

TOP TEN TIPS FOR MAMMOGRAPHERS

2023  Edition

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Tips and Tricks

- Image Evaluation
- Ergonomics
- Communication



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Tips and Tricks

- **Image Evaluation**
- Ergonomics
- **Clear Communication**



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Image Evaluation

- Measuring the PNL



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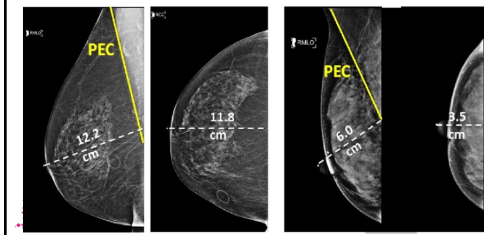
How to Correctly Measure the PNL



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Example of BAD information found online



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188 / BREAST IMAGING

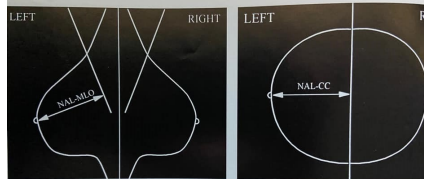


FIG. 10-27. (A) Schematic indicating the visualization of the pectoralis major on the mediolateral oblique (MLO) down to the level of the nipple areola line (NAL) on the MLO. (B) The corresponding line from the nipple to the back of the film on the cranio-caudal should be no more than 1 cm shorter than the NAL on the MLO. If it is shorter, there is likely breast tissue that is not being projected onto the detector.

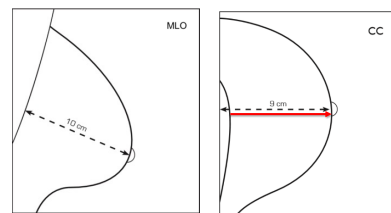
Ref: *Breast Imaging, 3rd Edition 2006*
Kopans, Daniel
Shared with permission from the author.



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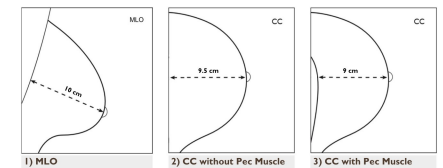
PNL Measurements



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PNL Measurements

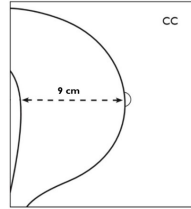


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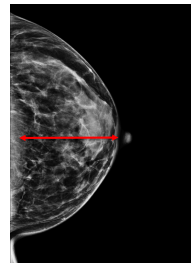
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Measurement of the CC

- Measurement is made from the base of the nipple/skin line to the anterior margin of the pectoralis muscle (if visualized)



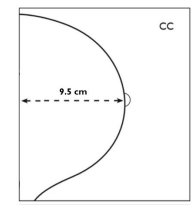
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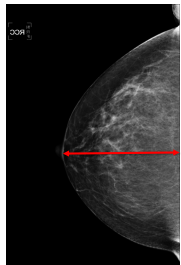
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Measurement of the CC

- Measurement is made from the base of the nipple/skin line to the edge of the image (if the pectoralis muscle is **not** visualized)



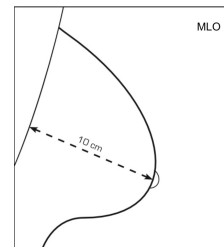
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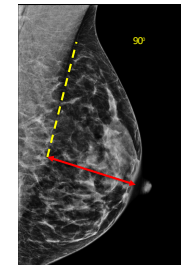
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Measurement of the MLO

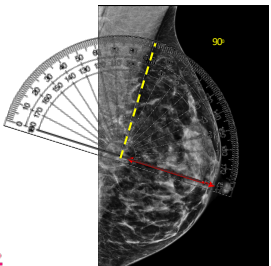
- Measure from the base of the nipple to the anterior margin of the pectoralis muscle where the intersection can be measured as a 90 degree angle.



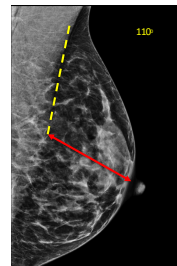
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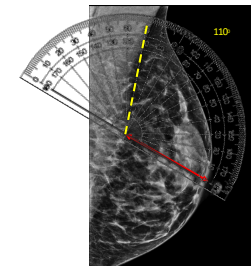
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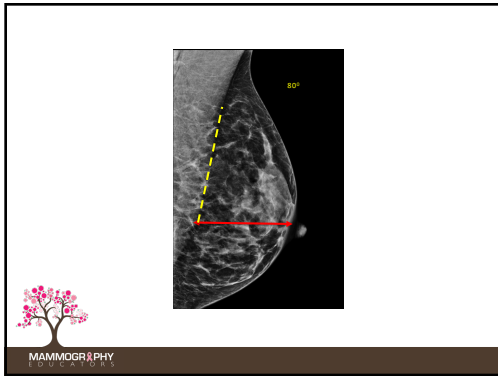
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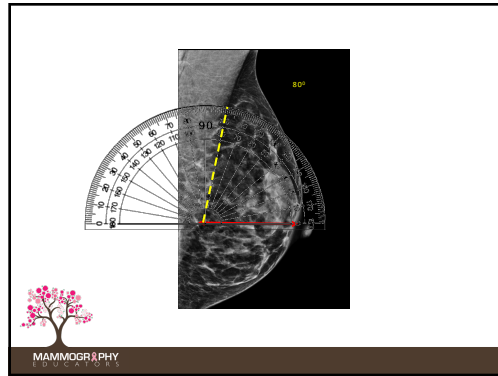
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PNL Dilemmas

- What if the nipple is not centered?
- What if there is inadequate muscle is (short or concave) on the MLO?
- What if the nipple is not in profile?

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Measurement of PNL if Nipple Not Centered

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Nipple Not Centered

YES NO

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PNL Measurements on CC and MLO

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PNL Measurement on CC

- PNL on CC view is measured along a line that extends directly posteriorly from the base of the nipple to the pectoral muscle or the edge of the film, whichever comes first!

ACR LEARNING NETWORK | Bassett LW, et al. Mammographic positioning: evaluation from the view box. Radiology. 1993 Sep;188(3):803-6.

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PNL Measurement on CC

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PNL Measurement on CC

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PNL Measurement on MLO

- To measure the PNL on MLO view, you need to accurately determine a 90-degree angle. This is done using the angle function on your PACS or Review Workstation (RWS) systems.
- The following slides show 3 ways to measure the PNL on MLO view when the pectoral muscle doesn't reach the nipple line.

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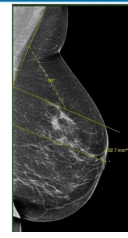
Option 1

- Draw a line from the superior aspect of the pectoral muscle inferiorly along its anterior border to where the pectoral muscle ends at the edge of the image.
- Make a line from the base of the nipple back to the pectoral muscle OR the edge of the image if the pectoral muscle is short. You will slide that same line up to the pectoral muscle line to ensure the angle is 90 degrees. Once you confirm it is 90 degrees, slide this same line down to the base of the nipple and see what the distance is.

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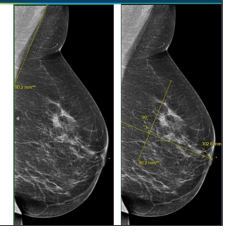
Option 2

- Draw a line from the superior aspect of the pectoral muscle inferiorly along its anterior border to where the pectoral muscle ends at the edge of the image.
- Slide this line down and anteriorly to the mid breast. Draw a line from the base of the nipple back to the edge of the image, intersecting the other line at a 90-degree angle.

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Option 3

- Draw a line from the superior aspect of the pectoral muscle inferiorly along its anterior border to where the pectoral muscle ends at the edge of the image.
- Draw a line parallel and anterior to the first line and extend it down past the nipple line. Next, draw a line from the base of the nipple back to the edge of the image, intersecting the second line at a 90-degree angle.

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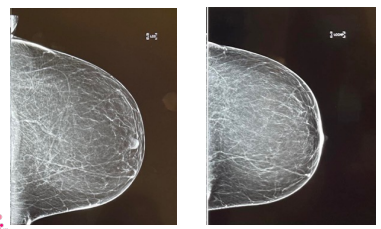


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Nipple Not in Profile



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Tips and Tricks

- Image Evaluation
- Ergonomics**
- Communication

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Stand Up Straight!



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Sitting is NOT Recommended for MLO



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Technologist Sitting for the MLO is NOT Recommended *Unless*:

- The patient is extremely short.
- The technologist has previous injuries or pain that prohibits standing.

Sitting is usually the cause of shoulder pain and injury and will actually exasperate the problem.

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No "Lunging"!!



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None of This Either!



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Push the Face Shield Back



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Rotate the Gantry (if possible)



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Control the Patient With Your Body



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Hand Position is Important for the
CC and MLO

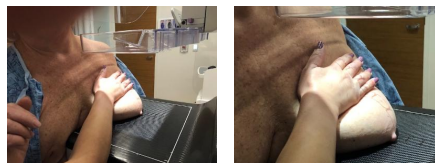


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Thumbs Up!



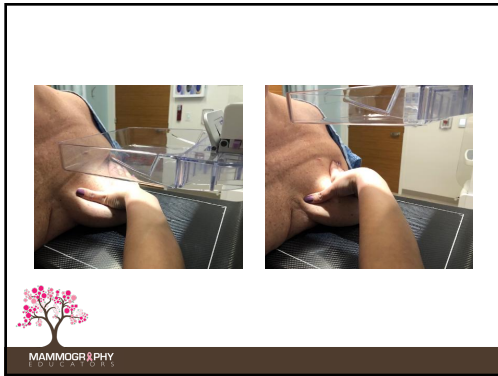
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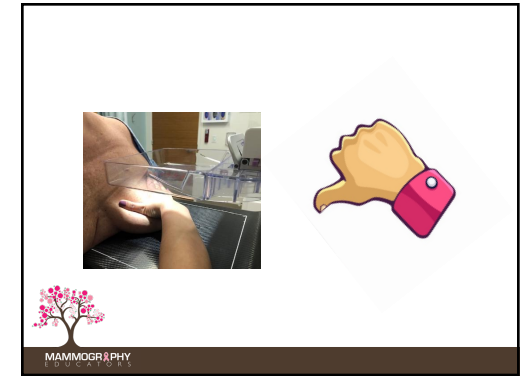
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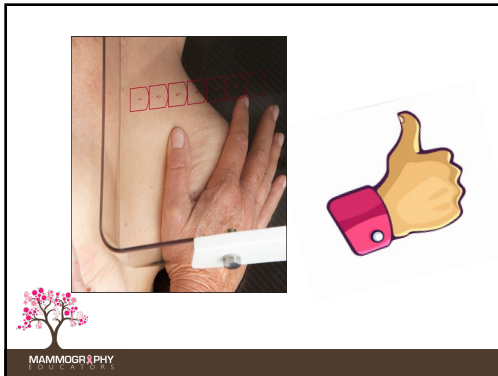
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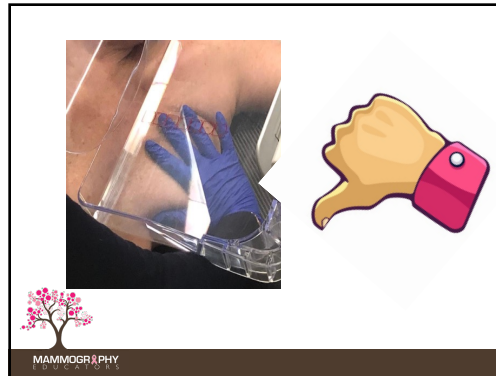
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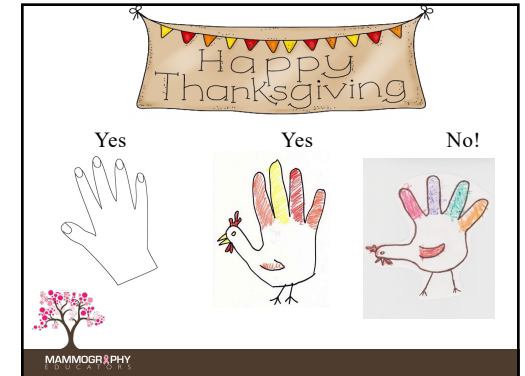
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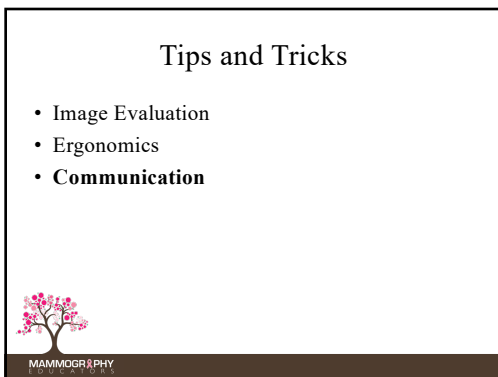
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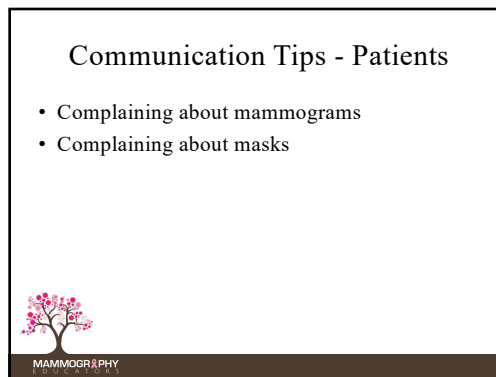
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“I hate mammograms.”

“Thank you for coming in anyway.”



55

“I hate wearing a mask.”

- *“I know what you mean.”*
- *“It sure isn't fun.”*



56

“Are you the nurse?”

“No, I'm an x-ray tech. It's very different training.”



57

“Aren't you afraid of the radiation?”

“An important part of my training is to make sure that the proper precautions have been put in place to make it safe for me and you.”



58

“What a disgusting job.”

“I'm proud to work in Women's Health.”



59

“Is this all you do all day long?”

“Yes it is. I'm proud to work in Women's Health.”



60

“Do you like touching breasts all day long?”

“No, of course not, I just want you to have the best mammogram possible.”



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Tips for Scripts

- Don't get defensive
- Remember, it's not personal
- Anxiety creates some “interesting” actions/reactions
- Do NOT make fun of your patients or their behavior
- How would you act in this same situation?




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Act Don't React

- Offer the patients correct information and reassurance.
- Get her in.....and out quickly.
- Tell her what you are going to do *before* you do it.
- Invite her into a partnership.




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“Would you rather be right....
or would you rather be happy??”

- Dr. Phil



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Communication Tips - Colleagues


- Complaining about images
- Complaining about patients
- Complaining about co-workers



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Some of the things patients do can
really be annoying!




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Letting Off Steam

- Appropriate
- Inappropriate



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Letting Off Steam

Appropriate

- Take a walk
- Exercise
- Listen to music
- Treat yourself to some retail therapy
- Treat yourself to some self care




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Letting Off Steam

Inappropriate

- Complaining
- Using social media as an outlet
- Over-doing
- Negative talk
- Self neglect or punitive behavior




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Lead by Example

Would you rather be part of the problem....
or part of the solution?



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References

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- Miller, Louise C. (2015) *Mammography Positioning Guidebook*. San Diego, CA.
- Miller, Louise C., Lehmann, T.L.(2020) *Image Quality & Positioning Problem Solving for Breast Imagers: Meeting EQUIP Standards*. San Diego, CA.



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Thank you!

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