

Breast Cancer and Breastfeeding

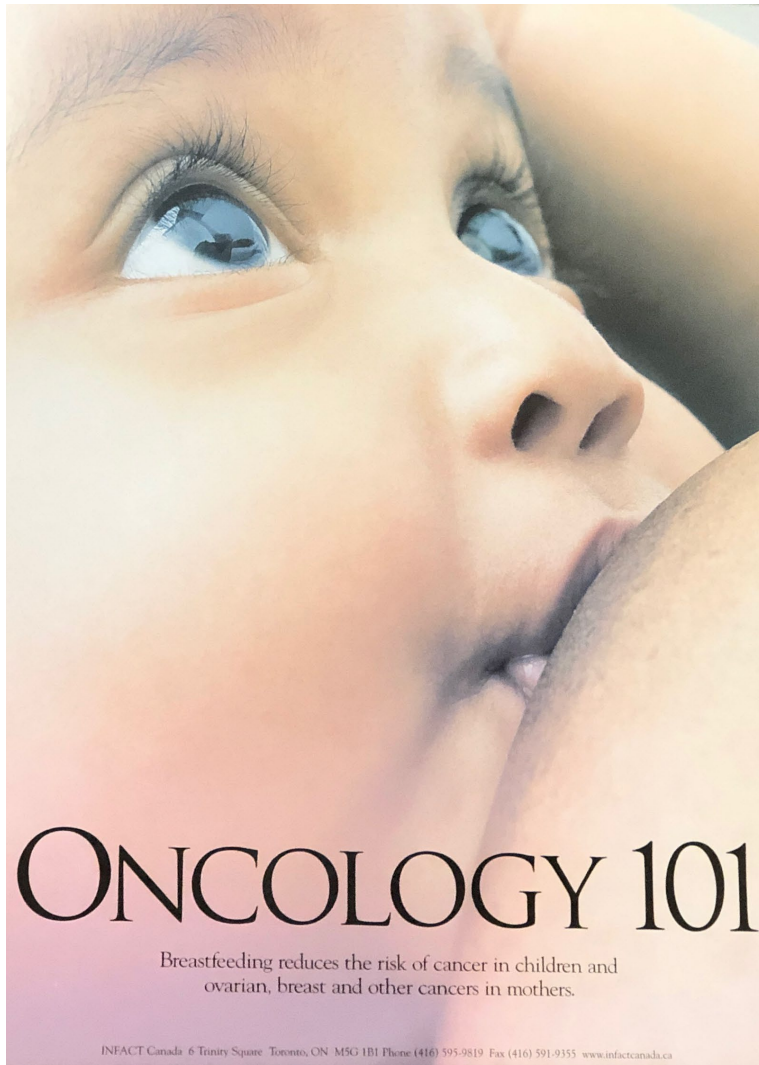


Overview



- Supporting lactation in survivors
- Managing lactation in a pregnant or breastfeeding patient who is diagnosed with breast cancer
- Radiology and nuclear medicine studies
- Breast cancer screening pregnancy and lactation

Relationship Between Parity, Lactation, and Cancer Risk is COMPLEX



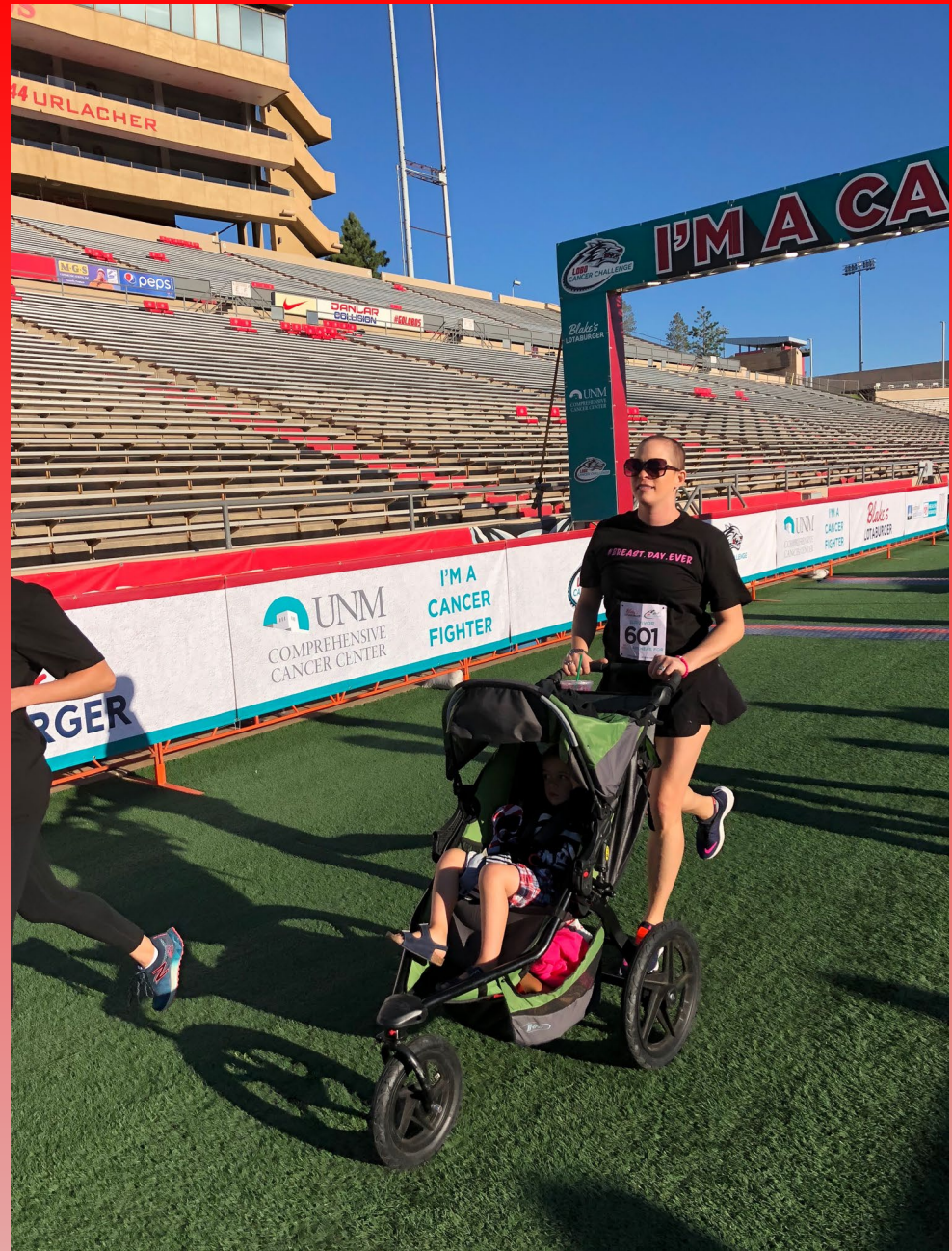
- “Crossover effect”
 - **Promotional effect during pregnancy and lactation with crossover to protective effect** in postmenopausal women with age at first pregnancy of < 25
 - Specific genomic signature after full-term pregnancy
 - **Cellular differentiation** and change in attachment of epithelial cells to basement membrane
 - **Down-regulation of genes** related to **cellular proliferation**
 - Attachment of epithelial cells to basement membrane, **intercellular adhesion**
 - **Down-regulation of estrogen, progesterone, HER2 receptors**

Relationship Between Parity, Lactation, and Cancer Risk is COMPLEX

- Conflicting studies, but most conclude reductions in different populations for breastfeeding
 - 4.3% lifetime risk reduction for every 12 months BF
 - **First degree relative** and **BRCA I mutation** carriers **highest decrease** in breast cancer development related to breastfeeding
 - **Decreased risk of TNBC**, particularly in African descent
 - “Oncogenic elimination hypothesis” for TNBC
 - **Proliferation-inducing oncogene** expression to promote mammary gland development may undergo full terminal differentiation/would be **detected by immune system during physiologic weaning**
 - In **forced weaning**, oncogene-overexpressing **cells still in stem cell** stage and would **escape immune system** recognition and become TNBC precursors



Managing Lactation in Breast Cancer Survivors



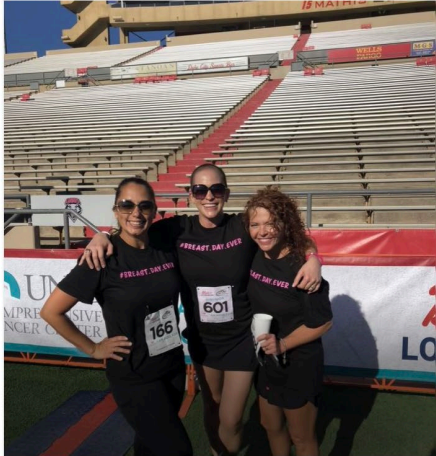
But First – Is Pregnancy Safe After Breast Cancer?



- Significantly reduced risk dying
- “Healthy Mother Effect”
 - Even when controlling for this, improved survival
- Interval since pregnancy may have impact
 - Within two years, improved DFS; after = similar
- Breastfeeding does not increase risk of recurrence
- Hypotheses
 - Alloimmunization against cancer cells in subsequent pregnancy
 - Breast cancer cells, fetal cells share common antigens
 - Mother immune system activated during pregnancy and eliminates circulating fetal cells as well as quiescent tumor cells
 - Impact of estrogen and apoptosis

Survivors: General Support

About Pink Warrior House Foundation



Our Team

From our President and Founder, Allison Hendricks – Smith: “I am a postpartum breast cancer survivor and was saddened during the duration of my year-long treatment journey to realize that we have little to no supports in place for those fighting breast cancer here in Bernalillo County.

While our medical treatment options are quite strong, they do so very little to address the mental, emotional, and social needs that arise during this journey for the patient and their caregiver(s). The very few services that are available to those who receive care at that facility. Pink Warrior House was born out of my realization that we can, and should, be better about supporting those going through this difficult fight. “



Fundraising

Pink Warrior House received our 501(C)-3 nonprofit status in May 2019. We are currently raising start-up capital to solidify our program services, purchase materials for our welcome bags (this will be our initial introduction to all patients), recruit practitioners and volunteers, and begin to heighten awareness about our services throughout the community.



Be the first of your friends



- Prenatal consult with breastfeeding medicine and lactation consultant
- Peer-to-peer support groups



SAVE RESEARCH
SAVE LIVES

Research is the reason I'm alive

MIRIAM, 36

TREATED FOR
TRIPLE-NEGATIVE
BREAST CANCER



Surgery: Mastectomy

- No lactation with mastectomy, skin sparing mastectomy, nipple sparing mastectomy
 - Lactation after mastectomy should not be encouraged nor expected; if significant engorgement or milk production → concern for residual parenchyma and ? Surveillance screening vs. return to OR for completion mastectomy
- Unilateral breastfeeding can provide milk not just for singleton, but for twins
 - Counsel on antenatal hand expression
 - Early postpartum for the vital single breast: protect it. Watch for nipple trauma, baby weight gain

Mom Breastfeeds Her Newborn Son After Cancer and a Mastectomy: 'It's an Amazing Feeling'

Bo Smith shared a photo celebrating her ability to breastfeed her newborn son after going through breast cancer and a mastectomy

By [Julie Mazziotta](#) | August 28, 2018 04:14 PM





Remember that nipples can be reconstructed
(buttock graft in this patient)...
Doesn't mean nipple is functional!

Breast Conserving Therapy: Surgery



- Systematic review: can produce milk, but reduced quantities
- Subareolar resection may sever terminal ducts
- Periareolar incisions may impact nipple innervation and/or latch from scarring; may affect milk ejection reflex
- Rodent models do demonstrate recanalization
- But remember that radiation may have most impact

Breast Conserving Surgery

- 26 year old 6 weeks postpartum
- Hx left fibroadenoma with focal DCIS
- Excision via superior periareolar incision age 22
- No adjuvant radiation
- Normal milk production



Breast Conserving Therapy: Radiation Impact

- Epithelial atypia in the terminal ductal-lobular units, atypical fibroblasts, fibrosis, atrophy, and non-specific vascular changes that appears to be irreversible
- Decreased skin/NAC elasticity
- Changes in milk composition
 - increased sodium concentration





← Pregnant



3 Months PP
Breastfeeding



Radiation Impact

- 38F 28 weeks pregnant, DM type I
- History left breast T2N0 triple negative IDC s/p BCS, adjuvant chemo, radiation 7 years prior c/b thoracic outlet syndrome



Radiation Impact

- No left breast growth, doubling of right breast size 1st/2nd trimester
- Initially treated with Keflex, changed to Bactrim
 - No response to either
- Ultrasound showed no masses, dermal edema
- Punch biopsy x 4
 - Dermal edema, dilated dermal lymphatics

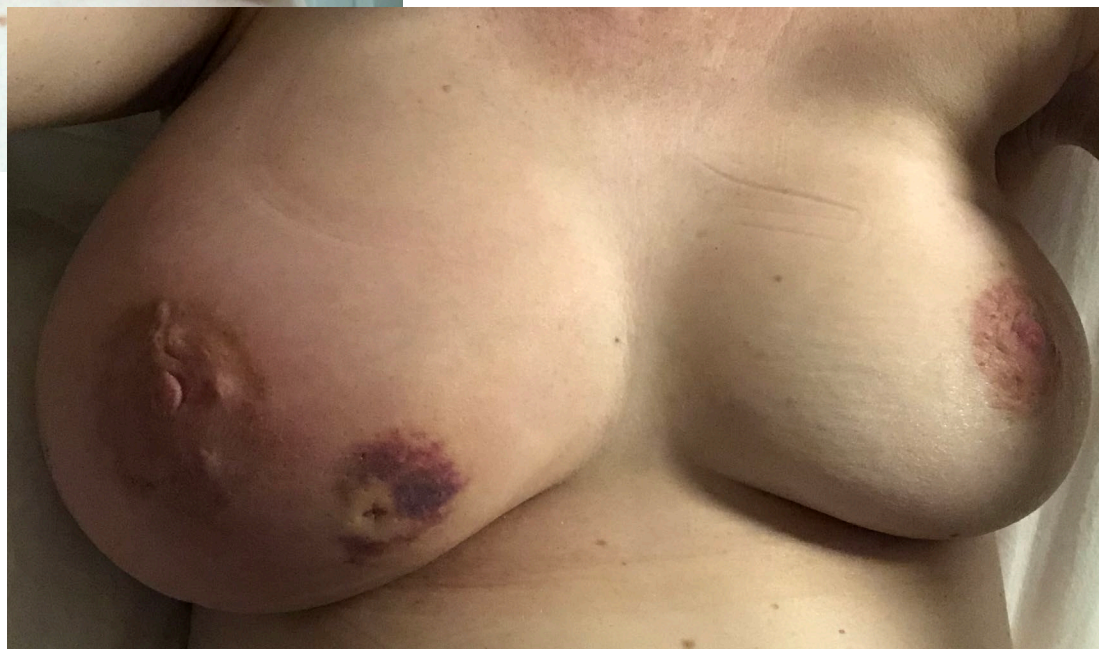


Radiation Impact

- Ultrasound biopsy x 2 of indistinct hypoechoic tissue UOQ
 - Lymphocytic mastopathy, lactational changes, benign CCC, PASH, stromal edema
- ID consulted, started Bactrim/augmentin
 - d/c 2/2 to side effects
- LN biopsy x 2
 - No malignancy



Lymphatic Drainage Initiated



Chemotherapy

- Causes irreversible histopathological changes that may impact milk production in the future
- PABC cohort: less breastfeeding success
 - 34% vs. 91%, particularly if more cycles and received earlier in pregnancy
 - suggests effect on lactogenesis I
- Prenatal and postpartum counseling that milk supply can be varied among individuals from remaining breast



Endocrine Therapy

- AI's transfer into breastmilk and suppress estrogen formation in infant
- No data on tamoxifen transfer in breastmilk
 - Tamoxifen inhibits lactogenesis II but unknown effect on established milk production
- European Society of Breast Cancer Specialists allows tamoxifen to be interrupted for pregnancy and/or breastfeeding
- POSITIVE enrolled 500 women ages 18-42 who completed 18-30 months of endocrine therapy with interruption of up to two years for pregnancy and breastfeeding



The POSITIVE trial: answering an important question for young women

For many young women undergoing hormone treatment for endocrine-responsive early breast cancer, the question of if and when they can stop therapy to become pregnant is high on their list [1].

Retrospective and population-based analyses support the safety of pregnancy and breast feeding after breast cancer in women at low risk of recurrence. However, there is no direct evidence about the risks of stopping hormone treatment within the typical five years and up to 10 years of therapy in the approximately 15% of patients who are diagnosed with breast cancer during their reproductive years.

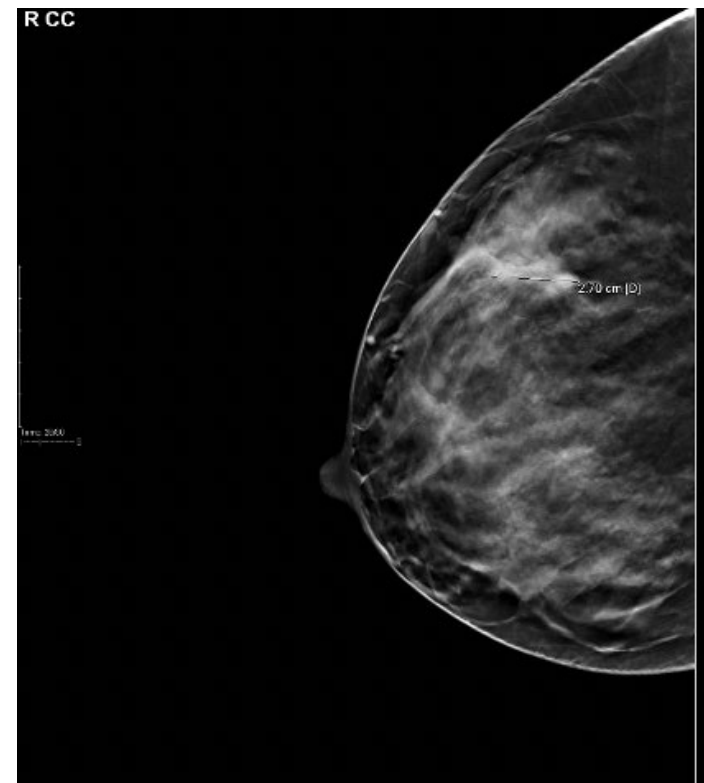
Following extensive discussion through the BIG-NABCG collaboration, the large international POSITIVE trial has been set up to produce clear evidence about the safety of interrupting cancer treatment.

Managing Lactation
When Cancer is
Diagnosed During
Pregnancy

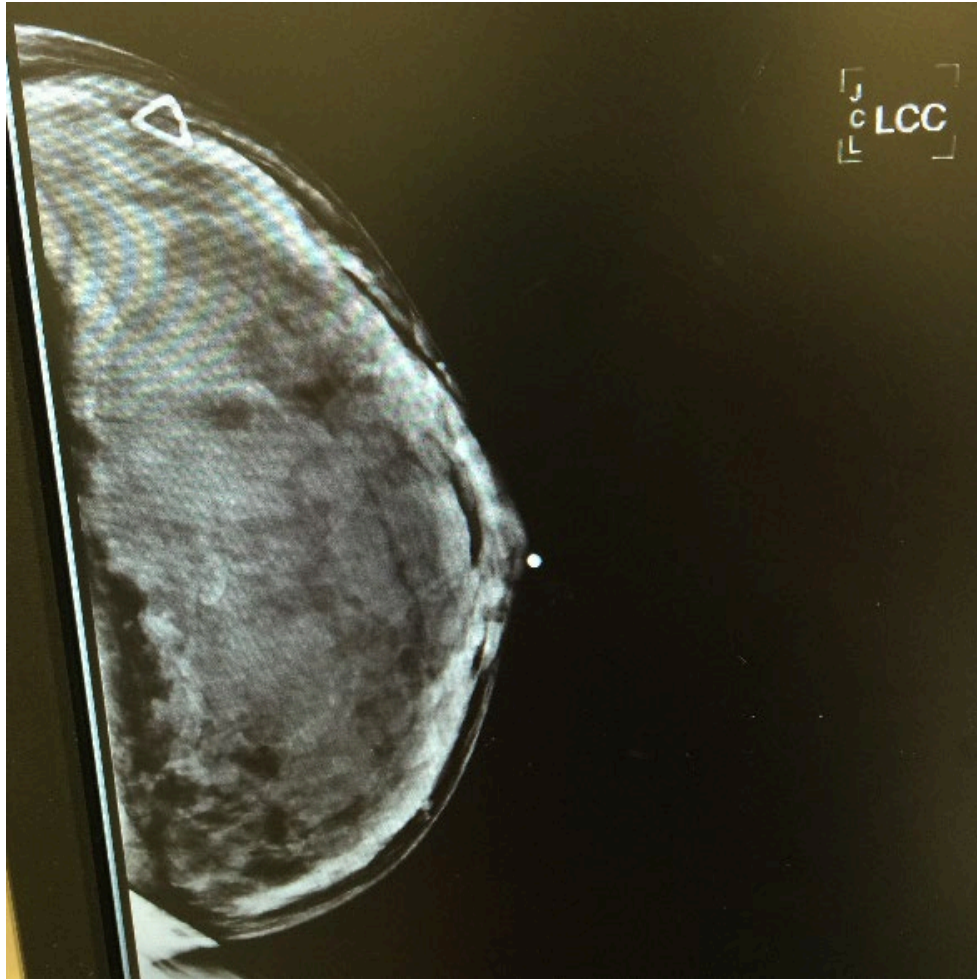


Imaging Studies

- Ultrasound s/s not altered with pregnancy
- Mammography 86% sensitivity during pregnancy
 - Decreased fat, increased water may alter mammographic appearance of mass
 - With shielding, fetal dose 0.004 Gy (threshold 100 Gy)
- No MRI with gadolinium in pregnancy



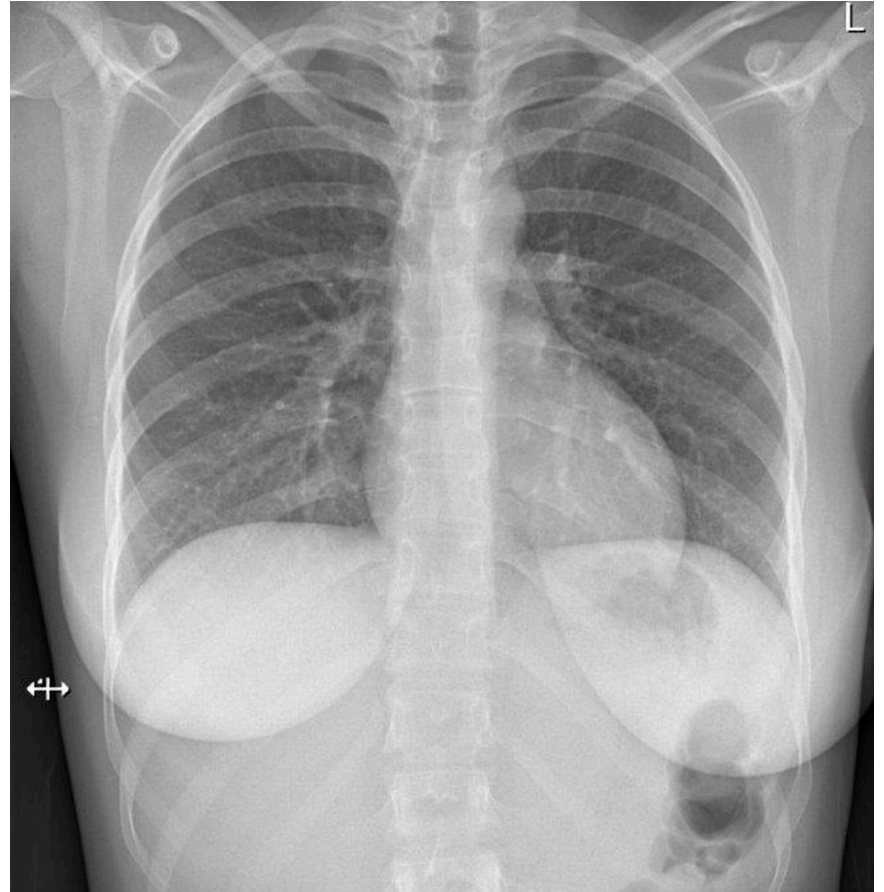
Mammogram: Safe During Pregnancy and Lactation



- Bilateral mammogram: 3-5 mGy radiation
- Equivalent to the average background radiation incurred over 2 months
- Shielded uterus < 0.004 mGy

Staging Studies

- CXR
- Liver ultrasound
- MRI without contrast skeletal survey
- MRI brain if central nervous symptoms
- Labs, echo prior to chemo



Treatment

- Confirm fetal dates to guide treatment safety
 - Early termination does not improve outcomes
- Chemotherapy
- *Anti-HER2 therapy**
- Surgery
- *Radiation/endocrine therapy**

Young Women with Breast Cancer: Fertility Preservation Options and Management of Pregnancy-Associated Breast Cancer

Nikita M. Shah, MD¹, Dana M. Scott, MD², Pridvi Kandagatla, MD^{1,3}, Molly B. Moravek, MD⁴, Erin F. Cobain, MD⁵, Monika L. Burness, MD⁵, and Jacqueline S. Jeruss, MD, Ph.D.^{1,6,7}

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Surgery	
First	<i>Monitoring:</i> fetal heart tones before and after surgery <i>Type:</i> mastectomy/axillary staging ^a recommended
Second	Favorable trimester for non-emergent surgery <i>Monitoring:</i> Before viability (23–24 weeks): fetal heart tones before and after surgery After viability: monitor fetal heart tracing and tocometry before and after surgery Consider intraoperative fetal monitoring if: Intraoperative emergent cesarean delivery is feasible as necessary Patient has been counseled/consented for cesarean delivery <i>Type:</i> mastectomy/axillary staging ^a recommended For appropriately selected surgical candidates also being treated with neoadjuvant/adjunct therapy, can consider lumpectomy with completion of radiation postpartum
Third	<i>Monitoring:</i> monitor fetal heart tracing and tocometry before and after surgery Consider intraoperative fetal monitoring as noted for second trimester <i>Type:</i> mastectomy or lumpectomy with completion of radiation postpartum (for appropriate surgical candidates)/axillary staging recommended
Overall	Recommend delaying reconstruction until postpartum period
Systemic therapy	
First	Avoid due to risk of miscarriage and fetal congenital malformations
Second	Chemotherapy generally considered safe without long-term complications
Third	Possible increased risk of preterm delivery, small for gestational age infants Anthracycline-based regimens have the most safety data Insufficient safety data for general use of taxanes; weekly administration of paclitaxel is acceptable if clinically indicated Anti-HER2/neu directed therapy (trastuzumab and pertuzumab) not recommended Risks of oligohydramnios and pulmonary hypoplasia Discontinue chemotherapy by 35 to 37 weeks to minimize hematologic toxicity
Overall	Anthormonal therapy contraindicated during all trimesters
Radiation therapy	
First	Absolutely contraindicated in all trimesters due to fetal toxicity:
Second	First trimester exposure: pregnancy loss and congenital malformations
Third	Second and third trimester exposure: intrauterine growth restriction, cognitive impairment, fetal death, increased risk of childhood malignancies

HER2, human epidermal growth factor receptor 2

The European Society for Medical Oncology (ESMO) Clinical Practice Guidelines offer management recommendations based on breast cancer subtype.¹⁰ Given the nuanced care required for the management of both breast cancer and pregnancy, we advocate for the organization of treatment recommendations by pregnancy trimester. Importantly, treatment decisions must be agreed upon collaboratively by the patient and the treatment team; including oncologists and obstetric providers

^aThe National Comprehensive Cancer Network (NCCN) Guidelines state that axillary staging can be performed using axillary lymph node dissection (ALND) or sentinel lymph node biopsy (SLNB) with technetium 99 m sulfur colloid, depending on the individual patient's clinical presentation. However, blue dyes used for SLNB are contraindicated in pregnancy secondary to the risk of anaphylaxis and unknown teratogenicity¹⁵

Surgery: Breast

- Mastectomy vs. BCS
no difference in survival
 - **1st/2nd trimesters:
mastectomy**
 - Can perform lumpectomy if chemo anticipated (i.e. do not want too great a delay to radiation if RT alone planned)
 - **3rd trimester:
mastectomy vs.
lumpectomy**

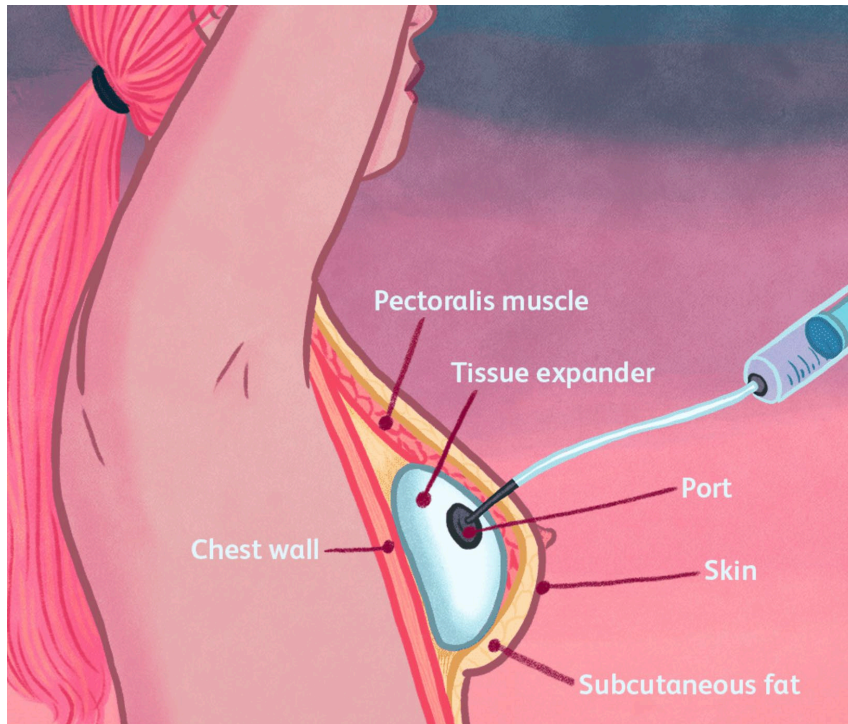


Surgery: Perioperative Issues



- Primary complication pre-term labor
- Delayed gastric emptying, hypercoagulability
- 1st trimester: Attempt to defer
 - Increased risk miscarriage, lower birthweight
 - May be related to underlying medical condition, surgery than exposure to anesthesia itself
- 2nd/3rd trimester
 - After 20 weeks, position left lateral decubitus
 - Doppler or u/s preceding/following surgery and continuous after 24 weeks
 - Consent for emergency c-section

Surgery: Breast Reconstruction



- Delay definitive reconstruction
 - Limit operative time, possible complications
 - Difficulty in achieving symmetry
- Small retrospective study 12 patients TE, 1 implant
 - No infection, hematoma, flap necrosis, capsular contracture
 - No adverse fetal outcomes
 - One patient local recurrence 19 months post-mastectomy, one patient leakage after RT

Surgery: Axilla

- No blue dye
 - Avoid isosulfan blue due to anaphylaxis risk
 - Methylene blue crosses placenta, teratogen
- Technetium safe
 - Lower than background radiation (8.2 mGy) but still, inject day of/intraop
- SLNB->send nodes intraop->ALND



Chemotherapy



- Contraindicated first trimester (organogenesis)
- Standard third-generation regimen ACT
 - DD regimens safe; can allow for shorter period of treatment/completion further from delivery
 - Taxanes less data but still safe
 - However, majority in YWBC Study had taxanes post-delivery
- MTX contraindicated
- Cisplatin/carboplatin may be used, but a/w higher toxicity due to decreased albumin
- Neulasta, steroids in short duration, anti-emetics all safe

Chemotherapy

- Stop week 35/36 prior to delivery
 - Reduce risk of infections, hemorrhage
 - Delivery after 35 weeks ideal for fetal lung maturity
- If continuing chemo, resume 3 weeks after delivery
- Fetal malformations no greater than general population
 - Placental protection from chemo agents
 - **Different than breastfeeding**
 - Greatest complication IUGR
 - Growth scans every 4 weeks or before each cycle
 - chemotherapy starting 24-28 weeks



Chemotherapy During Pregnancy: Breastfeeding Postpartum

- Chemotherapy usually resumed 3 weeks after birth
 - As early as 7 days
- Can allow mom to feed initial postpartum for stabilization, colostrum/early milk and then wean for resumption of chemotherapy



Contraindicated in Pregnancy (Give Postpartum)

- Anti-HER2 Tx
 - Renal, pulmonary malformations, oligohydramnios
- Endocrine
 - Tamoxifen: 20% birth defect rate
 - AI/LH agonists not safe
- Radiation





Diagnosed
Postpartum
While
Breastfeeding

PABC and Postpartum Breast Cancer

- PABC traditionally defined as occurring during pregnancy or within one year postpartum
- New arguments to distinguish cancer occurring during pregnancy versus that in the postpartum period
- This may encompass a timeline of breast involution for up to **20 years**
 - **Risk peaks at 5 years PP**

Cancer July 1, 2012

Editorial

Pregnancy-Associated Breast Cancer

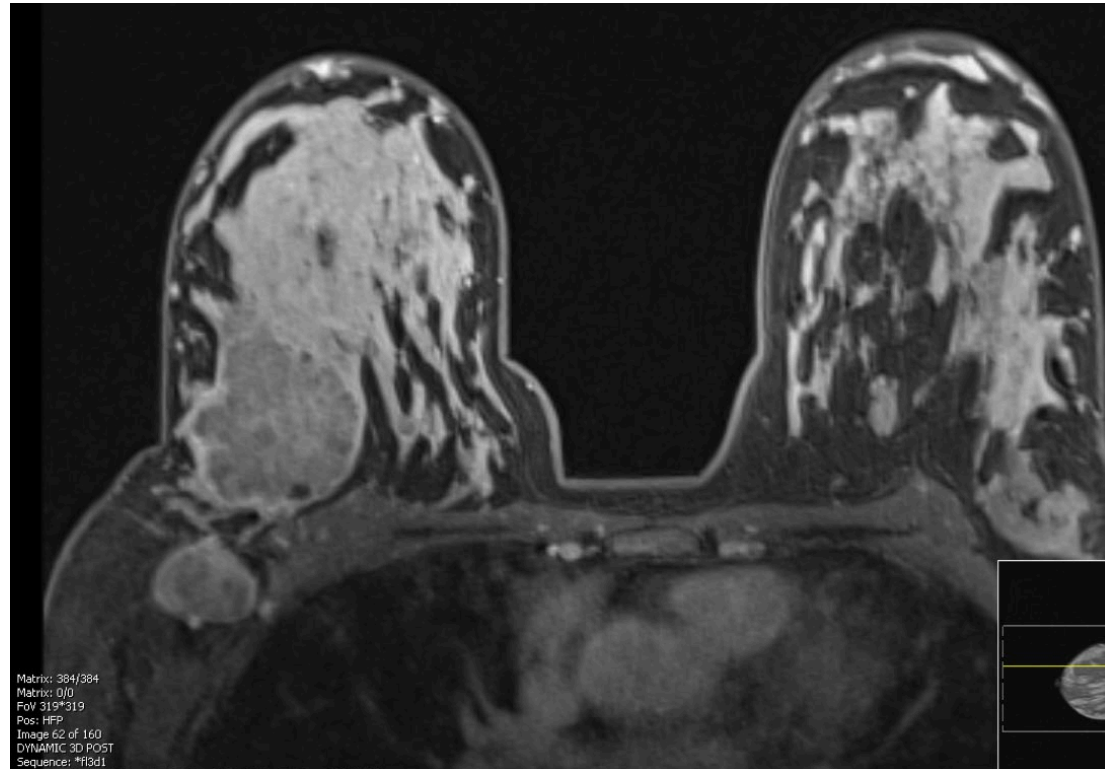
An Entity Needing Refinement of the Definition

Virginia F. Borges, MD MMSc^{1,2} and Pepper J. Schedin, PhD^{1,2,3}

Pregnancy, as a modifier of risk for developing breast cancer, confers a “dual effect” of both increased risk followed by subsequent protection for younger mothers. Although the protective effect of pregnancy is broadly appreciated, all women, regardless of their age at first birth, have a subsequent period of years during which they are at increased risk for the development of breast cancer.¹ For first-time mothers aged 25 years or younger, the risk is modestly increased compared to nulliparous women, and in a large Norwegian cohort, has been shown to last approximate 9 years, at which time a cross-over effect occurs.² This cross-over effect then changes the role of pregnancy from one of breast cancer promotion to subsequent protection. For a woman who delays childbearing until age 30 to 35, the risk for breast cancer is significantly increased compared to younger mothers, and the cross-over effect is delayed until her 60s.³ Women who wait until age >35 years for their first childbirth permanently increase their risk of breast cancer compared to nulliparous women.⁴ Rather surprisingly, peak incidence of breast cancer does not occur during pregnancy or in the immediate postpartum period, but rather approximately 6 years postpartum.³ Breast cancers diagnosed during pregnancy or within the postpartum period have been reported to present with more adverse clinical characteristics and are variably reported to have worsened breast-cancer specific outcomes for the mother. A review of these “pregnancy-associated breast cancers” was published by our group in 2009.⁵

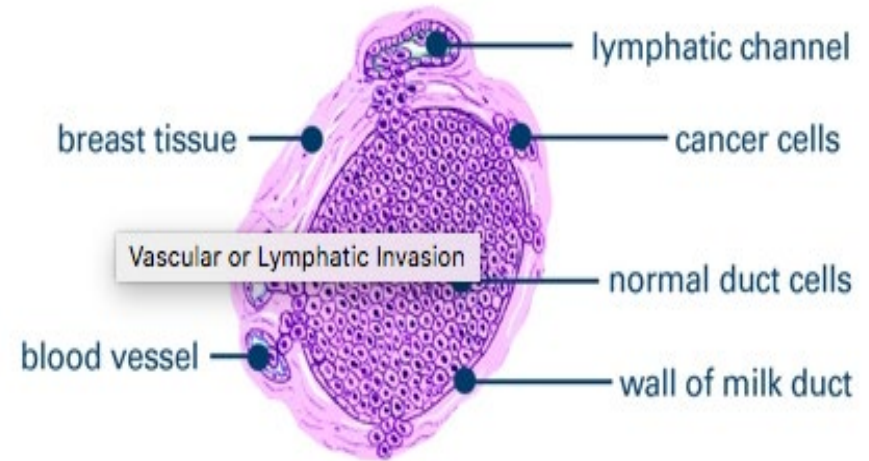
Postpartum Breast Cancer

- Cases diagnosed after pregnancy but within five years postpartum have a 3x increased risk of distant recurrence and death compared to nulliparous cases
 - Meta-analysis of 3628 patients up to 2 years PP: significantly higher risk of death
 - Driven by PP diagnosis
 - **Survival of patients diagnosed during pregnancy not different than controls**
- Poorer prognosis when adjusted for biologic subtype, stage, and year of diagnosis



Why?

- Postpartum breast involution
 - **Apoptosis of epithelium** returns breast to non-secretory state
 - Process **mimics wound healing**
 - Increased macrophage density, collagen deposition, and **stromal remodeling**
- **Lymphangiogenesis** is physiologic to clear apoptotic epithelium in lactation
 - But also present in chronic wounds, cancer, inflammation
- Postpartum tumor cells demonstrate increased **pro-lymphatic activity**



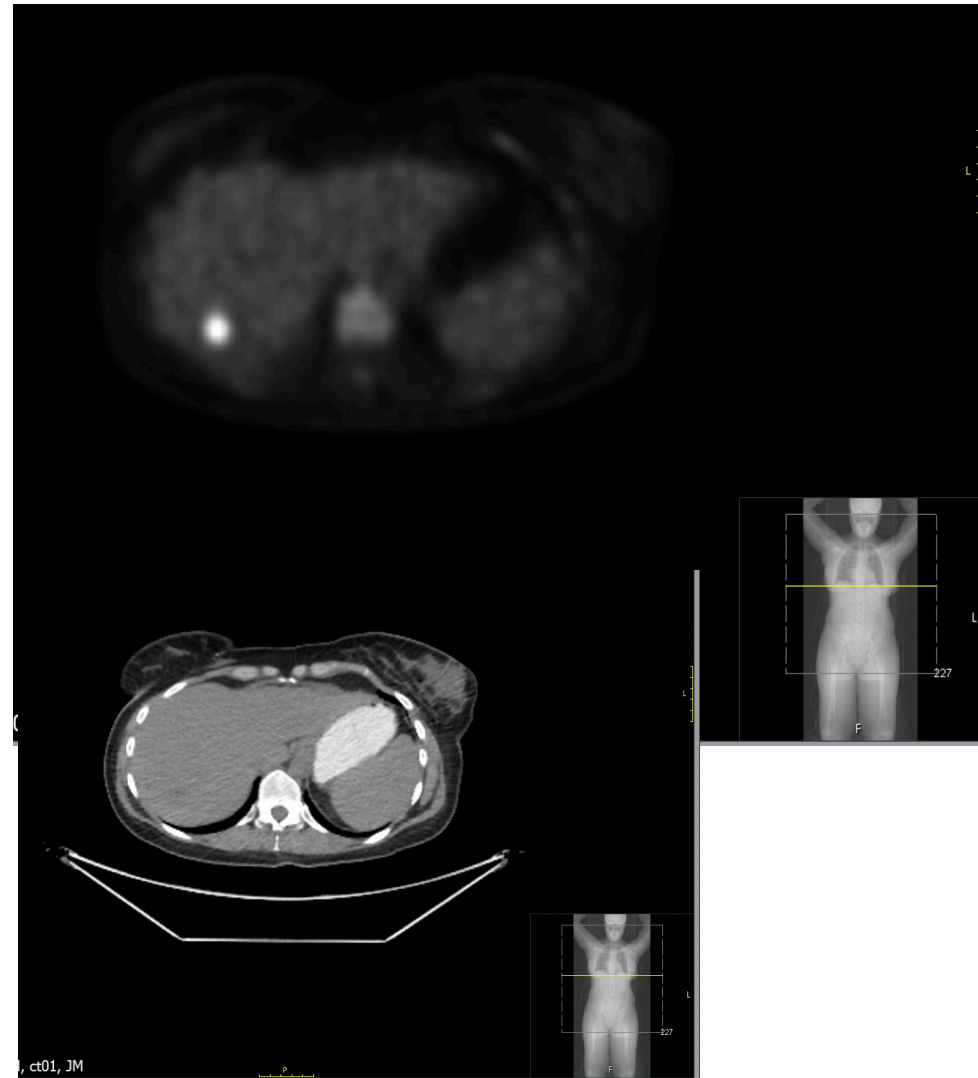
COX-2 and NSAIDs: Pre-Clinical Data

- Increased immature monocytes, reduced T cells in mammary gland involution
- The prostaglandin-generating enzyme COX-2 has been identified as influential for the pro-tumorigenic processes that occur during involution
- NSAIDs have been identified as targeting this COX-2 activity
 - Reverse presence of immature monocytes
 - Promote tumor border accumulation of T cells
 - Blunt lymphangiogenesis
 - Reduce fibroblast activation
 - Lower tumor growth and dispersion
- No trials in humans yet

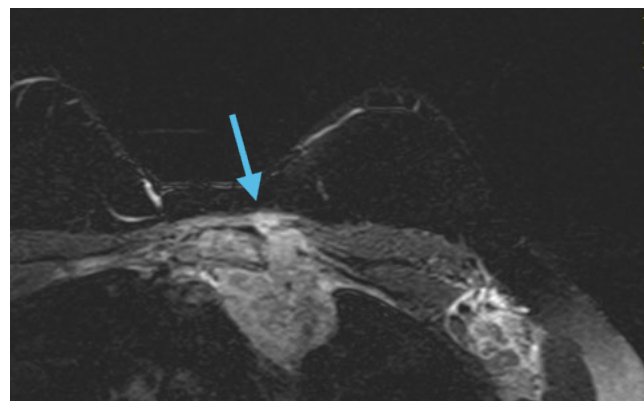
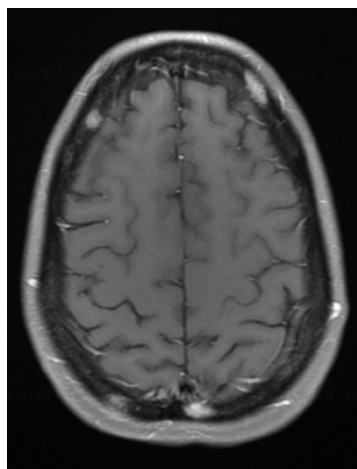
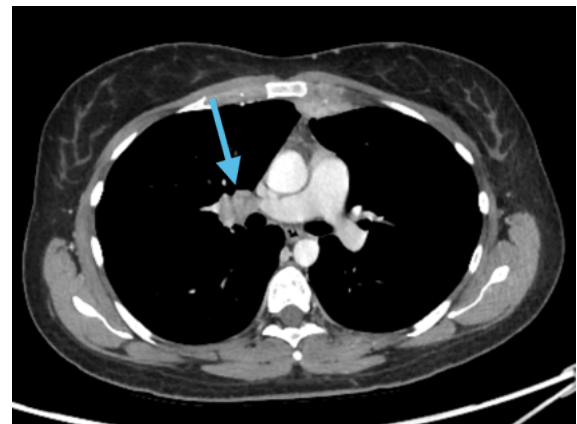
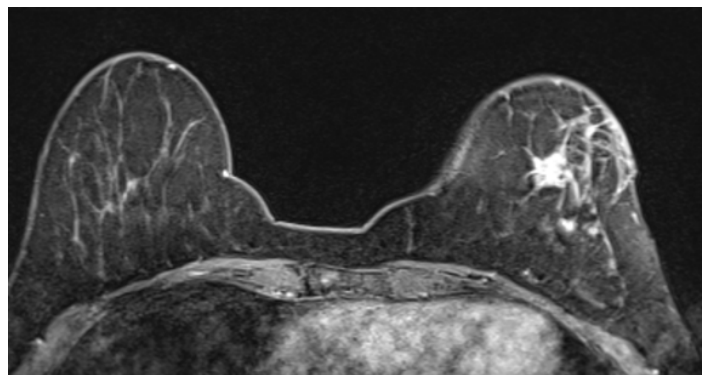


Postpartum Breast Cancer

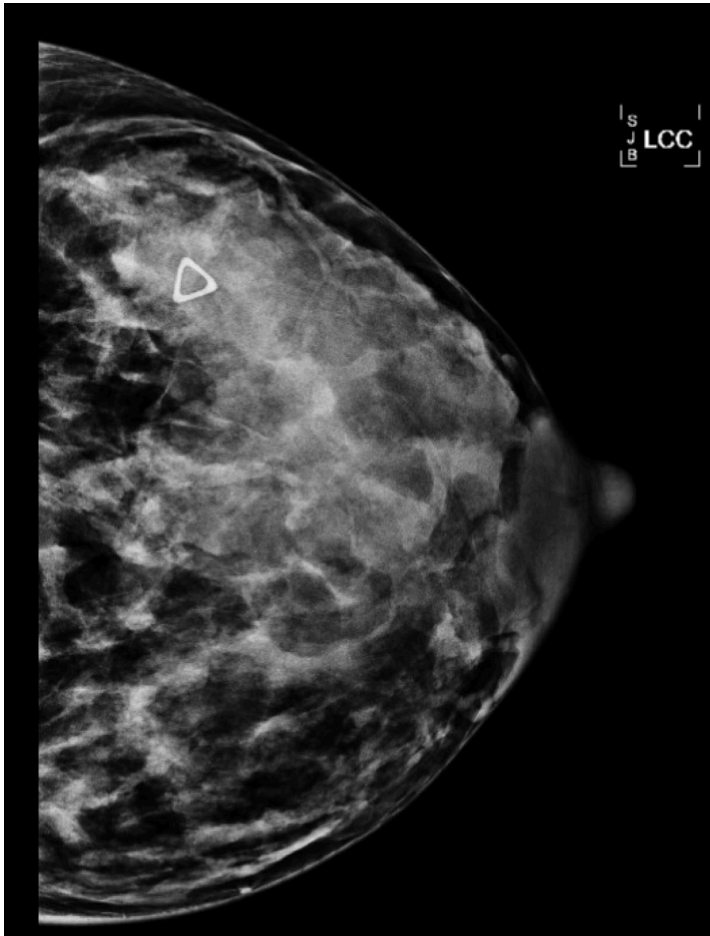
- Postpartum state preferentially supports metastases in liver
 - Hepatocyte apoptosis, extracellular matrix remodeling, deposition of collagen
- Also increased risk for brain metastases



Propensity to Metastasize: 33F 6 Months After Cessation of Breastfeeding



New Diagnosis: General Principles

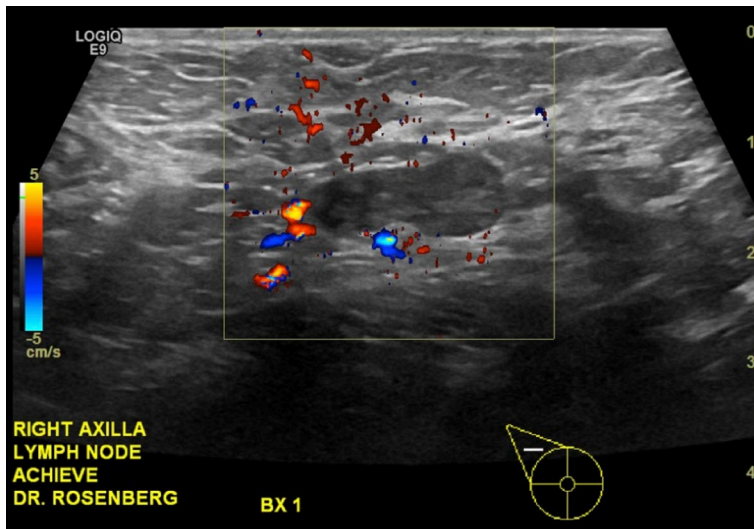
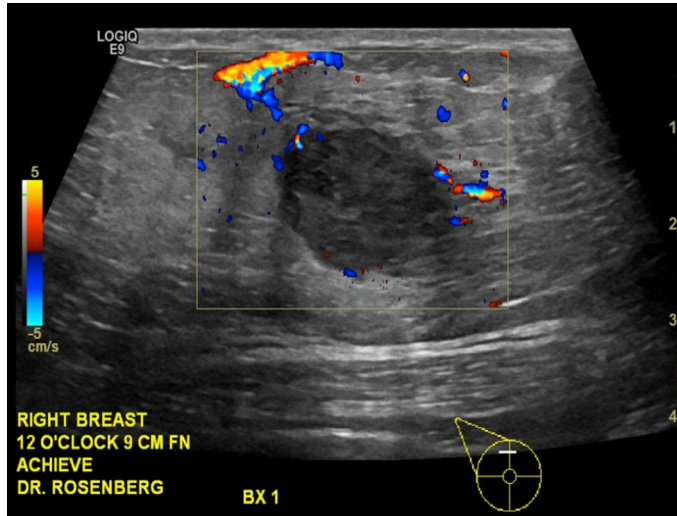


- Involve IBCLC, breastfeeding medicine physician
- Early weaning can impact mom's mental health; need psychosocial support
- Weaning often needed
 - Taper frequency of breastfeeding/milk expression
- Herbal/OTC (sage/Sudafed) vs. pharmacologic agents (cabergoline 0.25-0.5 mg q3 days x 2-3 days)



Radiology Studies

Ultrasound and 3D mammogram



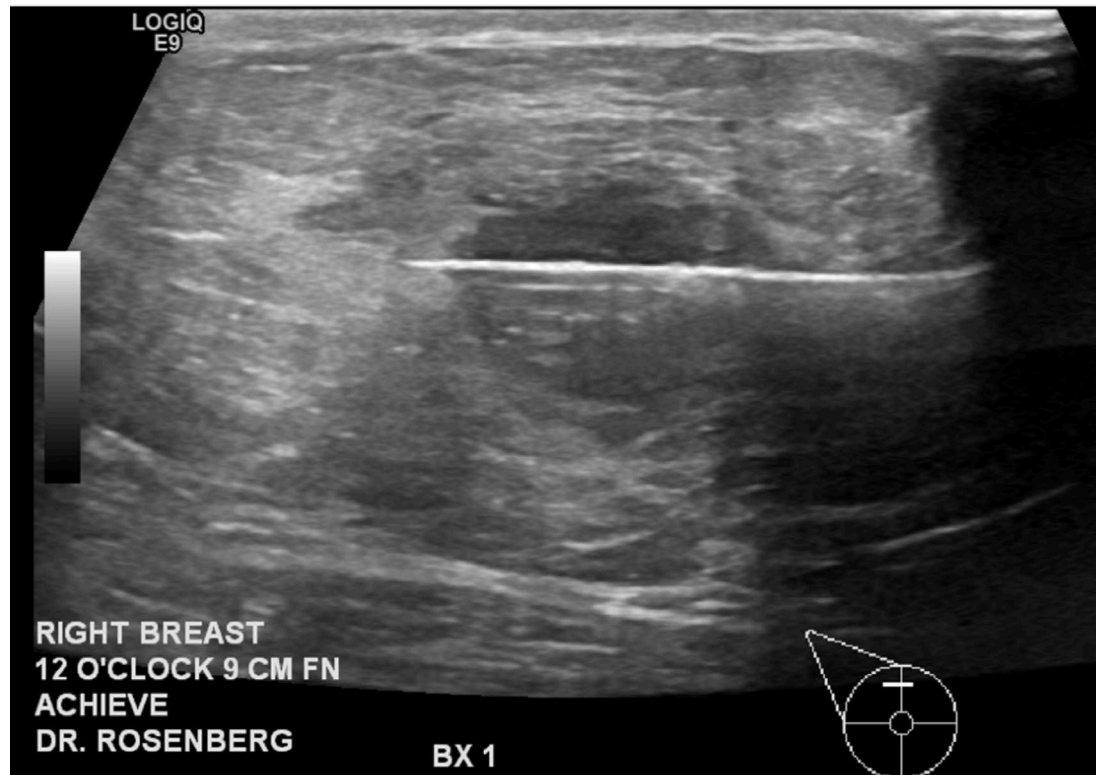
Remove Milk Prior to Imaging



- Reduces parenchymal density resulting from retained milk
- **Encourage patient to bring baby or pump to imaging appointment**
- **Feed normally after – do not “pump to keep breast empty”!**

Biopsies Are Safe and Effective

- Milk fistula rate low if managed appropriately
- Even with development of fistula, tends to be transient and self-resolving over the course of weeks

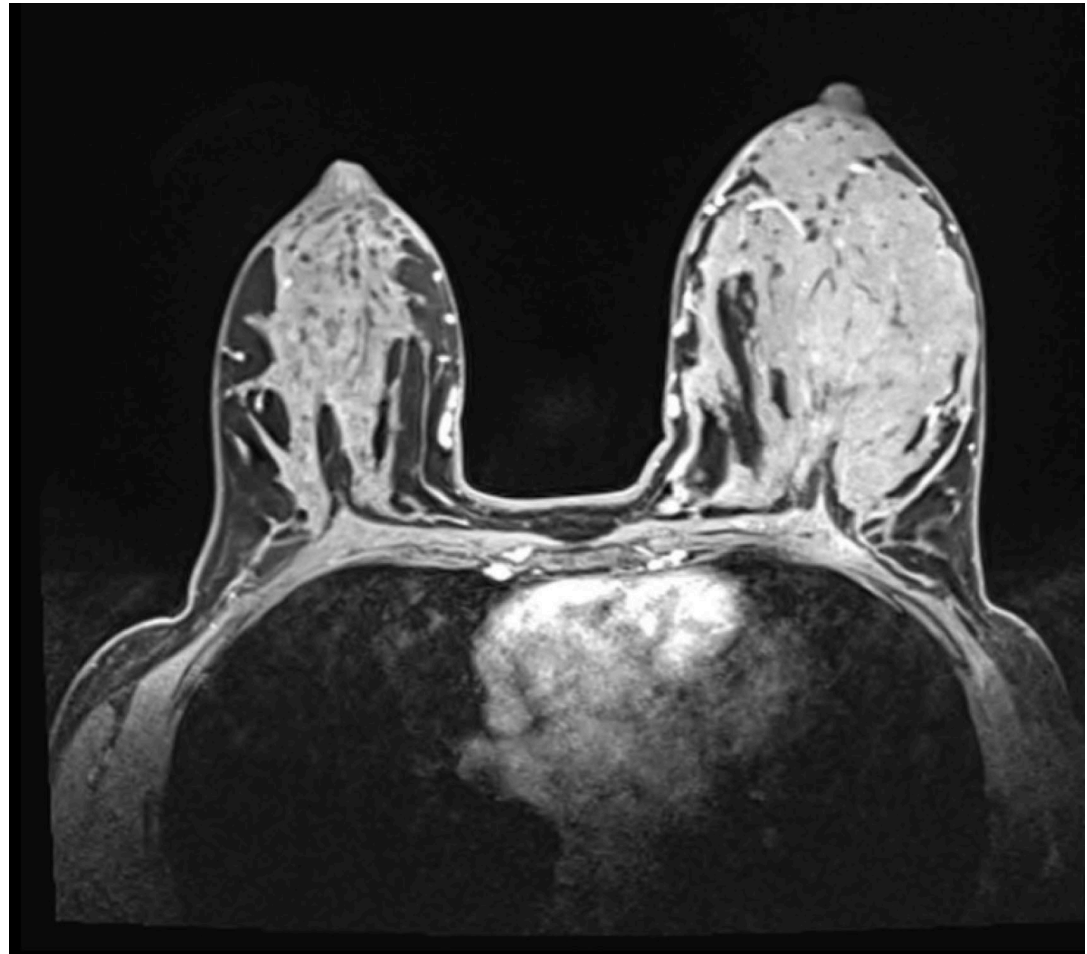


Patient Told to “Pump to Empty”

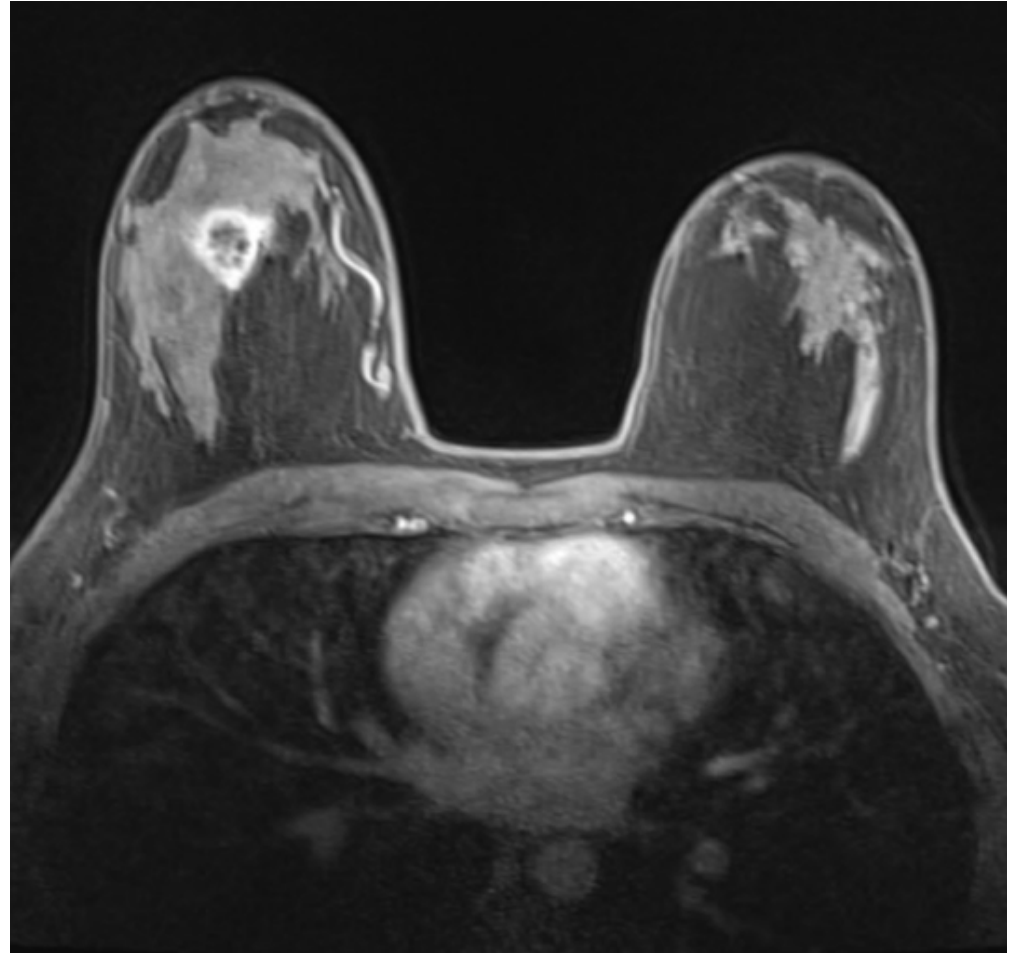
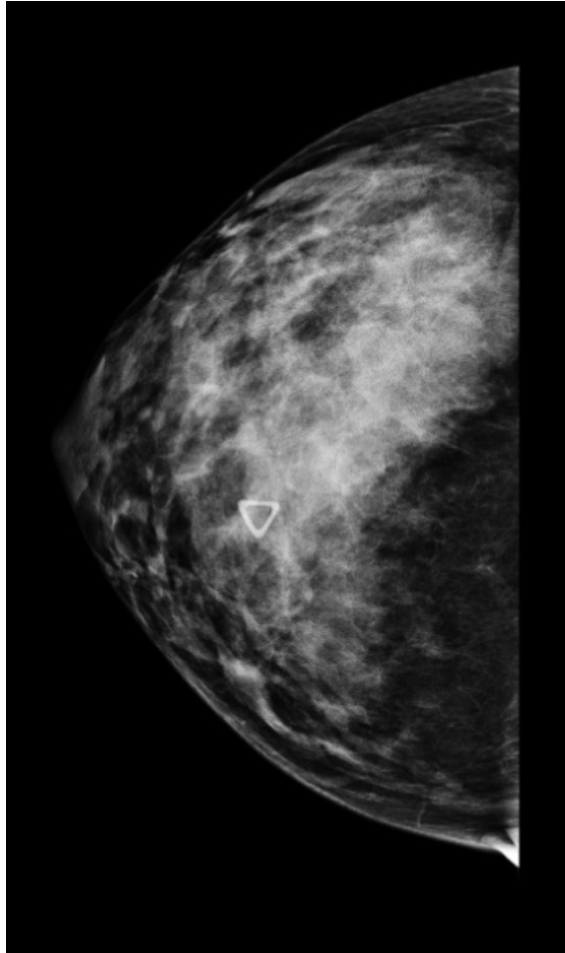


MRI for Extent of Disease

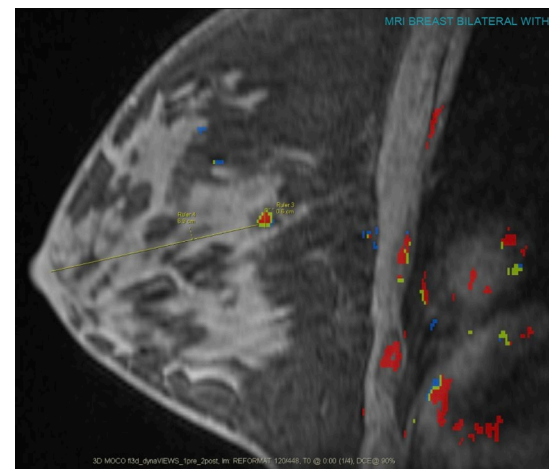
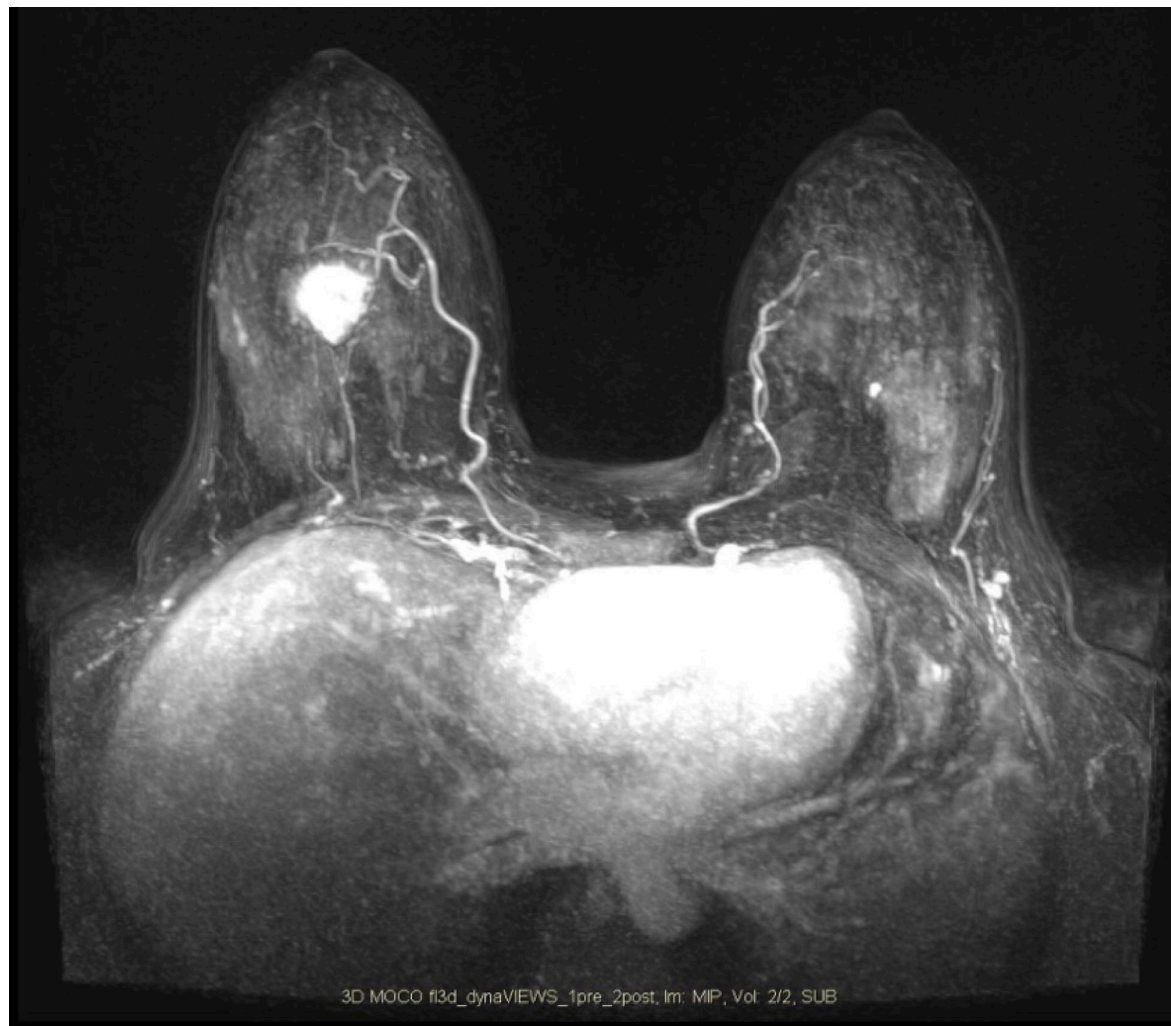
- Safe in lactation, NOT in pregnancy due to gadolinium
- Increased background parenchymal enhancement due to physiologic hypervascularity and diffusely increased T2 signal from milk
- Despite this, multiple reports document accuracy in setting of lactation



MRI May Detect MMG Occult Lesions

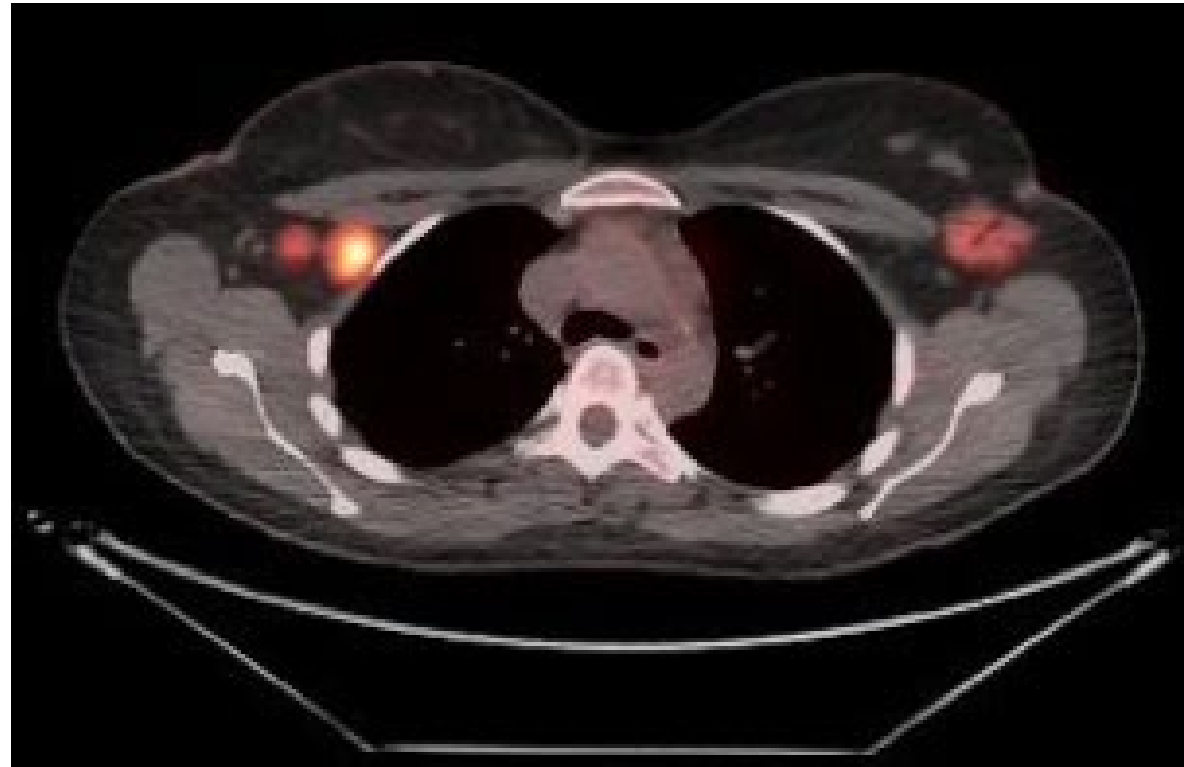


... And Lead to Additional Biopsies



Staging Studies

- Bone scan, PET radioisotopes not excreted in breastmilk
- However, external radioactivity of organs can require separation of dyad
- Expressed milk can be frozen and allowed to decay radioactivity over specified half lives and then fed
- Note additional areas of avidity may prompt additional workup



Additional Areas of Avidity for Biopsy

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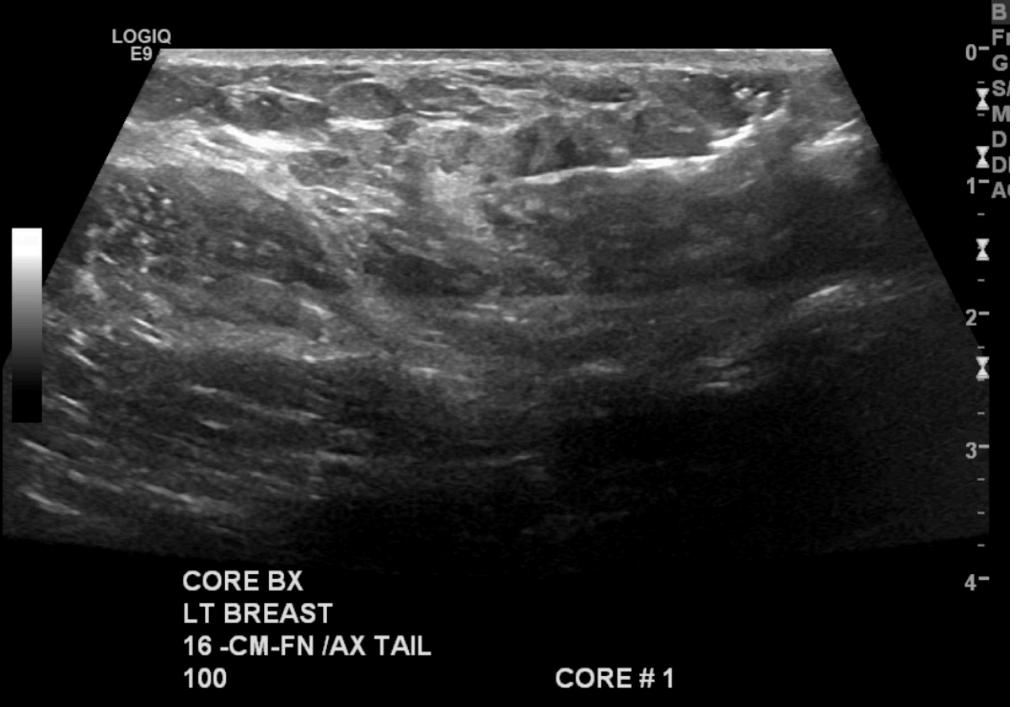
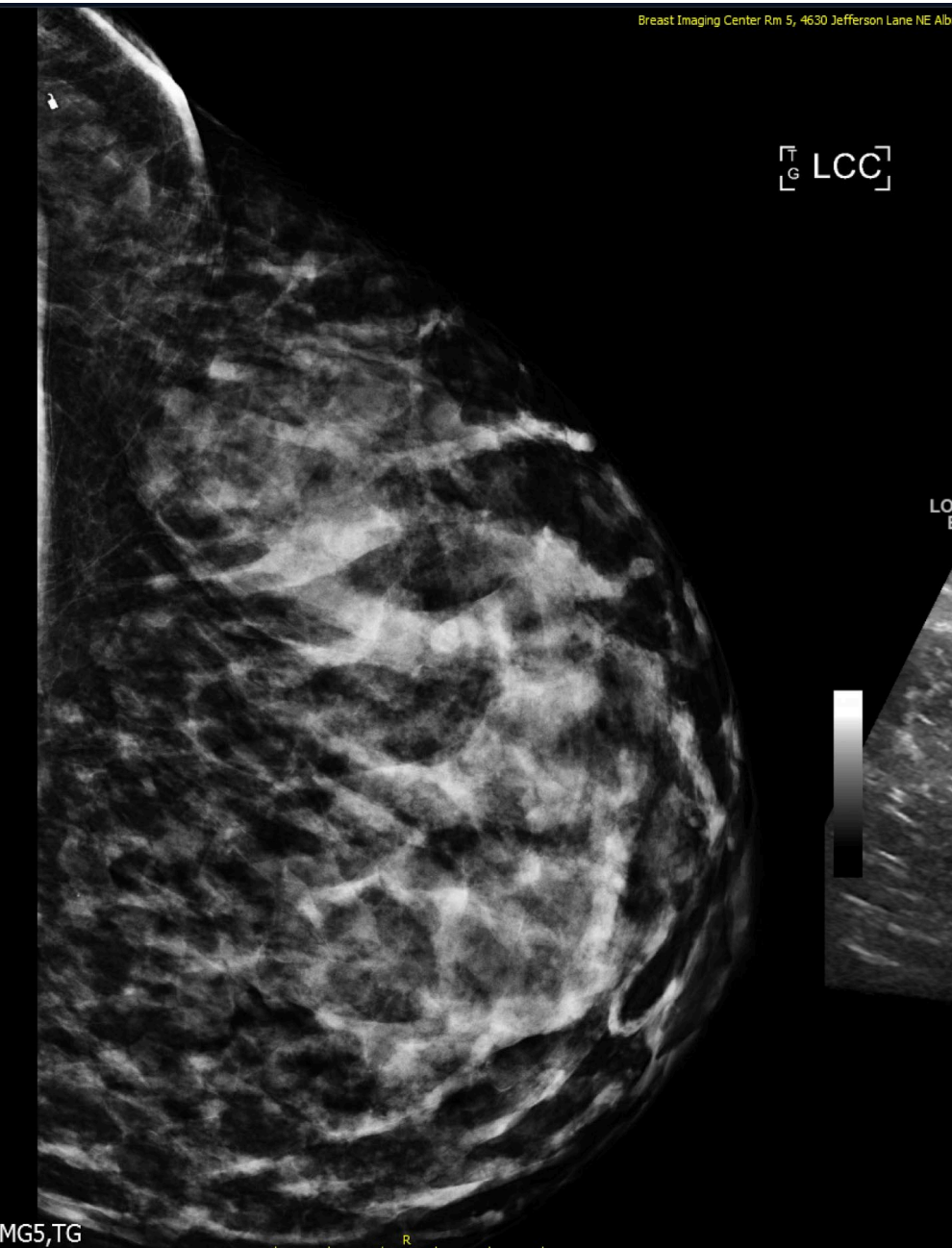
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CORE BX
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CORE # 1

MG5,TG

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PET CT and FDG-18



- Very little FDG is excreted into breast milk and **the milk itself is safe for infants**
- However, the lactating breast **does** accumulate FDG
 - Contact between mother and child should be limited for 12 hours to minimize external radiation
 - Express milk and feed to the baby via bottle

“Trash the Pump and Dump!”



CT with iodinated contrast, MRI with gadolinium contrast: **No need to interrupt breastfeeding!**



Index



About



Search



Feedback

This publication encompasses medical conditions, medications and substances of concern during lactation. Please note that in these categories there are very few absolute contraindications to lactation. If you are uncertain about a situation, please advise PUMPING AND SAVING! Most often dumping milk is NOT necessary, and the expressed milk can be given to the child later.

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Medications and Anesthesia

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Herpes Zoster

Herpes Simplex

Zika

Chickenpox (Varicella Zoster)

Brucellosis

Cytomegalovirus (CMV)

HTLV 1 or 2

HIV

Trash the Pump and Dump!

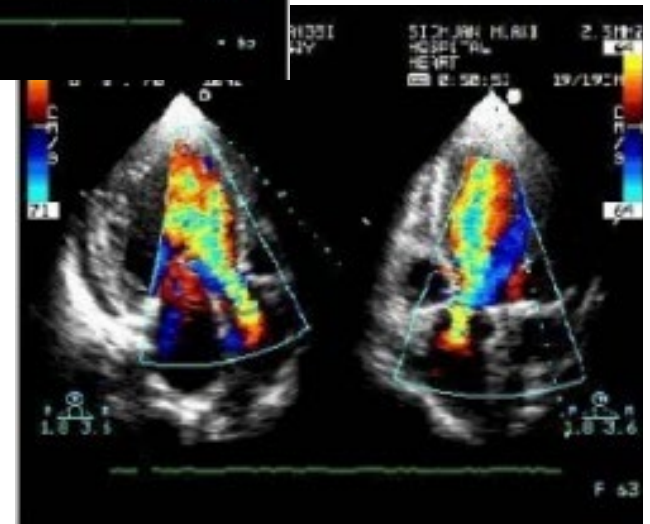


Very few situations require moms to interrupt breastfeeding, discard their breastmilk, or stop breastfeeding altogether. Skin creams/gels, eye drops, hair dyes, botox and fillers, lasers, facial peels and retin-A, teeth whitening, tattoos, numbing medications for dental work, acupuncture, and reasonable caffeine and alcohol consumption is safe with breastfeeding. Surgery, colonoscopies, anesthesia, and most radiology tests and medications are safe. Travel and airport security scans are safe. Breastfeeding should not be interrupted with Covid-19 infection or other viral illness. Exceptions include herpes on the breast, in which you should pump and discard milk until lesions develop scabs. Vaccines are safe, except smallpox and yellow fever. Marijuana and recreational drugs are *not* safe.

MEDICATIONS	RADIOLOGY AND NUCLEAR MEDICINE	ANESTHESIA AND ANALGESIA
<p><u>General principles</u></p> <ul style="list-style-type: none"> Most medications, including antibiotics, are safe during lactation. The exception list is extremely short and includes codeine, tramadol, chemotherapeutic agents, 1-131, statins, amiodarone, tetracyclines if used > 3 weeks, some novel oral anticoagulants, phenindione, and recreational drugs. Avoid medications that decrease milk production, such as estrogen-containing birth control pills, decongestants, sedating antihistamines, bromocriptine, and cabergoline <p><u>Resources</u></p> <ul style="list-style-type: none"> LactMed (National Institute of Health Toxnet medications and lactation database): https://www.ncbi.nlm.nih.gov/books/NBK501922/ 'Medications and Mother's Milk' by Dr. Thomas Hale. Online at Medsmilk.com Infant Risk Center Physician hotline (research center for medication safety during pregnancy and lactation): +1-800-352-2519, infantrisk.com e-lactancia (a comprehensive medication and herbal medicine database, in English and Spanish): e-lactancia.org Organization of Teratology Information Specialists (information on medications during pregnancy and lactation, with free online chats and phone calls): mothertobaby.org <p>For more information, please contact Katrina B. Mitchell, MD, IBCLC PhysicianGuideToBreastfeeding.org</p>	<p><u>General principles</u></p> <ul style="list-style-type: none"> No interruption of breastfeeding is required for X-ray, CT scan with iodinated intravenous contrast, or MRI with gadolinium-based contrast Nuclear medicine study recommendations most often do not require interruption of breastfeeding; iodine-based compounds are an exception and most often do require interruption and/or cessation PET CT requires separation of the mother-baby dyad for 12 hours, but the milk itself is safe Diagnostic and screening mammography is safe <p><u>Resources</u></p> <ul style="list-style-type: none"> American College of Radiology 'ACR Manual on Contrast Media' Version 10.3 2017: Chapter 19, Administration of Contrast Media to Women who are Breast-Feeding, page 102-3 Nuclear Regulatory Commission Regulation of Nuclear Medicine 'Guide for Diagnostic Nuclear Medicine' Chapter 2.4.1: Radionuclides in Pregnancy and Breast-Feeding, page 4 The International Commission on Radiological Protection 'Radiation Dose to Patients from Radiopharmaceuticals' Addendum 3 to ICRP Publication 53. ICRP Publication 106, 2008: Annex D, Recommendations on Breast-feeding Interruptions Mettler, Fred: 'Essentials of Nuclear Medicine Imaging', 6th Edition, Appendix G: Pregnancy and Breastfeeding American College of Radiology, Imaging of Pregnant and Lactating Women 2018 	<p><u>General principles</u></p> <ul style="list-style-type: none"> Mothers with healthy term or older infants generally can resume breastfeeding as soon as they are awake, stable, and alert after anesthesia. Normal mentation indicates that medications have redistributed from the plasma and milk compartment. Opioids do transfer into breastmilk and may cause infant sedation or apnea, but judicious use for short periods is safe <ul style="list-style-type: none"> IV: Due to poor oral bioavailability, Morphine and hydromorphone (Dilaudid), are preferred over other opioids PO: Hydrocodone (Vicodin, Norco) is preferred Avoid tramadol and codeine. Some mothers are ultra-rapid metabolizers of these medications, increasing the risk of over-sedation of the infant <p><u>Resources</u></p> <ul style="list-style-type: none"> Academy of Breastfeeding Medicine Clinical Protocol #15: Analgesia and Anesthesia for the Breastfeeding Mother, Revised 2017: https://abm.memberclicks.net/assets/DOCUMENTS/PROTOCOLS/15-analgesia-and-anesthesia-protocol-english.pdf Food and Drug Administration Use of Codeine and Tramadol Products in Breastfeeding Women April 2017- https://www.fda.gov/Drugs/DrugSafety/ucm118113.htm

Cardiac Evaluation Prior to Chemo

- Consider echocardiogram as an alternative to nuclear medicine imaging (MUGA).
- When MUGA is performed, length of interruption varies depending on method of Tc-99m RBC labeling and dose administered (max interruption 12 hours)



Open Access Protocol at Bfmed.org

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ABM Protocol

ABM Clinical Protocol #31: Radiology and Nuclear Medicine Studies in Lactating Women

Katrina B. Mitchell,¹ Margaret M. Fleming,² Philip O. Anderson,³ Jamie G. Giesbrandt,⁴
and the Academy of Breastfeeding Medicine

Abstract

A central goal of the Academy of Breastfeeding Medicine is the development of clinical protocols for managing common medical problems that may impact breastfeeding success. These protocols serve only as guidelines for the care of breastfeeding mothers and infants and do not delineate an exclusive course of treatment or serve as standards of medical care. Variations in treatment may be appropriate according to the needs of an individual patient.

Introduction

BREASTFEEDING WOMEN MAY be required to undergo diagnostic imaging and/or nuclear medicine procedures at any point during lactation. Many women report being incorrectly instructed to discard (“pump and dump”) their breast milk or stop breastfeeding after procedures. We seek to provide guidelines and recommendations regarding the safety of common imaging and nuclear medicine procedures performed during lactation. Although the vast majority of circumstances do not require interruption of breastfeeding, certain exceptions do exist and will be reviewed. A summary of recommendations is provided in Table 1.

It should be noted that breastfeeding mothers involved in the care of patients undergoing nuclear medicine procedures and/or imaging studies and procedures should take standard precautions. However, due to the fact that these health care workers are not directly ingesting, inhaling, or receiving intravenous radiopharmaceuticals and/or contrast, no interruption in breastfeeding is required. Should a mother have an unexpected exposure, the institutional Radiology Safety Officer (RSO) should be contacted. Other sources for recommendations regarding unintended health care exposures include MotherToBaby.org and Infantrisk.com

Recommendations

Breast imaging

Several organizations, including the American College of Radiology (ACR), have made recommendations regarding breast imaging in pregnant and lactating women.^{1–11}

Screening. The ACR states that initiation or continuation of screening mammography should be considered dependent on the patient’s individual risk and expected duration of lactation. This includes average risk women of age ≥40 years as well as some intermediate- to high-risk women of age <40 years.

There is no contraindication to obtaining a mammogram during lactation. Nursing or expressing milk before mammography is recommended to decrease parenchymal density, thereby improving the sensitivity of mammography. Ultrasound may also be used as a supplemental screening modality in conjunction with mammography. The physiologic increased vascularity caused by lactation results in marked increase in background parenchymal enhancement of the breast on magnetic resonance imaging (MRI). For high-risk women breastfeeding for short periods of time, MRI should be performed 3 months after cessation of lactation. For high-risk women who plan to breastfeed for longer periods of time, MRI may be considered in addition to mammography for screening.

Diagnostic. Diagnostic breast imaging during lactation is the same as that for nonlactating women. For diagnostic evaluation of an area of palpable concern or persistent bloody nipple discharge, ultrasound is often the initial imaging modality. If ultrasound is either negative or demonstrates suspicious findings, additional imaging with mammography may be indicated.

Noncontrast enhanced radiographic imaging

The radiation associated with image acquisition in radiography has no effect on the breast milk itself. This includes plain

TABLE 1. COMMON NUCLEAR MEDICINE IMAGING AGENTS AND RECOMMENDATIONS FOR BREASTFEEDING

<i>Imaging agent</i>	<i>Breastfeeding interruption</i>
Noncontrast radiographs	No
Nonvascular administration of iodinated contrast	No
CT with iodinated intravenous contrast	No
MRI with gadolinium-based intravenous contrast	No
Nuclear medicine imaging	
PET	No
Bone scan	No
Thyroid imaging	
I-131	Cessation for this infant
I-123	Recommendations vary, up to 3 weeks
Technetium-99m pertechnetate	Up to 24 hours, depending on dose
Renal imaging	
Tc-99m DTPA	No ^a
Tc-99m MAG3	No ^a
Tc-99m DMSA	No ^a
Tc-99m glucoheptonate	No ^a
Cardiac imaging	
Tc-99m Sestamibi	No ^a
Tc-99m Tetrofosmin	No ^a
MUGA	
Tc-99m RBCs in vitro	No ^a
Tc-99m RBCs in vivo	Up to 12 hours, depending on dose
VQ scan	
Tc-99m MAA	12 hours
Breast imaging	
Screening or diagnostic mammography	No
Ultrasound	No
MRI with gadolinium-based intravenous contrast	No

^aThe International Atomic Energy Administration recommends withholding breastfeeding for 4 hours or one feeding to account for any external radiation and free Tc-99m pertechnetate in the product.

CT, computed tomography; MRI, magnetic resonance imaging; MUGA, multigated acquisition scan; Tc-99m MAA, technetium-99m macroaggregated albumin; PET, positron emission tomography; Tc-99m MAG3, technetium-99m mertiatide; Tc-99m DMSA, technetium-99m succimer; VQ, ventilation-perfusion.

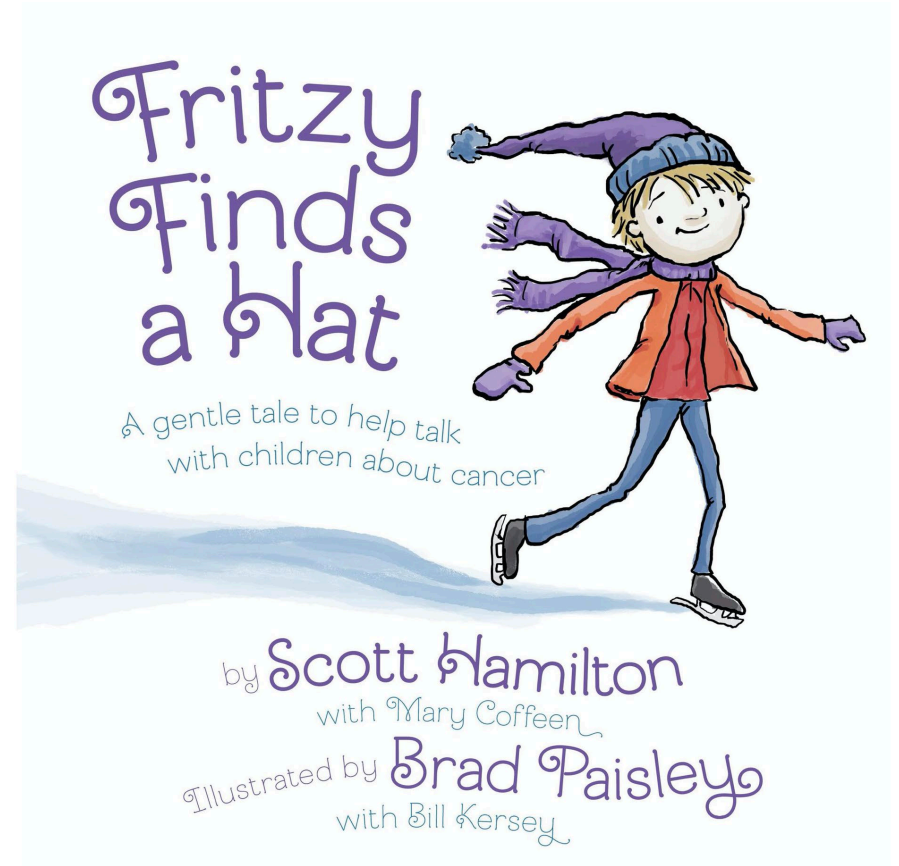
Chemotherapy and Breastfeeding

- No breastfeeding while receiving cytotoxic therapy for breast cancer
 - 2013 review demonstrates long-half life, high rate of transfer (including doxorubicin and cisplatin)
- Carboplatin and paclitaxel pass readily into breastmilk
- Infantile neutropenia after cyclophosphamide
- No human data on lactation and anti-HER2 but given in combo with chemo
 - Though low likelihood of monoclonal antibody excretion into breastmilk



Chemotherapy

- Patients may ask to express and discard milk to maintain production, and breastfeed in between cycles
 - Has been done with short chemo cycles for lymphoma
- Wait five serum half lives of agent with longest half life
- Consider
 - Risk for mastitis in setting of neutropenia
 - Whether baby will take breast intermittently q2-3 weeks and then return completely after months
 - Nipple trauma during these intermittent latch periods
 - Alterations of microbiome of breastmilk
 - Decrease in milk volume

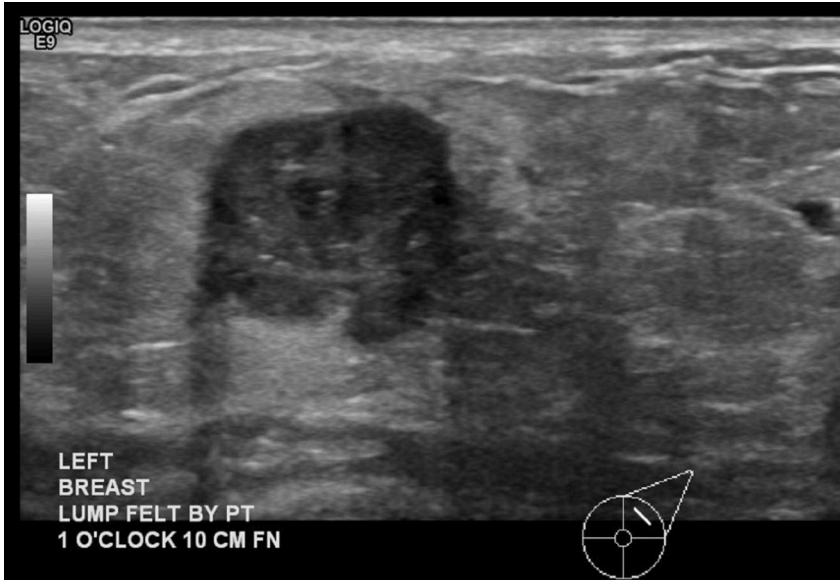


Questions as Agents Change

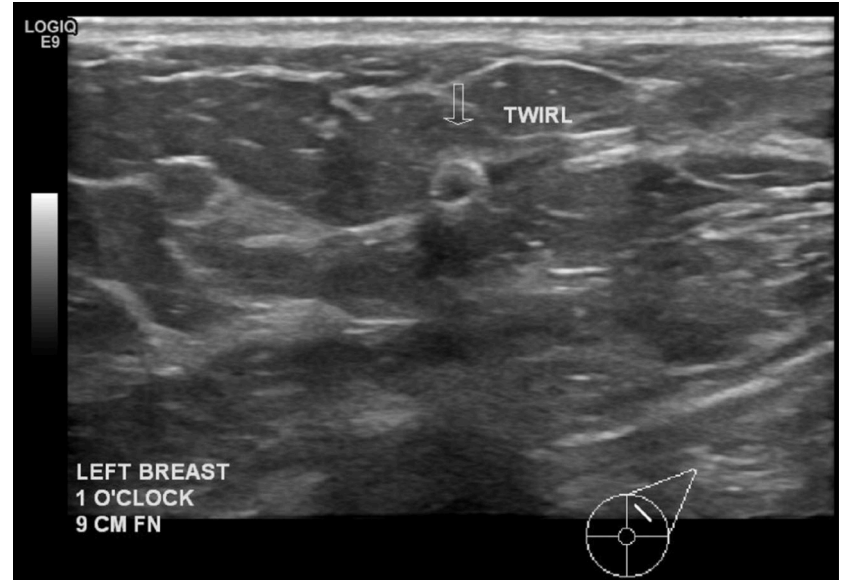
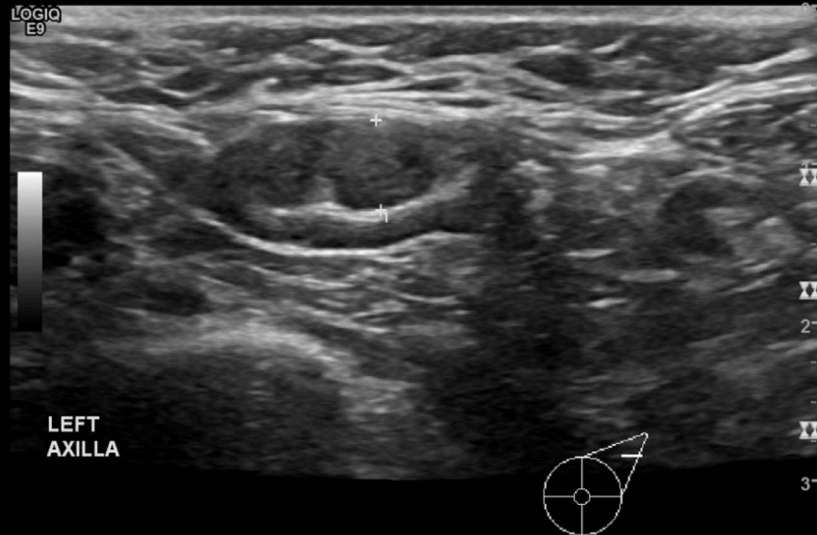
- LactMed
 - Phil Anderson, PharmD
 - Toxnet.nlm.nih.gov
- Texas Tech Infant Risk
 - Thomas Hale, PharmD
 - Infantrisk.com

The screenshot displays the LactMed website interface. At the top, the NIH U.S. National Library of Medicine logo is on the left, and the TOXNET TOXICOLOGY DATA NETWORK logo is on the right. Navigation links for Mobile, Help, FAQs, and TOXNET are in the top right. Below the header, the breadcrumb path reads 'TOXNET Home > LactMed'. A photograph of a woman holding a baby is on the left, with the text 'LactMed A TOXNET DATABASE' and 'Drugs and Lactation Database (LactMed)' to its right. The main content area features a search bar with the text 'e.g. sertraline, SSRIs' and a 'Search' button. Below the search bar are dropdown menus for 'Search Term' (set to 'singular/plural') and 'Records with' (set to 'all of the word:'), along with a checked checkbox for 'Include Synonyms and CAS Numbers in Search'. Two informational boxes are present: 'About LactMed' which explains the database's purpose, and 'Did you know' which includes a question mark icon and the text 'How do I obtain the full TOXNET dataset?'. Below these boxes is a dark banner for the 'InfantRisk Center' at 'TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER'. A navigation menu below the banner includes links for Home, Pregnancy, Breastfeeding, Dr. Hale's Blog, Research, Forums, Apps, and Support the InfantRisk Center. The bottom of the page features a large image of a group of women and a red banner with the text 'The world's leading research center for medication safety during pregnancy and lactation.'

Neoadjuvant Chemo



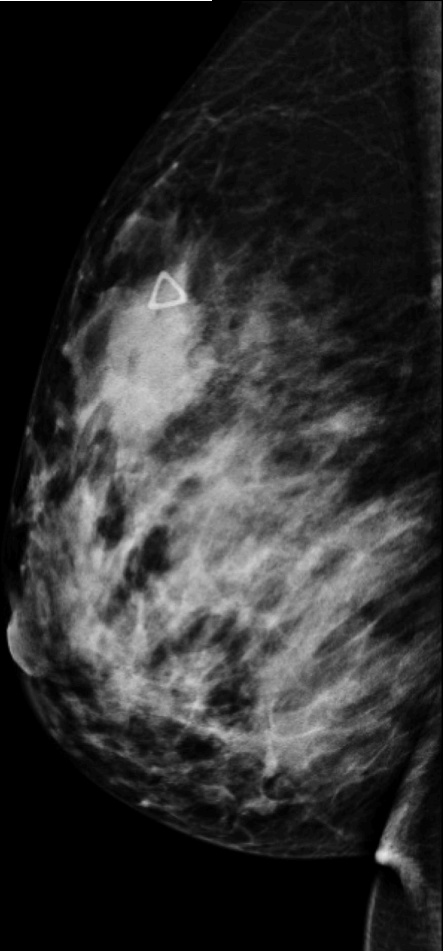
L 0.57 cm



Pre and Post NAC

RML

RLM



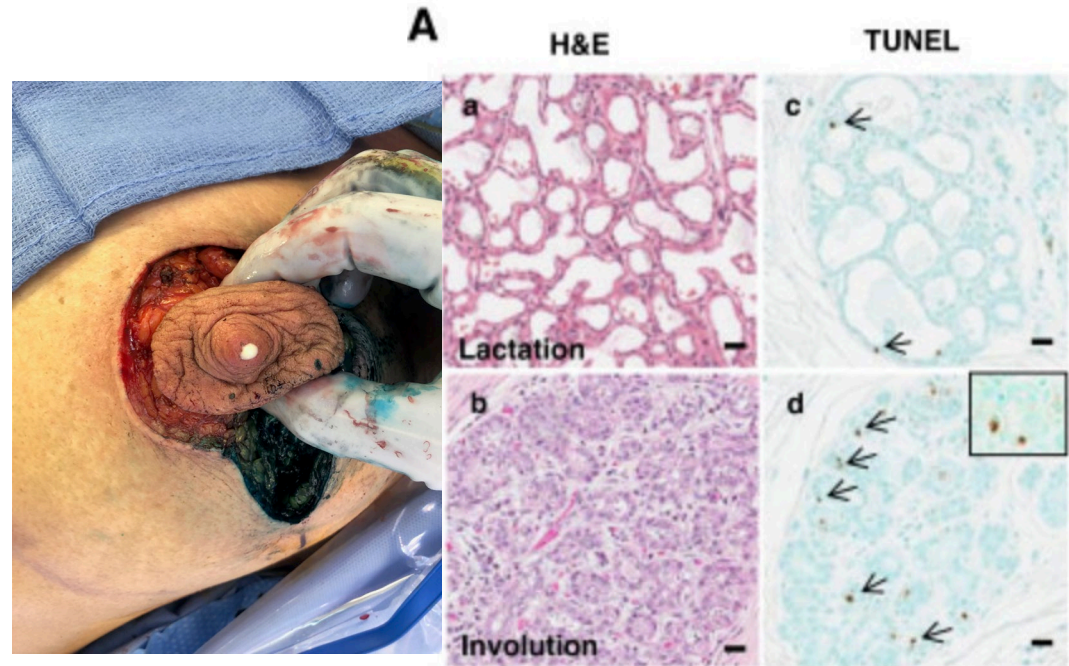
Surgery

- PABC cohort from MD Anderson: overall wound complication rate of 9%, consistent with rates in general population
- No milk fistula
- Total versus partial mastectomy no difference in complication rates
- No need for additional antibiotic prophylaxis; it is likely vascular breast and antimicrobial components confer natural protection



Surgery: When to Operate

- Involution well studied in mouse models
- Most women report minimal milk production a few weeks after weaning and high levels epithelial apoptosis observed six weeks after weaning
- Human mammary involution not complete until 12-18 months after weaning
- No surgery delayed due to these theoretical concerns



Surgery: Overall Recommendation

- Mastectomy = feed contralateral
- Partial = likely to need RT = feed contralateral and wean affected



Axillary Staging



- No data on transfer of vital dyes such as methylene blue or isosulfan blue into breastmilk, nor on bioavailability
- ? 24 hour interruption of methylene blue after IV but not intradermal recommendations exist
- Life threatening neonatal toxicity from enteral administration of methylene blue
- No data on intradermal injection of radiotracers from sentinel lymph node biopsy
- Some societies suggest 0-12 hours after IV technetium-99 radiotracers, so 24 hour interruption fits well within clinical scenario

CPM

- NCCN recommends CPM vs. high-risk imaging surveillance for high-risk patients
- Consider delaying CPM until childbearing complete
- Cochrane review concluded that while CPM decreases incidence of breast cancer, insufficient evidence exists whether this translates to survival benefit
- CPM increases risk of surgical complications
- Unknown whether future breastfeeding and chemoprevention reduces risk more than CPM



Perioperative Considerations

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ABM Protocol

- Perioperative lactation support program modeled by MSKCC
- ABM outlines recommendations for individualized perioperative lactation plans
- Appropriate medication selection, judicious fluid management, allowing for nursing or expressing milk in recovery room minimizes mastitis and unnecessary interruptions in lactation

ABM Clinical Protocol #15: Analgesia and Anesthesia for the Breastfeeding Mother, Revised 2017

Sarah Reece-Stremtan,¹ Matilde Campos,² Lauren Kokajko,¹ and The Academy of Breastfeeding Medicine

A central goal of The Academy of Breastfeeding Medicine is the development of clinical protocols, free from commercial interest or influence, for managing common medical problems that may impact breastfeeding success. These protocols serve only as guidelines for the care of breastfeeding mothers and infants and do not delineate an exclusive course of treatment or serve as standards of medical care. Variations in treatment may be appropriate according to the needs of an individual patient.



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For Adult Patients | For Child & Teen Patients | For Healthcare Professionals | For Research Scientist

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Preparing for Your Surgery or Procedure While You're Breastfeeding or Lactating



This information will help you prepare for your surgery or procedure at Memorial Sloan Kettering (MSK) while you're breastfeeding or lactating.

Open Access Protocol at Bfmed.org

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ABM Clinical Protocol #35: Supporting Breastfeeding During Maternal or Child Hospitalization

Melissa Bartick, MD, MS¹ Maria Teresa Hernández-Aguilar, MD, MPH, PhD,² Nancy Wight, MD,³
Katrina B. Mitchell, MD,⁴ Liliana Simon, MD, MS,⁵ Lauren Hanley, MD,⁶
Samantha Meltzer-Brody, MD, MPH,⁷ and Robert M. Lawrence, MD⁸;
and the Academy of Breastfeeding Medicine

A central goal of the Academy of Breastfeeding Medicine is the development of clinical protocols for managing common medical problems that may impact breastfeeding success. These protocols serve only as guidelines for the care of breastfeeding mothers and infants and do not delineate an exclusive course of treatment or serve as standards of medical care. Variations in treatment may be appropriate according to the needs of an individual patient. The Academy of Breastfeeding Medicine recognizes that not all lactating individuals identify as female. Using gender-inclusive language, however, is not possible in all languages and all countries and for all readers. The position of the Academy of Breastfeeding Medicine (<https://doi.org/10.1089/bfm.2021.29188.abm>) is to interpret clinical protocols within the framework of inclusivity of all breastfeeding, chestfeeding, and human milk-feeding individuals.

Introduction

LACTATING MOTHERS OR BREASTFEEDING INFANTS and children may require hospitalization for medical or surgical reasons, either at birth or later in an infant's life, and lactating mothers may sometimes require psychiatric hospitalization. Unfortunately, hospitalization of a breastfeeding mother or child can result in disruption of breastfeeding and unintended weaning,^{1–3} as well as other complications such as mastitis.⁴ However, few formal guidelines exist for management of lactation during hospitalization.^{2–11} This protocol outlines recommended care for the hospitalized lactating mother and breastfeeding child, and serves to set the standards to implement these model policies.

Staff outside of obstetric, pediatric, or neonatal units may have limited experience caring for lactating mothers and may have limited knowledge of lactation physiology or management. Furthermore, they may not understand the short-term and long-term risks of disruptions to lactation.^{4,12–14} Inadequately trained staff may substitute their own experiences around breastfeeding for evidence-based practices.⁵ In addition, the presence of a breastfeeding

infant or young child on an inpatient adult medical or surgical unit, perioperative area, or intensive care unit (ICU) may prompt concern for the child's safety and may raise questions regarding hospital liability. Management of breastfeeding with respect to medications, procedures, and fluids may also require special attention. Finally, staff may be unfamiliar with how to best assess a breastfeeding mother's own desires for initiating or continuing lactation, and how to best help her meet those needs through shared decision making.¹⁵

ABM Protocols #7 (Model Maternity Policy to Support Breastfeeding),¹⁶ #15 (Analgesia and Anesthesia for the Breastfeeding Mother),¹⁷ #25 (Preprocedural Fasting for the Breastfeeding Infant),¹⁸ and #31 (Radiology and Nuclear Medicine for the Breastfeeding Mother)¹⁹ may serve as useful adjuncts to this protocol.

Background

Breastfeeding is the biologically normative way to feed human infants. Risks of early cessation of breastfeeding include increased infectious and chronic diseases in children,

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⁴Breast Surgical Oncology, Ridley Tree Cancer Center at Sansum Clinic, Santa Barbara, California, USA.

⁵Department of Pediatrics, University of Maryland School of Medicine, Baltimore, Maryland, USA.

⁶Department of Psychiatry, UNC Center for Mood Disorders, University of North Carolina Chapel Hill School of Medicine, Chapel Hill, North Carolina, USA.

⁷Department of Obstetrics and Gynecology, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA.

⁸Division of Pediatric Infectious Disease, Department of Pediatrics, University of Florida, Gainesville, Florida, USA.

Radiation Therapy

- Fields restricted to affected breast only
- Histopathologic changes, NAC and skin changes, changes in content of milk as above
- Likely increased risk of wound complications including abscess and fistula
- ? Partial breast radiation (still not advised)
- Feed contralateral breast



Endocrine Therapy

- Nuanced discussion if patient still breastfeeding at time of completion of above therapy
- AI's transfer into breastmilk and suppress estrogen formation in infant
- No data on tamoxifen transfer in breastmilk
 - Tamoxifen inhibits lactogenesis II but unknown effect on established milk production
- European Society of Breast Cancer Specialists allows tamoxifen to be interrupted for pregnancy and/or breastfeeding
- POSITIVE enrolled 500 women ages 18-42 who completed 18-30 months endocrine therapy with interruption of up to two years for pregnancy and breastfeeding



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The Breast

journal homepage: www.elsevier.com/brst



Who are the women who enrolled in the POSITIVE trial: A global study to support young hormone receptor positive breast cancer survivors desiring pregnancy[☆]



Ann H. Partridge^{a,*}, Samuel M. Niman^b, Monica Ruggeri^c, Fedro A. Peccatori^d, Hatem A. Azim Jr.^e, Marco Colleoni^f, Cristina Saura^g, Chikako Shimizu^h, Anna Barbro Sætersdalⁱ, Judith R. Kroep^j, Audrey Mailliez^k, Ellen Warner^l, Virginia F. Borges^m, Frédéric Amant^{n,o}, Andrea Gombos^p, Akemi Kataoka^q, Christine Rousset-Jablonski^r, Simona Borstnar^s, Junko Takei^t, Jeong Eon Lee^u, Janice M. Walsh^v, Manuel Ruíz Borrego^w, Halle CF. Moore^x, Christobel Saunders^y, Fatima Cardoso^z, Snezana Susnjak^{aa}, Vesna Bjelic-Radicic^{ab,ac}, Karen L. Smith^{ad}, Martine Piccart^p, Larissa A. Korde^{ae}, Aron Goldhirsch^{af}, Richard D. Gelber^{ag}, Olivia Pagani^{ah,**}

Physical Exam and/or Imaging for Surveillance for Recurrence









Additional Considerations

Baby's Needs: Donor Human Milk



Thank you for your interest in donating your extra breast milk to a HMBANA member milk bank. To begin the process, please review our list of 27 member milk banks and their locations, and then call the one that is most convenient for you. Milk bank staff will guide you through the screening process.

Once approved, you can then drop off your precious donation at a milk depot site or use overnight shipping at no cost to you. Your milk bank doesn't have to be in your home state, as many work regionally and nationally.

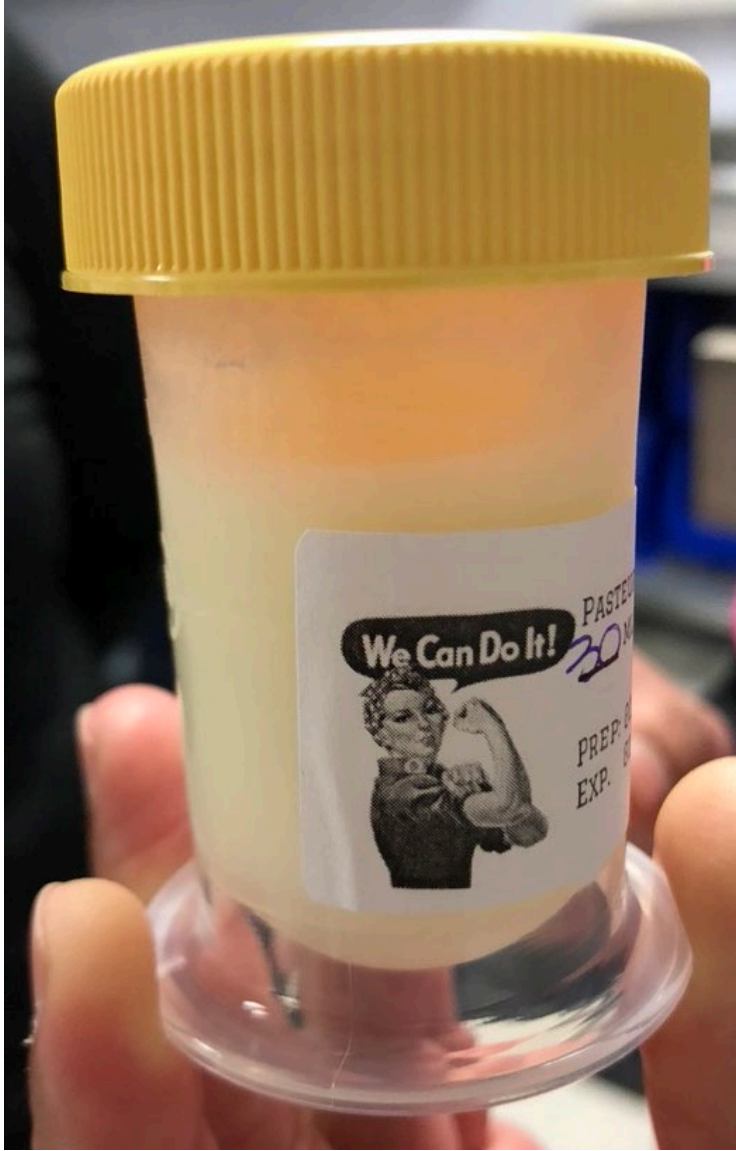
Likewise, if you are interested in receiving donor milk, please review the list below and contact the HMBANA member milk bank that is most convenient for you.

There are milk banks through out the world. The [European Milk Bank Association](#) lists member milk banks in their region and [PATH's resources](#) page lists other regional associations.

HMBANA member milk banks can be seen in a [larger map](#). Click on a map pin or browse the list below for each milk bank's particulars.

HMBANA believes in a world where all infants have access to human milk through support of breastfeeding and use of pasteurized donor human milk.





Academy of Breastfeeding Medicine's 2017 Position Statement on Informal Breast Milk Sharing for the Term Healthy Infant

Natasha K. Sriraman,¹ Amy E. Evans,² Robert Lawrence,³ Lawrence Noble,⁴
and the Academy of Breastfeeding Medicine's Board of Directors

Conclusions

Educated healthcare providers are well positioned to help mothers and families make informed choices about infant nutrition. ABM recognizes that informal milk sharing is an increasingly common practice with potential health benefits for the term healthy infant, but encourages adherence to these guidelines to reduce risk and make milk sharing as safe as possible. By following these recommendations on (1) medical screening of the donor and (2) safe milk handling practices, ABM provides practical guidance to providers regarding informal breast milk sharing to help patients and families make informed choices.

Internet-based breast milk sharing, and especially the purchase of milk over the internet, is strongly discouraged since (1) the donors are unknown to the recipient and/or cannot be medically screened and (2) the milk is often not suitable for consumption upon arrival.

Informal Milk Sharing



GLOBAL, HEALTH, NATIONAL

Is Online Breastfeeding a New Thing? How the Pandemic is Changing Everything and Nothing

1/26/2021 by **CORINNE BOTZ** and **MATHILDE COHEN**

If the 2000s were the decade of the “brelfie”—carefully curated breastfeeding selfies posted on social media—2020 could be dubbed the year of “laczoom,” to connote the different ways in which people expose their lactation online.





ABM Clinical Protocol #34: Breast Cancer and Breastfeeding

Helen M. Johnson, MD,¹ Katrina B. Mitchell, MD,² and the Academy of Breastfeeding Medicine

Abstract

A central goal of The Academy of Breastfeeding Medicine is the development of clinical protocols for managing common medical problems that may impact breastfeeding success. These protocols serve only as guidelines for the care of breastfeeding mothers and infants and do not delineate an exclusive course of treatment or serve as standards of medical care. Variations in treatment may be appropriate according to the needs of an individual patient.

Background

BREAST CANCER is the most common malignancy in women worldwide, with 1 in 20 women developing the disease during her lifetime.¹ It represents the leading cause of cancer deaths and disability-adjusted life-years among women.¹ In addition, breast cancer imparts significant morbidity to women and children through its impacts on breastfeeding.

Breast cancer treatments may affect breastfeeding in multiple ways. Breastfeeding women diagnosed with breast cancer may require medications or therapies that decrease milk production or are contraindicated during lactation. Women treated for breast cancer before or during pregnancy may have reduced lactational capacity due to surgical removal of breast tissue and/or irreversible effects of prior therapies. Given these unique challenges and the multitude of health risks associated with not breastfeeding,² women with a new or remote breast cancer diagnosis require unique support of lactation.

The aim of this protocol is to guide clinicians in the delivery of optimal care of breastfeeding women as it relates to breast cancer, from screening to diagnosis, treatment, and survivorship. Throughout this protocol, the quality of evidence, based on the Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence³ (Levels 1–5), is noted in parentheses.

Recommendations

Screening breastfeeding women for breast cancer

Limited evidence exists regarding breast cancer screening in the breastfeeding population (Box 1). The American College of Radiology recommends continuation of routine screening depending on the anticipated duration of breastfeeding and the individual's lifetime risk of breast cancer⁴ (Level 4). However, guidelines for routine breast cancer screening of nonlactating women vary between nations, and

controversy exists regarding screening eligibility, method, and interval⁵ (Level 1).

Expert consensus guidelines have been published for breast cancer screening of breastfeeding women at increased risk of breast cancer due to deleterious *BRCA* mutations⁶ (Level 4). These guidelines advise that women planning to breastfeed for at least 6 months continue routine screening, whereas those anticipating a shorter duration of breastfeeding may elect to defer mammography and/or magnetic resonance imaging (MRI) until 6 to 8 weeks after weaning.

Mammography, breast ultrasonography, and contrast-enhanced breast MRI are safe during lactation⁷ (Level 4). Lactating breasts have several physiologic differences relative to nonlactating breasts that impact their radiographic appearance: these include hypervascularity, dense parenchyma, and dilated lactiferous ducts containing residual breast milk⁸ (Level 4). Such differences may make interpretation of screening studies more challenging and increase the risk of false-positive results, thereby requiring additional imaging studies and biopsies⁷ (Level 4).

Breastfeeding or expressing breast milk immediately before the imaging examination reduces these differences and facilitates detection of abnormalities⁹ (Level 4). Utilization of supplemental imaging modalities can further optimize breast cancer screening in this population. Specifically, ultrasonography may offer the highest sensitivity⁹ (Level 4) and digital breast tomosynthesis (“3D mammography”) may be superior to conventional mammography⁴ (Level 4).

Breastfeeding management in women with a history of breast cancer

As breast cancer treatments may reduce lactational capacity, women with a history of breast cancer who would like



ORIGINAL ARTICLE – BREAST ONCOLOGY

Breastfeeding and Breast Cancer: Managing Lactation in Survivors and Women with a New Diagnosis

Helen M. Johnson, MD¹, and Katrina B. Mitchell, MD²

¹Department of Surgery, Brody School of Medicine, East Carolina University, Greenville, NC; ²Breast Surgical Oncology, Presbyterian Healthcare Services – MD Anderson Cancer Network, Albuquerque, NM

TABLE 1 Major sources, with levels of evidence, for key recommendations for lactation management strategies during multidisciplinary breast cancer care

	Recommendation	Source	Level of evidence
General considerations	Breastfeeding is protective against breast cancer, independent of the effect of parity on cancer risk	Collaborative Group on Hormonal Factors in Breast Cancer ²	Meta-analysis
Imaging	Ultrasound should be the first-line imaging modality for lactating women with a breast mass	diFlorio-Alexander et al. ³⁴	Expert consensus guidelines
	Lactation-related changes on breast magnetic resonance imaging do not preclude detection of breast lesions	Espinosa et al. ³⁹ Oh et al. ⁴⁰	Retrospective descriptive studies
Breast conservation therapy (BCT): lumpectomy and radiation	BCT impairs future lactational ability in most women, via both anatomic and histopathologic effects	Leal et al. ¹⁷	Systematic review
Chemotherapy	Breastfeeding is contraindicated during chemotherapy, with rare exceptions	Pistilli et al. ⁴⁴	Narrative review
	It may be possible to safely breastfeed between cycles in some cases	Anderson ⁴⁹	Expert opinion
	Breastfeeding success may be diminished in women who receive chemotherapy during pregnancy	Stopenki et al. ²⁴	Prospective cohort study
Endocrine therapy	Aromatase inhibitors are contraindicated in lactation	The InfantRisk Center ²⁵	Expert opinion
	It may be safe to defer or interrupt tamoxifen therapy to complete breastfeeding	Cardoso et al. ²⁸ POSITIVE trial (NCT02308085) https://clinicaltrials.gov	Expert consensus guidelines Randomized clinical trial (in recruitment phase)
Radiation therapy (RT)	Breastfeeding during RT may increase the risk of skin toxicity	Shachar et al. ⁶⁴	Expert opinion
	Irradiated breasts may produce milk with altered biochemical composition	Green ²² Guix et al. ²³	Case report Case report
Surgery	A full milk supply can be achieved and maintained by a single breast	Michaels and Wanner ¹⁵	Observation
	Lactating women undergoing breast surgery appear to have similar risks of wound complications as nonlactating women	Dominici et al. ⁵²	Retrospective cohort study
	An interruption in breastfeeding of up to 24 h may be advisable after dual-tracer sentinel lymph node biopsy	The InfantRisk Center ²⁵ Giammarile et al. ⁵⁷	Expert opinion Expert consensus guidelines
	Patients may benefit from perioperative lactation support programs	Rieth et al. ⁶²	Retrospective descriptive study

¹Department of Surgery, Brody School of Medicine, East Carolina University, Greenville, North Carolina, USA.

²Surgical Oncology, Ridley Tree Cancer Center at Sansum Clinic, Santa Barbara, California, USA.

Just a Note – IBC, Not Mastitis!





Additional Considerations: Perinatal Mental Health

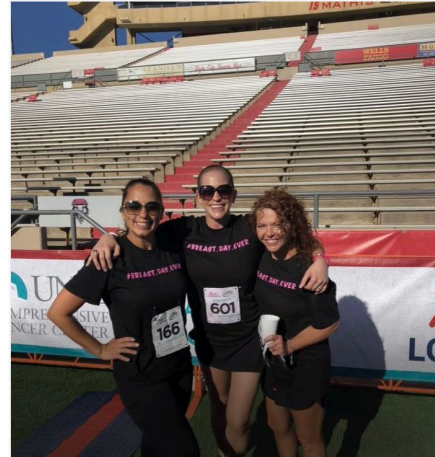
- Rapid drop in estrogen/progesterone = concurrent drop in serotonin
- Perinatal Mood and Anxiety Disorders (PMADs) most common complication of pregnancy and childbirth
- Affects at least 20% of women and 1/10 partners



Multidisciplinary Care

- MFM
- Peds/neonatologist
- IBCLC
- Onco-fertility
- Genetics
- Nutritionist
- Clinical Trials (POSITIVE)
- Oncology psych, SW
- Patient support groups

About Pink Warrior House Foundation



Our Team

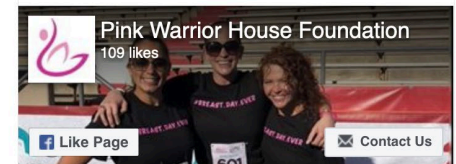
From our President and Founder, Allison Hendricks – Smith: “I am a postpartum breast cancer survivor and was saddened during the duration of my year-long treatment journey to realize that we have little to no supports in place for those fighting breast cancer here in Bernalillo County.

While our medical treatment options are quite strong, they do so very little to address the mental, emotional, and social needs that arise during this journey for the patient and their caregiver(s). The very few services that are available to those who receive care at that facility. Pink Warrior House was born out of my realization that we can, and should, be better about supporting those going through this difficult fight. “



Fundraising

Pink Warrior House received our 501(C)-3 nonprofit status in May 2019. We are currently raising start-up capital to solidify our program services, purchase materials for our welcome bags (this will be our initial introduction to all patients), recruit practitioners and volunteers, and begin to heighten awareness about our services throughout the community.



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image

By Diana Cervantes/@dee_sea_ Published 12 hours ago



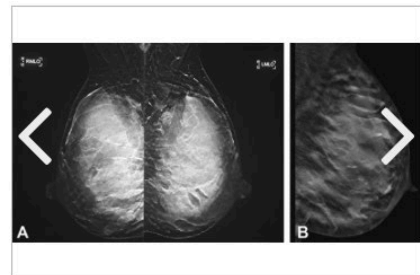
Diana Cervantes/@dee_sea_ · New Mexico Daily Lobo
Becker Mitchell, 2, holds a sign during Sunday's women's march at the Civic Plaza.

Breast
Cancer
Screening
During
Pregnancy
and
Lactation?



Breast Cancer Screening During Lactation: Ensuring Optimal Surveillance for Breastfeeding Women

Breastfeeding women may benefit from specific strategies to optimize detection of postpartum breast cancer through routine, age-appropriate,...



Refining Angular Pregnancy Diagnosis in the First Trimester: A Case Series of Expectant Management



Minimally Invasive Surgery in Morbidly Obese Women



Breast Cancer Screening During Lactation: Ensuring Optimal Surveillance for Breastfeeding Women



Mifepristone Antagonization With Progesterone to Prevent Medical Abortion: A Randomized Controlled Trial



Persistent Opioid Use in the United States



Instructions

Current Commentary

Breast Cancer Screening During Lactation
Ensuring Optimal Surveillance for Breastfeeding Women

Helen M. Johnson, MD, Tiffany C. Lewis, DO, and Katrina B. Mitchell, MD

Breast cancer is the most common malignancy among reproductive-aged women, and an increasing number of women are breastfeeding at the time of screening initiation. The literature was reviewed to identify evidence-based guidelines for breast cancer screening during lactation. Health care providers should consider routine age-related or high-risk screening; they should also discuss alternate surveillance strategies, including deferment until cessation of breastfeeding. Shared decision-making and individualized patient care should involve consideration of the limitations of current evidence. Lactation-related radiographic changes may make examination interpretation more challenging; preprocedure milk expression and use of particular supplemental imaging modalities can improve examination sensitivity. Despite these strategies, breastfeeding women may have higher rates of false-positive findings and therefore undergo more biopsies. However, given the increased risk of biologically aggressive breast cancers in postpartum women, these risks may be outweighed by the benefits of routine breast cancer screening for breastfeeding women.

(*Obstet Gynecol* 2019;00:1-5)

DOI: 10.1097/AOG.0000000000003600

cancer screening. Although it is clear that lactating women with a breast mass or persistent breast concerns should undergo diagnostic breast imaging,² more questions are arising regarding appropriate breast cancer screening in this population.

Few established guidelines for breast cancer screening in the setting of lactation exist. The American College of Radiology recently published guidelines for breast imaging in pregnant and lactating women,³ including the recommendation that breastfeeding women be offered routine breast cancer screening depending on the individual's risk of malignancy and the anticipated duration of lactation. However, breast cancer screening recommendations vary among different national and specialty-specific societies.⁴⁻¹⁰ Some, such as the American College of Radiology, advise that women be stratified into groups based on lifetime risk of breast cancer and offer specific recommendations for each group with regard to timing of screening initiation, screening frequency, and screening modalities.⁴ Several organizations recommend that

YES!

**American College of Radiology
ACR Appropriateness Criteria®
Breast Imaging of Pregnant and Lactating Women**

Variant 1: Breast cancer screening during lactation. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
Digital breast tomosynthesis screening	Usually Appropriate	☼☼
Mammography screening	Usually Appropriate	☼☼
US breast	May Be Appropriate	○
MRI breast without and with IV contrast	Usually Not Appropriate	○
MRI breast without IV contrast	Usually Not Appropriate	○
Tc-99m sestamibi MBI	Usually Not Appropriate	☼☼☼

Variant 2: Breast cancer screening during pregnancy. Age younger than 30 at high risk. Initial imaging.

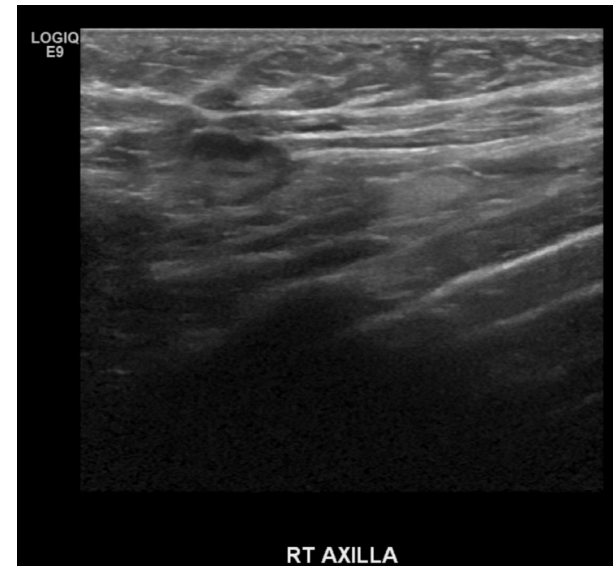
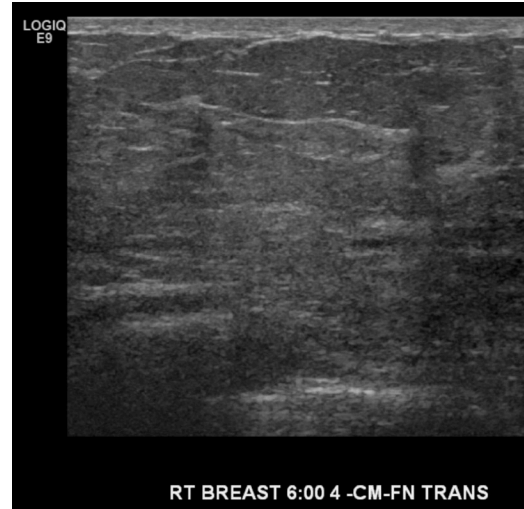
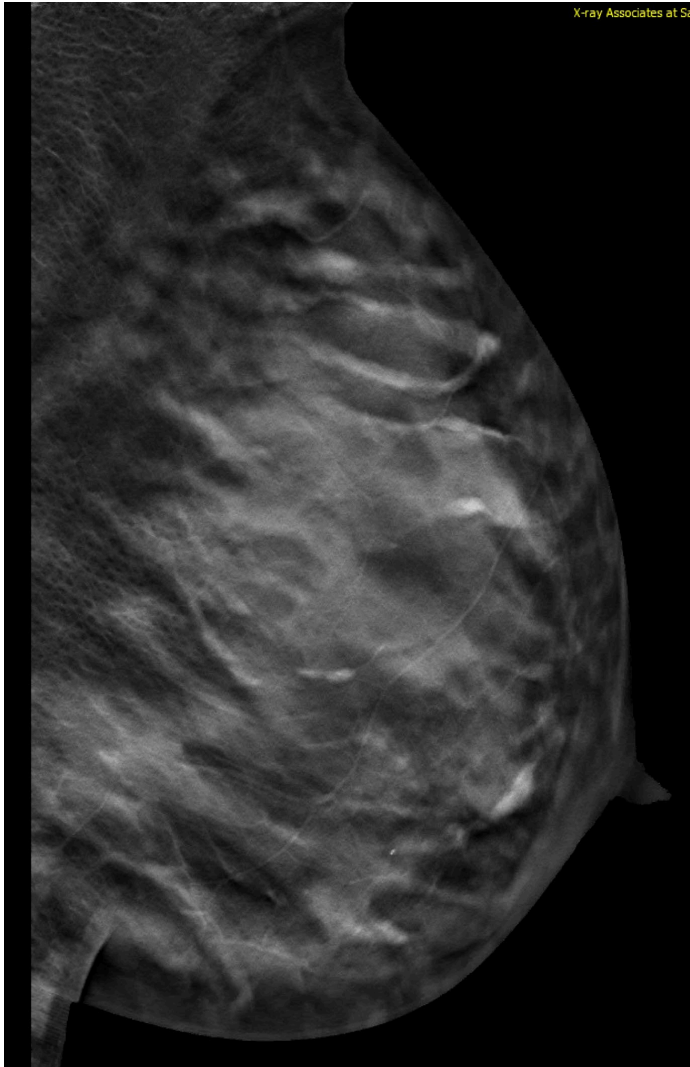
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MRI breast without IV contrast	Usually Not Appropriate	○
Tc-99m sestamibi MBI	Usually Not Appropriate	☼☼☼

Variant 3: Breast cancer screening during pregnancy. Age 30 to 39 years at elevated risk (intermediate or high risk). Initial imaging.

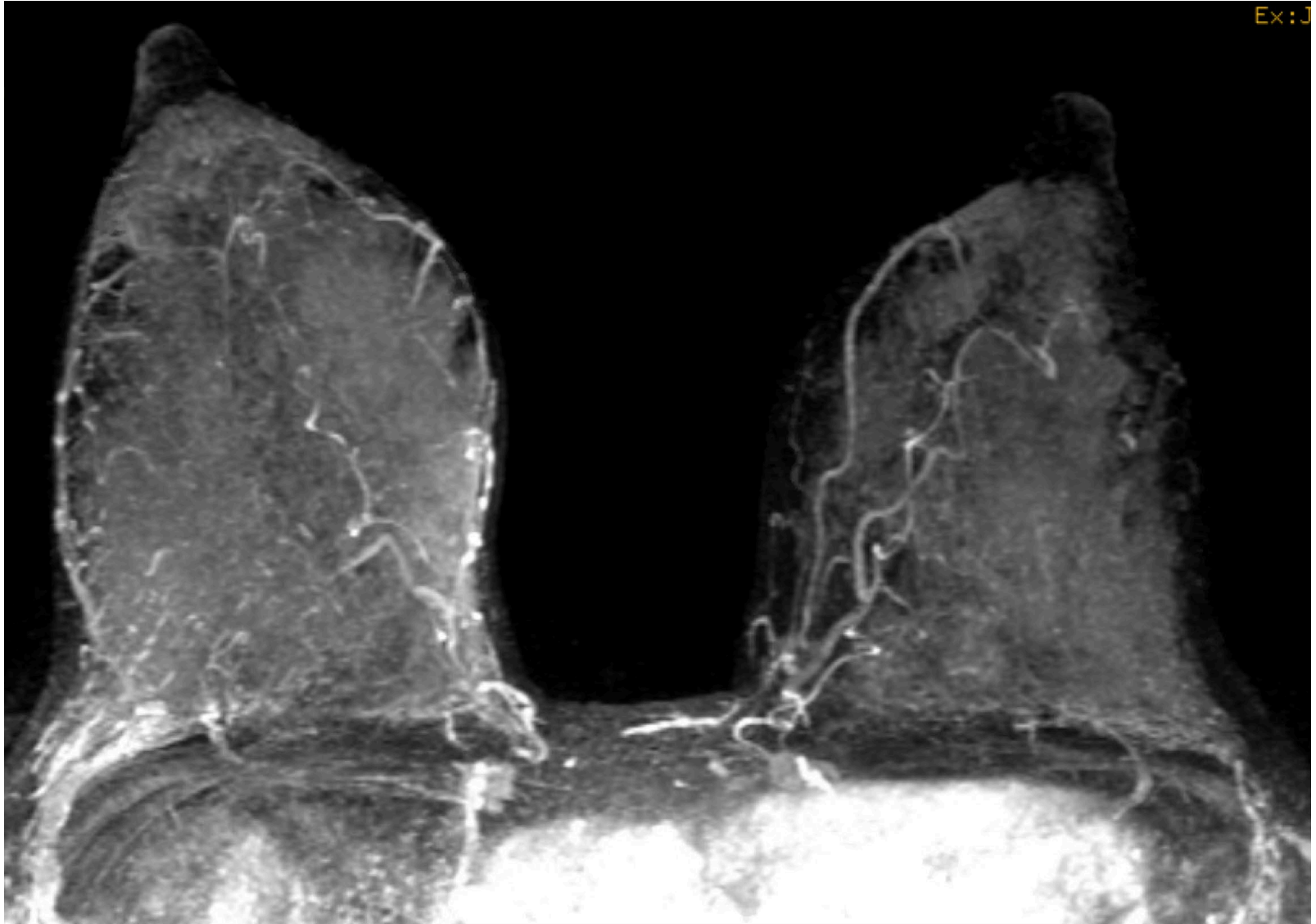
Procedure	Appropriateness Category	Relative Radiation Level
Digital breast tomosynthesis screening	Usually Appropriate	☼☼
Mammography screening	Usually Appropriate	☼☼
US breast	May Be Appropriate	○
MRI breast without and with IV contrast	Usually Not Appropriate	○
MRI breast without IV contrast	Usually Not Appropriate	○
Tc-99m sestamibi MBI	Usually Not Appropriate	☼☼☼

- Screening MMG or DBT +/- ultrasound
 - Under age 30 and high risk
 - 30-39 intermediate to high risk
 - 40 and over average risk
- Consider MRI in high risk lactating (not pregnant) patients on case-by-case basis

Q6 Month Screens in 30 year old BRCA I



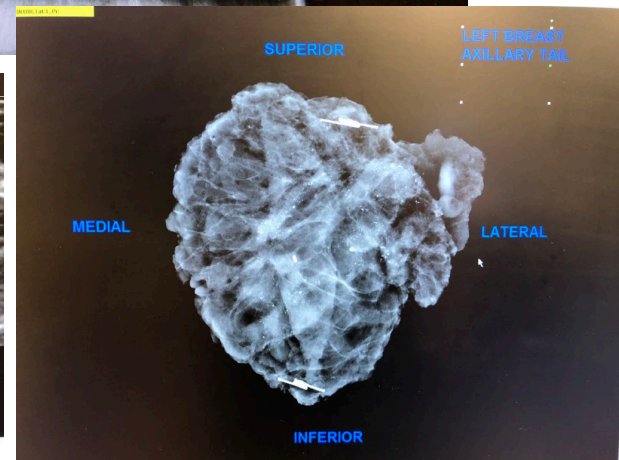
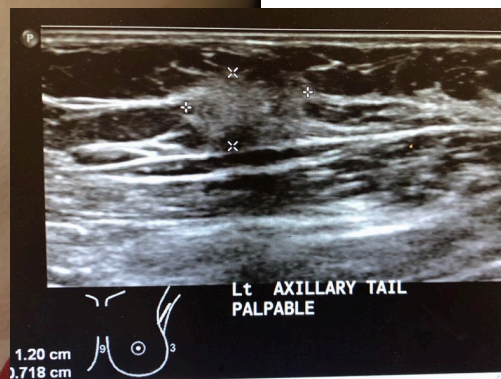
BRCA I Hypervascularity at 10 Months PP



Screen Significant Axillary Tissue

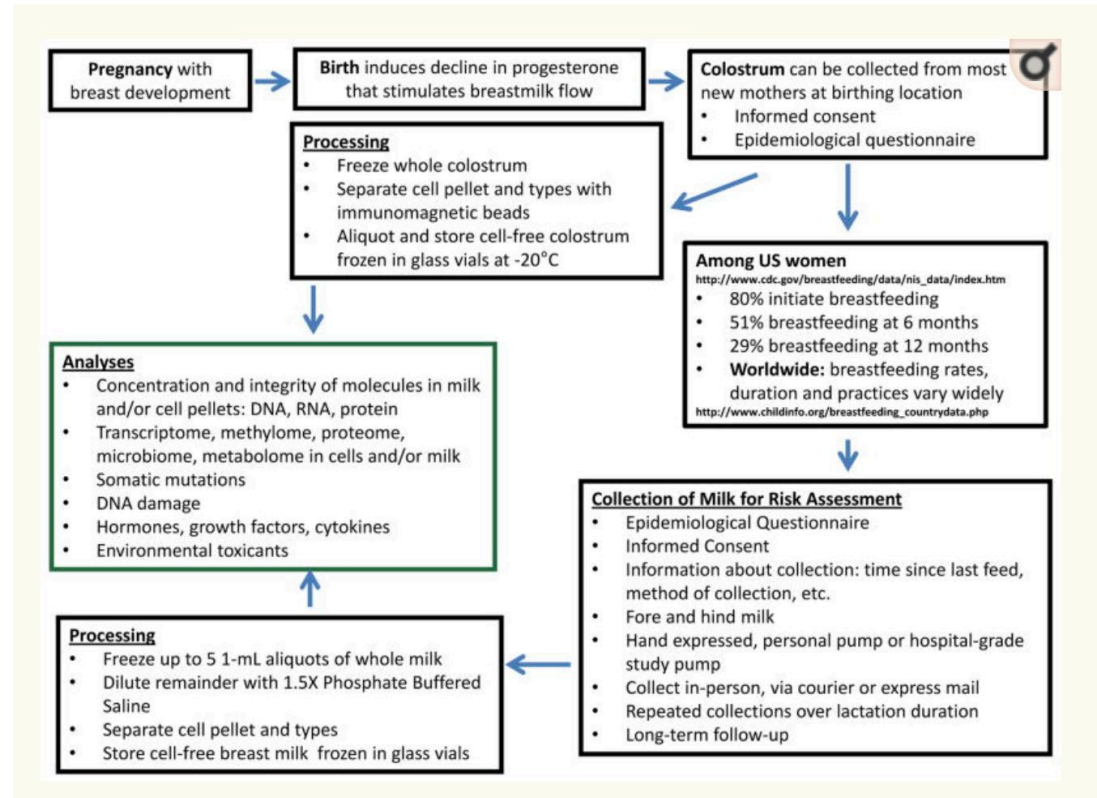


Breast Cancer in Accessory NAC



Breastmilk as a Biospecimen

- Potential of breastmilk analysis to inform early events in breast carcinogenesis



Noninvasive Assessment of Lactating Breasts Using Somatic Mutations and DNA Methylation as a Pre-symptomatic Test for *BRCA* Breast Cancer



Study Overview

- Participants contact UMass Breastmilk lab and we provide a prepaid FedEx package and instructions for mailing a milk sample from each breast, a saliva sample, and a copy of their *BRCA* test results
- We assess mutations and DNA methylation in the sloughed epithelial cells in the milk

Recruiting two groups of women

- Breastfeeding women with a germline mutation in a *BRCA* gene
- Breastfeeding women scheduled for a breast biopsy or recently diagnosed with breast cancer regardless of *BRCA* status

Kathleen Arcaro, PhD

University of Massachusetts Amherst

karcaro@umass.edu (413) 577-1823

<http://www.BreastmilkResearch.org>

Take Home Points

- Surgery, chemo safe in pregnancy after 1st trimester (1st trimester surgery weigh risk/benefit)
- Hold chemo week 35/36 and re-start 3 weeks after delivery
 - Can breastfeed baby until chemo resumes
- No radiation, no anti-HER2, no endocrine during pregnancy
- Postpartum breast cancer a distinct clinical entity from those cancers that develop DURING pregnancy
 - Breastfeeding management requires nuanced, multidisciplinary care
- MMG/ultrasound safe in both pregnancy and lactation; no MRI in pregnancy
- Staging studies safe in lactation but no PET CT or bone scan in pregnancy; use alternatives

