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Evaluation of common breast complaints in primary care

Abstract: Discovery of a breast mass, nipple discharge, or breast pain is a common, anxiety-producing occurrence for many women. Although most irregularities are benign, every woman presenting with a breast complaint should be evaluated to exclude or establish a diagnosis of cancer. The patient visit to the provider for a breast complaint can also present an opportunity for the NP to address and update any needed breast screenings.

By Mary Alison Smania, DNP, FNP-BC, AGN-BC

Breast complaints are common in the outpatient setting and predominantly consist of breast pain, nipple discharge, and a breast lump. In a study of breast symptoms of patients enrolled in a health maintenance organization (HMO), Barton and colleagues found that 16% presented with a breast complaint in a 10-year period. The study also found that women under age 50 presented with a breast complaint nearly twice as often as older women, and cancer was diagnosed in 23 of the 372 women who presented with breast symptoms (6.2%).¹

Although most breast concerns have benign causes, breast cancer is the most commonly diagnosed cancer among women and the second leading cause of cancer death in U.S. women.^{2,3} Knowing the risk factors for breast cancer is essential, and it is important to approach breast complaints with a degree of suspicion for malignancy to address the woman's symptoms (see *Factors that affect breast cancer risk*). In addition, women presenting with breast complaints may have anxiety related to the symptoms and possible breast cancer diagnosis, so the NP must have a complete understanding of benign breast disease and the actions needed to thoroughly and competently evaluate the patient and calm concerns.⁴

■ Breast pain

Breast pain is one of the most common breast complaints.¹ A retrospective study of breast symptoms of women enrolled in the National Breast and Cervical Cancer Early Detection program (n = 2,961) showed that breast pain was the most common presenting symptom with 49.3% of breast-related visits.⁵ Breast pain may or may not be associated with other symptoms, including a palpable breast mass, nodularity, nipple discharge, and skin changes. It is usually self-limiting and rarely associated with breast cancer.⁶

The prevalence of breast pain in clinical populations is 41% to 69%.^{7,8} Scurr and colleagues studied breast pain in the general population and found that 52% of the women studied reported breast pain (n = 1,659), with the severity of breast pain reported as 4.5/10 (on the numeric rating scale for patient self-report of pain).⁹ This study also showed that breast pain hampers activities of daily living and quality of life—specifically, sexual activity and sleep patterns—for 41% of participants.⁹ In addition, 10% of those women suffered from breast pain for over half their lives. The study also found that breast pain is typically reported by older women, those with larger breast cup sizes, and those who self-reported lower activity and fitness.⁹

Keywords: benign breast disease, breast cancer, breast complaints, breast mass, breast pain, nipple discharge, palpable breast lump

Classifications of breast pain. Cyclic breast pain is classically related to the menstrual cycle, with patients typically reporting pain worsening near menstruation. The pain is described as bilateral and diffuse, and is often located in the upper outer quadrants of the breasts with radiation to the axillae and ipsilateral arm. Occasionally, the pain is described as unilateral or more intense in one breast. Cyclic pain occurs most often during the luteal phase due to increased water content in the breast stroma caused by increasing hormone levels.¹⁰

Noncyclic pain is not related to the menstrual cycle and may be unilateral or focal. This pain generally occurs in women age 40 and older. Medications associated with breast pain

include oral contraceptives, hormone therapy, spironolactone, digoxin, and psychotropic drugs (including selective serotonin reuptake inhibitors [SSRIs] and haloperidol). Noncyclic breast pain can be caused by nonmammary pain that occurs in the chest wall, muscles, or originated from other areas, including shoulders, cervical and thoracic spine, upper extremities, heart, and lungs. After assessing the patient's history and performing the exam, clinicians need to differentiate breast pain from pain radiating from the chest wall or other sites, as an understanding of the origin of the pain aids in the diagnosis and treatment plan (see *Nonmammary causes for breast pain*).^{11,12}

Evaluation and management of breast pain. Breast pain complaints can be difficult to assess because symptoms often appear and disappear without warning. A patient history should identify breast-related symptoms and measure the amount and severity of the patient's pain over time. Information gathered should include location, quality, duration, radiation and severity of pain, relationship to physical activities or the menstrual cycle, any association with redness or warmth of skin, and interference with activities of daily living. Hormonal influences, such as pregnancy, use of contraceptives, and exogenous hormones, should be evaluated along with medications, both prescription and over-the-counter.

Risk assessment for breast cancer should include a reproductive, medical, and family history. A clinical breast exam should be performed, noting areas of localized, generalized, or bilateral breast tenderness. The neck, upper back, chest wall, and bilateral upper extremities should be examined to assess for other causes of pain.¹⁰ According to Noroozian and colleagues, mammography is recommended for women age 30 and older (particularly those with risk factors for breast cancer).^{13,14} Breast pain due to malignancy is typically unilateral and persistent; therefore, a focused ultrasound may be a more valuable assessment tool. An ultrasound should be considered for women under age 30 and can be used along with mammography in women over age 30.¹²

Helpful tools include a daily pain diary or chart to document the frequency and severity of the pain, use of medications, and interferences with lifestyle. A diary can help make an initial diagnosis of cyclic mastalgia and response to therapy. As the risk of malignancy following a negative exam (including breast exam and imaging) is estimated to be less than 1%, reassurance and watchful waiting following a negative evaluation are appropriate and helpful in 70% of women.¹² Referral to a breast specialist can also be helpful in certain cases and is another option for the primary care provider (PCP).

Nonpharmacologic interventions. Although there has been little research into nonpharmacologic treatment for breast pain symptoms, anecdotal reports in clinical practice have found that these measures can improve breast pain symptoms in clinical practice. Most are of low risk and expense to the

Factors that affect breast cancer risk^{11,22}

Demographics

- Age (increases with age)
- White or Ashkenazi Jewish descent

Reproductive history

- Age at menarche (<age 12 increases risk)
- Age at menopause (>age 55 increases risk)
- Age at first live birth (>age 30)

Medical history

- Genetic mutations (BRCA1, BRCA2, PALB2, CHEK2, PTEN, TP53, STK11, CDH1)
- History of past breast biopsies
- Previous chest radiation for another cancer treatment
- Diethylstilbestrol exposure
- Heterogeneously or extremely dense breast tissue on mammogram
- Hormone therapy

Lifestyle factors

- Alcohol use (>1 drink per day)
- Overweight or obese
- Decreased physical activity

Nonmammary causes for breast pain^{10,12}

Characteristics

- Unilateral
- Very lateral or medial
- Reproducible with pressure on specific area of chest wall

Causes

- Chest wall (costochondritis)
- Cervical and thoracic neurologic or muscular disorders
- Radiculopathy
- Lung disease
- Exogenous hormones (hormone therapy or contraceptive use)
- Gallstones
- Irritation of the pleura
- Pneumonia
- Rib fracture
- Shingles
- Esophageal spasm

patient. For example, mechanical support in the form of a supportive bra has been shown to relieve breast pain and is recommended during exercise, with a soft supportive bra during sleep to improve symptoms.¹² Patients also report that hot packs, cold packs, and massage may relieve symptoms.

Patients report that caffeine reduction or elimination can be effective, although research studies are inconclusive. Other lifestyle changes such as smoking cessation, stress reduction, and improving coping skills are possible low-risk interventions. Research findings have demonstrated improvement in breast pain symptoms following dietary reduction of saturated fat.¹² Evening primrose oil, with its low incidence of adverse reactions, can be used as treatment for cyclic and noncyclic breast pain. The oil contains gamma-linolenic acid and is thought to change the saturated/polyunsaturated fat balance and decrease sensitivity to hormone levels.¹²

Pharmacologic interventions. Analgesics such as acetaminophen and ibuprofen may reduce breast pain. The patient's medications (oral contraceptives, hormone therapy, spironolactone, and others) that may be contributing to the breast pain can be assessed and adjusted. Other medications (danazol, bromocriptine mesylate, and tamoxifen citrate) could be considered in consultation with a breast specialist, although these drugs are not approved by the FDA for the treatment of breast pain.¹⁵⁻¹⁸ (See *Algorithm for evaluation and treatment of breast pain.*)

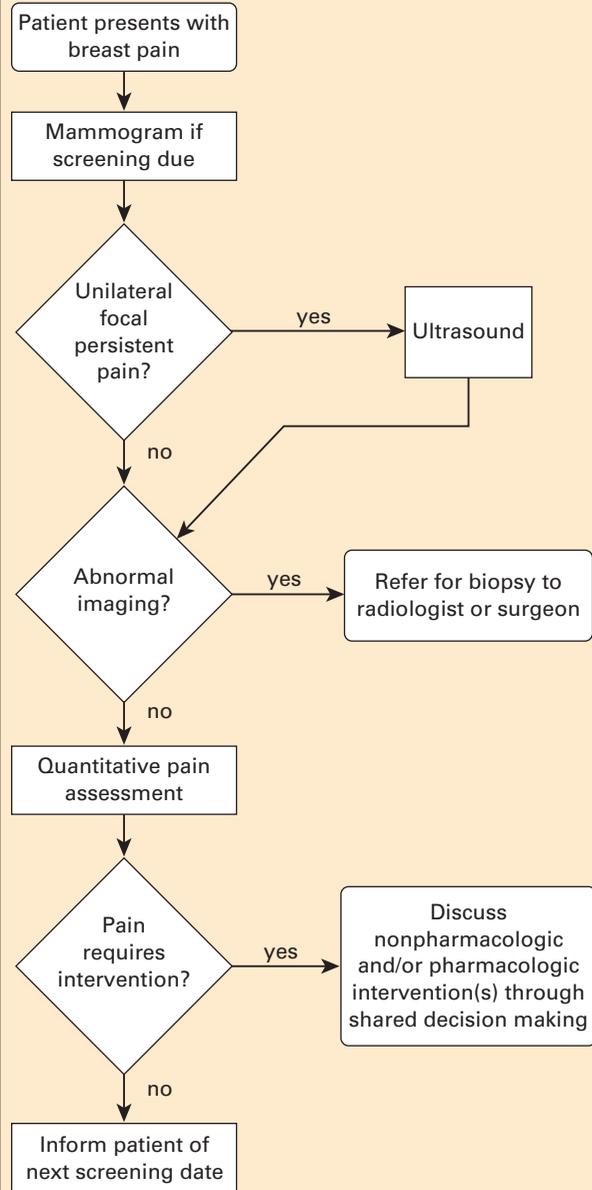
■ Palpable breast mass or thickening

Palpable breast masses can include benign causes, such as fibroadenomas, cysts, prominent areas of fibrocystic change, normal nodularity, fat lobules, and inframammary lymph nodes. They may also be caused by infections, abscesses, and malignancy. Barton and colleagues found that 42% of women seeking care due to a breast complaint complained of a breast mass.¹ Although most palpable breast masses are benign, they are the most common presenting symptoms in patients diagnosed with breast cancer.¹⁹

Evaluation and management. Patients presenting to their PCP with breast complaints should be evaluated with a detailed medical, family, and reproductive history (including menarche and first live birth as well as current and past hormone use). The PCP should determine if there is a family history of cancers and previous breast biopsies, and should assess the patient's risk factors for cancer, including previous thoracic radiation and breast density. A detailed assessment of the mass is the next step, determining when and how the mass was first noticed or found; the duration; any change in size over time; its correlation to the menstrual cycle; and the presence of pain, redness, fever, or nipple discharge.²⁰

A clinical breast exam is recommended to look for symmetry, nipple discharge, visible masses, skin changes (such

Algorithm for evaluation and treatment of breast pain¹²



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as inflammation, rashes, and dimpling), and retraction of the nipple. Normal breast tissue can be diffuse and lobular; irregularity with palpation is not necessarily abnormal. If the patient is premenopausal, nodularity can be associated with menstruation. The best time to perform a clinical breast exam is 1 week after the onset of the patient's last menstrual cycle.²¹

A palpable mass is defined as a dominant mass if it is 3-dimensional, distinct from surrounding tissues, and asymmetrical relative to the other breast.²⁰ The exam may include

other findings described as a nodularity or thickening that is different from the surrounding tissue and asymmetrical to the other breast.²¹

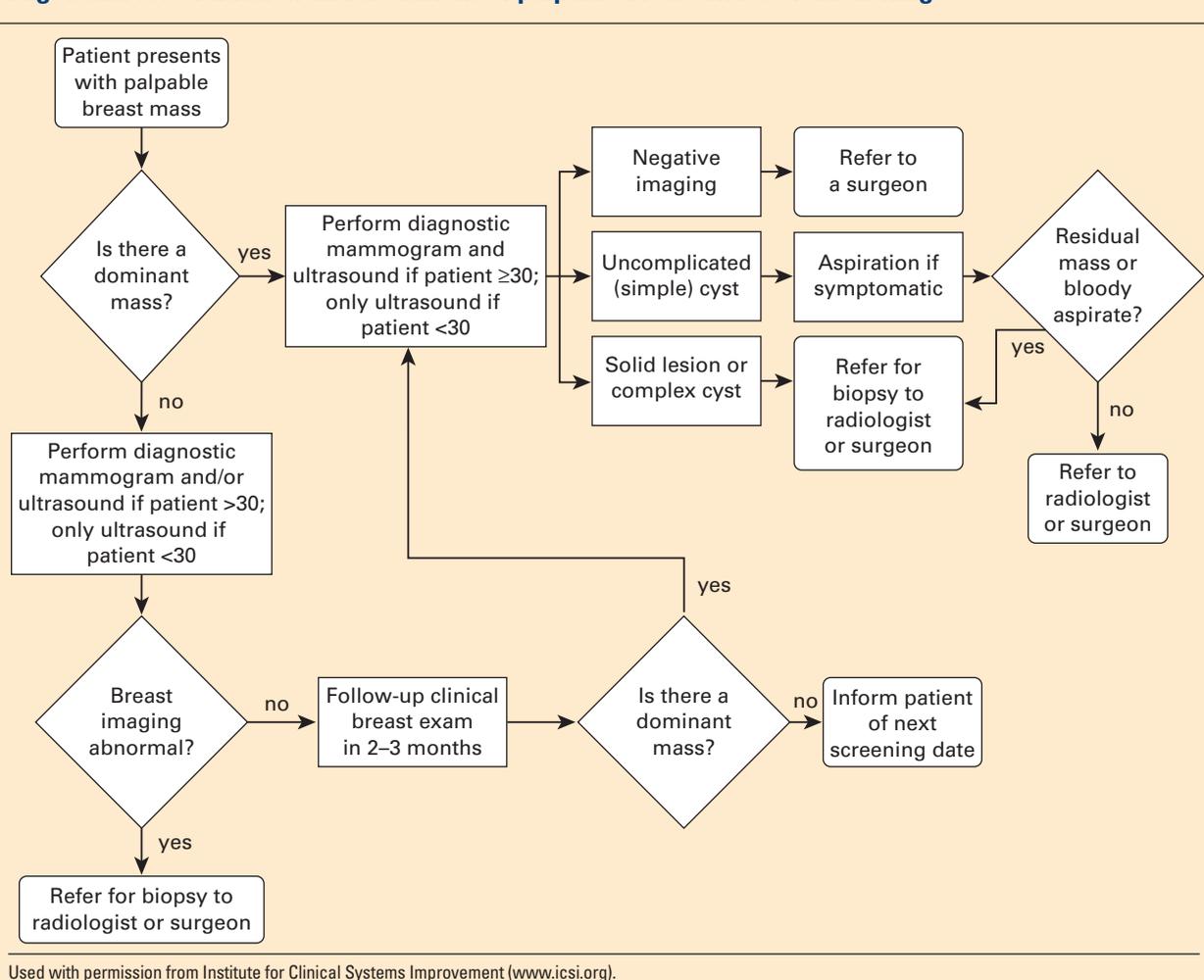
Common benign causes of dominant masses or thickening include cysts, which tend to occur in women around age 40, beginning in the perimenopausal period and fluctuating with menstrual cycles. Cysts are benign and can feel like a hard mass, making them difficult to distinguish from breast cancer. Fibroadenomas are common in younger women; the median age for diagnosis is 30, and they represent approximately 50% of all breast biopsies.²⁰ Fibroadenomas are frequently painful and can be difficult to differentiate from breast cancer on palpation. Fibrocystic changes commonly seen in premenopausal women are prominent, firmer glandular tissue with symmetrical thickening. These changes can be cyclical, fluctuating with the menstrual cycle.²¹

Breast cancer can present as a palpable lump. Upon palpation, it is difficult to differentiate between a benign cause and carcinoma. With an estimated 252,710 new cases

of breast cancer diagnosed in 2017, it is essential for clinicians to follow up on complaints.³

Women presenting to the clinic with complaints of a breast mass (found by self-breast exam or incidentally by the patient or partner) should be examined by the NP. If a dominant mass is palpated on clinical breast exam, a diagnostic mammogram and ultrasound are indicated for women age 30 and older of average risk. Diagnostic mammogram and ultrasound should also be considered for those under age 30 only if they are at high risk for breast cancer.²² Women under age 30, at average risk, and who have a dominant mass by palpation during clinical breast exam require imaging with ultrasound.¹² If the provider cannot palpate a dominant mass on clinical breast exam, it is still recommended that a mammogram and ultrasound be considered for women older than age 30 and an ultrasound only for women under age 30. A biopsy is recommended for suspicious abnormalities.^{23,24} Biopsy options can include fine-needle aspiration, core needle biopsy, or excisional biopsy. Referral to a

Algorithm for evaluation and treatment of palpable breast mass or thickening¹²



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breast specialist or breast surgeon is recommended once an abnormality has been identified and the patient needs surgical intervention.¹² The surgeon's role is to evaluate abnormalities and communicate with the PCP. A palpable breast mass or thickening with normal mammogram and/or ultrasound does not rule out malignancy and requires referral to a surgeon.¹² (See *Algorithm for evaluation and treatment of palpable breast mass or thickening.*)

■ Nipple discharge

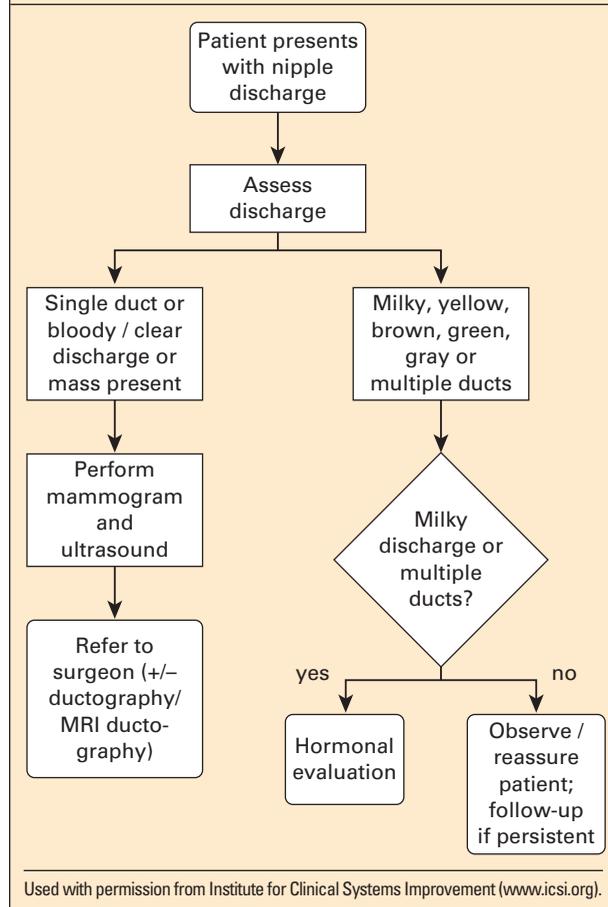
The third most common breast symptom reported after breast lump and breast pain, nipple discharge is commonly encountered as a chief complaint in primary care, accounting for 2% to 5% of medical visits by women.^{1,25} Although it is mostly a benign process due to a physiologic or benign etiology and an uncommon presenting symptom in breast cancer (at a rate of 5% to 12%), the problem causes anxiety and concern.¹⁰ A chief complaint of nipple discharge requires immediate evaluation to distinguish pathologic causes from physiologic (therefore benign) causes.^{26,27}

Physiologic (benign) discharge is usually bilateral (involving more than one duct) and is most likely associated with nipple stimulation or breast compression. Approximately 50% to 80% of women of reproductive age can elicit discharge from the breast with pressure.²⁸ During pregnancy and breastfeeding, the mammary glands discharge milk and colostrum, and this discharge can last up to 1 year after weaning. Galactorrhea is a bilateral, milky white discharge that is physiologic in women who are pregnant or breastfeeding. If galactorrhea occurs outside of pregnancy and breastfeeding, it is most commonly caused by two pituitary hormones (prolactin and thyroid-stimulating hormone), which could lead to a pituitary adenoma or hypothyroidism.^{9,29}

Pathologic discharge. Nipple discharge that is spontaneous, unilateral, has blood, and is serous, clear, or associated with a mass is considered pathologic. Common causes of pathologic discharge include intraductal papilloma, duct ectasia, carcinoma, and infection.³⁰ Breast carcinoma is the least likely of the three major causes of pathologic nipple discharge; however, the likelihood of cancer is greatly increased when a palpable mass is present with the discharge. Pathologic nipple discharge is usually associated with women over age 50.¹² Carcinoma can be found in 7% to 15% of patients with nipple discharge.³¹

The most common cause of pathologic discharge is benign papilloma, which is found in up to 57% of women reporting this symptom.¹² Intraductal papillomas are small, fragile, wart-like growths present within single mammary ducts near the nipple. Papillomas typically cause bloody or serosanguinous nipple discharge and are the most frequent cause of nipple discharge in the absence of a mass. Papillomas are found most frequently in women ages 45 to 50.¹⁰

Algorithm for the evaluation and management of nipple discharge¹²



The second most common cause of pathologic discharge is mammary duct ectasia, which affects 15% to 20% of patients with complaints of discharge.³¹ This condition is characterized by dilated mammary ducts that are filled with plugs of keratin and stagnant secretion, leading to an inflammatory process with periductal mastitis, surrounding the ducts with a plasma cell infiltrate. This occurs most frequently in women over age 50. The nipple discharge can be cream-like, green, and contain blood; its cause is unknown. Mammary duct ectasia can also be asymptomatic and sub-clinical, and can present as breast pain, a breast mass, nipple discharge, nipple retraction, or breast abscess.¹⁰

Evaluation of nipple discharge. A thorough history and physical exam should be performed in all women with nipple discharge. A detailed history about the discharge should include details about its color and frequency, whether the discharge is spontaneous or evoked by manipulation of the breast, whether the discharge is bloody, and whether it originates from multiple ducts or a single duct. A patient's complete medication history and any history of recent trauma should

Examples of medications that can cause nipple discharge^{10,29}

<p>Gastrointestinal agents</p> <ul style="list-style-type: none"> • Cimetidine • Metoclopramide <p>Antihypertensives</p> <ul style="list-style-type: none"> • Methyldopa • Verapamil <p>Hormones</p> <ul style="list-style-type: none"> • Estrogen • Oral contraceptives • Thyrotropin-releasing hormones 	<p>Analgesics</p> <ul style="list-style-type: none"> • Codeine • Methadone • Morphine <p>Psychotropics</p> <ul style="list-style-type: none"> • Haloperidol • Monoamine oxidase inhibitors • Molindone • Olanzapine • Phenothiazine • Risperidone • SSRIs • Tricyclic antidepressants
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also be included.³² A complete history should also be taken to determine if the patient has any risk factors for breast cancer.

The physical exam should include a complete breast exam to assess the symmetry and contour of the breasts; any skin abnormalities, the presence of masses, edema, or erythema; and the position of the nipple. Pressure around the areola in a systematic approach can help identify the specific duct involved in the discharge with an attempt to elicit discharge and identify the duct or ducts. Cytology is not routinely recommended due to low sensitivity (27%) for detection of cancer.³² However, the discharge can be tested for the presence of blood with a hemocult test. Finally, the axillary and supraclavicular nodes should be checked.¹²

Mammography and ultrasound of the areolar region should be performed for patients with unilateral, spontaneous, bloody, serous, or clear discharge, or if the discharge is associated with a mass.^{15,27,30-36} Referral to a surgeon is indicated for women with pathologic discharge for consideration of a ductal excision. Magnetic resonance imaging (MRI) of the breast can also be helpful and ordered prior to referral.³⁶ (See *Algorithm for the evaluation and management of nipple discharge*.)

After a thorough history and physical exam, evaluation of physiologic (benign) nipple discharge symptoms should include a human chorionic gonadotropin pregnancy test to eliminate pregnancy as a cause.^{25,29} Prolactin and thyroid-stimulating hormone levels can be checked to establish the presence of endocrinopathy if pregnancy is not the cause. Some medications that inhibit dopamine can also cause galactorrhea (see *Examples of medications that can cause nipple discharge*). Physiologic discharge outside of pregnancy and breastfeeding can appear as straw-colored, gray, yellow, green, or brown.³

For women with physiologic (benign) nipple discharge, reassurance is the recommended treatment. Physiologic nipple discharge will typically resolve when the nipple is not stimulated; therefore, education and counseling about ceas-

ing nipple stimulation and expressing discharge is the suggested treatment.¹⁰ The patient can be seen for a follow-up visit in 1 month to verify resolution of the physiologic nipple discharge after the patient stops nipple stimulation.

■ **Opportunity for screening updates**

The patient's visit to their PCP can also present with an opportunity to update needed breast health screenings as recommended by the American Cancer Society (ACS).³⁷ The ACS recommends that women ages 40 to 45 (with average risk for breast cancer) should have the choice to begin annual breast cancer screenings with mammograms. For women ages 45 to 54, the ACS recommends a yearly mammography; women age 55 and older could be screened with mammography every 2 years or continue annual screening. The ACS also recommends screenings continue as long as the woman is in good health and expected to live 10 or more years.³⁵ Providers should discuss mammography with their patients, and women should be familiar with how their breasts look and feel, alerting their PCP of any changes immediately.

■ **Conclusion**

Women may present to their PCP or women's health provider with breast complaints, and benign causes are much more common than malignant causes. Evaluation and management of complaints should include obtaining a relevant history, performing a physical exam, ordering appropriate imaging studies, ordering a biopsy (as needed), and referring the patient to a breast specialist as indicated. The visit to the PCP can also present an opportunity for the NP to address and update any needed breast screenings. NP

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