ST VINCENTS / OPTIMAL IMAGING BREAST IMAGING POLICIES

PURPOSE

- To standardize and ensure appropriateness, completeness and execution in the performance of breast imaging in all patients.

GENERAL BREAST IMAGING COMMENTS

- All mammography technologist's notes should be made in MagView rather than as a PACS comment or on the examination paperwork.
- Mammography is not contraindicated while a patient is pregnant or while breastfeeding.
- Gadolinium IV contrast for breast MRI is never to be administered to a pregnant patient unless approved by a radiologist (regardless of how the exam is ordered). If IV contrast is approved by a radiologist, the order for the IV contrast should be signed back to that radiologist.
- Breast MRI with or without IV contrast is not contraindicated while a patient is breastfeeding. The patient should pump both breasts immediately before the examination.

WHO IS ELIGIBLE FOR SCREENING MAMMOGRAPHY

- A screening patient must be asymptomatic (i.e. cannot have any current breast symptoms).
- Patients at average risk for breast cancer should begin annual screening at age 40.
- Patients at high risk for breast cancer should begin annual screening at age 30:
  - Patients with ≥20% risk of breast cancer per risk models (e.g. Tyrer-Cuzick, Gail and BCSC models).
  - Patients with a genetic predisposition that places them at increased risk of breast cancer including BRCA1/2, PALB2, ATM, CDH1, BALD1 mutations and Cowden (PTEN) and Li-Fraumeni (TP53) syndromes.
  - Patients with a first-degree relative (parent, full sibling or child) who has a known BRCA mutation.
  - Patients with a history of ADH or lobular neoplasia (ALH or LCIS).
- Patients with a personal history of DCIS, IDC, ILC or ovarian cancer should begin annual mammography at the time of diagnosis (regardless of age).
- Patients with a first-degree relative (parent, full sibling or child) with a history of breast cancer should begin annual screening 10 years prior to the earliest age of the family member at diagnosis (but no earlier than age 30).
- Patients with a history of chest/mantle radiation received between 10-30 years of age should begin annual screening 8 years following completion of radiation (but no earlier than age 25).
- There is no recommended age at which patients should stop annual screening, however any patient undergoing screening should have a reasonable life expectancy and be willing to undergo evaluation/treatment of any abnormality found.

STANDARD SCREENING MAMMOGRAM VIEWS

- Standard screening mammography views include only CC and MLO views.
- Only obtain additional views (exaggerated CC lateral, exaggerated CC medial, cleavage, nipple in profile, inframammary fold or axillary views) when required to completely visualize the breast tissue (and pectoralis muscle). See adequate positioning section below.

- Exaggerated CC lateral views are only to be obtained if there is incomplete visualization of the posterior outer fibroglandular margin on the standard CC views.
- The 2D views from a screening 3D tomosynthesis exam should be synthesized 2D views. Conventional 2D screening views should only be obtained if requested by the radiologist or if the patient refuses 3D tomosynthesis imaging.

ENSURING ADEQUATE POSITIONING ON SCREENING MAMMOGRAMS

- The following are essential to ensuring adequate positioning on standard screening mammography views:
  - Nipple in profile on either the CC or MLO view (on both views if possible).
  - Pectoralis major muscle extends to the posterior nipple line on the MLO view.
  - Inframammary fold visible on the MLO view.
  - Length of the posterior nipple line on the CC view measures within 1 cm of the length of the posterior nipple line on the MLO view.
  - At least one image from each projection should be free of motion and skin folds.
- The reason(s) for the inability to properly position a patient must be documented in MagView.

HOLDING SCREENING MAMMOGRAMS FOR OUTSIDE EXAMINATIONS TO ARRIVE

- All patients undergoing breast imaging should have prior examinations (including outside examinations) in PACS prior to that imaging being interpreted.
- If prior breast imaging is not already available in PACS and the patient does not bring outside imaging to the appointment, the Technologist should use the PowerShare Request sheet on Google Drive to obtain any outside examinations. PowerShare requests are often completed in 1-2 days compared to waiting for a disc with outside examinations to arrive. Most local institutions can share examinations via PowerShare. Contact a PACS administrator if you do not already have access to the PowerShare Request sheet.
- Alternatively the Technologist can have the patient complete a release authorization form and fax the form to the File Room.
- A screening mammography examination can be held for up to 10 business days while waiting for requested outside examinations to arrive.
- After 10 business days, the screening examination will be placed on the worklist to be read (with or without outside examinations). If outside imaging arrives after the examination is

read, the reading radiologist will issue an addendum. Another radiologist can issue an addendum if the original radiologist is unavailable.
- The inability to obtain outside examinations must be documented in MagView.

MAMMOGRAMS IN PATIENTS UNDER 30 YEARS OF AGE

- Patients under 30 years of age are typically only evaluated with ultrasound.
- Mammography can be performed at the discretion of the radiologist.

BI-RADS 0 AND 3 PATIENTS WHO ARE LATE FOR EVALUATIONS

- If a patient presents within 6-24 months of prior imaging for evaluation of BI-RADS 0 or 3 findings, the patient requires orders for diagnostic evaluation (mammography +/- ultrasound).
- If a patient presents more than 24 months from prior imaging for evaluation of BI-RADS 0 or 3 findings, the patient can proceed with either screening mammography or diagnostic evaluation depending on what orders the patient has (e.g. a patient with an order for screening mammography whose last breast imaging was BI-RADS 0 or 3 and was performed 3 years ago can proceed with screening mammography).
- If a patient presents for a unilateral examination and is within 2 months of being due imaging of the other breast, every attempt should be made to obtain an order for imaging of both breasts so the patient does not have to return for a second appointment.

GENERAL BREAST MRI CONSIDERATIONS (WHY MRI IS NOT AUTOMATICALLY APPROVED)

- Breast MRI is more sensitive for detecting abnormalities than mammography or ultrasound (i.e. abnormalities are detected more often on MRI or sometimes only detectable on MRI).
- However breast MRI is less specific than mammography and ultrasound (i.e. findings can be diagnosed more readily with mammography and/or ultrasound compared with MRI and sometimes without needing biopsy).
- Findings on breast MRI usually have to be further evaluated with diagnostic mammography and/or ultrasound (assuming mammography and/or ultrasound was not already performed).
- Breast MRI is usually more expensive for a patient than evaluation with mammography and ultrasound, and MRI does not always add useful information.
- Screening breast MRI is generally performed alternating with screening mammography every 6 months (assuming the patient is at least 30 years of age to undergo mammography).
- Diagnostic breast MRI is generally performed after diagnostic evaluation with mammography and/or ultrasound has already been performed.

WHICH RADIOLOGIST TO CONTACT FOR BREAST MRI APPROVAL OR PROTOCOL QUESTIONS

- Questions should be directed to the radiologist who will be responsible for reading the MRI examination.

- Breast MRIs performed at Southside Hospital are read the next weekday by the Southside imaging radiologist.
- Breast MRIs performed at all other locations are read the next weekday by the Breast Center radiologist.

WHO IS ELIGIBLE FOR BREAST MRI

- All patients 30 years old or older with an order for lesion detection protocol breast MRI (either screening or diagnostic MRI) must have recent screening or diagnostic mammograms of both breasts within the prior 8 months available in PACS prior to scheduling the MRI. Recent mammograms can be unilateral in patients with a history of mastectomy on the other side. Recent mammograms are not required if the patient has undergone bilateral mastectomy.
- If a radiologist approves a breast MRI without recent mammography available, that radiologist is responsible for reading the MRI. Flag the examination for the approving radiologist and indicate the name of the approving radiologist on the tech worksheet.
- All indications for breast MRI not listed below require radiologist approval prior to being scheduled. If a patient does not have one of the below indications, contact a radiologist to determine whether or not MRI can proceed (see above section on which radiologist to contact).
- In patients who are up to date with mammography, the following indications do not require radiologist approval prior to scheduling MRI:
  - Patients with newly diagnosed or a personal history of breast cancer (IDC, ILC or DCIS), including patients who have undergone lumpectomy or unilateral/bilateral mastectomy.
  - Patients undergoing restaging for current breast cancer following neoadjuvant therapy.
  - Recent post-lumpectomy patients with positive surgical margins.
  - High-risk patients
    - Patients with ≥20% risk of breast cancer per risk models (e.g. Tyrer-Cuzick, Gail and BCSC models).
    - Patients with a genetic predisposition that places them at increased risk of breast cancer including BRCA1/2, PALB2, ATM, CDH1, BALD1 mutations and Cowden (PTEN) and Li-Fraumeni (TP53) syndromes.
    - Patients with a history of chest/mantle radiation received between 10-30 years of age. MRI should begin 8 years following completion of radiation (but no earlier than age 25).
  - Intermediate-risk patients
    - Patients with 15-20% risk of breast cancer per risk models.
    - Patients diagnosed with breast cancer before age 50.
    - Patients with heterogeneous or extremely dense breast tissue and breast cancer diagnosed at any age.
  - Patients with metastatic cancer likely of breast origin diagnosed by biopsy.

- Patients in which breast MRI was recommended by a St Vincents radiologist on recent mammography and/or ultrasound (within prior 6-8 months). Recommendations by an outside radiologist requires St Vincents radiologist approval.
- Patients in which diagnostic mammography and/or ultrasound performed at St Vincents or Optimal Imaging did not find a satisfactory explanation for breast symptoms (e.g. palpable lump, nipple discharge, focal pain or skin/nipple changes).
- Evaluation solely for breast implant integrity (as implant integrity protocol without IV contrast).

BREAST MRI IN MASTECTOMY PATIENTS

- Mastectomy patients do not require radiologist approval prior to undergoing breast or chest wall MRI if the examination is for mastectomy bed surveillance (e.g. assessing for disease recurrence in an asymptomatic patient).
- If MRI is requested for a specific abnormality/concern (e.g. palpable mass, focal pain, skin retraction/changes), the evaluation should begin with chest ultrasound. Ultrasound often answers the clinical question, is cheaper and easier than MRI for the patient and uses fewer medical resources.
- The protocol, FOV and requisition used depend on the examination indication and the presence or absence of breast reconstruction(s):
  - Routine surveillance in an asymptomatic patient with bilateral mastectomies without reconstructions - Use MSK soft tissue tumor protocol limited to the anterior chest wall (both sides). Patient in the prone position. Use MRI chest without and with IV contrast requisition.
  - Routine surveillance in an asymptomatic patient with bilateral mastectomies with reconstruction(s) on one or both sides - Use lesion detection breast protocol with normal breast FOV. Patient in the prone position. Use MRI chest without and with IV contrast requisition.
  - Routine surveillance in an asymptomatic patient with mastectomy on one side (without or with reconstruction) and normal breast tissue on the other side - Use lesion detection breast protocol with normal breast FOV. Patient in the prone position. Use MRI chest without and with IV contrast requisition. At least one normal breast = regular breast MRI.
  - Specific abnormality/concern (e.g. palpable mass, focal pain, skin retraction/changes) on the side of a mastectomy without or with reconstruction (e.g. implant/flap) – Use MSK soft tissue tumor protocol with a smaller FOV centered on the mastectomy bed (or large enough to cover the entire reconstruction if present). Patient in the prone position. Use MRI chest without and with IV contrast requisition.

USE OF IV GADOLINIUM CONTRAST FOR BREAST MRI EXAMINATIONS

- Lesion detection protocol breast MRIs require IV contrast. Acute kidney injury (AKI) and GFR <30 mL/min are no longer considered contraindications to IV gadolinium administration.
- Implant integrity protocol breast MRIs are performed without IV contrast (unless the protocol is combined with the lesion detection protocol).
- Gadolinium IV contrast for breast MRI is never to be administered to a pregnant patient unless approved by a radiologist (regardless of how the exam is ordered). If IV contrast is approved by a radiologist, the order for the IV contrast should be signed back to that radiologist.

PRIOR BREAST IMAGING BEFORE OBTAINING BREAST MRI

- All patients undergoing breast MRI should have prior breast examinations (including outside examinations) in PACS prior to the MRI examination being interpreted.
- If prior breast imaging is not already available in PACS and the patient does not bring outside imaging to the appointment, the Technologist should use the PowerShare Request sheet on Google Drive to obtain any outside examinations. PowerShare requests are often completed in 1-2 days compared to waiting for a disc with outside examinations to arrive. Most local institutions can share examinations via PowerShare. Contact a PACS administrator if you do not already have access to the PowerShare Request sheet.
- Alternatively the Technologist can have the patient complete a release authorization form and fax the form to the File Room.

OFFICE NOTES / PATHOLOGY REPORTS PRIOR TO BREAST MRI

- Patients undergoing breast MRI must have a recent office note from the ordering clinician scanned into PACS. The Technologist should contact the ordering clinician's office to obtain this note.
- Patients with a history of recent biopsy or surgery at an outside facility also need the biopsy and pathology reports scanned into PACS.

UPLOADING OUTSIDE BREAST IMAGING TO PACS

- Screening mammogram - Outside images are required (assuming they can be obtained). Outside reports are preferred as well.
- Diagnostic mammogram and/or ultrasound - Outside images and the report(s) that prompted the diagnostic examination are required. Earlier outside images (e.g. screening mammograms) are preferred as well.
- Breast MRI - Outside images and the report(s) that prompted the MRI are required. Earlier outside images (e.g. screening mammograms) are preferred as well.

- Biopsy/Aspiration - Outside images and the report(s) that prompted the procedure are required. Earlier outside images (e.g. screening mammograms) are preferred as well.
- Localization – Outside biopsy images (including post clip placement mammograms and specimen radiographs) and report, outside diagnostic mammography and/or ultrasound images and report(s) and the biopsy pathology report are required. Earlier outside images (e.g. screening mammograms) are preferred as well.
- If required outside reports do not arrive with the outside images, contact the facility and have the reports faxed over. Scan the reports into the appropriate examination folders in PACS.

BREAST PROCEDURES IN PATIENTS TAKING BLOOD THINNERS

- Patients undergoing breast procedures are not required to hold any blood thinners prior to procedure (unless she/he chooses to do so). This change was approved by IR leadership, approved by the majority of procedure radiologists and aligns with SIR guidelines for low-risk procedures.

REVIEW OF OUTSIDE BREAST MRI FOR CONSIDERATION OF MRI-GUIDED BIOPSY

- MRI-guided breast biopsies are currently only performed at Southside hospital.
- Only radiologists who perform MRI-guided breast biopsies (Drs. Bathala and Rezaei) are allowed to review/approve these biopsies.
- MRI-guided breast biopsies cannot be scheduled until an invasive sheet has been signed by either Drs. Bathala or Rezaei.
- Breast MRIs from outside institutions will not be reviewed for MRI-guided biopsy unless the examination was performed at NAS Jacksonville. Breast MRIs from many outside institutions are often technically inadequate or suboptimally interpreted. These patients either need a repeat breast MRI at St Vincents or Optimal Imaging, have an existing breast MRI from NAS Jacksonville or have repeat diagnostic evaluation at St Vincents or Optimal Imaging.

BREAST IMAGING EVALUATION OF ER PATIENTS & INPATIENTS

- The only routinely appropriate indications for breast imaging in an ER patient or inpatient are for the evaluation of suspected mastitis or abscess. Use a ultrasound chest requisition rather than a MA US Breast requisition. This can be ordered by any treating clinician.
- Diagnostic breast imaging and/or biopsy of a patient who presents with advanced breast malignancy as an ER patient or inpatient is at the discretion of the treating radiologist. The order for mammography, breast ultrasound and/or biopsy must come from a clinician who will follow the patient as an outpatient (breast surgeon, hematologist/oncologist, radiation oncologist or OB/GYN). A clinician who only treats inpatients cannot be the ordering clinician as he/she has no mechanism to follow the patient once discharged.

- Evaluation of incidentally detected breast findings in an ER patient or inpatient is generally inappropriate.
- For an ER patient or inpatient with a breast complaint that is to be evaluated during the current visit or at an outpatient visit, the Breast Center will either fax a release authorization form to the patient's nurse or direct the nurse to the svrads website where the form can be printed. The nurse will have the patient complete the form and fax it back to the Breast Center or File Room.

REFERENCES

- ACR Practice Parameter for the Performance of Screening and Diagnostic Mammography – https://www.acr.org/-/media/ACR/Files/Practice-Parameters/Screen-Diag-Mammo.pdf.
- ACR Practice Parameter for the Performance of Contrast-Enhanced MRI of the Breast – https://www.acr.org/-/media/ACR/Files/Practice-Parameters/mr-contrast-breast.pdf.
- Breast Cancer Screening in Women at Higher-Than-Average Risk: Recommendations from the ACR – https://doi.org/10.1016/j.jacr.2017.11.034.