

**CATEGORICAL COURSE CURRICULUM  
2 YEAR COURSE  
BREAST IMAGING**

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|--------------------------|---|
| Lecture 1                | Epidemiology                                      |
| Lecture 2                | Breast anatomy, pathology and physiology          |
| Lecture 3                | Mammographic equipment and technique              |
| Lecture 4                | Mammography Quality Control                       |
| Lecture 5                | Mammographic interpretation                       |
| Lecture 6                | Problem Solving Mammography                       |
| Lecture 7                | Breast ultrasound                                 |
| Lecture 8                | Interventional procedures                         |
| Lecture 9<br>Mammography | Mammographic reporting and Medicolegal Aspects of |
| Lecture 10               | Screening Mammography                             |
| Lecture 11               | Breast MRI  |
| Lecture 12               | Therapeutic considerations                        |
| Lecture 13               | Patient management principles                     |

Goals and Objectives  
Breast Imaging  
Second Year Residents

**Patient Care**

Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

*Knowledge Based Objectives*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

**WILL DEMONSTRATE:**

- Use of effective communication and caring and respectful behavior when interacting with  
Patients of all ages and their families

- Ability to gather essential and accurate information about patients when appropriate (from chart, old films, lab, referring MD)
- Ability to work with other health care professionals to provide patient focused care in the breast imaging area including technologists and clinicians, providing help with all diagnostic and screening hanging protocols, and consultation in the reading room, answering the phone, calling referring MD's.
- Recognition of principles of physics and radiation biology in daily radiology practice especially as it relates to the unique problems of breast imaging and quality control, analog and digital.

*Skill based objectives*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

**WILL DEMONSTRATE:**

- Ability to use the Webchart and Rad Info systems to obtain needed patient information
- Ability to supervise diagnostic mammography with direct supervision from staff

**Medical Knowledge**

Residents must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavior) sciences and the application of this knowledge to patient care.

*Knowledge based objectives*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

**WILL DEMONSTRATE:**

- Recognition of normal and abnormal anatomy necessary to interpret mammograms and other breast imaging techniques
- Recognition of importance of obtaining all relevant information before image interpretation or performance of exam
- Recognition of limitations in personal knowledge and not make decisions beyond level of personal competence

*Skill based objectives*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

**WILL DEMONSTRATE:**

- Recognition of normal and abnormal findings on mammograms and breast

- ultrasound.
- Demonstrate the ability to direct diagnostic mammography.

### **Practiced Based Learning and Improvement**

Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.

#### *Knowledge based objectives*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

#### **WILL DEMONSTRATE:**

- Evidence of independent study using textbooks from suggested reading list
- Participation in Interdisciplinary Breast Conference
- Appropriate follow-up of interesting cases (looks up biopsy results, gets follow-up from surgeons, etc.)

#### *Skill based objectives*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

#### **WILL DEMONSTRATE:**

- Operation of use IT systems and assist in interventional breast procedures.

### **Interpersonal and Communication Skills**

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange with patients, patient's families, and all levels of professional associates.

#### *Knowledge Based Objectives:*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

#### **WILL DEMONSTRATE:**

- Ability to work as an effective member of the imaging team and contribute to the clinical care of patients when appropriate

#### *Skills Based Objectives:*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

#### **WILL DEMONSTRATE:**

- Ability to dictate written reports for routine breast imaging Exams using BIRADS system

## **Professionalism**

Resident must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

### *Knowledge Based Objectives:*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

#### **WILL DEMONSTRATE:**

- Discussion of routine breast imaging procedures with patients and families with sensitivity to cultural differences
- Commitment to ethical principles especially to unique problems inherent in the female population (informed consent, confidentiality, and radiation exposure)
- Professional dress, demeanor and attitude in the reading room and patient care areas

## **System Based Practice**

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

### *Knowledge Based Objectives:*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

#### **WILL DEMONSTRATE:**

- Knowledge of how their image interpretation and communication affects patient care
- Practice of techniques for cost effective utilization of supplies, time, and personnel in the Radiology Department
- Concern for assisting patients with complexities of the health care system whenever possible

### *Skills Based Objectives:*

By the final rotation in Breast Imaging as a second year Radiology Resident, the resident

#### **WILL DEMONSTRATE:**

- Ability to use BIRADS Lexicon

Goals and Objectives  
Breast imaging  
Third Year Residents

**Patient Care**

Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

*Knowledge Based Objectives*

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident

**WILL DEMONSTRATE:**

- Effective communication and caring and respectful behavior when interacting with patients of all ages and their families
- Ability to gather and interpret essential and accurate information about patients when appropriate (from chart, old films, lab, referring MD)
- Ability to work with other health care professionals to provide patient focused care in the radiology department including technologists and nurses providing help locating films and consultation for most common problems in the reading room, answering the phone, calling referring MD's.
- Application of principles of physics and radiation biology in daily radiology practice especially as it relates to the unique problems of breast imaging.

*Skill based objectives*

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident

**WILL DEMONSTRATE:**

- Ability to use the Webchart system to obtain needed patient information
- Ability to perform diagnostic mammography independently with review of staff .
- Ability to assist with invasive studies (ultrasound guided biopsy, stereotactic biopsy and MRI guided biopsy)
- Ability to interpret and perform breast ultrasound
- Ability to perform screening mammography as a secondary screener

**Medical Knowledge**

Residents must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavior) sciences and the application of this knowledge to patient care.

*Knowledge based objectives*

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Identification of normal and abnormal anatomy necessary to interpret all breast imaging studies.
- Analysis of all relevant information before image interpretation in order to tailor exams to specific patient problems and needs.
- Understanding of the advantages and disadvantages of available modalities especially as they relate to the breast parenchymal pattern and suspected disease process.
- Recognition of limitations in personal knowledge and not make decisions beyond level of personal competence

*Skill based objectives*

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Recognition of normal and abnormal findings on breast imaging procedures as well as breast examination and to discuss their implications for diagnosis and treatment

**Practiced Based Learning and Improvement**

Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.

*Knowledge based objectives*

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Evidence of independent study including textbooks from suggested reading list, journal articles, and web-based learning
- Appropriate follow-up of interesting cases (looks up biopsy results, gets follow-up from surgeons, etc.)
- Interest in teaching medical students, other service resident teams, radiologic technologists and RN's about interesting cases in reading room including participation in breast conferences.

Skill based objectives

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to do a web-based literature search pertinent to Breast imaging
- Operation of Digital Mammography systems

**Interpersonal and Communication Skills**

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patient's families, and professional associates.

Knowledge Based Objectives:

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to work as an effective member of the imaging team and contribute to the clinical care of patients when appropriate
- Discuss imaging results with residents and medical students on telephone and in the Breast Center

Skills Based Objectives:

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to dictate correct and concise written reports for all studies, after review with staff

**Professionalism**

Resident must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Knowledge Based Objectives:

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to explain all imaging modalities, techniques, etc. to patients and families with concern for cultural differences
- Commitment to ethical principles especially to unique problems inherent in the female

population (informed consent, confidentiality, radiation exposure)

- Professional dress, demeanor and attitude in the reading room and patient care areas

### **System Based Practice**

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

#### *Knowledge Based Objectives:*

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Knowledge of how the timeliness and content of their image interpretation and communication affects patient care
- Practice of techniques for cost effective utilization of supplies and personnel in the Radiology Department
- Use of timely performance and interpretation of studies to decrease anxiety of patients and ensure appropriate secondary procedures.
- Assistance of patients with complexities of the health care system

#### *Skills Based Objectives:*

By the final rotation in Breast imaging as a 3<sup>rd</sup> year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to communicate findings using the BIRADS Lexicon.

Goals and Objectives  
Breast imaging  
Fourth Year Residents

### **Patient Care**

Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

#### *Knowledge Based Objectives*

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Effective communication and caring and respectful behavior when interacting with patients of all ages and their families
- Ability to collect and analyze information about patients in order to optimize

choice of imaging modality, and select protocols to provide maximum information needed for diagnosis and treatment.

- Ability to work with other health care professionals to provide patient focused care in the Breast Center when needed and provide consultation to clinicians.
- Application of principles of physics and radiation biology in daily radiology practice especially as it relates to the unique problems of imaging the female population, including managing breast imaging studies in pregnancy and at early ages.

Skill based objectives

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to use the Webchart system to obtain needed patient information
- Ability to perform all diagnostic mammography procedures
- Ability to perform screening mammography.
- Complete understanding of MQSA requirements and the ability to institute a MQSA practice in the community.
- Ability to perform interventional procedures with supervision
- Ability to interpret all imaging studies to the level expected of the community breast imaging with staff oversight and consultation.

**Medical Knowledge**

Residents must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavior) sciences and the application of this knowledge to patient care.

Knowledge based objectives

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Identification of normal and abnormal anatomy necessary to interpret all plain films and imaging studies to the level expected of the community diagnostic radiologist
- Analysis of all relevant information before image interpretation in order to tailor exams to specific patient problems and needs, and to suggest more appropriate or additional studies as needed

- Ability to select the best modality to provide needed information based on ability to compare and contrast characteristics of each
- Recognition of limitations in personal knowledge and not make decisions beyond level of personal competence

*Skill based objectives*

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Recognition of normal and abnormal findings on all breast imaging studies and assessment of their implications for diagnosis and treatment

**Practiced Based Learning and Improvement**

Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.

*Knowledge based objectives*

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Evidence of independent study including textbooks from suggested reading list, journal articles, and web-based learning, including information needed for difficult case management
- Appropriate follow-up of interesting cases (looks up biopsy results, gets follow-up from surgeons, makes rounds on interventional cases)
- Interest in teaching medical students, other service resident teams, radiologic technologists and RN's about interesting cases in reading room including conducting breast imaging conferences.

*Skill based objectives*

Appropriate biopsy techniques using ultrasound and stereotactic equipment.

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to do a web-based literature search pertinent to Breast imaging
- Operation of Digital Mammography systems

**Interpersonal and Communication Skills**

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patient's families, and professional associates.

Knowledge Based Objectives:

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to work as an effective member of the imaging team with the goal of optimizing contribution to diagnosis and clinical care of patients.
- Ability to provide consultation with residents and medical students on telephone and in reading room and formulate plans for further imaging of patients when needed.

Skills Based Objectives:

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to dictate correct and concise and helpful written reports for all studies with minimal oversight from staff

**Professionalism**

Resident must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Knowledge Based Objectives:

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to explain all imaging modalities, techniques, etc. to patients and families with concern for cultural differences
- Commitment to ethical principles especially to unique problems inherent in the female population (informed consent, confidentiality, radiation exposure)
- Professional dress, demeanor and attitude in the reading room and patient care areas
- Interpretive skills and non-interpretive behaviors which are known to be assets in group practice such as reliability, availability, sharing in all work to be done, voluntary pitching in during times of crisis, affability at all times including times of stress, minimizing influence of personal problems on professional duties

**System Based Practice**

Residents must demonstrate an awareness of and responsiveness to the larger

context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

Knowledge Based Objectives:

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Timely and accurate image interpretation (with staff oversight) to maximize efficient and medically appropriate patient care
- Ability to offer constructive criticism of inefficient or ineffective departmental activities
- Assistance of patients with complexities of the health care system including anticipation and proactive prevention of likely problems

Skills Based Objectives:

By the final rotation in Breast imaging as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

- Ability to direct a mammography service.
- Ability to direct the appropriate diagnostic imaging evaluation of a mammographic or palpable abnormality to completion, including needle localization or biopsy.

**Breast Evaluation**

Patient Care

- 1) Communicate effectively and demonstrate caring and respectful behavior when interacting with patients and families
- 2) Gather essential and accurate information about patients when appropriate (reviews old films, chart, lab work, calls referring MD)
- 3) Use information technology to support patient care decisions and patient education (looks up needed information in books, on-line)
- 4) Work effectively with other health care professionals including other disciplines to provide patient focused care (interpersonal skills, calls reports when needed, affable on call)

Knowledge

- 5) Demonstrate an investigatory and analytic thinking approach to clinical situations (after gathering necessary history and clinical information, tailors studies to answer clinical questions)
- 6) Know and apply basic and clinical sciences - Appropriate knowledge of Screening

and Diagnostic Procedures

7) Know and apply basic and clinical sciences - Appropriate knowledge of common breast disease processes

8) Visual perception

9) Ability to formulate a differential diagnosis

10) Knows necessary anatomy

11) Performs completely all invasive procedures appropriate for level of training (manual skills)

#### Practice-Based Learning and Improvement

12) Locate and assimilate evidence from scientific studies related to patient problems (shows evidence of independent study and choice of journal club articles)

13) Appropriate followup of cases

14) Facilitates learning of students and other health care professionals (teaches others in the reading room - students, other service residents, techs, nurses, etc.)

#### Interpersonal and Communication Skills

15) Work effectively with others as a member of the imaging team (pitches in where and when needed - not a clock watcher, comes on time, stays late, timely return from conf.)

16) Dictate written reports that are correct, concise, meaningful, quality of dictation - timeliness of signing reports

#### Professionalism

17) Considers well being of patients and department ahead of personal needs (availability)

18) Commitment to ethical principles (pt. Confidentiality, obtaining informed consent, business practices)

19) Maintains appropriate professional demeanor in patient care areas and reading room

#### Systems-Based Practice

20) Understands how their patient care and image interpretation affects patient care and other professionals (and vice versa) (demonstrates timely reporting, faxing, calls to referring MD's, careful coding)

21) Concern for cost-effective operation of department, patient imaging work-up, effect on hospitalization, etc. (adds on studies late when needed, timely reporting, use of most efficient modality to obtain needed information)

22) Assist patients with complexities of medical system when possible

