

Beyond the Screening Mammogram: Multimodality Approach to Dense Breasts

ALLISON ZUPON, MD
IMAGING FOR WOMEN

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Disclosures

- ▶ ABUS Mastery Educator, GE Healthcare

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Objectives:

1. Identify supplemental imaging techniques based on patient risk assessments
2. Describe strategies for personalized breast care
3. Explain contrast-enhanced mammography and ABUS utilization

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What is our role as Breast Imagers?

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We serve the patients and their doctors

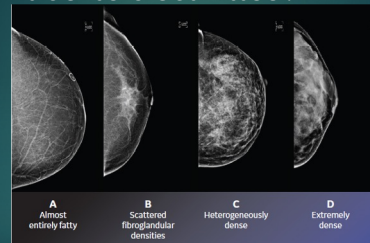
- ▶ Not hiding in a dark room
- ▶ Educating our referring providers
- ▶ Providing guidance for our patients
- ▶ We are the expert voice for breast imaging guidelines

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Is a mammogram enough?

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What is dense breast tissue?



Source: American College of Radiology (ACR) Breast Imaging Reporting and Data System Atlas (BIRADS Atlas), Reston, VA: American College of Radiology; 2018. BIRADS is a trademark of the American College of Radiology.

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And Why Does It Matter?

- Independent risk factor for breast cancer
- Cancer is harder to see in dense breasts
 - "Snowball in a snowstorm"
- Tomosynthesis does not increase the CDR on dense breasts.
- Many of our patients have dense tissue
 - >40% of women under 50 have BIRADS C or D density
 - 30-40% of women in their 60's

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Breast Density is the leading common risk factor for development of breast cancer.

- ▶ Greater than:
 - ▶ Family history
 - ▶ Personal history of benign lesions
 - ▶ First full-term pregnancy after age 30
 - ▶ Early menarche
 - ▶ Late menopause

Population Attributable Risk Proportion of Clinical Risk Factors for Breast Cancer, Rigaeva, et al., JAMA Oncology Feb 3, 2017

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Tomosynthesis does not significantly improve cancer detection in dense tissue.

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Let's recap why you want to do this

- ▶ Heterogeneously dense and dense breast tissue are the leading common independent risk factor for breast cancer.
- ▶ These cancers are more difficult to find due to "masking".
- ▶ Mammography is less sensitive in dense breasted women.
- ▶ When we give a woman with category C or D tissue a "normal" mammogram report, we are not telling the whole story.

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Interlude for Missouri History



- Missouri is in fact in the middle
- "Kingdom of Calaway" nickname acquired during the civil war

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Risk Assessment

- ▶ All women should have their breast cancer risk assessed by age 25
 - ▶ Particularly high-risk patient populations
 - ▶ African American women
 - ▶ Women of Ashkenazi Jewish descent
- ▶ Tyrer-Cuzick v8 model incorporates tissue density and polygenic risk

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New ACR Recommendations

- ▶ Women with genetic mutations or risk >20%
 - ▶ Annual DBT starting at 30
 - ▶ Annual MRI (or CEM) starting at age 25 to 30
 - ▶ Mutation carriers can delay mammogram until 40 if annual breast MRI is performed

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New ACR Recommendations

- ▶ For women at higher-than-average risk of breast cancer:
 - ▶ Annual digital mammography
 - ▶ Beginning between 25 and 40 (depending on type of risk)
 - ▶ Supplemental screening, depending on risk
 - ▶ MRI is supplemental method of choice
 - ▶ CEM or US could be considered if patient cannot have MRI

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What has 8 nipples and a bunch of Grammys?

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Dolly Barkton!



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The Patient Care Pathway at IFW

- ▶ Tyrer-Cuzick v8 assessment
- ▶ Genetic testing questionnaire
- ▶ On-site sample collection for genetic testing
 - ▶ We partner with a company that delivers results and does the genetic counseling
- ▶ IFW tailors the patient's recommendations based on risk and density on mammogram

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"You can have the best acne cream in the world, but if it costs \$300 a tube and turns your teenage patient's face purple, you aren't going to have a lot of takers."

-My medical school professor, circa 2007

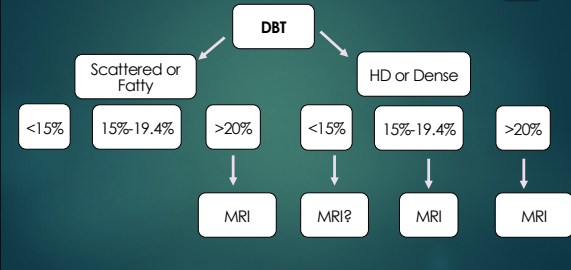
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ACR Guidelines for supplemental screening

- ▶ Women diagnosed with breast cancer before age 50 or with personal histories of breast cancer and dense breasts should undergo annual supplemental breast MRI.
- ▶ Others with personal histories, and those with atypia at biopsy, should strongly consider MRI screening, especially if other risk factors are present.
- ▶ For women with dense breasts who desire supplemental screening, breast MRI is recommended.
- ▶ For those who qualify for but cannot undergo breast MRI, contrast-enhanced mammography or ultrasound could be considered.

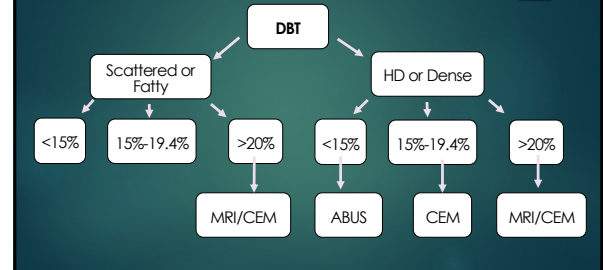
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The Patient Care Pathway In a Perfect World



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The Patient Care Pathway in My World



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The Patient Care Pathway at IFW

- ▶ We read everything online
- ▶ Each radiologist has an assistant that discusses negative result and recommendations with the patient
- ▶ We have same day ABUS spots
- ▶ CEM is offered, but scheduled on a different day
 - ▶ Screening CEM typically scheduled 6 months after DBT

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Automated Breast Ultrasound (ABUS)

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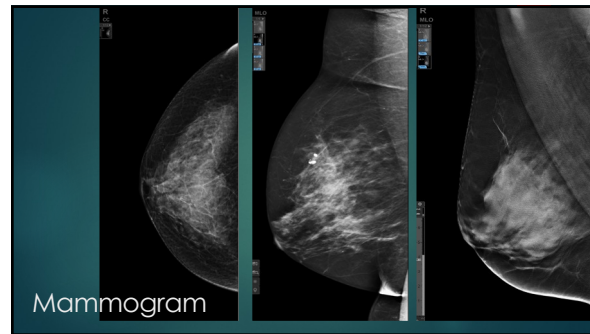
ABUS

- ▶ Standard transverse images plus reconstructed 3D coronal view
- ▶ Faster, more standardized US screening
- ▶ Can also be used for diagnostic ultrasound
- ▶ Cancer detection rate (incremental) of 2-3 per thousand
- ▶ Federal density mandate

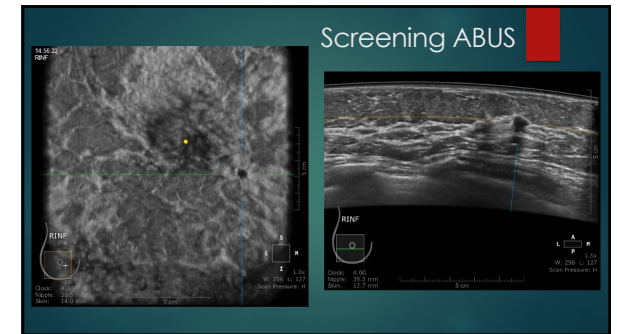
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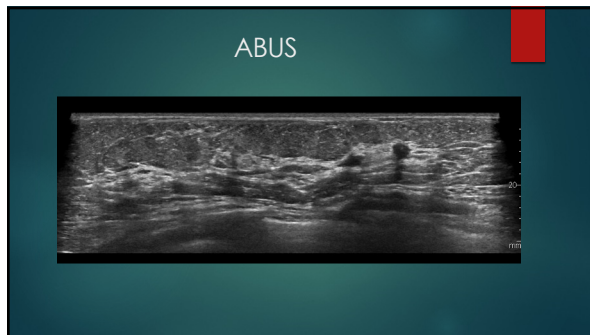
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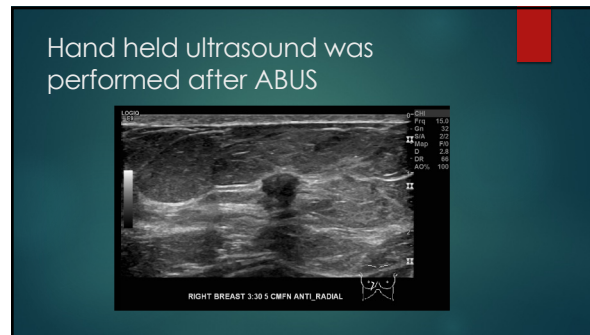
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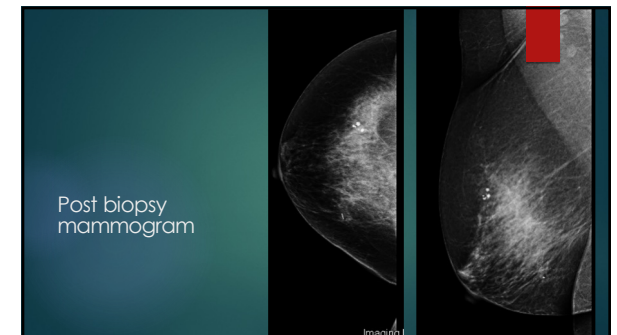
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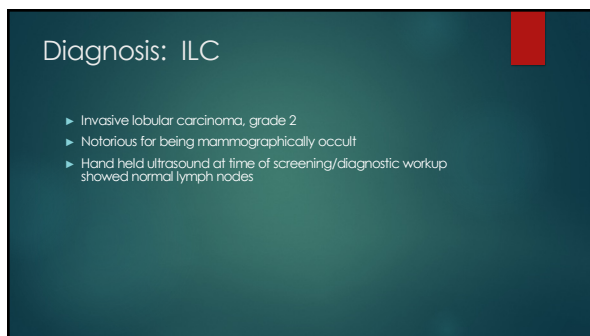
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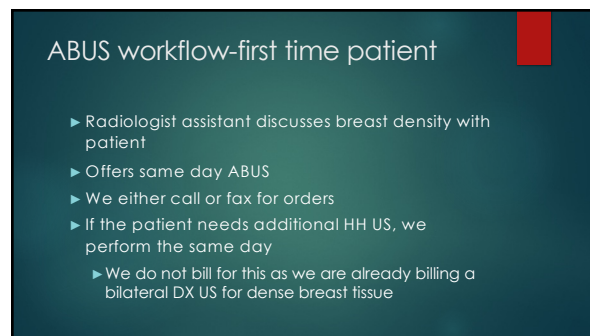
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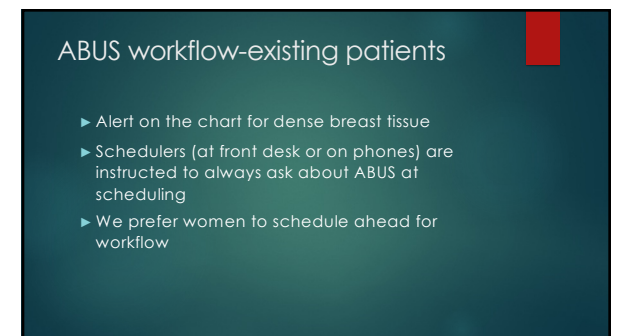
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Contrast Enhanced Mammography

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CEM Workflow

- ▶ Radiologist or assistant discusses recommendation for contrast imaging with the patient
- ▶ Staff delivers questionnaire
 - ▶ Assess risk of contrast reaction
 - ▶ Need for labs

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CEM: The basics

- ▶ Combination of mammography and iodinated contrast material administration
- ▶ Relies on angiogenesis and "leaky" vessels supplying malignancy
- ▶ Mammogram images are taken at low and high energy, with post-processing to create a recombined image showing areas of contrast uptake.
- ▶ Biopsy with CEM is possible with equipment and software

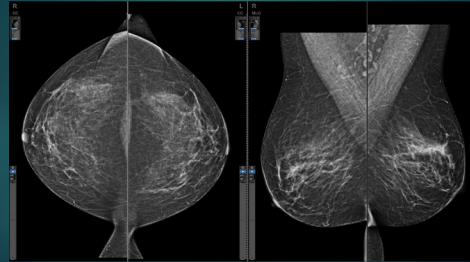
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CEM is great at finding cancer

- ▶ 15.5 per thousand CDR²
 - ▶ 8.8/1000 with low-energy images alone
- ▶ Shows the same or nearly the same CDR as MRI
 - ▶ 97% in the Xiang et al review
- ▶ Increased accuracy and specificity vs. MRI¹
 - ▶ 98% and 66% vs. 92% and 52%

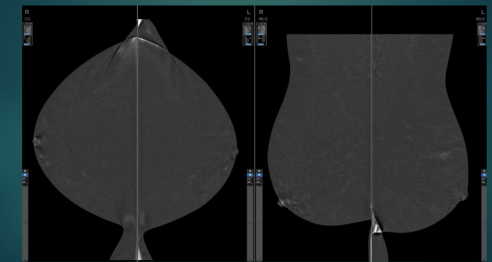
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CEM images-Low energy



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CEM images-high energy post contrast



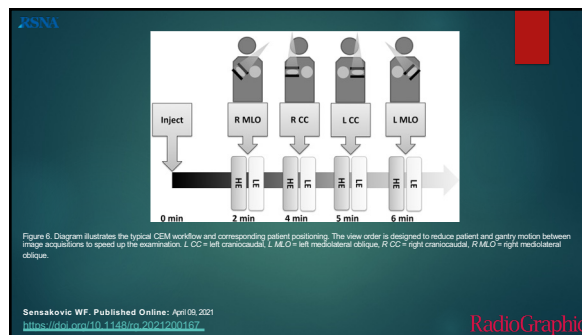
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CEM: Acquisition

- ▶ IV access
- ▶ 1.5 mL/kg up to max 150mL power injected at rate of 2-3 mL/sec
- ▶ Image acquisition between 2 and 10 minutes after contrast administration
- ▶ Low energy and high energy 2D images are obtained
 - ▶ Breast compression is released between image acquisitions
 - ▶ CC and MLO views obtained
 - ▶ Read online in case you need extra views
- ▶ Plan for an extra 15-20 minutes in the exam room



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CEM Workflow

- ▶ Risk of contrast reaction
 - ▶ We have a low threshold to decline screening exam
 - ▶ We are an outpatient facility, so your risk tolerance may be different
- ▶ Need for labs
 - ▶ Any patient over 60 y/o gets labs
 - ▶ Younger patients are on a case by case basis
 - ▶ Hx of renal disease, uncontrolled diabetes, etc

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CEM Workflow

- ▶ Our office obtains an order from the patient's referring provider
- ▶ We ask for lab work (if necessary) to be performed within 30 days of the exam
 - ▶ I will accept up to 3 months as long as it's normal
- ▶ We schedule the patients in 30 minute slots

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MRI

- ▶ MRI is still the gold standard for high risk patients
- ▶ Highly sensitive, no radiation
- ▶ Not as easy to schedule or undergo
- ▶ Recommended for patients at 20% or higher lifetime risk
- ▶ We don't have an MRI machine
 - ▶ We counsel patients to get MRI if they qualify
 - ▶ Many just don't want to have one again



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Multimodality Tools to Personalize Care

ABUS, Contrast Enhanced Mammography, MRI

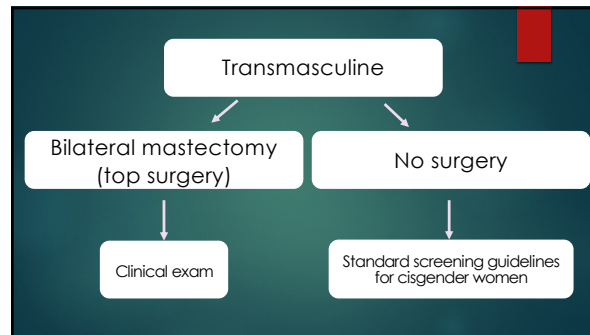


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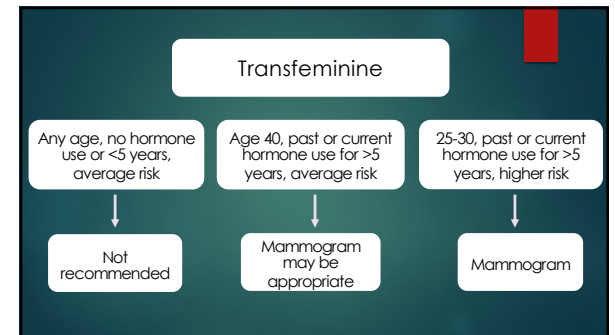
Taking care of our transgender patients

- ▶ Transmasculine (transgender men)
 - ▶ Female sex assigned at birth, male gender identity
 - ▶ If the patient has had bilateral mastectomy, his risk of breast cancer is lowered by at least 90%
 - ▶ If the patient has not had mastectomy (top surgery), he should follow screening recommendations for cisgender women

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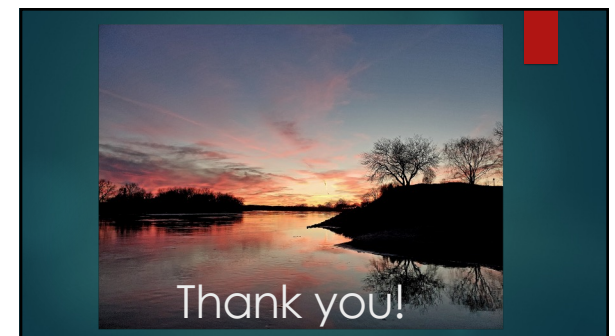


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Summary

- ▶ Breast cancer screening should be tailored to the individual patient
- ▶ Clear communication helps the patient make an informed decision
- ▶ We must also educate our referring providers
- ▶ Offer supplemental screening!

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