it is done as preventive surgery in women at very high risk for breast cancer. Most women, if they are hospitalized, can go home the next day.

**Modified Radical Mastectomy** until recently has been the most common and the most standard surgical procedure used in the treatment of breast cancer. The breast and axillary nodes are removed leaving the pectoralis muscle intact. The modified radical has been effective and does not create a scaphoid appearance.



Modified Radical Mastectomy

**Radical Mastectomy** is a procedure, which includes a modified radical mastectomy and the removal of the pectoralis major and minor muscles. The **Halsted radical** may be the procedure of choice where there is muscle involvement. This procedure removes the breast, pectoralis muscle and the axillary contents. With breast cancers being detected earlier, the need for this radical procedure is being replaced with the modified radical mastectomy and the lumpectomy with radiation.

### **Axillary Lymph Node Dissection (ALND)**

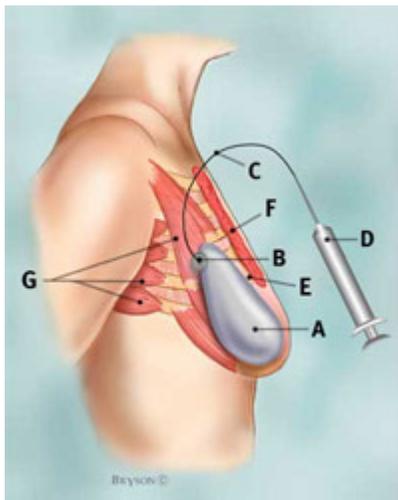
The main purpose for lymph node removal is the prognostic information provided. Lymph node involvement indicates the degree of metastasis and a higher risk for recurrent distant disease. It is also used in conjunction with staging the cancer, determining the primary treatment of the breast, and predicting outcomes. It is an integral part of a modified radical mastectomy. It may also be done along with a breast-conserving procedure, such as lumpectomy or a limited resection. Recent changes resulting in earlier diagnosis, the question of therapeutic benefit and staging is causing a re-evaluation of the necessity for lymph node dissection. There is a trend toward omitting node removal in very early cancers, (in situ) and small invasive cancers when lymph node spread is low probability. Removal of the axillary nodes does not prevent the spread of the disease to the nodes. It does help provide disease control in the axilla. It has been proposed that examination of **the sentinel node**, which is the first node that drains lymph from the tumor bed in the breast, would be a reliable method to stage the axilla and determine the need for adjunctive therapy.

The main long-term effect in approximately 30% of women who have ALD is lymphedema in the arm and axilla. This occurs because any excess fluid in the arms normally travels back into the bloodstream through the lymphatic system. Removing the lymph nodes sometimes causes this fluid to remain and build up in the arm. It can also occur in up to 3% of women who have had a sentinel node biopsy. It has also been noted to be more common in patients who have received radiation treatment following breast surgery.

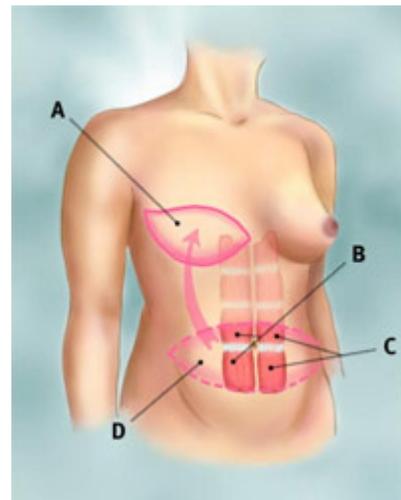
## BREAST RECONSTRUCTION

Advances in plastic surgery have resulted in many of the current improvements in breast reconstruction. Myocutaneous flaps, autologous procedures are often preferred to synthetic implants in breast reconstruction. The **transabdominal myocutaneous (TRAM – transverse rectus abdominis muscle) flap** or **latissimus dorsi flap** is favored in recreating the breast. The most popular artificial insert is the saline-filled silicone implant, placed behind the pectoral muscle.

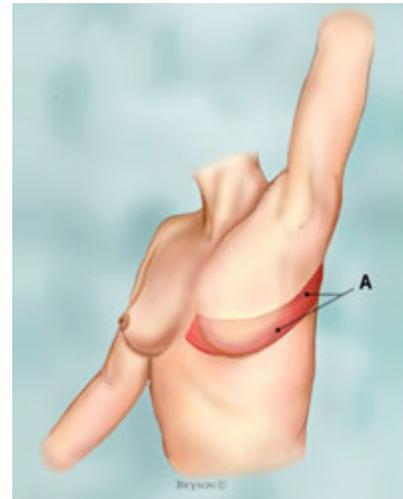
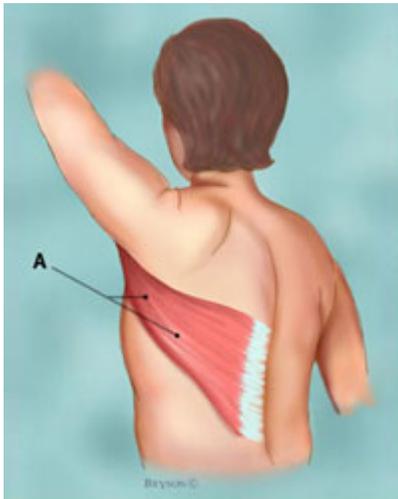
For most women the skin that remains after a mastectomy must be stretched or expanded to make room for an implant. To stretch the skin, the surgeon inserts a balloon-type device called a tissue expander under the chest muscle. The expander has a port (metal or plastic plug, valve or coil). The port allows the surgeon to add increasing amounts of liquid over time to stretch the skin. When stretching is done and other treatments (chemotherapy, radiation, or both) are completed, the expander is usually replaced with a permanent implant.



**Breast Expander**



**TRAM Flap**



### Latissimus Dorsi Flap

For some women considering immediate reconstruction, a **skin-sparing mastectomy** can be done. In this procedure, most of the skin over the breast (other than the nipple and areola) is left intact. The amount of breast tissue removed is the same as with a simple mastectomy.

This approach is only used when immediate breast reconstruction is planned. It may not be suitable for larger tumors or those that are close to the skin. Implants or tissue from other parts of the body are used to reconstruct the breast. Although this approach has not been used as long as the more standard type of mastectomy, many women prefer it because it offers the advantage of less scar tissue and a reconstructed breast that seems more natural.

Some doctors doing a prophylactic (preventive) mastectomy for women with known BRCA mutation might consider doing a **subcutaneous mastectomy**. In this procedure, the incision is made below the breast. The breast tissue is removed, but the breast skin and nipple are left in place. This is followed by breast reconstruction. This procedure leaves less visible scars, but it also leaves behind more breast tissue than other forms of mastectomy, so the chances that cancer may develop in the remaining tissue are higher than for a skin-sparing or simple mastectomy. Because of the higher chance of cancer developing, most doctors do not recommend this procedure for women who opt for a preventative mastectomy.

Young women with a known BRCA mutation and/or breast cancer are at very high risk for an initial or recurrent breast cancer. These women may want to consider having a **prophylactic mastectomy**, or even a double mastectomy as a preventative measure, or as treatment for the breast cancer and to reduce this risk of recurrence

It is essential for the patient to understand that there is no procedure available to recreate a perfect breast in one operation. Reconstruction of the nipple and areolar complex is usually done one to two months after initial reconstruction surgery. The plastic surgeon should discuss choices, specific risks, benefits, and complications with the woman so she can make an informed decision. Breast reconstruction can help promote emotional as well as physical

recovery from mastectomy. It is widely recognized as a positive step in the treatment of breast cancer.

## Radiation Therapy

Radiation therapy uses high-energy ionizing x-rays via a linear accelerator to deliver precise amounts of radiation to kill cancer cells by damaging their DNA thereby preventing their ability to reproduce. Radiation may be used with surgery to prevent local recurrence; as primary treatment to destroy a tumor; to shrink a large tumor; as palliation to alleviate the symptoms of metastases; and as a combined modality therapy



External-beam radiation therapy is delivered using a machine called a linear accelerator (also called a LINAC). A LINAC uses electricity to form a stream of fast-moving subatomic particles. This creates high-energy radiation that may be used to treat cancer.

Internal radiation therapy (brachytherapy) is radiation delivered from radioactive material placed inside or on the body. Brachytherapy can be given as a low dose rate or a high dose rate. A high dose treatment regimen that is being studied to treat patients with breast cancer who have undergone breast-conserving surgery is the MammoSite® system. In this high dose treatment, a robotic machine guides one or more radioactive sources through delivery tubes into or near the tumor, which is removed at the end of the session.

The current External therapy treatments are given on an out-patient basis and may be given several times a week over 4-6 weeks with each session usually lasting 20 minutes. Side effects may include skin changes (irritation or damage), fatigue, and/or anorexia. Most patients can continue working and normal activities. The severity and time symptoms last depend upon the treatment and individual factors. The patient's knowledge about the treatment should be assessed so that appropriate information can be given to the patient and her family. In addition, the patient may need assistance with planning for the treatments and self-care to control the side effects. Nutritional support is very important during this therapy since a number of patients report a marked decrease in appetite.

Current research is being done to improve radiation therapy. Drugs such as radiosensitizers that make cancer cells more sensitive to the effects of radiation are being studied. At present, anticancer drugs such as 5-fluorouracil and cisplatin make cancer cells more sensitive to radiation therapy. Other research is looking at radioprotectors, drugs that will protect normal cells from damage caused by radiation therapy.

Radiation combined with limited surgery, such as lumpectomy, has become the standard treatment for many breast cancers. The cure rate at ten years is equal to a modified radical mastectomy.

Radiation therapy can sometimes be omitted as a part of breast-conserving therapy. Although this is somewhat controversial, women may consider lumpectomy without radiation therapy if all of the following are true:

- they are age 70 years or older
- they have a tumor 2 cm or less that has been completely removed (with clear margins)
- the tumor is hormone receptor-positive, and the woman is getting hormone therapy (such as tamoxifen or an aromatase inhibitor)
- no lymph nodes contained cancer

## **Chemotherapy**

Chemotherapy is a systemic treatment, which uses cytotoxic drugs to destroy or disable fast growing malignant cells. They can be administered in conjunction with local therapy, surgery or radiation to achieve a greater response than with a single modality. The agents used, dosage and route of administration vary.

The clinical situation will determine the chemical protocol for each individual patient. Chemotherapy can be administered as the initial treatment for breast cancer. This neoadjuvant chemotherapy is often used with large tumors to shrink the tumor sufficiently to obtain clean margins at the time of excision, to reduce the size of the tumor and the lymph nodes so as to perform conservative surgery versus a complete mastectomy.

For those with metastatic breast cancer, chemotherapy is used to disable cancer cells that have spread from the breast to other parts of the body. It can also reduce some cancer-related symptoms and prolong survival.

There are a number of protocols/guidelines for chemotherapy drug utilization and combinations of drugs. The American Society of Oncology, the National Comprehensive Care Network, and the National Cancer Institute have developed and updated these guidelines for chemotherapy administration to ensure quality care.

Short term side effects may include nausea, vomiting, diarrhea or constipation, alopecia, anemia, fatigue, weight gain or loss, increased susceptibility to infections, mouth ulcers, sleep disorders and/or irritability. Pain can also result due to some chemotherapy medications cause nerve damage, especially noticed in the fingers and toes, myalgia, and/or numbness. Medications can assist the patients in tolerating some of these side effects.

Long term side effects of chemotherapy can include early infertility, early menopause, continued fatigue, weight gain, and rarely heart problems and leukemia. Some patients will have cognitive problems, which can last over a year in some cases, but may cause the patient to become anxious, stressed, or depressed. The true extent of the cognitive effects of chemotherapy is not known, but research in this area is on-going.

Adherence to the chemotherapy regimen is extremely important. A number of patients discontinue treatment due to some of the side effects listed above. The health care professional should provide patients with verbal and written information regarding these side effects and measures that can be taken to reduce the symptoms. The provider can also assist the patient in planning, decision making, and finding resources for support that will result in adherence to the regimen.

In the chart below, the current chemotherapy drugs used in the treatment of breast cancer are listed. Also listed are the combinations of drugs used in chemotherapy treatment regimens.

<b>1.1 Chemotherapy Drugs for Early and Locally Advanced Breast Cancer</b>	
<b>Drug (Abbreviation)</b>	<b>Brand Name</b>
Cyclophosphamide (C)	Cytoxan
Docetaxel (T)	Taxotere
Doxorubicin (A)	Adriamycin
Epirubicin (E)	Ellence
Methotrexate (M)	Maxtrex
Paclitaxel (T)	Taxol

1.2 Chemotherapy Drugs for Early and Locally Advanced Breast Cancer	
Chemotherapy drug combination	Treatment cycle/drug regimen
<b>AC:</b> a combination of doxorubicin (Adriamycin) and cyclophosphamide (Cytoxan)	<p>Given by IV on day one, followed by 20 days of rest. This is repeated four times every 21 days.</p> <p>AC can also be given in a dose-dense two-week cycle.</p>
<b>AC—&gt;Paclitaxel:</b> a combination of doxorubicin (Adriamycin) and cyclophosphamide (Cytoxan) followed by paclitaxel (Taxol)	<p>Doxorubicin and cyclophosphamide (AC) are given by IV on day one, followed by 20 days of rest. This is repeated for four cycles, followed by paclitaxel.</p> <p>AC can also be given in a dose-dense two-week cycle, followed by paclitaxel.</p> <p>Paclitaxel is given by IV once a week for 12 cycles.</p> <p>Paclitaxel can also be given in a dose-dense manner, every two weeks for four cycles with growth factor injections to boost white blood cell count.</p> <p>Dexamethasone (an anti-inflammatory steroid drug) is given before the paclitaxel to prevent an allergic reaction.</p> <p>This regimen is given to both pre- and postmenopausal women whose cancer has spread to the <u>lymph nodes</u>.</p>
<b>AC—&gt; Docetaxel:</b> a combination of doxorubicin (Adriamycin), cyclophosphamide (Cytoxan) followed by docetaxel (Taxotere)	<p>This regimen is similar to AC—&gt;Paclitaxel, except that docetaxel is used instead of paclitaxel.</p> <p>Docetaxel is given once every three weeks.</p>
<b>CAF (FAC/CAF):</b> a combination of cyclophosphamide (Cytoxan), doxorubicin (Adriamycin) and 5-fluorouracil (Adrucil)	<p>Usually, all are given by IV on day one. One is given on day eight, followed by 20 days of rest. The cycle is repeated six times.</p>

	Sometimes the cyclophosphamide is given as an oral pill on days 1 to 14 (rather than by IV). In this case, the cycle is every 28 days.
<b>TAC:</b> a combination of docectaxel (Taxotere), doxorubicin (Adriamycin) and cyclophosphamide (Cytosan)	Usually, all are given by IV on day one, followed by 20 days of rest. The cycle is repeated six times.  This regimen is used for <u>lymph node-positive</u> cancer.
<b>Cyclophosphamide (Cytosan) and docetaxel (Taxotere)</b>	Given by IV on day one, followed by 20 days of rest. This is repeated for a total of four cycles, every 21 days.
<b>CMF:</b> a combination of cyclophosphamide (Cytosan), methotrexate (Rheumatrex) and 5-fluorouracil (Adrucil)	Given by IV on day one and day eight. Cyclophosphamide can be given by IV on day one and day eight, or as oral pills on days 1 to 14, followed by two weeks of rest. The cycle is repeated six times.  If oral cyclophosphamide is used, the cycle is 28 days. For IV cyclophosphamide, the cycle is 21 days.

### ***HER2/neu-positive tumors***

If a tumor is HER2/neu-positive, trastuzumab (Herceptin) is included in the chemotherapy regimen. Trastuzumab is usually started with chemotherapy, and then continued after chemotherapy. In total, you will be given trastuzumab for about one year. Learn more about [trastuzumab](#).

### ***Chemotherapy drugs for metastatic breast cancer***

Some of the same drug combinations used to treat early breast cancer are also used to treat metastatic cancer. Figure 5.3 lists the most common chemotherapy drugs (used alone or in combination) to treat metastatic breast cancer. This list is not exhaustive and does not include rarely used drugs or those no longer in use.

<b>Figure 1.3 Chemotherapy Drugs for Metastatic Breast Cancer</b>	
<b>Drug (abbreviation)</b>	<b>Brand Name</b>
Capecitabine	Xeloda
Carboplatin	Paraplatin
Cisplatin	Platinol
Cyclophosphamide (C)	Cytosan
Docetaxel	Taxotere
Doxorubicin (A)	Adriamycin
Epirubicin (E)	Ellence
5-Fluorouracil (5FU)	Adrucil, Effudex, Fluoroplex
Gemcitabine	Gemzar
Ixabepilone	Ixempra
Liposomal Doxorubicin	Caelyx, Doxil, Evacet
Methotrexate (M)	Rheumatrex
Paclitaxel (T)	Taxol
Paclitaxel, albumin bound	Abraxane
Vinorelbine	Navelbine

Source: National Cancer Institute: nci.gov and [National Institutes of Health's Medline Plus Web site](#).

## Hormone Therapy

Hormone receptor assays show that about two-thirds of women with breast cancer have tumors that contain estrogen receptors. A tumor that is positive for both estrogen and progesterone receptors has an 80% chance of responding to hormone therapy. While most hormone therapy is used therapeutically or prophylactically for disseminated disease, use of Tamoxifen (an anti-estrogen drug), as a preventative measure was studied in a clinical trial known as the “Breast Cancer Prevention Trial”, funded by the National Surgical Adjuvant Breast and Bowel Project (NSABP). In 1998, this trial found that Tamoxifen was effective in significantly reducing the incidence of invasive and non-invasive breast tumors in women at high risk for the disease.

The STAR (Study of Tamoxifen and Raloxifene), one of the largest breast cancer prevention trial studies ever conducted, enrolled almost 20,000 postmenopausal women. This clinical trial, also conducted by the NSABP, was completed in 2006. This study found that both Tamoxifen and Raloxifene, initially introduced to treat osteoporosis in post menopausal women, worked equally well in reducing breast cancer risk by 50% for postmenopausal women at increased risk for the disease without some of the serious side effects known to occur with Tamoxifen. Raloxifene demonstrated 36 % fewer uterine cancers and 29% fewer blood clots than women taking Tamoxifen. Uterine cancers, especially endometrial cancers, are a rare but serious side effect of Tamoxifen. In addition, in the initial results, Raloxifene did not increase the risk of developing a cataract, as Tamoxifen does.

Other side effects of hormone therapy included edema, weight gain, nausea, vomiting, hot flashes, vaginal bleeding, hypercalcemia, skin rash, headache, and tumor flare. It is also noted that a non-hormonal contraception should be used during therapy.

## Clinical Trials

Clinical trials are designed to find better ways to treat cancer patients. They are going on in most parts of the country for all stages of breast cancer. Up-to-date information is available from the Cancer Information Services at 1800-4-CANCER: ACS website, cancer.org; kometatlanta.org; and National Cancer Institute, cancer.com.

## Treatment by Stage

Treatment of breast cancer depends on the type and stage of the disease, patient's age, menopausal status, and overall health. For a summary of standard treatments by stage, refer to the website for the National Cancer Institute @ <http://cancernet.nci.nih.gov/>. and select Breast Cancer Treatment.

# **FOLLOW-UP AND MANAGEMENT OF BREAST FINDINGS**

## **Section VI**

## CLINICAL BREAST EXAM (CBE)

The CBE method recognized by the state is the California Model, vertical strip method. Results of the CBE should be documented in the patient's medical record and sent to the radiologist with the request for mammography.

Clinical management, case management and data collection guidelines:

### Normal / Benign CBE findings

- ❖ Instruct patient on the vertical strip breast self examination (BSE);
- ❖ Review CBE results with patient;
- ❖ Refer for screening mammogram if age appropriate;
- ❖ Explain to patient the importance of routine CBE and when she should return for a repeat exam.
- ❖ Document findings and patient education in medical record;
- ❖ Communicate CBE findings (on referral form) to radiologist.
- ❖ Complete BCCP data forms

### Abnormal CBE findings

**Abnormal CBE REQUIRES follow-up evaluation by a surgeon or breast specialist regardless of mammography results.**

- ❖ Instruct patient on BSE, identifying abnormality with patient;
- ❖ Educate the patient on possible diagnostic tests that will be performed;
- ❖ Document abnormal findings, (specific findings, i.e., "nipple discharge"), on data forms and indicated follow up needed especially surgical consult.
- ❖ Refer for diagnostic mammogram and include CBE results in referral to radiology facility. Send a signed "Release of Information" form with referral asking results be sent to health department and to the evaluation surgeon.
- ❖ After completion of imaging studies, refer patients with CBE results and imaging films to a surgeon for evaluation. Clinical nurse with assistance from the patient navigator, if appropriate, should arrange and document in patient's medical record the date of surgical evaluation appointment.

- ❖ According to Dr. Jacqueline Miller, MD, USPHS, Medical Director of the NBCCEDP, it is not absolutely necessary to have a surgical consult before a breast biopsy, but the necessity of having such a consult should depend on the degree of suspicion for breast cancer. If the mammography findings are highly suspicious for cancer, then a surgical consult should be considered before the biopsy is done. It is important that the person obtaining/ordering the biopsy is experienced and knowledgeable about the appropriate follow-up of biopsies so that the correct information and care is given to the woman.
- ❖ Send completed “Release of Information” form with surgical referral so as to obtain follow up reports from the surgeon.
- ❖ A registered nurse will follow up with the surgeon concerning diagnosis and recommendations and should document all contacts in the patient’s medical record.
  - With assistance from the patient navigator, the nurse will provide assistance with making appointments, transportation, and payment options to enable patient to comply with recommendations.
  - Enter diagnostic procedure, dates performed, the work-up status, final diagnosis and date into the medical record. Document in the progress notes the name of the physician who made the final diagnosis.

If the diagnostic work-up has not been completed within 60 days of the abnormal CBE, the work-up status can be reported on the data forms as “Pending”, “Lost to Follow-Up” or “Work-Up Refused” and the date this determination was made.

- ◆ **“Lost to Follow-Up”** indicates the patient has moved, unable to be reached, or is deceased.
- ◆ **“Work Up Refused,”** indicates the patient has refused further follow-up or is unresponsive to case management efforts to complete appropriate follow-up.
- ◆ Before Administrative Closure of case management efforts:
  - attempts must be made to determine why the patient is “lost” or “work-up has been refused”;
  - provide the patient with education in words that emphasize the consequences;
  - understand the medical liability of closing this record; and
  - document all patient contacts and keep receipts of certified letters, etc.

- If breast cancer is diagnosed, obtain information from surgical consult regarding diagnosis and stage/tumor size, date of diagnosis, and treatment status and/or plans,
- Arrange with patient to complete Women's Health Medicaid application.
- Provide case management including counseling and support referrals as needed.

## **MAMMOGRAPHY**

### **Negative / Benign (ACR – BI RADS 1 and 2)**

1. The patient is notified of a normal mammogram in writing as required by the Mammography Quality Standard Act, and notification is documented in the medical record. (This may also be performed by your radiology provider)
2. A copy of this imaging report should be placed in the patient's medical record.

### **Assessment Incomplete (ACR – BI RADS 0)**

1. The patient is notified of mammogram results.
2. After an explanation of the inability to determine the final results of the mammogram without additional special views of the breast tissue, the nurse will schedule a return appointment to the radiology facility in a short time span.
3. The patient will be counseled regarding the mammogram findings so as not to alarm the patient while providing any needed support.
4. All activities and contacts with the patient should be recorded in the medical record.

### **Unsatisfactory Mammogram**

1. An unsatisfactory mammogram cannot provide a reading/result, therefore, another mammogram is needed.
2. The patient should be informed of these findings and should be rescheduled for a repeat mammogram within four weeks.
3. Explanations should be given before repeating the mammogram so that the patient does not use deodorant, lotions, or powder, which could obscure the films.

4. If the unsatisfactory mammogram was a result of patient discomfort, reschedule the repeat mammogram 1-2 weeks following menstrual cycle.
5. Each step performed should be documented in the medical record.

### **Probably Benign Findings (ACR – BI RADS 3)**

1. The patient should be notified regarding the result of her mammogram.
2. If this finding occurs with the patient's initial mammogram (no history of prior mammogram), this must be treated as an incomplete mammogram and further imaging studies should be indicated. Consult with the radiologist to determine what studies may be needed.
3. If the patient reports a history of a previous mammogram, and the current mammogram report reflects a Bi Rad 3, the patient should be instructed on scheduling a return visit for a repeat CBE and mammogram based on the recommendation of the radiologist.
4. The patient should be given an explanation regarding the need for short term follow-up. It should also be discussed that a repeat CBE is the best way to assure the most accurate interpretation of the breast findings.

### **Suspicious Findings (ACR – BI RADS 4 and 5)**

1. The patient should be informed of report findings.
2. An appointment for a surgical evaluation and follow-up should be accomplished within four weeks after the abnormal mammogram.
3. The patient should be given a thorough explanation of the findings and need for follow-up. Counsel and support the patient as needed. Case Management should be done to insure the patient has the ability to access this follow-up care.
4. Document all patient and surgical contacts regarding this patient in her medical record.

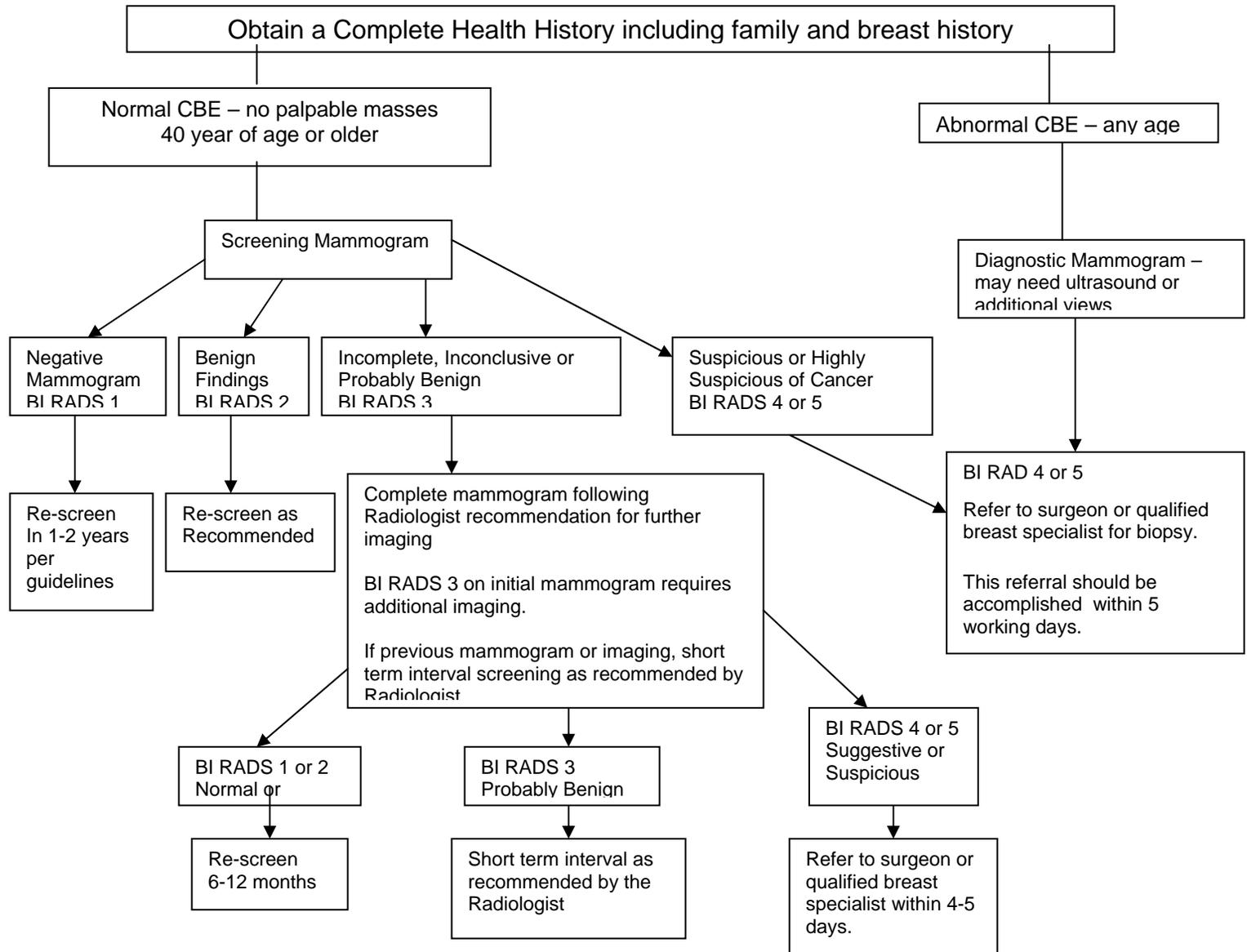
## Management of Common Breast Problems

**History:**

**CBE**

**Imaging**

**Recommended Follow-up**



## Follow-up Protocol

### **Every effort should be made to contact the patient regarding an abnormal finding.**

At least 3 attempted contacts must be documented in the patient's medical record before executing an Administrative Closure. The following steps are recommended in the follow-up process.

- At least two telephone calls and/or letters. If these do not successfully reach the patient, proceed to the next step.
- A certified letter marked return receipt requested must be sent. Contact with a family member or other person is not considered contact with the patient.
- The dates and results of phone calls and letters must be documented in the patient's medical record.
- If a patient refuses follow-up, the nurse should identify barriers, (i.e., fear, lack of transportation, etc.). An attempt should be made to eliminate any barriers. Refusal of follow-up must be documented in the patient's medical record.
- If the patient is reached, but does not comply with recommended follow-up after following the above steps, the case is reported as "refused".
- If the patient has moved without a forwarding address or has died, the case should be reported as "lost to follow-up".
- Any variance from the written protocol should be explained in the patient's medical record. The reason for variance must be beyond the capability of the clinic staff to overcome.

## BIOPSY REFERRAL

The patient whose screening results indicate a need for a biopsy should be informed in the clinic or by a home visit, (if staffing allows), of the screening results and the need for diagnostic evaluation.

- It is important to stress that the mammogram is only a screening test that indicates if further tests are needed including a referral to a surgeon.
- A copy of the mammogram, and CBE findings along with a “Release of Information” form should be given to the patient to take to the surgical consultation. Information regarding the referral should be documented in the patient’s medical record. Insure that the mammogram films are forwarded or “patient transported” to the surgeon for review at or before the patient’s appointment.
- The health center/contract provider should receive a written report from the surgeon within 30 days following the completion of the diagnostic evaluation. If report is not received by this time, the clinical nurse should contact the surgeon for this report.
- The clinical/examining nurse and/or the patient navigator should provide case management services to the patient throughout the diagnostic process especially to encourage compliance with follow -up and to alleviate barriers to care that the patient might encounter.
- Patients receiving screening and diagnostic services from the Federal and State program should be aware that the Health District/Contract Provider must report the evaluation procedure, date, final diagnosis, and treatment to the BCCP data unit.

### **Rigorous attempts must be made to complete diagnosis within 60 days of the abnormal screening.**

- Case management efforts such as phone call, letters, and home visits should be employed to encourage patient compliance.
- Mail a certified letter to patients who fail to comply stressing the importance of obtaining diagnostic follow-up.
- All attempts to contact the patient must be documented in the medical record. If a patient refuses follow-up, the nurse and/or patient navigator should attempt to identify barriers, (i.e.; fear, lack of transportation, etc.), and efforts made to eliminate the barriers.
- If certified letter return receipt states patient is no longer at that address or is deceased, report the patient as “Lost to Follow-up” and retain copy of receipt in the patient’s medical record.
- If certified letter return receipt states patient refused, retain copy of the receipt and document patient refusal of follow-up in the medical record including date of refusal.
- Any variance from the written protocol should be explained in the patient’s medical record. The reason for variance must be beyond the capability of the clinic staff to overcome. When possible obtain a signed “*Statement of Refusal of Care*” when a patient rejects care that has been offered to her.

## PATIENT COUNSELING and CASE MANAGEMENT

To help ensure compliance, the patient should be counseled about the results of her breast examination, mammogram and their implications. Depending on the type of findings, the following information should be discussed.

- The need for further testing. Use of easy reader booklets and printed material to assist with counseling.
  - The following booklets are available from the American Cancer Society's S.E. Division, Inc. Contact Olga Jimenez at 404-949-6454 or [www.cancer.org](http://www.cancer.org)
    - *For Women Facing a Breast Biopsy*
    - *Mastectomy: A Patient Guide*
  - National Cancer Institute ([www.cancer.gov](http://www.cancer.gov)) had numerous booklets and fact sheet available at no charge.
    - *What You Need to Know About Breast Cancer (P017)*
  - Komen for the Cure ([www.komen.org](http://www.komen.org)) has downloadable information.
- Counseling may be done in one to one sessions, or involve those whom the patient has trust including, family members, church member, pastor, close friend, other health center staff, or family physician with patient's permission.
- Case management including ongoing attempts to contact the patient, identifying and resolving barriers and utilization of additional resources to support the patient through diagnosis and/or treatment.
- Case Management efforts may continue after the screening cycle is closed. For the patient who is unable to obtain needed diagnostic or treatment follow-up due to existing barriers, the nurse may need to provide expanded case management and counseling. This effort should continue for at least 90 days after the date of the abnormal screening or the diagnosis before final closure of the screening cycle.

## DOCUMENTATION

Completely document all patient-centered encounters in the patient's medical record (electronic or hard copy record) Encounters include attempts to contact the patient, other contacts to family and/or guardians, interventions, phone conversations, referrals, patient visits, appointments made, and other providers and resources. Appropriate written documentation (hard copy or electronic) is an essential component of quality case management. Quality documentation is timely, accurate and complete. Retention of records should be in compliance with the State Record Retention Policy ([http://www.georgiaarchives.org/records/retention\\_schedules](http://www.georgiaarchives.org/records/retention_schedules)).

# Patient Education

## Section VII

## PATIENT EDUCATION

Early detection will save lives. Through education and screening techniques, women can lower their risk of mortality associated with breast cancer. Performing monthly breast self-exams (BSE), obtaining an annual clinical breast exam (CBE), and having an annual mammogram, when age appropriate, are recommended practices for early detection.

As part of the National Breast and Cervical Cancer Early Detection Program, health providers and public health clinics, can provide patients with breast self-exam instructions and perform the clinical breast exam. Mammograms are provided through local hospital or radiology offices/centers. In all healthcare settings, a portion of a well-woman exam involves education especially for the breast self-exam.

Counseling sessions for patients should include disease risk factors, screening recommendations, follow-up if needed, record keeping and educational materials aimed at decreasing breast cancer morbidity and mortality.

Educational materials are available from a number of sources, especially, the American Cancer Society, National Cancer Institute, and Komen for the Cure. Care should be taken to insure educational materials relating to breast cancer and early detection reflect current knowledge of prevention and treatment. With advances in communication, a number of these educational offerings can be downloaded from the websites. Printed materials and videos can also be obtained from these sites. Additional resources can be found in the Public Education Resource Catalog.

- The American Cancer Society      [www.cancer.org](http://www.cancer.org)
- The National Cancer Institute      [www.cancer.gov](http://www.cancer.gov)
- Komen for the Cure      [www.komen.org](http://www.komen.org)

The following is a list of **some** of the resources available.

**American Cancer Society**    [www.cancer.org](http://www.cancer.org)

<i>For Women Facing Breast Cancer</i>	(4652.00)
<i>For Women Facing a Breast Biopsy</i>	(4537.00)
<i>10 Tips to a Good Mammogram</i>	(3423.00)
<i>Let's Talk About a Mammogram</i>	(2028.11)
<i>Breast Health Card</i>	(2048.00)
<i>What You Should Know About Breast Cancer</i>	(4400.66)

**National Cancer Institute**    [www.cancer.gov](http://www.cancer.gov)

<i>Understanding Breast Changes: A Health Guide for Women</i>	P051
<i>Mammograms</i>	F712
<i>Herceptin (Trastuzumab): Questions and Answers</i>	N057
<i>Tamoxifen: Questions and Answers</i>	N109
<i>Moving Beyond Breast Cancer, Video</i>	V013

**Komen for the Cure**    [www.komen.org](http://www.komen.org)

<b><i>Understanding Breast Cancer Guide</i></b>	<b>Download</b>
<b><i>Factors that Affect Breast Cancer Risks</i></b>	<b>Download</b>
<b><i>The Breast and Breast Cancer</i></b>	<b>Download</b>
<b><i>Screening Tests</i></b>	<b>Download</b>
<b><i>Other Issues Related to Early Detection and Screening</i></b>	<b>Download</b>
<b><i>Types of Biopsies</i></b>	<b>Download</b>
<b><i>Factors that Affect Treatment Decisions and Prognosis</i></b>	<b>Download</b>
<b><i>Breast Self Exam Card (Vertical method)</i></b>	<b>Purchase</b>

**Support Programs**

*Reach for Recovery* A program managed by the American Cancer Society that pairs a woman diagnosed with breast cancer with a breast cancer survivor volunteer who had a similar diagnosis allowing the volunteer to support the woman as she goes forward with her treatment regimen.

*Look Good, Feel Better* A program managed by the American Cancer Society provided for women undergoing cancer treatment especially chemotherapy. The program is aimed at showing women how to care for their skin, make up techniques, wig care and/or use of scarves to improve their appearance and minimize the side effects of cancer treatment.

*Faith-Based support groups* May be located in your area and are usually available for breast cancer survivors, and /or family members of a survivor.

# INSTRUCTIONS TO PATIENT PRIOR TO MAMMOGRAM

## The patient should:

1. choose a mammography facility certified by the Food and Drug Administration (FDA).
2. schedule the exam about 5-7 days after the first day of her menstrual flow in order to decrease discomfort.
3. wear a two piece outfit or clothing that can be easily removed.
4. avoid use of under arm deodorant, talcum powder, perfume or ointments in the underarm area because these may contain materials that could be misinterpreted on the mammogram film.
5. obtain previous mammogram films if performed in another facility so that the current films can be compared with previous mammogram
6. provide information in the facility that may be pertinent such as pregnancy, breastfeeding, breast implants, or past history of breast problems.
7. provide the name, address and phone number of current doctor or health care professional.
8. have a prepared list of any questions she might have regarding the mammogram.
9. reduce salt and caffeine, which may be beneficial in relieving discomfort. A mild over the counter pain reliever about an hour before the mammogram also may help.
10. not be alarmed that several pictures are made especially if this is the first mammogram or you have large breast.
11. not fear the radiation exposure because only a small amount is used in mammography.
12. know that the compression of the breast is very important. It allows the x-ray to show as much of the breast tissue as possible and lowers the x-ray dose needed to get a better pictures. Any discomfort from the compression will only last a few seconds.

13. ask the facility when to expect the results of the mammogram. Usually most results are available within 10 days unless the radiologist is waiting for prior films to arrive so as to compare the current exam with previous mammograms.
14. feel free to ask questions regarding your mammogram results. Make sure you understand the results and any follow up needed.
15. comply with recommended follow up from either the radiologist or your health care professional. This is especially important if any problems or concerns are noted in this exam. This should be done in a timely manner.
16. keep a copy of all screening reports especially mammography.

# **SPECIAL PATIENT NEEDS, BARRIERS, AND CONSIDERATIONS**

## **OLDER WOMEN**

### **Barriers to screening:**

- Low perceived susceptibility
- Lack of awareness
- Lack of recommendations by a health care professional
- Lack of Access to care
- Low income
- Transportation

### **Special Considerations:**

- Printed material should have print adequate size, with good contrast between print and background.
- Use both printed and oral communication for better understanding.
- Review of information to insure patient understands.
- Provide listing of resources and offer assistance in obtaining services/transportation.
- Provide information pertaining to age group when discussing risks and recommendations for screening.
- Increased awareness concerning early detection should be the goal.

## **AFRICAN-AMERICAN WOMEN**

### **Barriers to screening:**

- Cost of screening and treatment
- Lack of perceived susceptibility
- Fear of pain
- Lack of awareness
- Fatalism
- Lack of health care professional referral or access to health care
- Transportation

### **Special Considerations:**

- Messages to reach the African American women may be conveyed more efficiently through the church.
- Risks of breast cancer and increased awareness of screenings should be stressed.
- Provide listing of resources for low-cost or free mammography screening.
- Messages from respected African American women addressing the fear of pain, breast cancer survival, and benefits of early detection and treatment may be successful avenues to relay these messages.

## **HISPANIC/LATINO WOMEN**

### **Barriers to screening:**

- Embarrassment
- Language, inability to communicate
- Cost
- Access
- Anxiety over results
- Fear of pain during the mammography procedure
- Fear of radiation exposure during mammography
- Transportation

### **Special Considerations:**

- Stress patient privacy through videos and printed materials. Provide access to female health care professionals when possible.
- Provide list of resources and educational material in Spanish. Stress the availability of low cost or free services, and transportation and/or alternate sites if available.
- Reduce anxiety prior to mammogram by assuring that most mammograms are normal. Efforts should be made to reduce the time between the test and providing the results.
- Stress the safety of mammography.
- Address the usual lack of pain and if present will only last for a brief time. Radiologic technologists should be alerted if fears are excessive.
- Provide, when possible, a bilingual health care professional or interpreter. Special attention should be given to the patient's understanding instructions and stressing the need for follow-up. May need to use bilingual family member/friend or bilingual patient navigator to accompany the patient to the testing facilities.

## **NATIVE AMERICAN WOMAN**

### **Barriers to screening:**

- Bodily privacy, women do not talk about sexual organs
- Health care system differences
- Male providers may be considered inappropriate to perform CBE and discuss breasts and genitalia
- Communication barriers
- Cost of care and screenings
- Lack of transportation

### **Special Considerations**

- Provide lists of resources for low-cost or free mammograms, transportation services and alternate sites, if available.
- Be aware of and sensitive to cultural differences. American Indian patients may not want to be touched and may seem inattentive, because, out of respect for others. They often will not make eye contact.
- American Indians are very private and may feel disrespected by the personal health related questions addressed in the medical history. They value the use of titles, (such as Mr., Mrs., etc.), which they use even in ordinary conversations among close friend and acquaintances.

## **ASIAN / PACIFIC ISLAND WOMEN**

### **Barriers to screening:**

- Lack of orientation to preventive medicine and technology
- Language differences
- Lack of transportation
- Women tend to care for other family members before taking care of themselves
- Belief in not having control over illness
- Lack of institutionalized cultural competency

### **Special Considerations:**

- Provide outreach into communities to inform the Asian Americans of available services.
- Provide list of resources for low cost or free mammogram services and transportation services, if needed.
- “Touching” is not generally acceptable.
- The use of titles and correctly pronounced name are important. Direct eye contact may be avoided.
- The husband or older male in the family is traditionally the chief decision maker. This may need to be considered when screening and follow-up are discussed with the patient.
- Allow additional time for medical visits using calm, caring approach.

## **LOW-INCOME WOMEN**

### **Barriers to screening:**

- Lack of access to medical facilities
- May need to travel a “distance” to nearest facility
- Lack of transportation
- Fear of finding cancer and the effects of cancer treatment
- Lack of general knowledge about mammography
- Lack of knowledge about when and where to go for a mammogram
- Perception of low personal cancer risk
- Lack of physician referral; passivity with health care professional (unwillingness to ask questions)
- Cost
- Lack of prevention orientation
- Fear of dependency on others

### **Special Consideration:**

- Rural residents have higher poverty rates
- Tend to be less educated
- Are less likely to have health insurance and/or Medicaid coverage.

## FINANCIAL RESOURCES

Many women do not seek recommended screenings due to lack of financial resources. The following programs are now available to assist:

### **Georgia Breast and Cervical Cancer Program (BreasTesT & More)**

Mammograms, breast exams, and cervical cancer screenings are offered to women who are low income and uninsured at no cost to the patient. The local health departments/contracted providers should be contacted to schedule an appointment for a breast examination. The health department/contracted provider will schedule the appointment for a mammogram through a local participating radiology facility. All participating mammography facilities must be certified by the FDA.

### **Medicare**

Effective January 1998, for women over 65, Medicare preventive services, Part B will pay for mammography every year, if performed in an FDA certified facility. Also covered is the pelvic and clinical breast exam during the office visit every 3 years. The Pap test is authorized yearly for women at high risk for cervical cancer. More information may be obtained by dialing Call 1-800-MEDICARE (1-800-633-4227).

### **Medicaid**

Medicaid eligible patients may receive mammography screening services by physician/APRN order. The Breast and Cervical Cancer Prevention and Treatment Act of 2002 provides matching federal funds to states for breast and cervical cancer treatment. Women under 65 of age diagnosed with breast or cervical cancer or cervical pre-cancer who are income eligible for the BCCP program, (uninsured, Georgia resident, U.S. citizens or qualified aliens), can receive breast and/or cervical cancer treatment through the **Women's Health Medicaid Program**. Eligible women receive full coverage Medicaid for the duration of the breast and/or cervical cancer treatment. To obtain a copy of the DCH WHM Presumptive Manual please go to: [www.mmis.georgia.gov](http://www.mmis.georgia.gov) and select Provider Information, scroll down to and select Provider Manuals, and then click on "Presumptive Eligibility Medicaid ACA WHM"

### **Private Insurance**

Mammography screening coverage is mandated in Georgia for all third party insurers. Contact the individual company for benefit information.

## **Susan G. Komen for the Cure**

For those low income and underinsured patients living in the 10 county Metro Atlanta area, Macon, and the Coastal regions of Georgia, Komen for the Cure can assist patients seeking breast cancer screening, diagnostic services which may include MRI exams and genetic screening through grant funded sites. The list of grantees and services provided plus information on current clinical trials can be found at their home web site, [www.komen.com](http://www.komen.com). Affiliate specific contact for Atlanta metro is [www.komenatlanta.org](http://www.komenatlanta.org) , the coastal region is [www.komencoastalgeorgia.org](http://www.komencoastalgeorgia.org), and in the Macon area is [www.komencentralga.org](http://www.komencentralga.org)

## **American Cancer Society (ACS)**

The ACS **Hope Lodge** is available to patients and caregivers actively undergoing cancer treatment on an outpatient basis. Patients must live at least 40 miles or a one-hour drive time away from the treatment facility.

American Cancer Society **Road to Recovery** program provides transportation to and from treatment for people who have cancer who do not have a ride or are unable to drive themselves.

The ACS also offers educational services for patients and their families in understanding financial and legal matters such as: Advanced Directives, Informed Consent, the Patient's Bill of Rights, Family and Medical Leave Act, American with Disabilities Act, and other financial topics that can assist the patient throughout their cancer treatment.

More information on these program and current clinical trials is available through their web site, [www.cancer.org](http://www.cancer.org).

# **Patient Education Handouts**

## **Section VIII**

# Questions to Ask Your Doctor About Breast Biopsy

Compiled by Susan G. Komen for the Cure @ [www.komen.org](http://www.komen.org)

When a lump is felt in the breast or an abnormal area is found on a mammogram, a biopsy may be recommended. Follow-up tests, such as a diagnostic mammogram or ultrasound imaging, can provide more information. However, to make a definite diagnosis of breast cancer, cells or tissue must be removed from the abnormal area of the breast. They are then examined under the microscope. The procedure that removes the cells or tissue is called a biopsy.

**Answers to the following questions will help you understand the procedures involved.**

Q: Where will the biopsy take place?

Q: What type of biopsy will I have? Why do you recommend this type? Will the entire lump be removed or just part of it?

Q: Can the lump be aspirated (fluid or cells removed with a needle) with a needle? How reliable is a needle biopsy?

Q: How long will the biopsy or aspiration take?

Q: Can the biopsy be done on an outpatient basis? Will I be awake? What will I feel during the procedure?

Q: What medications should I avoid before the biopsy and for how long? When can I start taking my usual medications?

Q: Will the biopsy leave a scar?

Q: Are there any aftereffects of a biopsy? If so, what are they? What problems should I report (i.e., tenderness, pain, numbness along the scar)?

Q: When will I be able to return to my normal routine (i.e., drive, go back to work, do household chores)?

Q: After the biopsy, how soon will I know the results? Can my tissue be placed in a tissue bank (a place where tissue is protected and stored for future use)?

Q: If cancer is found, who will talk with me about my treatment options? When must I make a decision about my treatment choices?

## Questions to Ask Your Doctor **When Breast Cancer is Diagnosed**

Compiled by Susan G. Komen for the Cure @ [www.komen.org](http://www.komen.org)

To make a definite diagnosis of breast cancer, cells or tissue must be removed by surgery or with a needle from the abnormal area of the breast. They are then examined under the microscope. The procedure that removes cells or tissue is called a biopsy. If a biopsy confirms cancer, a number of tests may be done to find out if the breast cancer has spread to other organs.

### **Answers to these questions will help you understand your diagnosis.**

Q: What were the results of my biopsy or needle aspiration?

Q: What kind of breast cancer do I have? What is the stage of my disease? What is the size of the tumor? Has the cancer spread to my lymph nodes or other parts of my body (metastasized)?

Q: What tests were done on the tumor and what were the results (i.e., estrogen and progesterone receptor status)? How do these results affect my options for treating the cancer?

Q: Who will coordinate my care?

Q: How can I get a copy of my pathology report?

Q: Will the lymph nodes under my arm be checked for cancer? If so, how will this affect my treatment options?

Q: What tests will I have before surgery to see if the cancer has spread to any other organs (liver, lungs, bones)?

Q: What do you recommend for treatment? Will you refer me to an oncologist (a doctor who specializes in treating people with cancer)?

Q: What is my prognosis (chance for recovery)?

## Questions to Ask Your Doctor About Treatment Choices

Compiled by Susan G. Komen for the Cure at [www.komen.org](http://www.komen.org)

Your treatment plan depends on several factors such as your age, stage of your tumor and estrogen receptor (ER) status. However, deciding on a treatment is a personal matter for you as well as a medical one. The type of treatment you decide on should be based on the risks and benefits and how they relate to your own values and lifestyle.

**Answers to these questions will help you determine the best treatment plan for you.**

Q: What are my treatment options? What do you recommend for me and why?

Q: What is your opinion about breast-conserving surgery (lumpectomy) followed by radiation therapy? Is this treatment right for me? (Anyone considering this option should also consult with a radiation oncologist.)

Q: What is a sentinel node biopsy? Will I have this done? How accurate is a sentinel lymph node biopsy in my case?

Q: Will I need more treatment (radiation therapy, chemotherapy and/or hormonal therapy) after my surgery? Will you refer me to a radiation oncologist for radiation therapy and a medical oncologist to discuss the need for chemotherapy or hormonal therapy?

Q: Can breast reconstruction be done at the time of the surgery, as well as later? Will you refer me to a reconstructive surgeon before my surgery?

Q: If I choose not to have reconstruction, what can I do? What types of breast prostheses are available? Where can I buy breast prosthesis? Is it covered by my insurance?

Q: How long do I have to make a treatment decision? What will my insurance cover?

Q: Is there a clinical trial for patients with my type of breast cancer? If so, how can I learn more?

# Questions to Ask Your Doctor About Reconstructive Breast Surgery

Compiled by Susan G. Komen for the Cure at [www.komen.org](http://www.komen.org)

Breast reconstruction can help restore the look and feel of the breast that was removed during a mastectomy. Performed by a plastic surgeon, breast reconstruction can be done during the mastectomy surgery or in another operation. Exactly when you decide to have reconstruction depends on your wishes and the specifics of the situation. You should discuss your options with your doctor.

## **Answers to these questions will help you understand reconstructive surgery.**

Q: What are the types of reconstructive surgery? What will my insurance cover? What type do you recommend?

Q: When is the best time for me to have reconstruction — now or later? If I need radiation therapy, will it affect the results and success of the reconstructive breast surgery?

Q: What are the short and long-term effects of muscle flap reconstruction versus implant reconstruction?

Q: What are the chance of infection and/or rejection of an implant device? Are there any other risks or side effects to consider?

## **Answers to these questions will help you prepare for your reconstruction and follow-up.**

Q: How many operations will I need? How long is each operation? How long is the hospital stay for each? How much time is needed for recovery after each? Are there any medications to avoid before surgery?

Q: Is there much pain after surgery? What body changes, such as swelling, will I have after surgery, and for how long?

Q: How can I expect the reconstructed breast to look and feel? How will it compare with my other breast? Will anything need to be done to the other breast?

Q: May I see pictures of reconstructive surgeries that you have done? Are you a board-certified plastic surgeon?

Q: Will I be able to detect a possible recurrence after reconstructive surgery? Will I still need mammograms? Will reconstructive breast surgery change my normal breast health routine in any way?

Q: If I do not choose reconstruction, what prostheses, or breast forms, are available and where do I buy them? Will insurance cover the costs?

## Questions to Ask Your Doctor Before Breast Surgery

Compiled from Susan G. Komen for the Cure at [www.komen.org](http://www.komen.org)

Your treatment options depend on many factors, such as your age, tumor stage and estrogen receptor (ER) status. Deciding on your treatment plan is a personal matter as well as a medical one. Your treatment should be based on the risks and benefits and how these relate to your personal values and lifestyle.

### **Answer to these questions will help you prepare for your surgery.**

Q: What type of surgery do you recommend for me and why?

Q: If I choose breast reconstruction, can it be done at the time of surgery, as well as later? Will you refer me to a reconstructive surgeon before my surgery?

Q: How long will I be in the hospital? Will I need someone to help me when I go home from the hospital?

Q: How should I expect to feel after the operation? What limitations will I have on my normal activities? Will my daily routine be affected?

Q: Where will the surgical scar(s) be located? Will my breast(s) feel any different after the surgery? Will I have less feeling in my breast?

Q: Will I have a surgical drain (tube that drains fluid from the breast) in place when I go home? If so, how will I care for it? When will it be removed?

Q: When should I return for a follow-up appointment?

Q: When will I find out my results of the surgery (pathology)?

Q: What side effects might I have after surgery (i.e., pain, tenderness, bruising, scarring, numbness)? Which ones should I tell you about?

Q: What is my risk of having long-term problems or side effects from my surgery?

Q: Will I need any other treatments? If so, which ones and how long after surgery will they start?

## Questions to Ask Your Doctor After Breast Surgery

Compiled by Susan G. Komen for the Cure @ [www.komen.org](http://www.komen.org)

After surgery, it is important to take care of yourself physically and mentally.

**Answers to these questions will help you play an active role in your recovery.**

Q: When will I be able to get back to my daily routine?

Q: Are there any precautions I should take? If lymph nodes were removed, ask if having an injection in that arm or shaving under that arm should be avoided? What is lymphedema? How can I reduce my chance of getting lymphedema?

Q: Are there special exercises I should be doing? What kind? When should I start? How long should I do them? Are there any exercises that I should avoid?

Q: Will my tumor be saved? Where will it be stored? For how long?

Q: What problems should I report to you? What pain or discomfort is normal? How can I treat the pain?

Q: Where can I find a breast cancer or cancer support group led by a qualified professional?

**Answers to these questions will help you prepare for follow-up visits to the doctor.**

Q: Who will I see after my treatment?

Q: How often should I return to my doctor for an exam, lab tests or other X-rays? What tests will be done? What will the tests tell us? When should I have my next mammogram?

# Questions to Ask Your Doctor About Breast Cancer Chemotherapy

Compiled from Susan G. Komen for the Cure @ [www.komen.org](http://www.komen.org)

Chemotherapy uses drugs to kill cancer cells. It usually begins four to six weeks after the final surgery. Most often it involves the use of a combination of drugs, which may have a number of side effects on the body.

**Answers to these questions will help you understand the reason for chemotherapy.**

Q: Why is chemotherapy recommended for me?

Q: What is the significance of cancer found or not found in the lymph nodes? How many lymph nodes do I have under my arm and how many have cancer cells in them?

Q: If my lymph nodes are not involved, should chemotherapy or hormone therapy still be considered?

**Answers to these questions will help you understand the drugs involved and their effects.**

Q: What drugs will I be taking? Why have you chosen these drugs for me? Are there other combinations that are also effective?

Q: What are the possible side effects of this type of chemotherapy? How long will they last? Will I lose my hair? What are the long-term risks? How can I prevent or treat these side effects?

Q: Which side effects should I report to you immediately?

Q: What medications will I receive to prevent or treat side effects? Are there any complementary therapies that might **help me cope with side effects? If so, what?**

**Answers to these questions will help you prepare for your treatment and follow-up.**

Q: How soon should chemotherapy be started?

Q: In what form and how often will I get the treatment? Will I need someone to go with me?

Q: How long will each treatment take? How many treatments will I have?

Q: Will I still be able to work, exercise, etc. during these treatments? Are there special precautions I should take while on chemotherapy or afterwards?

Q: Will the cost of the treatment be covered by my health insurance?

## Questions to Ask Your Doctor About Radiation Therapy

Compiled from Susan G. Komen for the Cure @ [www.komen.org](http://www.komen.org)

Like surgery, radiation therapy is a local treatment for breast cancer. It uses targeted, high-energy X-rays to stop cancer cells' ability to grow and divide. Radiation therapy aims to get rid of cancer from the breast, chest and axillary lymph nodes and to lower the risk of the cancer coming back (recurrence).

**Answers to these questions will help you understand the reason for radiation therapy and help you prepare for the treatment.**

Q: Why do you recommend radiation therapy? Will other therapies be needed?

Q: How long will each radiation treatment take? How many treatments will I have? How soon should treatment begin?

Q: Who will plan my radiation treatments? Who will give them and where?

Q: How is radiation given and how long does it take? What areas of my breast will receive radiation? If I have breast reconstruction, can I still have radiation?

Q: Can I come alone or should someone come with me?

Q: What can I do to prepare for my treatment (i.e., wear a two-piece outfit)?

Q: Will the costs of the treatment be covered by my health insurance?

**Answers to these questions will help you understand the possible effects of the treatment.**

Q: What side effects may I expect and how long might they last? What side effects should I call you about?

Q: What are the long-term risks of this treatment?

Q: What should I avoid or not do during or after treatment (i.e., skin creams, lotion, underarm shaving, etc.)?

Q: Can I continue normal activities (work, sex, sports, etc.) during treatment? After treatment?

Q: How often are checkups and tests required after treatment ends? Which doctor will manage my care?

## Questions to Ask Your Doctor About Hormone Therapy

Compiled by Susan G. Komen @ [www.komen.org](http://www.komen.org)

Hormones, like estrogen, can promote the growth of breast cancer if the cancer cells depend on hormones to grow. Hormone therapy treats breast cancer by preventing cancer cells from getting the hormones they need to grow. The most common hormone therapy for early stage breast cancer is the drug tamoxifen. A newer class of drugs called aromatase inhibitors is also available. Other therapies, such as the suppression or removal of the ovaries, are sometimes used as well. *Note: Hormone therapy is not to be confused with hormone replacement therapy.*

### Answers to these questions will help you understand hormone treatment.

Q: Which hormone treatment do you recommend for me and why?

Q: How does hormone therapy treat breast cancer?

Q: What are the short and long-term side effects of this hormone treatment? What are my chances of having side effects?

Q: Is there a generic form of this hormone treatment? Is it as effective as the name brand?

### Answers to these questions will help you prepare for the treatment itself.

Q: How soon after surgery should the hormone therapy be started? How long will I be on the therapy?

Q: How do I take the treatment? How often?

Q: Will I take the hormone therapy along with my other treatment?

Q: Will my insurance pay for the hormone treatment? If not, are there financial assistance programs that will help cover the costs?

Q: Will I need more tests or exams? If so, which tests and how often will they be needed?

Q: What signs and symptoms should I tell you about?

Q: What are the risks if I stop taking the hormone therapy?

## Questions to Ask Your Doctor About Lymphedema (Swelling of the Arm)

Compiled by Susan G. Komen for the Cure @ [www.komen.org](http://www.komen.org)

The removal and/or radiation treatment of axillary lymph nodes as part of treatment for breast cancer can lead to lymphedema. Lymphedema can cause painful swelling of the arm or hand on the side of surgery. Lymphedema can develop weeks, months or even years after treatment and can vary in its severity. To reduce your chances of developing lymphedema, precautions can be taken, such as avoiding an infection or injury to the affected arm.

### Answers to these questions will help you understand lymphedema.

Q: What are my chances of getting lymphedema?

Q: What signs or symptoms of lymphedema should I watch for and tell you about?

### Answers to these questions will tell you what you can do to avoid lymphedema.

Q: If I get a shot or get my blood pressure taken from the affected arm, will I get lymphedema?

Q: What exercises should I do (or avoid) to prevent lymphedema? What else can I do?

Q: What else can I do to avoid lymphedema (i.e., use sunscreen, insect repellent and garden gloves)?

Q: If I get a cut, burn or insect bite on the affected arm, what can I do to protect myself?

Q: If I do get lymphedema at some time, is it permanent?

### Answers to these questions will help you understand the treatment for lymphedema.

Q: What is the first step in treating lymphedema?

Q: Should I wear a compression sleeve? Do I have to wear it at all times, even at night? What about on an airplane?

Q: What is manual lymph drainage (MLD)? When is wrapping used to treat lymphedema? Please explain how these treatments work. Will my insurance company pay for these treatments?

# Questions to Ask Your Doctor **Genes and Inherited Breast Cancer Risk**

Compiled by Susan G. Komen for the Cure @ [www.komen.org](http://www.komen.org)

Every cell in your body contains genes. Some genes are key in the development of breast cancer (i.e., BRCA1 and BRCA2). Sometimes, people are born with a problem in one of these genes, an inherited mutation that can be passed on to children. Inheriting a mutated breast cancer gene may increase a woman's risk of breast or ovarian cancer. However, only 5-10 percent of all breast cancers are caused by those inherited mutations.

**Answers to these questions will help you to understand the relationship between genes and inherited breast cancer risk.**

Q: Should I get genetic testing? Should I talk with a genetic counselor? If yes, why? How is the test done?

Q: When should I get the test? Will options be different in my treatment?

Q: What are the benefits and risks of genetic testing?

Q: What does our family need to think about when considering genetic testing (i.e., emotional impact, what it will mean for other family members, what we will do with the information)?

Q: How much does genetic testing cost? Does my insurance pay for it?

Q: Will my results be confidential? Who will see my results? What are the risks and benefits of being tested?

Q: What are my options if I have a mutation in a breast cancer gene?

Q: If I have a mutation, will I get breast cancer? Are my family members (i.e., daughter, son, sister, mother) at a higher risk for breast cancer? What can we do? Where can we/they go for testing and counseling?

Q: What does it mean if my test is negative?

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## Appendix A

### **Additional Tumor Markers that may affect or detect cancer cell growth:**

#### **Urokinase Plasminogen Activator (uPA)**

Urokinase is an enzyme that occurs naturally in urine and blood plasma. It is produced in the kidneys and helps dissolve blood clots in the kidney or bladder. Tumors can also produce urokinase, and researchers think that it may encourage tumor cells to spread. Plasminogen is a substance that, when activated, becomes plasmin, an enzyme that digests fibrin, an insoluble protein that forms when blood clots.

#### **PAI-1 Inhibits uPA**

Plasminogen activator inhibitor 1 (PAI-1) is a special protein that inhibits urokinase. If the level of PAI-1 and uPA are both high, it may mean that the tumor is overproducing urokinase, allowing cancer cells to spread beyond the tumor. High levels of PAI-1 may not be able to inhibit the growth of the cancer without additional help from chemotherapy.

#### Benefits of performing an uPA and PAI-1 Tumor Marker Test

If the lymph nodes are node negative, and the tumor is hormone sensitive, low levels of uPA and PAI-1 may indicate the risk of recurrence is quite low. In this instance, chemotherapy would not improve survival. However, if the levels of these tumor markers are high, the risk for recurrence is high and chemotherapy would be beneficial.

#### **CA 27.29**

CA 27.29 is a mucus-containing protein that is produced by the MUC-1 gene. Breast cancer cells will shed copies to the CA 27.29 protein in the bloodstream. This tumor marker is usually used during the treatment phase of breast cancer to monitor the response to treatment. Levels of this protein will usually drop if the treatment is working. CA 27.29 may be employed to determine the possibility of early recurrence. This marker can also be elevated with other cancers, and is not elevated in all patients with breast cancer.

### **CA 15-3**

CA 15-3 is also used to monitor patients with breast cancer. Elevated blood levels are found in less than 10% of patients with early disease and in about 70% of patients with advanced disease. Even though levels of this marker may drop if treatment is working, there is usually an increase noted a few weeks after treatment is completed. This rise is caused when dying cancer cells spill their contents into the bloodstream.