Breast Fellowship Goals, Objectives and Curriculum:

Need:
- Complex decision making for both benign and malignant breast diseases.
- Patients frequently seek advice from surgeons reading other treatment modalities (entry to system and level of trust)

Overarching and Competency Based Goals and Objectives:
1. **Patient Care:** The fellow must be able to provide appropriate and effective treatment for the most common benign and malignant breast diseases in a compassionate approach. This includes care delivery in clinic, OR and emergency setting when indicated.
2. **Medical Knowledge:**
   - **Pathophysiology:** Fellows will know the epidemiology, pathology and other relevant biomedical principles in breast disease. These principles are detailed in the specialty specific curriculum included. These curricula were developed in collaboration with representatives from each specialty area.
   - **Technical:** Fellows will know all the technical procedures of the breast and axilla implemented in the surgical management of breast diseases. Details outlined in Curriculum below.
3. **Practice Based Learning and Improvement:** Fellows must demonstrate the ability to respond to feedback on their care of patients and commitment to lifelong learning. They will be expected to provide information and demonstrate knowledge of the literature through presentations at Division and Department level conferences. They will also be expected to actively participate in Breast Tumor Board presentations as well as develop and execute multidisciplinary based patient care plans. They are also expected to attend the weekly Departmental M&M Conference and contribute cases when indicated.
4. **Interpersonal and Communication Skills:** Fellows must demonstrate the ability to communicate effectively with patients and families the often complex information associated with breast diseases. They must also demonstrate a collaborative approach with other healthcare professionals in providing for the unique needs of these patients. This includes at least Medical Oncologists, Radiation Oncologists, Radiologists, Pathologists, Plastic Surgeons and other professionals such as Physical Therapists and Genetic Counselors. They are also expected to provide accurate and timely documentation of clinical activities.
5. **Professionalism:** Fellows must demonstrate professionalism in their relationships with patients, families and colleagues. They will be expected to demonstrate:
   a. Compassion and respect
   b. Responsiveness to patient needs
   c. Respect for patient privacy and autonomy
   d. Accountability to patients and colleagues
   e. Sensitivity and responsiveness to a diverse patient population including age, race, religion, disabilities and sexual orientation
   f. High standards of ethical behavior
   g. A commitment to continuity of care and in particular an appreciation of the long term follow up required in many clinical scenarios (particularly cancer patients)

   Fellows must perform complete and thorough documentation of clinical activity in a timely manner.
6. **Systems Based Practice:**
The fellow must demonstrate knowledge of community resources available for patients. The fellow will be expected to work with the Nurse Navigator for the breast center to identify at least one project to improve the patient care experience during the program.

BREAST FELLOWSHIP CURRICULUM OTHERWISE ORGANIZED BY SPECIALTY:

RADIOLOGY:

Screening and Diagnostic Studies:
The fellow will understand &/or know:
1. Guidelines for breast cancer screening for the general public and high risk populations.
2. Controversies relating to age, screening interval and argument regarding over-diagnosis of small cancers
3. Indications, techniques and uses for diagnostic studies including diagnostic mammogram, ultrasound, tomosynthesis and MRI
4. Interpretation of studies:
   Mammography: including tomosynthesis
   Appearance of normal anatomy
   Characteristics of benign and suspicious calcifications and masses
   Indirect signs of malignancy (architectural distortion & asymmetry)
   Surgically altered breast
   Ultrasound:
   General principles
   Indications
   Technical principles: including breast and axilla
   MRI:
   General Principles
   Normal anatomy
   Structural abnormalities:
   Mass & architectural distortion
   Kinetic abnormalities:
   Background enhancement
   Mass & non mass-like enhancement
   Second look imaging

Reporting: The fellow will know the important components of breast radiology reporting and be familiar with the verbiage and its implications including:
BIRADS categories
Breast composition statement/qualifier
Location of focal finding(s)
Final assessment category
Concordance of all components: With particular emphasis on the important concept of clinical/pathologic/radiographic correlation.

Interventional procedures: The fellow will be familiar with the indications, techniques, and benefits/risks of interventional procedures including:
Needle localization
Guidance techniques: Mammography, ultrasound and MRI
   Benefits and risks of each approach
Core needle biopsy
Vacuum assisted needle biopsy
FNA: Breast and axilla
Cyst aspiration
Cytology
Site markers: Importance of using site makers, follow up x-rays to assess positioning of markers
Specimen radiography: Percutaneous and excision specimens
Post-procedure imaging: As Above
Galactography/ductography: Benefit/risk

**Lymphoscintigraphy:** The fellow will be familiar and/or know the:
Recommendations/indications
Injection sites for dyes and differences for radioactive and lymphazurin blue (or methylene blue) dye
Radioactive seed localizations
Sensitivity & specificity of sentinel lymph node technique

**CORRELATION:** As above. This a very important concept that will be reinforced in all the clinical rotations.

**SURGICAL ONCOLOGY:** The fellow will know and understand the management of:
1. Surgical management of benign, atypical and malignant lesions of the breast including:
   - The indications for surgical excision
   - The risk of an associated cancer when atypical lesions are diagnosed with needle biopsy
     and the factors that impact the risk.
   - The risk of developing breast cancer associated with atypical lesions of the breast (both ductal
     and lobular)
2. Familiarity with office procedures:
   - Imaging, FNA, core needle biopsy with/without imaging, punch biopsy of skin
3. The indications and technical approaches to wire or image guided excisional procedures and the
   importance of specimen imaging
4. Breast cancer treatment options: The risk/benefit of each approach and important issue in the
   decision making process such as:
   - Breast conservation:
     - Criteria/contraindications
     - Technical approaches including incision orientation and tissue removal to maximize cosmesis
     - including oncoplastic procedures
   - Mastectomy:
     - Determining resectability and indications for neoadjuvant treatment (also in G&O for Medical
       Oncology)
   - Indications
     - Types & indications including radical, modified radical, total and skin & nipple sparing
     - approaches
   - Extent of resection
   - Optimal flap anatomy
   - Unique challenges:
     - Pregnancy associated breast cancer: Diagnostic work up and treatment considerations
     - Hereditary breast cancer and risk reduction in patients at risk
5. Axillary assessment: The fellow with be familiar with the various approaches to axillary staging and
   understand the history and evolution of thought and practice regarding the axilla in breast cancer. The
   includes:
   - Ultrasound: Its use in staging the clinically negative axilla and indications
   - Sentinel lymph node biopsy: Indications and technique including injection of dyes
Axillary lymph node dissection:
   Indications
   Anatomy and technical approaches
6. Complex chest wall resection for recurrence: The fellow will be capable of:
   Coordinating care plan with Plastic Surgery and/or other teams (possibly Thoracic Surgery)
7. Managing complications: The fellow will be familiar with possible post-operative complications as well as situations and conditions that increase the risk of complications; including:
   Seromas
   Neuropraxia(s)
   Lymphedema
   Flap or nipple necrosis
8. Managing recurrent disease: The fellow will be knowledgeable in the management of patients with recurrent breast cancer in a variety of settings including:
   Following breast conservation with and without prior radiation therapy
   Following mastectomy with and without reconstruction
   Special challenge of axillary recurrence
9. Surgical management of metastatic disease: The fellow will be knowledgeable about the principles of surgical resection of metastatic breast cancer including but not limited to control of the primary tumor, curative and/or palliative intent
10. Prophylactic surgery: The fellow will know the important steps in risk assessment (see Genetics below), benefits and risks of a surgical approach to risk reduction and the medical alternatives to prophylactic surgery.
11. Patients with genetic mutations: The fellow will know the alternatives to treatment and be sensitive to the individual choice involved in this decision process.

PLASTIC & RECONSTRUCTIVE SURGERY: The fellow will be familiar with all approaches to post-mastectomy breast reconstruction and oncoplastic considerations in breast conservation. This includes:
1. Post-mastectomy reconstruction:
   Immediate AND delayed reconstruction and important criteria in the decision making process.
   Implants/expanders: Risks & benefits; contraindications; limitations in use.
   Autologous tissue options: Particularly DIEP (most common autologous approach with our Plastic Surgery Team), latissimus dorsi flap and other options
2. Oncoplastic procedures
3. Sequencing of adjuvant radiation therapy in reconstructed breast

MEDICAL ONCOLOGY: The fellow will be familiar with options for systemic treatment; criteria for decision making; and side effects, risks and contraindications associated with various systemic treatments. This includes:
1. Criteria for recommendations: The fellow will know the importance of stage and tumor markers in systemic treatment decisions including ER/PR, Her2/neu and Oncotype Dx testing.
2. Endocrine treatment options: The fellow will know the indications, criteria used in decision making (including menopausal status, side effect profile), risks/benefits and duration of treatment.
3. Chemotherapy: The fellow will know the most commonly used chemotherapy agents in the treatment of breast cancer, the mechanism of action, side effects/toxicities (short and long term) and other considerations in decision making (e.g. co-morbidities)
4. Targeted therapy: The fellow will know the currently available agents, indications, benefits and options for combination therapy
5. Neoadjuvant, adjuvant treatment: The fellow will know the indications and options as well as the appropriate interval between treatment regimen completion and surgery. The fellow will understand and appreciate the importance of communication between the multidisciplinary care team providers to optimize care in this approach.
6. Palliative approaches & hospice: The fellow will understand the change in philosophy and goals as well as the multiple options for symptom management.
7. The unique psychosocial needs of patients receiving chemotherapy: The fellow will understand the psychological challenges directly related to chemotherapy agents and indirectly due to changes in body image (alopecia) and perceptions of sexuality.

RADIATION ONCOLOGY: The fellow will understand the important role radiation therapy plays in the care of breast cancer patients. This includes:
1. Criteria for recommendations:
   - Following breast conservation:
     DCIS in particular using scoring systems in decision making
   - Following mastectomy
   - In treatment of chest wall recurrence
2. Side effects, complications and treatment: The fellow will be able to counsel patients about the side effects, as well as, recognize and treatment
3. Criteria for treatment recommendations: The fellow will know the criteria for radiation therapy for patients with DCIS (including scoring system as decision tool); invasive cancer including patients with axillary, internal mammary or supraclavicular lymph node metastases; following mastectomy; and for chest wall recurrences.
4. Familiarity with treatment planning and regimens (including approaches and fields) for treatment including:
   - Conventional whole breast irradiation
   - Hypofractionated treatment plans
   - Brachytherapy
   - Partial breast irradiation
   - Intraoperative approaches and the importance of coordination of plans with Radiation Oncology colleagues.
4. Considerations in designing treatment fields: Including when to include:
   - Axilla
   - Internal mammary and supraclavicular nodes
5. Side effects/complications and identifying and treatment:
   - Skin reaction
   - Lymphedema
   - Constitutional symptoms
   - Risk of cardiopulmonary compromise
6. Role in treatment of metastatic disease at various sites including bone, brain, CNS and soft tissue including for palliation
7. Radiation and reconstructive surgery: As also indicated under Plastic Surgery, the fellow will know the importance of planning and communication (with both Radiation Oncology and Plastic Surgery) in the treatment of women with locally advanced disease that desire reconstruction.

**PATHOLOGY:** The fellow will be familiar with all the most common benign and malignant pathology of the breast. This includes:

1. Benign breast pathology: The fellow will know the most common benign breast masses and processes otherwise and the unique histologic features and implications for surgical management. This includes:
   - Simple & complex cysts
   - Ductal hyperplasia: The fellow will be know the histology and continuum of hyperplasia -> atypia -> DCIS -> invasive cancer
   - Fibroadenoma: The fellow will know the characteristics and recommendations for diagnostic work up and options for treatment.
   - Fat necrosis: The fellow will be able to recognize the characteristic appearance on imaging studies and the importance of correlation the clinical impression with the pathologic finding.
   - Atypical lesions: The fellow will appreciate the subtleties and challenges in identifying these lesions and distinguishing from DCIS. This includes all of the following:
     - Atypical ductal hyperplasia
     - Flat epithelial atypia,
     - Lobular neoplasia (atypical lobular hyperplasia & LCIS)
   - Others including: Papillary lesions, radial scar, complex sclerosing lesions.
   - Phyllodes tumors: Benign and borderline
   - Diabetic mastopathy
   - Galactocele
   - Mondor’s disease

2. Malignant lesions pathology: The fellow will know the unique histologic feature of noninvasive and invasive breast cancer including:
   - DCIS
   - LCIS
   - Paget’s disease
   - Invasive mammary carcinomas:
     - Invasive ductal carcinoma
     - NOS
     - Variants (Mucinous, medullary, papillary, tubular, metaplastic)
   - Inflammatory
   - Histologic changes following neoadjuvant treatment
     - Invasive lobular carcinoma
     - Multicentric and multifocal cancers
     - Phyllodes tumors
     - Pregnancy associated breast cancer
   - The rare types of tumors that may metastasize to the breast and be confused with primary tumors or breast cancer with unknown primary when presenting as enlarged axillary lymph nodes

3. Staging: The fellow will understand the importance of staging and know the criteria for clinical and pathologic staging including
   - Challenges:
     - Measuring size of primary tumor for both noninvasive and invasive lesions
Characteristic histologic changes following neoadjuvant treatment
Artifacts associated with biopsy

4. Specimen handling: The fellow will know the importance of specimen handling during dissection, orientation prior to submitting to pathology and the process of tissue handling in the Pathology lab. This includes:
   - Gross room specimen processing including frozen section & touch prep of sentinel nodes
   - Specimen orientation with marking or painting by the surgeon
   - Special staining including IHC, FISH

5. Prognostic testing: The fellow with know the importance of molecular profiling in developing systemic treatment plans and the importance of remaining up to date about this rapidly evolving technology. This includes:
   - Oncotype DX and molecular profiling models
   - Continuity: Reviewing cases actively participating in clinically

6. Molecular mechanisms of breast carcinogenesis: The fellow will be familiar with precursor lesions and changes associated with progression to invasive cancer and development of metastatic disease.

7. Unique educational tools: Breast service notebook, gross room “histology tour”

GENETICS: The fellow will be understand the concepts and models of breast risk analysis and be able to address the needs of this unique patient group. This includes:
1. Risk assessment: The fellow will observe and assist in genetic counseling sessions for women at high risk of developing breast cancer. The primary goal is gaining the ability to identify appropriate patients for referral for Genetic Counseling and Testing.
   This includes:
   - Creating a family pedigree
   - Mutations: BRCA 1 & 2, p53, Cowden’s
   - Understanding the importance of counseling prior to undergoing testing.
   - Gaining familiarity with the genetic testing methods and technology and the importance of remaining current in this knowledge due to the rapid pace of innovation.
   - Know the types of benign pathology that confer an increased risk and the impact on risk
   - Know the environmental exposures that may increase risk (social and medical)
   - Test interpretation and communicating results with patients
   - Privacy issues related to testing including insurance related issues and patient fears related to this important issue.

PSYCHO-ONCOLOGY: The fellow will gain an understanding of the unique needs of breast cancer patients including:
   - High risk
   - Newly diagnosed breast cancer patient
   - Challenges along continuum of care including all components of treatment and survivorship
   - Cultural diversity
   - Communicate effectively in “lay terms”

Community resources:
   - Patient advocate organizations
   - Participate in public service
   - Recognize patients at psychosocial high risk and identify resources

Part of this experience will be gained through the Center for Integrative Medicine which provides a variety of services for cancer patients including individual & group counseling, mindfulness workshops
for handling stress, physical therapy including yoga classes; other opportunities include acupuncture for patients with chronic pain, massage therapy and nutritional counseling.

**COMMUNITY SERVICE AND OUTREACH:**
The fellow will understand the importance of community education and cancer patient advocacy. This will be done through the Tennessee Cancer Coalition which is a statewide organization that partners with the American Cancer Society to increase public awareness across the state and offers a forum for regional professionals to exchange ideas and develop plans for implementation across the state. The Breast and Cervical Cancer Early Detection and Treatment Program is also part of this coalition. Dr. Meszoely has served as State Chair of this organization and is very actively involved in their programs.

**RESEARCH:** The fellow will have the opportunity to:
- Center for Quantitative Studies:
  - Summer Institute: Please see scheduled topics @ https://medschool.vanderbilt.edu/cqs/cqs-summer-institute
  - Participate in clinical trial patient enrollment and monthly review of cases
  - Develop and complete a clinical research project and prepare manuscript for publications
  - Gain familiarity with cooperative groups and their research trials
- IRB: Participate in institutional program’s educational series

**PHYSICAL THERAPY/REHAB:** The fellow will be able to understand the importance of therapy for:
- Mobility:
  - In office teaching and when referral is indicated
- Lymphedema therapy

**SCHEDULE:**
- Dedicated months in Pathology, Radiation Oncology, Medical Oncology, Surgical Oncology
- Clinical experiences that do not have dedicated months but will be provided during the other clinical rotations: Physical therapy & lymphedema therapy; Genetic counseling;

**CONFERENCES:**
- Wednesday:
  - Surgery M&M Conference
  - Breast Multidisciplinary Tumor Board Conference
  - Pathology Unknown Conference 2X/year
  - Radiology Resident Conference presentation 1X/year
- Thursday:
  - Internal Medicine Grand Rounds (when applicable to goals of Fellowship)
  - Pathology didactic conference
- Friday:
  - Surgery Grand Rounds
  - Radiology Resident Conference