PGMI Digital Image Reference Set

Version

October 2017
• The aim in screening is to produce consistent high quality breast imaging and transparency and consistency of assessment.

• The PGMI (Perfect, Good, Moderate, Inadequate) image grading criteria allows for a review of images to take place against a set of criteria rather than individuals own ideas of what constitutes a good image. It is one component of image monitoring that should be seen as useful tool to assist in maintaining standard and in supporting staff who require help with technique.

• The recommended standard in the NAS requires a radiographer to achieve 50% G or P grading's.
**Image Assessment Criteria**

**CRITERIA FOR IMAGE ASSESSMENT**

1. All breast tissue imaged (fat visualised posterior to glandular tissue)
2. Correct image identification clearly shown:
   - Date of Examination
   - Client Identification - name and (number and /or date of birth)
   - Side Markers
   - Positional markers
   - Radiographer identification
3. Correct Exposure for modality
4. Good Compression
5. Absence of movement
6. Correct image processing
7. Absence of artefacts
8. No skin folds
9. Symmetrical images

---

**I = INADEQUATE IMAGES**

(appplies to both CC and MLO images)

1. Significant part of the breast not imaged
2. Incomplete of incorrect identification
3. Incorrect exposure
4. Inadequate compression which hinders diagnosis
5. Blurred image
6. Incorrect image processing
7. Overlying artefacts
8. Skin folds which obscure the image
# Image Assessment Criteria

## CLASSIFICATION OF CC IMAGES

1. All breast tissue imaged
   - Medial border well demonstrated
   - Nipple in profile or skin edge seen transecting nipple
     (retro-areolar tissue well separated)
   - Nipple in midline of imaged breast
   - Posterior nipple line (PNL) within 1 cm of PNL on MLO view

## CLASSIFICATION OF MLO IMAGES

1. All breast tissue imaged
   - Pectoral muscle shadow to nipple level
   - Full width of pectoral muscle
   - Nipple in profile or skin edge seen transecting nipple
     (retro-areolar tissue well separated)
   - Infra-mammary fold well demonstrated
   - Posterior nipple line (PNL) within 1 cm of PNL on CC view

---

**P = PERFECT IMAGES**

Both CC and MLO images meet criteria for image assessment 1-9
Image Assessment Criteria

<table>
<thead>
<tr>
<th>G = GOOD IMAGES</th>
<th>G = GOOD IMAGES</th>
</tr>
</thead>
</table>
| 1. All breast tissue imaged *  
- All postero-medial tissue visualised  
(*axillary portion of breast not to be included at expense of medial portion)  
- Nipple in profile or skin edge seen transacting nipple  
- Nipple in midline of imaged breast | 1. All breast tissue imaged  
- Pectoral muscle well demonstrated  
- Nipple in profile or skin edge seen transacting nipple  
- Infra-mammary fold (IMF) well demonstrated |

Criteria 2-6
- Both CC and MLO images meet criteria for image assessment 2-6 inclusive for categorisation as G

Criteria 7-9
- Both CC and MLO images displaying minor degrees of variation in criteria for imaging assessment 7, 8 & 9 will be accepted for categorisation as G
- Minor artefacts not impacting on tissue visualisation
- Minor skin folds - tissue visualisation seen through the minor creases/folds
- Minor asymmetry
# Image Assessment Criteria

**M = MODERATE IMAGES**
(acceptable for diagnostic purposes)

1. Most breast tissue imaged *(however, all breast tissue must be imaged on MLO view)*
   - Nipple not in profile but clearly distinguishable from retro-areolar tissue *(however, nipple must be in profile in MLO image)*
   - Nipple not in midline *(significant bias)*

2. Correct image identification
3. Correct exposure for modality
4. Adequate compression
5. Absence of movement
6. Correct image processing
7. Artefacts which do not obscure the image
8. Skin folds which do not obscure the breast tissue visualisation
9. Asymmetrical images

**M = MODERATE IMAGES**
(acceptable for diagnostic purposes)

1. Most breast tissue imaged
   - Pectoral muscle not to nipple level but posterior breast tissue adequately shown
   - Nipple not in profile but clearly distinguishable from retro-areolar tissue *(however, nipple must be in profile in CC image)*
   - Infra-mammary fold (IMF) not clearly demonstrated but breast tissue adequately shown
Nipple profile examples

This criteria has been revised for the digital environment to widen ‘in profile’ to include nipple being transected by skin edge as part of acceptable ‘G’ grading.

Nipple profile clearly seen in these CC’s
Nipple profile examples

Nipple profile transected by skin edge and acceptable as part of a G grading if all other criteria are met
Nipple profile examples

Nipple profile not transected by skin edge and deemed off profile therefore not sufficient for G grading
Examples of “P” grading
Examples of “G” grading

‘G’ because of pec width and asymmetry
Examples of “G” grading
Examples of “G” grading

‘G’ because the medial border is not demonstrated on the CC’s even though the pec muscle is seen at the chest wall.
Examples of “G” grading

‘G’ because the medial border is not demonstrated on the CC’s
Examples of “G” grading

‘Fingernail’ curve at IMA demonstrates this area is visualized
Examples of “G” grading

Slight asymmetry of pec length grades images as G not P
Examples of “G” grading

Right CC has slight medial bias, not sufficient to downgrade to ‘M’ grading
Examples of “G” grading

• MLO views OK, IMA just seen on Right MLO

• Nipple transected Left MLO

• CC’s have medial bias but graded G as PNL of CC’s within 1cm of PNL of MLO’s
Examples of “G” grading

• Nipples on CC’s are transected.

• Clipping of lateral aspect minimal and may be acceptable by some services (with regards to ⅓ rule).

• MLO’s have some asymmetry of height - if lower point of both pec were matched, there would be a more similar pec width across the top losing small amount of upper Right MLO and would be acceptable for G grading.
Examples of “M” grading

• No IMA seen on either MLO

• If relying on skin contour to define upper boundary of MLO then this image is missing tissue of the upper breast aspect

• Clipping of lateral aspect of the breast

• CC’s have nipple transected by skin edge
Examples of “M” grading

Breast well extended and breast tissue well elevated however skin folds at IMA extend into breast tissue and angles not clearly visualised
Examples of “M” grading

• Left IMA not clearly visualized

• Right IMA borderline as there is a slight dip at edge of image

• Left pec not down to level of nipple

• Asymmetry of CC placement is minor – this may be addressed by some PACS/modality software
Examples of “M” grading

• IMA not clearly seen on both MLO’s.
• Left CC nipple not transected by skin
Examples of “M” grading

- Right breast meets G criteria as nipple profile transected on CC
- Using the current PGMI criteria, the previous Left breast surgery results in an M grading even though these images are of a high diagnostic quality. These are likely to be the best images achievable on this lady.
Examples of “M” grading

- Pec’s not sufficient length for G grading.

- Creases at IMA would be acceptable for a G as ‘windowing’ through this area allows for clear visualization.

- CC’s show minor asymmetry.
Examples of “M” grading

If 2 images are required in the MLO projection, the IMA needs to be clearly demonstrated in the ‘uplift’ view.
Examples of “M” grading

- Skin folds in axilla

- Twists at both IMA’s, not into breast but IMA’s not clearly seen
Examples of “M” grading

Graded as M due to the skin folds in the axilla
Examples of “M” grading

Twists, folds and absent IMA
Thank You

For comment and feedback please contact an ASMIRT representative on the Medical Imaging Advisory Panel 2 (Breast & Ultrasound)