P. THE DIAGNOSIS AND MANAGEMENT OF BREAST DISEASE

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INTRODUCTION

Complete and careful examination of the breast is as important as the pelvic examination and Pap test in the detection of malignancy. While most women with breast problems do not have cancer, their major concern in diagnosis and management is fear of uncovering a malignancy. The job of providers is to confirm or negate that fear quickly and accurately by carefully assessing breast problems and following established screening guidelines.

Breast cancer is the most common malignancy of women in the United States. Thirty percent of all new cancers in women occur in the breast, and the next most common site is the lung and bronchus (13%). It is the second leading cause of cancer deaths in women, surpassed only by lung cancer. It is a disease of increasing frequency with increasing age, with the peak incidence in the eighth decade. One in eight women will develop breast cancer during her lifetime, if she lives to age 95.

Striking and disturbing patterns emerge when cancer risk factors are examined by ethnicity (1). In general, cancer is uncommon in Native Americans. Cancer rates for all sites are lowest for Native American females (180/100,000 population), exclusive of Alaska Natives, who have a rate comparable to white females (348/100,000 population). Breast cancer is the second most common cause of cancer deaths for most Native American women (it is third for Alaska Natives), although this data must be interpreted with great caution due to the small numbers of cases reported. Compared with other groups, data from the National Health Interview Survey (1996) demonstrate that Native American men and women have the highest reported use of alcohol and tobacco. They have one of the highest obesity rates and are less likely to have health insurance. Interestingly, Pap tests and mammogram use are comparable, although the differences are not significant. Of note, Native American women differ from other ethnic groups in their age presentation at diagnosis of breast cancer. Among New Mexico Native American women from 1973 to 1998, 31% of women diagnosed with breast cancer were aged 40-49. In comparison, 26% of Hispanic woman and 17% of non-Hispanic white women diagnosed with breast cancer were aged 40-49. This disparity relates, in part, to the difference in age structure between these populations: Native Americans have the largest proportion of young women in their population. (2)

In an effort to increase screening and diagnosis of breast cancer, much attention has been given to risk-based screening. However, the two main risk factors for breast cancer are female gender and advancing age. Secondary “major” risk factors are a personal history of previously diagnosed breast cancer or a 1st degree relative (mother, sister or daughter) with a history of breast cancer. Family-related risk is highest for those with a first-degree relative with bilateral cancer that occurred premenopausally at presentation (8-10-fold increased risk). Only 25% of women who have breast cancer come from a recognized high-risk group. Less reliable risk factors include nulliparity, delayed first pregnancy (>35 years old), late menopause (>55 years old), and exposure of the breast to radiation in childhood. Because the two main risk factors for breast cancer are gender and age, a successful screening program must include all women over established age cutoffs.

Fortunately, most women with breast problems do not have cancer. All practitioners should understand the signs and symptoms of breast disease in order to diagnose and manage the myriad of far more common benign breast conditions. What follows is a discussion of the signs and symptoms of breast disease, as well as the diagnostic tools available to the clinician to help distinguish between benign masses and malignancies. If a dominant mass is found on exam or if the exam is equivocal, the patient should be referred to a family physician, surgeon or gynecologist who is skilled in the evaluation of breast disease. If no provider with these skills is available on-site, the patient should be referred to another institution for evaluation.

DIAGNOSIS OF BREAST DISEASE

The etiology of breast disease is diagnosed through a variety of means:

1. Breast self-examination (BSE)
2. Clinical breast examination (CBE)
3. Mammography
4. Ultrasonography
5. Magnetic resonance imaging (MRI)
6. Fine-needle aspiration
7. Breast biopsy using a variety of techniques

Thermography and magnetic resonance imaging have been studied but do not offer any clear advantage over mammography or ultrasound. Breast self-examination, CBE, and mammography will be discussed in detail. The reader should refer to the references and appendices for details regarding the other modalities listed above.

Breast Self-Examination

Breast self-examination (BSE) has been advocated by medical and lay people for more than three decades despite a lack of evidence attesting to its value. Two recent large randomized controlled trials, one in China and one in Russia, have examined the value of BSE (3,4). In these trials, women randomized to intensive and ongoing instruction in BSE were compared with controls and they demonstrated no decrease in breast cancer mortality. The first study included 450,000 women. There was no relationship between self-report of BSE and mortality from breast cancer over 13 years. Neither of the two trials showed a benefit to BSE and indeed, suggested the disadvantages of unnecessary office visits and unnecessary breast biopsies. Because of this data, the Canadian Preventive Services Task Force (the Canadian counterpart to the United States Preventive Services Task Force – USPSTF) changed their guidelines to a D rating for including BSE at the periodic health visit of women aged 40-69: "Because there is fair evidence of no benefit, and good evidence of harm, there is fair evidence to recommend that routine teaching of BSE be excluded from the periodic health examination"(5). The USPSTF has given a C rating to BSE, indicating insufficient evidence to recommend for or against BSE, although this recommendation may be revisited in light of recent evidence (6).

If it is decided that BSE should be taught, care should be taken to perform a thorough exam. As *complete* physical examination of the breast can be socially uncomfortable for the patient and the provider, simultaneously *performing the CBE while teaching BSE* can be a mechanism for diffusing the tension. Tell the patient to "use you as the mirror" and guide her through BSE. The best place for the patient to perform BSE may be in the shower or bathroom, as she is already undressed. Further, once in the shower, using friction-free techniques (i.e., a soapy hand) aids in the palpation of subtle changes. The best time to do the BSE is one week after the period begins and, in the case of menopausal women, at the beginning of the month.

To inspect her breasts, the woman should stand before a mirror and look for changes in contour, skin lesions (dimpling or flattening of the skin), changes in the position of the nipples, and inversion of a not previously inverted nipple. To palpate her breasts, she may stand or lie down and place the arm on the side of the breast to be examined above her head and use the opposite hand to systematically examine the breast in either a radial fashion (from the outer rim of the breast, move the examining hand toward the nipple) or concentric fashion (starting at the outer rim of the breast, move the fingers in small circles and work toward the nipple). After examining one breast, the opposite breast may be examined in a similar fashion. Women whose breasts are large and/or pendulous may have difficulty performing the exam in the standing position. By lying down and leaning slightly to the side opposite the breast to be examined, the breast tissue is more evenly distributed over the chest wall and can therefore be more thoroughly examined. Finally, the nipples should be palpated and gently squeezed to elicit any discharge. The

instructor should guide the patient's hand through this examination so that she will understand the proper technique and know what characteristics are normal for her.

Positive findings on breast examination that suggest malignancy include the following:

- Single, hard, dominant mass
- Unilaterality
- Skin dimpling over the mass
- Nipple retraction
- Fixation to the chest wall, edema of the skin, and *peau d'orange* ("skin of an orange") skin changes
- Venous engorgement of the skin, which may overlie a rapidly growing tumor

Clinical Breast Examination

Clinical breast examination in conjunction with mammography appears to reduce mortality from breast cancer in women of certain age groups. Townsend described the complete breast examination as follows:

For breast examination, the patient must be completely disrobed above the waist. She should first be examined in an upright sitting position with her arms at her sides. A well-lighted room is essential, because changes in the skin may be subtle, visible only in good light and as the patient moves from side to side. The clinician should inspect the breasts, the supraclavicular areas and the neck, noting any unusual masses, changes in the skin such as dimpling, retraction, redness or derma, and the size and symmetry of the breasts. No two breasts will be completely symmetrical; however, normal breasts should differ in size to only a moderate degree. It is important to look for inversion of the nipples and to note if there are any skin lesions, such as eczema of the nipple or areola. Particular attention during this initial inspection should be directed to the position of the nipples. One nipple pointing straight ahead or downward and the opposite nipple pointing up toward the axilla might suggest a tumor causing retraction and pathologic change in the position of the nipple.

Next, the patient should be asked to raise her arms over her head and lean forward so that the extreme lateral portions of the breast, the underneath portions, and the axillary extensions (tail of Spence) may be seen. Again the physician should search diligently for areas of skin dimpling, flattening of the skin, edema or redness, all of which may be subtle. While the patient is still sitting, she should place both hands on her iliac crests and firmly press against them. This tenses the pectoral muscles and may cause a mass to become apparent or may allow detection of fixation of the mass to the pectoral muscles or skin.

While the patient is still sitting and with her arms again elevated, the clinician should palpate each breast with the flat parts of 3-4 fingers. Each breast should be systematically examined, quadrant by quadrant or in increasing or decreasing concentric circles around the areola. Whichever method is used, it is important to use one technique consistently, to completely examine the breast in all areas, and to examine both breasts in a similar fashion. Often, simultaneous bilateral palpation of the breasts may reveal very subtle changes. The nipple should be compressed in an attempt to detect any nipple discharge. In areas of increased nodularity or a dominant mass (a three-dimensional mass clearly distinguishable from surrounding breast tissue), molding of the breast about the mass may better define its characteristics.

With the patient still sitting, the supraclavicular areas and each axilla should be examined for the presence of palpable lymph nodes. To facilitate adequate examination of the axilla, the physician should raise the patient's arm and then insert the examining hand high into the apex. With the examining hand still in this position, the patient's arm should be brought down toward her side and the examining hand slowly moved down over the chest wall in an attempt to compress lymph node-bearing tissue against the chest wall and detect enlarged lymph nodes. If any lymph nodes are palpated, their size, consistency

and mobility should be noted. Each axilla and each supraclavicular area should be examined separately and compared with the other.

The patient should then be asked to lie down, and a small pillow may be placed under the shoulder on the side to be examined. Again, each breast should be systematically palpated, first with the patient's arm over her head. This position allows the breast to flatten out and facilitates examination of the medial half of the breast. The complete breast would be examined again, quadrant by quadrant or by using the concentric circles method. Next, the patient's arm should be placed at her side and the breast examined again. Bimanual compression of the breast often aids in detection of masses. The pillow should then be placed under the opposite shoulder and the opposite breast examined.

If a mass is found, its size, position, consistency and mobility should be determined. The clinician should note whether the mass is fixed to the skin or the underlying pectoral muscles of the chest wall, and whether there is any dimpling of the skin, edema, or redness in any portion of the breast.

Examination of the skin of the breast is extremely important, and the physician should look particularly for eczematoid skin changes of the nipple or the areola. Such changes should be considered to be Paget's disease until proven otherwise by biopsy. Paget's disease always involves the nipple and may involve the areola, whereas benign diseases may involve the areola alone. Findings should be carefully recorded.

Screening and Diagnostic Mammography

Modern mammography using two views with minimal radiation doses (0.2 rad mean glandular dose) is presently the most sensitive method to detect occult breast cancer. It is used for both screening (evaluating asymptomatic at-risk patients for the presence of disease) and diagnosis (aiding in the determination of disease in a symptomatic patient) of breast cancer. Attempts to stratify patients to be screened based on risk factors is inherently faulty and will miss a significant number of cancers, as only 25% of women with breast cancer come from a recognizable high-risk group. This fact, coupled with a 1 in 8 lifetime risk of developing breast cancer, provides the most compelling reasons to offer universal screening of all susceptible women.

In several large controlled trials in different populations, both in the U.S. and abroad, mammography has been shown to detect breast cancers from 18-24 months sooner than clinical exam alone. This early detection has several benefits: increased survival, the ability to perform breast-conserving surgery (i.e., lumpectomy with axillary node dissection), and a significantly decreased chance of positive axillary nodes.

The basic screening mammography examination consists of two views (lateral oblique and craniocaudal). Patients should be told that the breasts will be compressed maximally to enhance resolution. While this is uncomfortable, it is not unbearable. The entire process is relatively brief, and patients suffer no ill effects from it. Diagnostic mammography may take more time and involve more views (often called spot compression views) in order to evaluate the suspicious area. It is helpful to tell the radiologist and the patient where the problem is (or draw a picture) so that the area can be evaluated in detail.

Clinicians should be aware of the limits of the technology: it is only as good as those performing it, those interpreting it, and the patient's anatomy. The optimal setting is one in which there is dedicated equipment, specially trained technicians, and radiologists skilled in interpreting mammograms. Dense fibrograndular breasts do not image as well as fatty breasts; hence the increased benefit of mammograms to older women whose breast tissue has been replaced by fat.

Any woman with a palpable mass should be referred for evaluation despite a negative mammogram. Mammography has a 10-15% false-negative rate. If a mass is present in the setting of a negative mammogram, referral to a surgeon is still warranted. In a recent analysis of cancers missed by mammography, there was a preponderance of dense breasts, lack of malignant microcalcifications, and the presence of a "developing opacity."

Screening recommendations

Age-specific mammography screening recommendations from the USPSTF are shown in Table 1:

Table 1. Mammography Screening Recommendations by Age Group

Age (y)	*Strength of recommendation*	*Guideline*
35 (baseline)		Not recommended
<40		Screening not generally recommended; exceptions include those with family history of first-degree relative with premenopausal breast cancer (consult oncologist to decide on screening interval and when to begin)
40 and older	"B"	Divergence of options; mammography may be recommended annually, every 2 years, or not at all (see text)

Recommendations and Rationale Screening for Breast Cancer U.S. Preventive Services Task Force (Level III)
http://www.ahrq.gov/clinic/3rduspstf/breastcancer/brcanrr.htm

The following paragraphs summarize the rationale behind the screening guidelines of the USPSTF:

"The USPSTF found fair evidence that mammography screening every 12-33 months significantly reduces mortality from breast cancer. Evidence is strongest for women aged 50-69, the age group generally included in screening trials. For women aged 40-49, the evidence that screening mammography reduces mortality from breast cancer is weaker, and the absolute benefit of mammography is smaller than it is for older women. Most, but not all, studies indicate a mortality benefit for women undergoing mammography at ages 40-49, but the delay in observed benefit in women younger than 50 makes it difficult to determine the incremental benefit of beginning screening at age 40 rather than at age 50. The absolute benefit is smaller because the incidence of breast cancer is lower among women in their 40s than it is among older women.

The USPSTF concluded that the evidence is also generalizable to women aged 70 and older (who face a higher absolute risk of breast cancer) if their life expectancy is not compromised by comorbid disease. The absolute probability of benefits of regular mammography increases along a continuum with age, whereas the likelihood of harm from screening (false-positive results and unnecessary anxiety, biopsies, and cost) diminishes progressively from ages 40-70. The balance of benefits and potential harms, therefore, grows more favorable as women age. The precise age at which the potential benefits of mammography justify the possible harms is a subjective choice. Further, the USPSTF did not find sufficient evidence to specify the optimal screening interval for women aged 40-49 (see Clinical Considerations)."

Mammography reporting

The BI-RADS (Breast Imaging and Reporting Data System) reporting system has been adopted by the American College of Radiology. This format is meant to standardize the language used in mammography reports. In particular the consistent use of the assessment categories will help clinicians to better understand optimal disposition of their patients based on mammographic imaging and also aid in auditing a mammography practice. Mammography results are reported according to the following categories:

0: Assessment is incomplete; additional imaging evaluation is needed

1: Negative finding

2: Benign finding

3: Probably benign finding; short follow-up interval suggested

4: Suspicious abnormality; biopsy should be considered

5: Highly suggestive of malignancy; appropriate action should be taken.

Patients with category 4 or 5 results should be referred to a surgeon for evaluation. Many radiology departments will order and perform additional tests (category 0) while informing the provider of the need, although not all do this. It is important for the clinician to be aware what the local radiology department does. Only 2% of category-3 lesions will be malignant. Others for whom immediate referral is warranted are those patients who are anxious or who have a high-risk history.[5]

MANAGEMENT OF THE PALPABLE MASS

Palpable breast masses must be managed promptly and cancer ruled out. The vast majority of these masses will be benign, but patients should not be lost to follow-up. Figure 1 presents an example of a protocol for the management of breast masses. Women with a palpable mass may require the following diagnostic/therapeutic procedures:

Diagnostic mammography: Diagnostic mammography differs from screening mammography. In patients with a palpable abnormality, the lump is marked with a radio-opaque marker to aid in localization. A radiologist views the films prior to the patient's departure so that additional coned down magnification or compression views may be obtained.

Ultrasound: Most useful for the workup of breast masses in women under 30-35 years of age, i.e., in those women in whom a mammogram would not be helpful because of the dense nature of their breasts. Again, however, a young woman with a palpable mass who has a negative ultrasound needs further workup to rule out cancer.

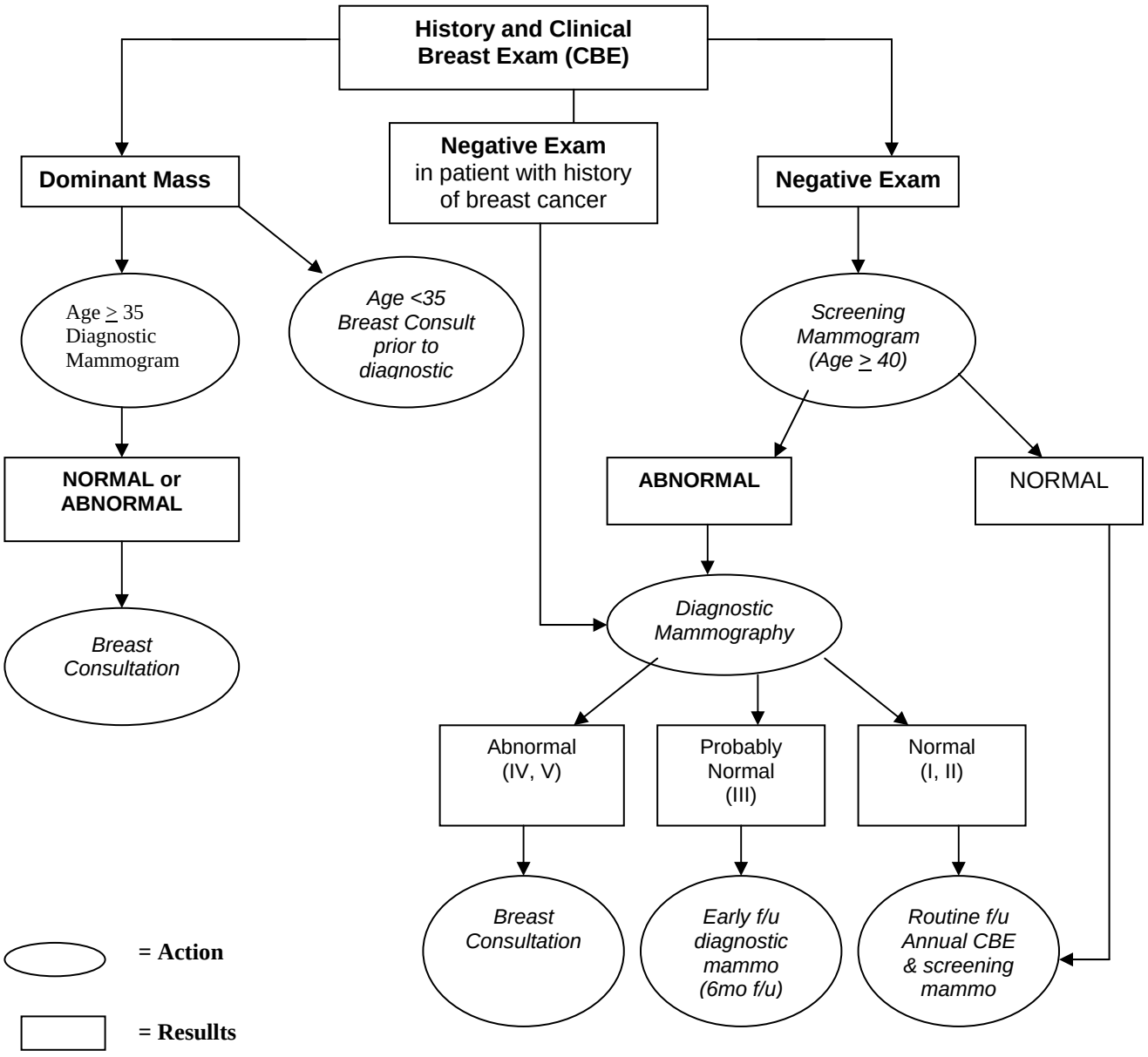
Fine needle aspiration:

- Fine needle aspiration consists of inserting a 22-gauge needle attached to a small syringe into a mass and aspirating back to differentiate a solid from a cystic mass. If non-bloody fluid is obtained and the mass disappears, the patient can go back to routine screening. If no fluid is obtained or if the fluid is bloody, referral for mammography and/or ultrasound (depending on the age of the patient) and referral to a breast consultant is advised.

- Fine needle aspiration biopsy (FNAB) is slightly more involved and is usually done by a pathologist. Equipment needed includes a 20-mL disposable syringe, 20- and 22-gauge sterile needles, an alcohol pad, glass slides, and fixative. The needle is placed into the mass, full suction is placed on the syringe and moved back and forth until material can be seen in the bottom of the syringe. The goal of fine-needle aspiration is to fill the needle with cells that are then quickly expressed onto a slide and immediately fixed to the slide.

- The sensitivity of fine-needle aspiration for differentiating palpable masses related to benign vs. malignant conditions is about 90%. Diagnostic accuracy of physical examination and mammography, when fine-needle aspiration biopsy was added as the third arm to the triad, yielded a positive predictive value of 100%.

Figure 1: CLINICAL BREAST EXAM/MAMMOGRAPHY ALGORITHM



Definitions:

ACR (American College of Radiology) Lexicon: I=Normal, II=Benign, III-Probably benign, IV=Suspisious, V=Highly suspicious of malignancy

Screening Mammo: Study done on patient without breast symptoms. Study consists of two views of each breast. Report is read as normal (I, II), probably benign (III) needs six-month follow-up, abnormal (IV, V), or incomplete assessment (VI) – return for additional evaluation. Except for very obvious findings, breast consultation often is not recommended until the diagnostic mammogram is complete.

Diagnostic Mammo: Study done on patient with a significant breast finding (mass) or abnormal screening mammogram (IV, V, VI), to characterize the abnormality. The study involves additional mammography views and often ultrasound.

Breast Consultation: A general surgeon or physician experienced in breast evaluation who decides on further work up in the setting of an abnormal exam or mammogram.

*Under age 35, the usefulness of mammography is assessed on an individual basis by the breast consultant. Consultants may also order other tests such as ultrasound but may defer such tests in preference for the fine-needle aspiration (FNS). Because of the variability in work-up of a palpable mass, breast consult prior to diagnostic studies is preferred.

SIGNS OF BREAST DISEASE

The principal signs of breast disease are:

- Skin changes: dimpling, lines, scaling, *peau d'orange*, nipple retraction
- Dominant mass
- Nipple discharge
- Axillary adenopathy
- Asymmetry (note that some asymmetry is normal)

The symptoms that clinicians will encounter are:

- Pain
- Pruritus

Most skin findings are the result of changes taking place in the breast itself. Shortening of Cooper's ligaments often occurs when a malignancy is present. This will cause dimpling in the overlying skin. It is very important to examine breasts as described above in order to accentuate these changes if they are present.

Scaling is commonly seen on the nipple in women who complain of pruritus of the nipples. This pruritus can be particularly bothersome during pregnancy, with or without scaling. Nipple eczema should be treated with topical steroids for a short time. However, if there is an underlying mass (often not clinically evident, so mammography is required), or if scaling persists after 1 or 2 weeks of treatment, Paget's disease of the breast must be ruled out.

Peau d'orange skin, or skin edema, is caused by extensive lymphatic blockage by cancer cells. The entire breast or a portion of the breast will look like the skin of an orange, hence the name.

Most dominant masses are benign, but evaluation is imperative. Common causes of a dominant mass include fibroadenoma, fibrocystic changes, fat necrosis, galactocoele, and cancer. Fine-needle aspiration can be very helpful in distinguishing benign from malignant neoplasm, cysts from solid masses, or fibrocystic changes from other lesions. Figure 1 presents an alternative algorithm for the triage of breast masses.

Aside from a breast mass, nipple discharge is perhaps the most worrisome sign of breast disease for a patient. Nipple discharge occurs in 3-8% of women, and the vast majority of the time (89-92%) it is associated with a benign condition.

For a discharge to be significant it is most often spontaneous, persistent, and non-lactational. Nipple discharge should be distinguished from nipple secretion. Secretions must be expressed, while discharges possess the above-listed characteristics.

Types of nipple discharge include:

- Milky
- Multicolored and sticky
- Purulent
- Sanguinous/bloody
- Serosanguinous
- Clear/watery
- Yellow/serous

The evaluation of the nipple discharge should include characterization, quantity, duration and associated signs and symptoms. Most of the above discharges are produced by a specific lesion in one area of the

breast, so a systematic evaluation of the breast, isolating each quadrant and expressing the breast from the periphery toward the direction of the nipple (radial lines), can usually isolate the involved segment. Most discharges, save perhaps the sanguinous or serosanguinous, should not be sent for pathologic evaluation, as the results are often confusing and do not yield helpful results. Patients with either a clear, bloody, serous, or serosanguinous discharge should be referred for evaluation including mammogram. If a biopsy or needle aspiration is performed in the office, mammogram should either be done first or delayed for two weeks to allow resolution of inflammation secondary to the biopsy or aspiration. Table 2 summarizes the discharges and their clinical characteristics and recommended treatments.

Breast pain (mastalgia or mastodynia) can be a very bothersome problem for a patient. Pain is rarely associated with cancer, but it is commonly seen with fibrocystic changes or physiologic nodularity. Fibrocystic changes occur as a result of an exaggerated response to the normal fluctuation of hormones during the menstrual cycle which can lead to proliferation of the ductal epithelium, cystic metaplasia of the ducts, and fibrosis of the surrounding connective tissue.

The pain tends to be bilateral and cyclic, beginning a few days after ovulation and increasing in intensity until the onset of the menses. Patients may report swollen tender breasts. The pain is usually greatest in the upper outer quadrants (there is more glandular tissue here). In addition to pain, patients may be alarmed by the presence of breast masses. Several firm, moderately mobile nodules may be palpable. These nodules vary in size and tend to have indistinct margins. Patients need to be aware of any particular prominent thickenings and should alert the clinician to any changes over time in any of these areas so that they can be referred for biopsy. Most fibrocystic diagnoses are not premalignant. However, those with atypical hyperplastic changes increase the risk of cancer by as much as five-fold (7).

Table 2. Nipple Discharge Evaluation and Testament

Type of discharge	Cause(s)	Diagnosis/Symptoms	Treatment
Milky (galactorrhea)	Increased prolactin, decreased thyroid, nipple stimulation, chest surgery, chest trauma, drugs	Check prolactin	Referral, change medications, nothing
Multicolored, sticky (duct ectasia)	Seen at perimenopause	Associated pain, Burning, or itching of nipples	Local hygiene, reassurance, self-limited
Purulent	Puerperal or non-puerperal mastitis (usually *S. aureus*)	Tenderness, warmth, erythema, systemic, signs/symptoms (fever, malaise)	Antibiotics, continue breastfeeding
Bloody, serous, clear	Intraductal papilloma, adenosis, fibrocystic change	Systematic evaluation to find involved area	Refer to surgery, mammogram

BENIGN CONDITIONS OF THE BREAST AND OTHER SPECIAL CIRCUMSTANCES

There are many benign conditions of the breast, and these are presented in Table 3. There are several special circumstances that merit discussion: breast masses in adolescents, silicone breast implants and connective tissue disorders (CTDs), and pregnancy and lactation and breast cancer.

In a review of 15 retrospective studies involving **breast masses in teenagers**, fibroadenoma was the most common lesion found (68.3%). Fibrocystic changes accounted for 18.5% of the remaining lesions, and only 0.9% were malignant. If a breast mass is found in an adolescent, it is recommended that she be followed for at least one complete menstrual cycle. Persistent masses (present greater than 3-6 months) or masses that increase in size over time should be excised. Also mammography has no value in teenagers due to the density of their breasts.

Silicone breast implants have gained a great deal of attention in the media (and the courtroom, unfortunately) due to a possible link to certain CTDs. In January 1992, the Food and Drug Administration called for a moratorium on silicone breast implants based on case reports of CTD occurring in implant users. Given the weakness of case reports as clinical evidence, this is surprising. Six published reports have failed to show a causal link, and the most recent paper, a retrospective, population-based cohort study, has confirmed that there is no link. Women should be advised that there are no good data to support the removal of asymptomatic implants at this time.

The evaluation of **breast masses during pregnancy** can be difficult because the breasts undergo such dynamic changes. However, delay in the evaluation can result in a poorer prognosis should cancer ultimately be found. For this reason, breast masses *must* be evaluated by a qualified provider as soon as they are palpated. Conditions commonly diagnosed during pregnancy include galactocoele, fibroadenoma, lipomas, papilloma, fibrocystic changes, and inflammatory lesions. Breast cancer is diagnosed in 1:3000 to 1:10,000 pregnancies. Among breast cancer patients under 40, 10% are diagnosed during pregnancy. Helpful diagnostic measures include ultrasonography, needle biopsy, and surgical biopsy. Mammography is generally not helpful, and in fact should be delayed for 6 months after breastfeeding cessation. Mastectomy, if needed, can be accomplished during pregnancy, and certain chemotherapeutic agents can be given as well.

Pregnancy does not alter the course of breast cancer, assuming there are no delays in diagnosis. There was some suggestion that women who conceived after breast cancer had improved survival over those who did not get pregnant. A well-designed matched retrospective cohort trial seems to demonstrate that women who feel healthy are more likely to attempt pregnancy than those who do not, the so-called “healthy mother effect.”

Lactation seems to have a protective effect on the development of *pre-menopausal* breast cancer (relative risk [RR], 0.78) but no such association exists for *post*-menopausal breast cancer (RR, 1.04).

Table 3. Common Benign Breast Conditions

Condition	Mass	Discharge character	Pain	Etiology	Age	Management
Galactorrhea	-	Milky (fat globules)	-	Medications Trauma Pituitary Adenoma	Reproductive	Stop medications Obtain prolactin levels CT scan Bromocriptine*
Duct ectasia	±	Multicolored, sticky	+	Inflammation	Perimenopausal	Local hygiene
Mastitis	If abscess	Purulent	++	Staphylococcus aureus	2-4 weeks postpartum	Antibiotics
Intraductal papilloma	-	Bloody or serous	±	Benign Neoplasm	Over 40	Mammography Surgical excision*
Fibroadenoma	Spherical, well circumscribed	-	-	Benign Neoplasm	Early adulthood	Mammography Surgical excision*
Fat necrosis	Single mass with fibrosis ± retraction	-	+	Trauma	Over 35	Observe briefly if slid history of trauma Mammography Surgical excision otherwise or if mass does not resolve quickly*
Fibrocystic changes	Cysts and/or multiple nodules	-	+	? hormonal	Reproductive	Mammography Medical therapy Aspiration of cyst* Danazol for severe symptoms*
Mondor's disease	-	-	++	Unknown	30-60	Warm compresses Analgesics

SUMMARY

This chapter provides a brief overview of the salient features of screening for breast cancer and for diagnosis and management of benign breast disease. Readers are encouraged to refer to any of the excellent sources listed in the bibliography for more detailed information. Moreover, the IHS ob-gyn clinicians have developed several principles to guide IHS clinical programs for more effective breast cancer screening and detection:

- **CAREFUL, COMPLETE PHYSICAL EXAMINATION OF THE BREASTS** SHOULD BE PART OF THE **ANNUAL** CLINICAL EXAMINATION FOR ALL AMERICAN INDIAN AND ALASKA NATIVE WOMEN, AS DEFINED IN THE IHS MANUAL, CHAPTER 13 (MCH). These clinical examinations should be readily and skillfully performed by all providers of routine health care to American Indian and Alaska Native women, whether generalist, family practitioner, nurse-midwife, or ob-gyn.

- **DIAGNOSTIC MAMMOGRAPHY** SHOULD BE AVAILABLE FOR ALL IHS PATIENTS AS INDICATED FOR THE EVALUATION OF ABNORMAL CLINICAL OR SELF-EXAMINATION FINDINGS.

- **SCREENING MAMMOGRAPHY** SHOULD BE AVAILABLE THROUGHOUT THE IHS WITH THE OBJECTIVE OF SCREENING ALL AMERICAN INDIAN AND ALASKA NATIVE WOMEN EVERY 1-2 YEARS BEGINNING AT AGE 40 IF THEY ARE OF AVERAGE RISK FOR BREAST CANCER.

- Mammography capability may best be developed “in-house” at larger hospitals while other service units may choose to develop mobile unit services cooperatively with non-IHS community resources or with other nearby IHS service units. Some may best provide screening mammography through contract health services. WHEREVER PROVIDED, IT IS ESSENTIAL THAT THESE SERVICES INCLUDE MODERN, LOW-DOSE EQUIPMENT, TRAINED TECHNICAL PERSONNEL TO CORRECTIVELY PERFORM THE EXAMINATIONS, AND RADIOLOGISTS SKILLED IN THE INTERPRETATION OF MAMMOGRAMS. MAMMOGRAPHY SCREENING PROGRAMS MUST INCLUDE ESTABLISHED SYSTEMS OF FOLLOW-THROUGH AND FOLLOW-UP.

IHS ob-gyn clinicians recommend the following actions

- American Indian and Alaska Native women must be more adequately
  - informed about their risk for breast cancer, and
  - the availability of effective screening programs.

- This information should be disseminated as widely as possible by the IHS, by the CHRs, and by available community resources.

- They must also be informed about the importance of a yearly clinical examination, the minimal content of which is defined in the IHS Manual, Chapter 13.11. Health care providers should be skilled in differentiating the normal breast exam from possible significant abnormalities. Screening breast palpation and cervical cytologic examinations (Pap tests) should be performed yearly in whatever elective setting patients present themselves, whether inpatients or outpatients.

- Mammography should be universally available for the evaluation of women who are found to have significant findings on breast examination, whether “in-house” or as a high priority for CHS funding.

- IHS medical centers and large full-service hospitals should develop in-house mammography capability so that mammography screening can become a routine part of the IHS disease prevention.

REFERENCES

1. Landis SH, Murray T, Bolden S, Wingo PA. Cancer statistics, 1998. CA Cancer J Clin 1998;48:6-29. (Level III)
2. Ries LA, Eisner MP, Kosary CL, Hankey BF, /Miller BA, Clegg L, et al, editors. SEER Cancer statistics review, 1973-1999. Bethesda(MD): National Cancer Institute; 2002. Available at: http://seer.cancer.gov/csr/1973_1999/. Retrieved March 24, 2003. (Level III)
3. Thomas DB, Gao DL, Self SG, Allison CJ, Tao Y, Mahloch J, et al. Randomized trial of breast self-examination in Shanghai: methodology and preliminary results. J Natl Cancer Inst 1997;89:355-65. (Level I)
4. Semiglazov VF, Moiseenko VM, Manikhas AG, Protsenko SA, Kharikova RS, Popova RT, et al. [Interim results of a prospective randomized study of self-examination for early detection of breast cancer (Russia/St. Petersburg/WHO)]. Vopr Onkol 1999;45:265-71. Russian. (Level I)
5. Baxter N. Preventive health care, 2001 update: Should women be routinely taught breast self-examination to screen for breast cancer? CMAJ 2001;164:1837-46. (Level III)
6. Cady B, Steele GD Jr, Morrow M, Gardner B, Smith BL, Lee NC, et al. Evaluation of common breast problems: guidance for primary care providers. CA Cancer J Clin 1998;48:49-63. (Level III)
7. Hindle WH. Breast disease for gynecologists. East Norwalk(CT): Appleton and Lange; 1990. (Level III)

General References

1. American College of Obstetricians and Gynecologists. Breast cancer screening. ACOG Practice Bulletin, ACOG; ACOG; 2003. (Level-III)
2. Auvinen A, Elovainio L, Hakama M. Breast self-examination and survival from breast cancer: a prospective follow-up study. Breast Cancer Res Treat 1996;38:161-168. (Level III)
3. Donegan WL. Evaluation of a palpable breast mass. N Engl J Med 1992;327:937-942. (Level III)
4. Kacl GM, Liu P, Debatin JF, Garzoli E, Caduff RF, Krestin GP. Detection of breast cancer with conventional mammography and contrast-enhanced MR imaging. Eur Radiol 1998;8:194-200. (Level III)