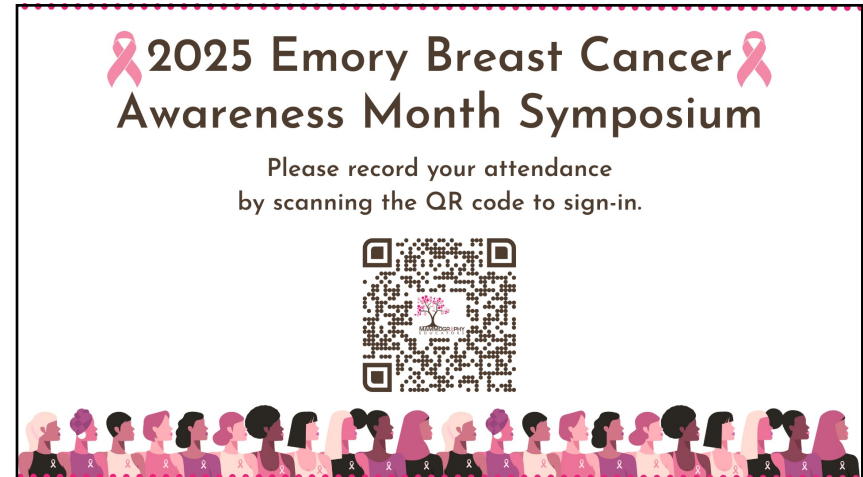
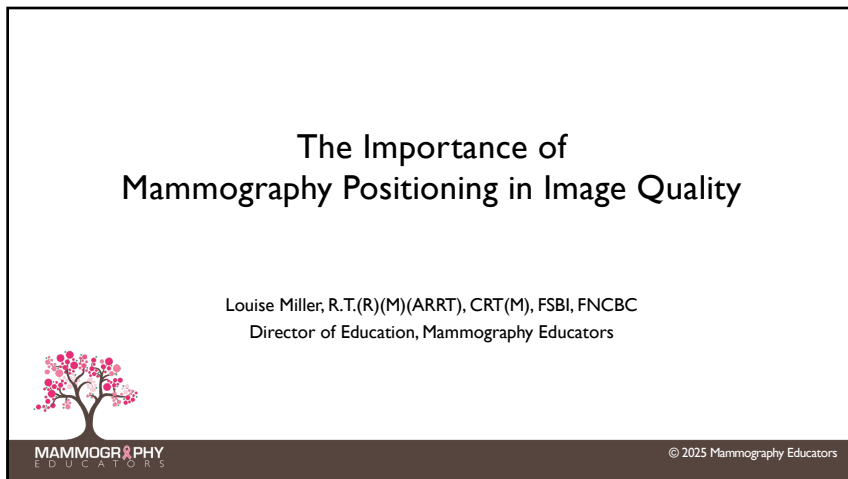




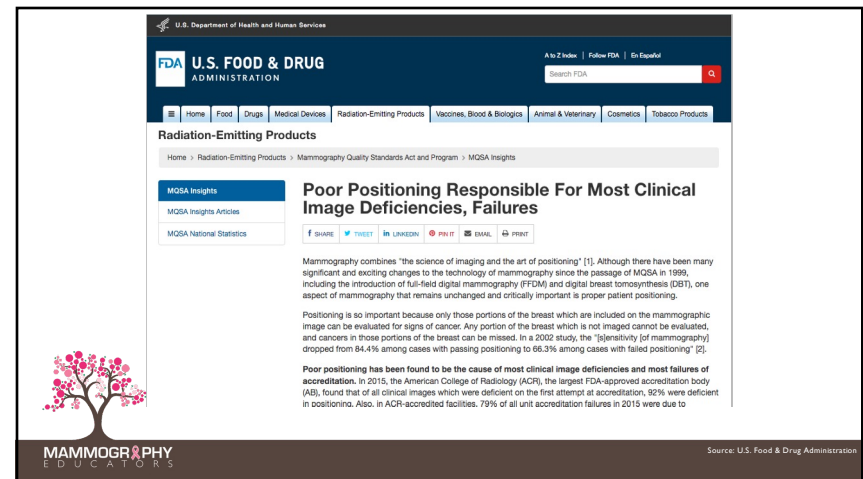
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The Member Newsletter of the Society of Breast Imaging
Click on this bar to return to Table of Contents

A Technologist's Perspective of the FDA Report "Poor Positioning Responsible for Most Clinical Image Deficiencies, Failures"

By Louise Miller, RT(R)(M)

Recently I received a call from a radiologist asking me to provide 8 hours of positioning training for his technologists. They had failed American College of Radiology (ACR) accreditation for positioning and needed to document the training in order to resubmit new images, which were due in a week. A side note here: if you fail, get help EARLY. When I met the radiologist in his office on the morning of the training, he began to tell me that his techs obviously didn't know how to position correctly. This is a common assumption that is not entirely untrue. I met with the techs, who were all experienced mammographers with varying years of experience. I presented a lecture on standardized positioning and correlational anatomy and then gave a hands-on demonstration with a model. Almost all were surprised by the way I positioned, which was based on the tenets of consistency, reproducibility, and sound ergonomics. I learned these principles way back in the 1990s and have modified them to accommodate the changes in technology over the years. They all laughed nervously because none of them positioned this way. In fact, their positioning techniques were all different from each other. This is a scenario I see in hundreds of facilities throughout the country. I started asking myself, "What has changed? What did they miss that I did not?" These were all women who were proud of their work and were often embarrassed by their failure. They were doing the best they knew how. Fortunately, most technologists want to learn techniques, and they want to improve and do their best possible work for the patients. These technologists were lacking essential training updates for positioning or had insufficient initial training using a standardized method.



Louise Miller, RT(R)(M)




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Source: Mammography Educators

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Now is the time to make a collaborative effort to establish, improve and maintain quality in mammography positioning.




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QUALITY

ALL industries have established standardized methods performance of tasks to:


- Establish and maintain quality
- Reduce errors
- Increase consumer satisfaction
- Increase profit
- Reduce possibility of litigation



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400,000 deaths per year due to medical errors... How many mistakes were made??



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Source: Journal of Patient Safety

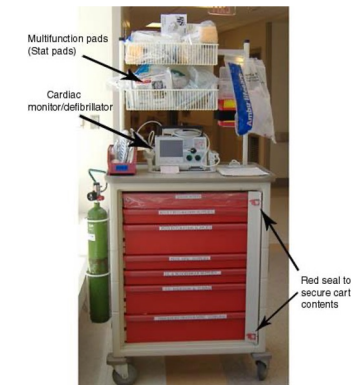
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How do we reduce medical errors?

- Standardization
- Consistency
- Reproducibility



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| World Health Organization SURGICAL SAFETY CHECKLIST (FIRST EDITION) | | |
|---|--|--|
| Before induction of anaesthesia | Before skin incision | Before patient leaves operating room |
| SIGN IN <ul style="list-style-type: none"> PATIENT HAS CONFIRMED <ul style="list-style-type: none"> • IDENTITY • SITE • PROCEDURE • CONSENT SITE MARKED (NOT APPLICABLE) ANAESTHESIA SAFETY CHECK COMPLETED PULSE OXIMETER ON PATIENT AND FUNCTIONING | TIME OUT <ul style="list-style-type: none"> CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE VERBALLY CONFIRM <ul style="list-style-type: none"> • PATIENT • SITE • PROCEDURE ANTICIPATED CRITICAL EVENTS SURGEON REVIEWS WHAT ARE THE CRITICAL OR UNEXPECTED STEPS, OPERATIVE DURATION, ANTICIPATED BLOOD LOSS? ANAESTHESIA TEAM REVIEWS: ARE THERE ANY PATIENT-SPECIFIC CONCERNS? NURSING TEAM REVIEWS: HAS STERILITY (INCLUDING INDICATOR RESULTS) BEEN CONFIRMED? ARE THERE EQUIPMENT ISSUES OR ANY CONCERNS? HAS ANTIBIOTIC PROPHYLAXIS BEEN GIVEN WITHIN THE LAST 60 MINUTES? <ul style="list-style-type: none"> YES NOT APPLICABLE IS ESSENTIAL IMAGING DISPLAYED? <ul style="list-style-type: none"> YES NOT APPLICABLE | SIGN OUT <ul style="list-style-type: none"> NURSE VERBALLY CONFIRMS WITH THE TEAM <ul style="list-style-type: none"> THE NAME OF THE PROCEDURE RECORDED THAT INSTRUMENT, SPONGE AND NEEDLE COUNTS ARE CORRECT (OR NOT APPLICABLE) HOW THE SPECIMEN IS LABELLED (INCLUDING PATIENT NAME) WHETHER THERE ARE ANY EQUIPMENT PROBLEMS TO BE ADDRESSED SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE REVIEW THE KEY CONCERNS FOR RECOVERY AND MANAGEMENT OF THIS PATIENT |

THIS CHECKLIST IS NOT INTENDED TO BE COMPREHENSIVE. ADDITIONS AND MODIFICATIONS TO FIT LOCAL PRACTICE ARE ENCOURAGED.



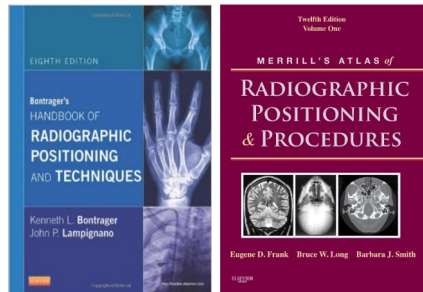
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Standardized Technologist Training for General Radiology



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Bontrager's and Merrill's



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Standardization

- We all position the same way for every body part.
- We all do it in the same sequence.
- We all set up the machine before we bring the patient in.
- We all position the whole patient, not just the body part.



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In General Radiology

All training is competency-based, and a technologist's skills will be evaluated for positioning techniques, as well as clinical image evaluation.



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We position the **whole patient**,
not just the body part!



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All exams are done using the *same*
positioning technique, in the *same* sequence.



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WHY???

- Consistency
- Reproducibility
- Efficiency
- Proficiency
- Use of proper body mechanics



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But in mammography...
We are “all over the map”

- LCC, LMLO, RMLO, RCC
- RCC, LCC, RMLO, LMLO
- RMLO, RCC, LMLO, LCC
- LCC, RCC, LMLO, RMLO
- RCC, RMLO, LMLO, LCC
- LCC, LMLO, RCC, RMLO
- LMLO, LCC, RCC, RMLO



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My Suggestion:

- Do CC's first
- Then, do the MLO on the side you just finished the CC
- Then, do the other MLO

Example: RCC, LCC, LMLO, RMLO



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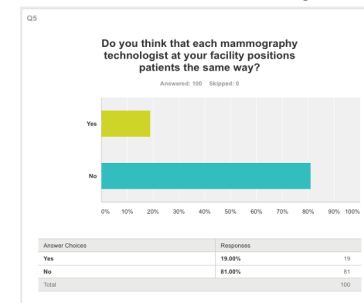
So why is this true for all body parts in
radiology **EXCEPT** in Mammography???



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Most technologists *do not* practice a
standardized method of positioning.



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How can we make things better?

Consistency and Reproducibility



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No Standards for Mammography Positioning

There are standards for WHAT images should look like,
but not HOW you get to that point!



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So, the problem is...

No standardization or follow-through, which means:

- Less consistency and reproducibility
- More repeats and rejects
- More accreditation failures
- Increased exposure
- MISSED BREAST CANCERS???



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Mammography Positioning Techniques Should Be:

- Based on ergonomic principles
- Efficient
- Proficient
- Consistent
- Reproducible



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Common Work-Related Injuries

- Wrist problems
- Shoulder problems
- Back
- Knees
- Hips



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Do standardized positioning techniques work?

- Used consistently for 50+ years in Sweden
- Was taught by ACR in the 1990s
- Results published by Bassett et al in 1993 showed an improvement of 68% in image quality after ACR standardized positioning training
- Current preliminary data regarding standardized positioning techniques is impressive



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USE DATA!!!



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Mammography Positioning Standards in the Digital Era: Is the Status Quo Acceptable?

Positioning criteria following training for updated standardized positioning techniques for FFDM and DBT far exceeds data on Bassett study.*



*Approved for publication by ACR, December 2017

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Reasonable Expectations

Even the “perfect” patient, in terms of body habitus, breast mobility, etc. may provide a challenge that inhibits the technologist’s ability to position and compress properly.



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But with mammography CAN improve image quality by using standardized positioning techniques that are applicable for FFDM and DBT and developing a strong knowledge-based foundation that depends on the technologist’s understanding of correlative anatomy.



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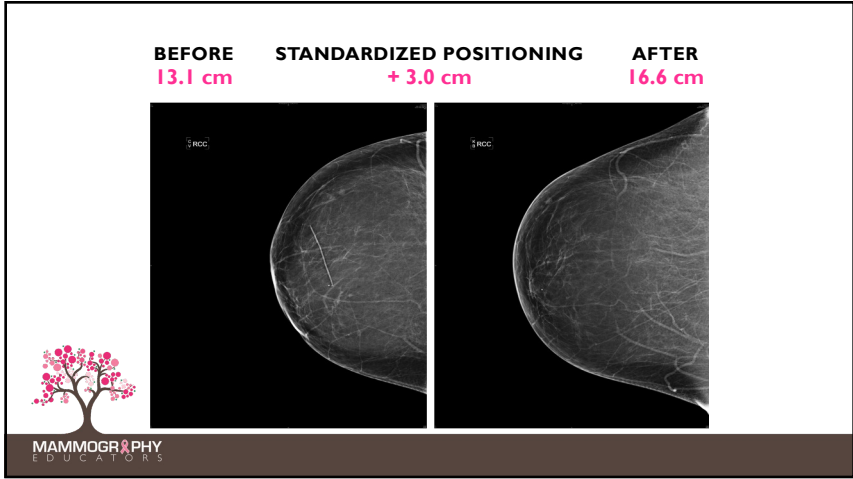
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Does it work??

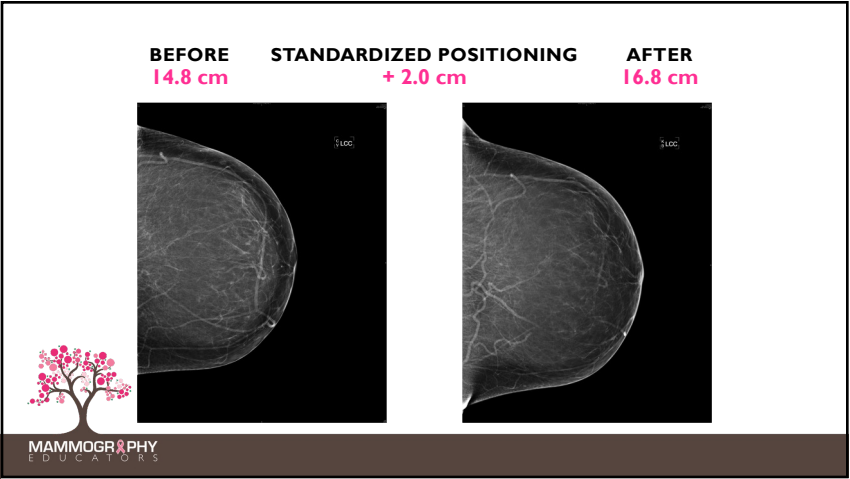


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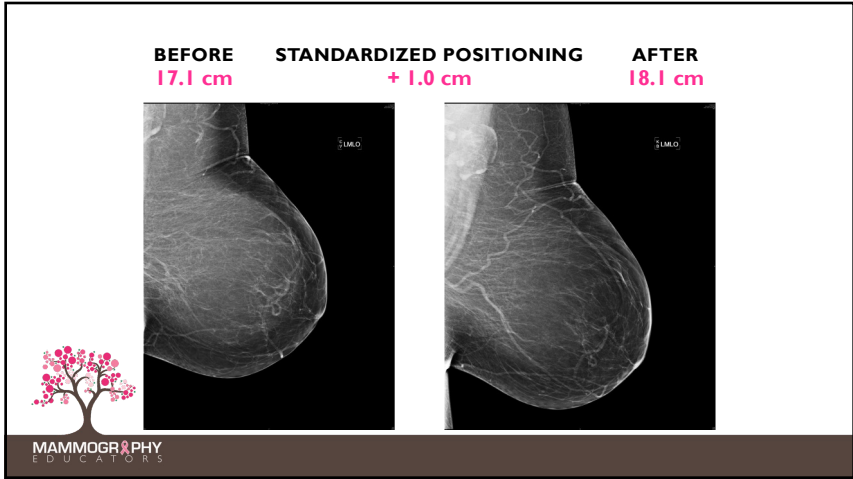
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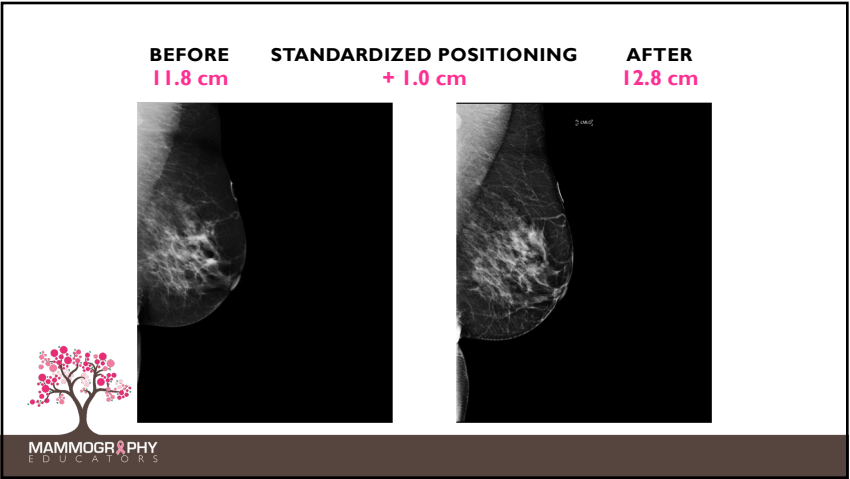
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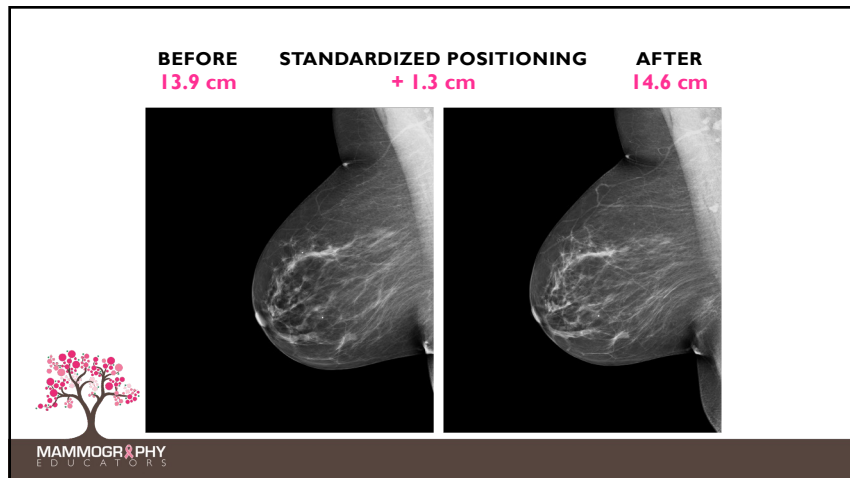
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We need:

- Accurate methods for determining the actual number of images taken
- Accurate methods for analyzing positioning standards
- The ability to provide corrective action plans for improving positioning errors (EQUIP)
- The establishment of standardized positioning techniques that are efficient, consistent and ergonomically sound

A small tree logo with pink flowers is in the bottom left corner, and the text 'MAMMOGRAPHY EDUCATORS' is at the bottom.

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It is ALL our responsibility to make sure that ALL women receive the highest quality mammogram achievable.

A small tree logo with pink flowers is in the bottom left corner, and the text 'MAMMOGRAPHY EDUCATORS' is at the bottom.

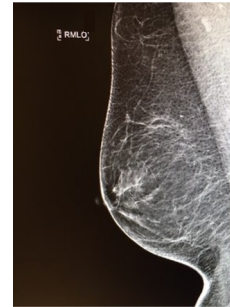
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The MLO

- Inclusion of all breast tissue within perimeter
- Pectoral muscle fully visualized
- Tissue well separated
- Tissue visualized back to retromammary fat space
- IMF



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The MLO

Visualization of the pectoral muscle:

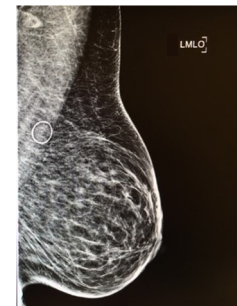
- The pectoralis muscle is not really part of the breast
- However, it serves as an important anatomical landmark for positioning and film evaluation



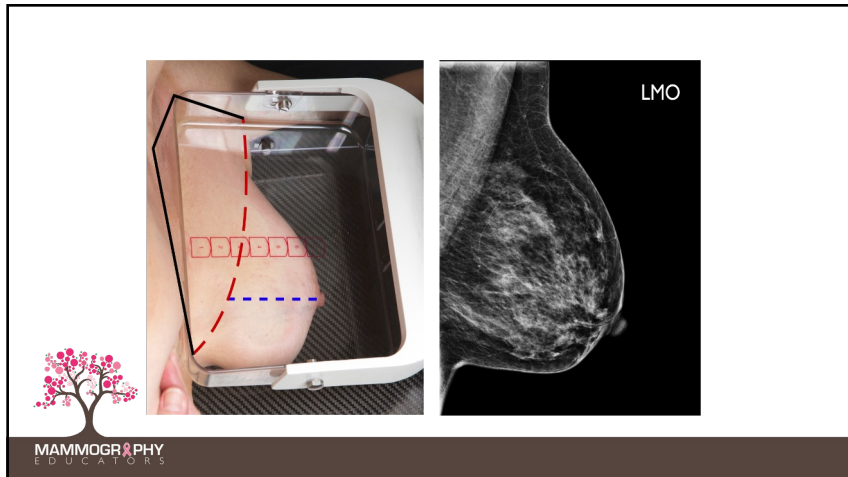
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The MLO

- Visualized down to the PNL
- Wide margin at the axilla
- Convex/straight
- Radiolucent



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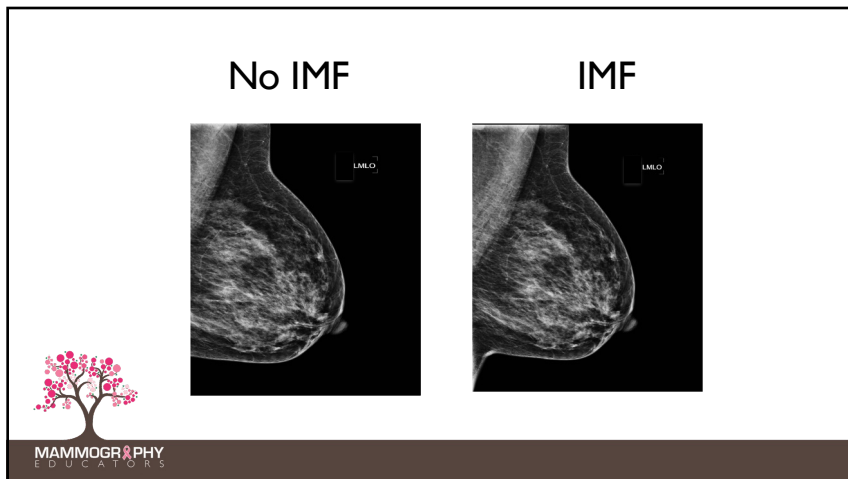
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Common Problems with the MLO

- No visualization of the IMF
- Folds in the IMF
- Breast drooping

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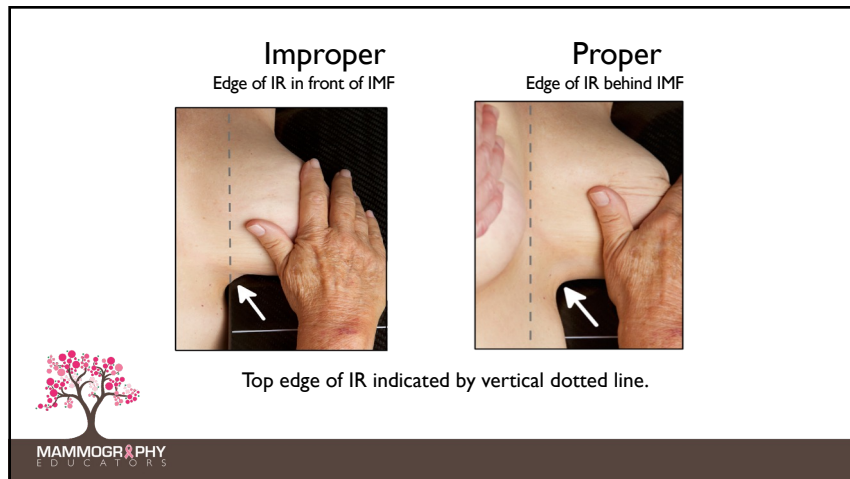
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The position of the patient related to the bottom, front corner of the IR is critical:

- Patient must be facing forward with both feet
- The lower front corner of the IR should be directly below the patient's nipple (on VNL) or halfway between her ASIS and umbilicus
- This requires the patient taking a "side step" towards you

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Position of the Breast

- Breast held in “up and out” position to bring the breast back to its “normal” position (nipple perpendicular to the chest wall)
- Maintained by adequate compression

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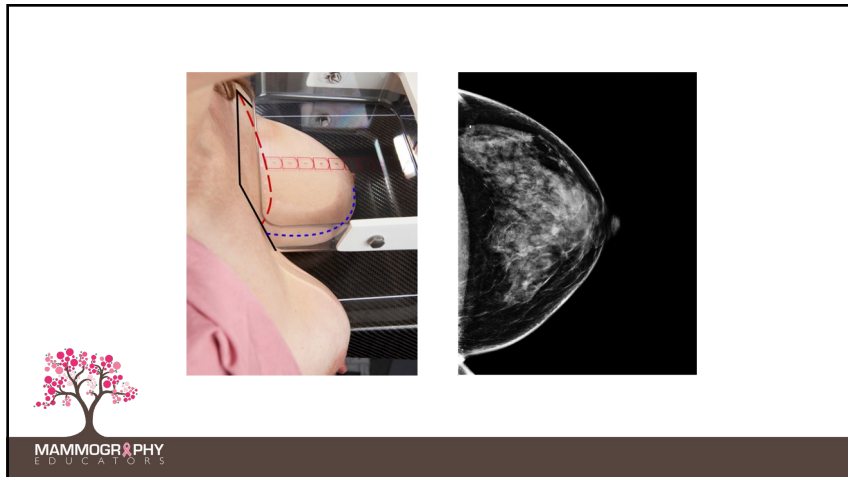
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The CC

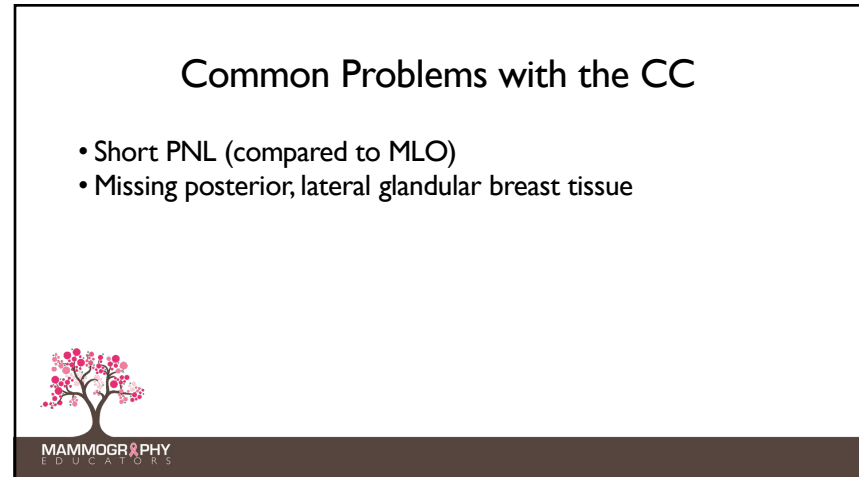
- Include maximum amount of breast tissue in the axial/transverse plane
- Visualization of medial breast tissue (cleavage) if possible
- Visualization of pectoralis muscle on approximately 40-50% of all CCs

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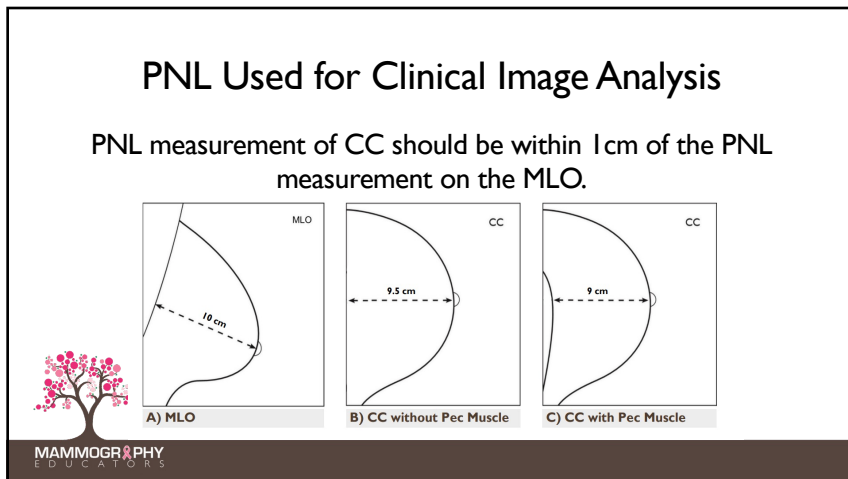
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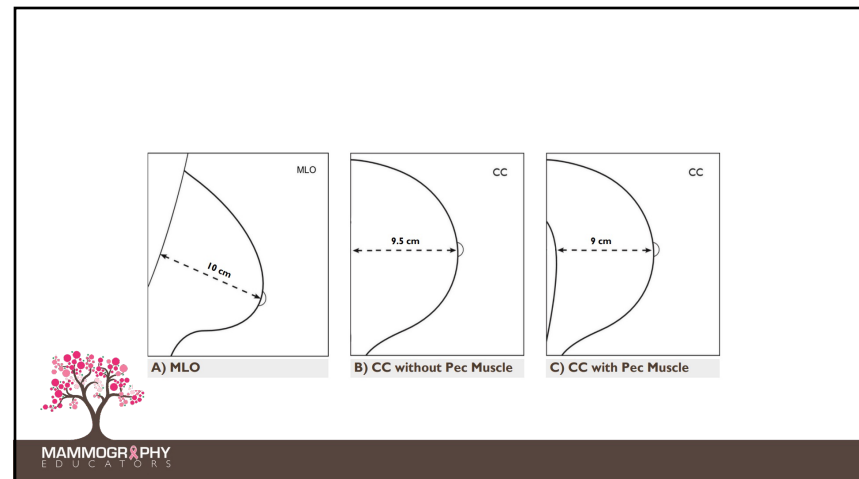
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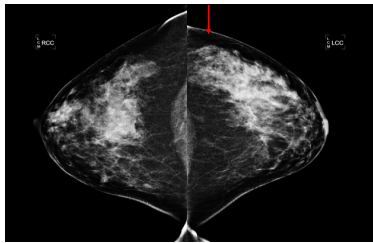


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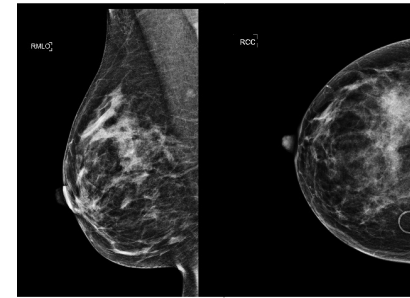
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Missing Posterior Lateral Glandular Breast Tissue



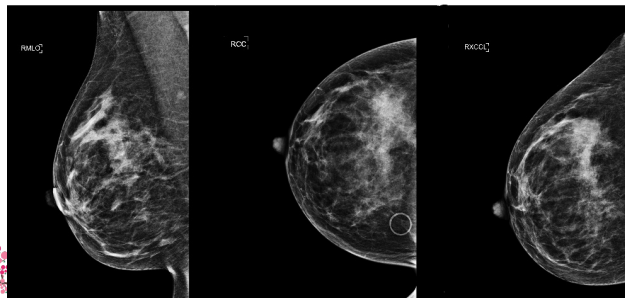
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The Use (and Misuse) of the XCCL



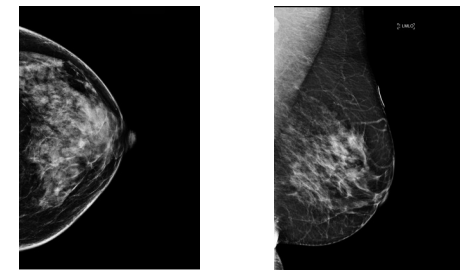
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Use of the XCCL



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Subsequent Screening Mammogram No XCCL Needed!



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Use of the XCCL

- Should be performed on less than 5% of all patients
- Performed at 0-degree angulation
- Patient's body should be at 45-degree angle to IR
- Nipple should be pointing towards the upper corner of the image receptor



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Use of the XCCL – Standard of Care

- XCCLs should be done on *baseline* mammograms when posterior breast tissue is excluded on the CC
- On subsequent screening mammograms, if glandular breast tissue is imaged back to the retromammary fat space an XCCL *does not* need to be done
- *There is no data that shows that the use of XCCLs for screening finds more breast cancers!*



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Focus On

- Consistency
- Reproducibility
- Efficiency
- Proficiency
- Ergonomic principles



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Mammography Saves Lives!

But it is up to you.....

Even the best radiologist, in the best breast center cannot diagnose a cancer that is not included on the image.



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The Importance of Mammography Positioning on Imaging Quality

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