

Breast Fellowship Goals, Objectives and Curriculum:

Need:

Multidisciplinary approach to breast cancer treatment.

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 will 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
 - Pre-operative assessment
 - Benefits, risks and complications associated with various procedures
 - Flap anatomy: Oncologic and cosmetic considerations when designing flaps
 - Nipple/areolar reconstruction
 - Symmetry procedures
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.
3. 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 will 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

Radiation Oncology 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