RADT-2930: MAMMOGRAPHY APPLICATIONS

Cuyahoga Community College

Viewing: RADT-2930 : Mammography Applications

Board of Trustees:

January 2023

Academic Term:

Fall 2023

Subject Code

RADT - Radiography

Course Number:

2930

Title:

Mammography Applications

Catalog Description:

Supervised sessions emphasizing practical application of patient preparation and positioning for diagnostic, screening and interventional/special procedure mammographic examinations to include appropriate technique, radiation protection and demonstration of
professional and ethical skills. Performance, evaluation and documentation of quality
control tests, as required by the Mammography Quality Standards Act (MQSA) and the American College of Radiology (ACR). Clinical experience in a mammography clinical environment for a total of 225 clinical hours which includes 8 hours of full-field digital mammography (FFDM) and 8 hours of digital breast tomosynthesis (DBT) training.

Credit Hour(s):

3

Other Hour(s):

225

Other Hour Details:

Directed Practice: 225 hours per semester, not to exceed 24 hours per week

Requisites

Prerequisite and Corequisite

RADT-2610 Introduction to Mammography, and RADT-2620 Anatomy and Physiology of the Breast, and RADT-2630 Positioning Techniques for Breast Imaging, and RADT-2640 Physics of Mammography; and concurrent enrollment in RADT-2650 Interventional and Special Imaging Procedures, and RADT-2660 MQSA and ARC Regulatory Standards, and RADT-2670 Mammography Quality Control; or departmental approval.

Outcomes

Course Outcome(s):

Recognize breast anatomy and the significance of mammographic correlation.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Solicit and record patient clinical history relevant to the performance and interpretation of the mammographic procedure.
b. Document location of lumps, scars, moles, and the like by means of radiopaque markers on breast and/or diagram on clinical information sheet or radiology information system (RIS).
c. Document breast imaged and projection used.

Course Outcome(s):

Recognize breast pathology on mammographic images.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Retrieve prior images from the picture archiving communications system (PACS) for comparison to the quality of the new images.
b. Participate in or observe other clerical functions performed by mammographers.

Course Outcome(s):

Discuss the importance of communication and patient assessment skills related to obtaining a high-quality mammographic examination.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Provide for patient comfort and cooperation by familiarizing patient with the equipment, explaining the procedure, stressing the need for compression and by providing general psychological support.
b. Respond to patient questions on breast self-exam (BSE), clinical breast exam (CBE), patient dose, possible mammography and other breast imaging procedures.

Course Outcome(s):

Observe adherence to departmental structure and regulatory guidelines.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Process patient information effectively using the Radiology Information System (RIS).
b. Monitor patients per departmental procedure under the supervision of qualified personnel.
c. Demonstrate compliance with hospital policies and procedures.
d. Communicate to the patient how the results of the exam will be given to him/her.
e. Become an MQSA-qualified technologist during this clinical when at least 40 hours of attendance and 25 supervised exams are completed.

Course Outcome(s):

Demonstrate proficiency using mammography equipment.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Select equipment (e.g. image receptors, grids, compression plates) appropriate to the patient and the examination to be performed, including digital breast tomosynthesis (DBT).
b. Practice safe operation of equipment under the supervision of a qualified mammographer.

Course Outcome(s):

Discuss interventional/special procedures and explain why they may need to be performed.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Apply appropriate nursing procedures and practices in the breast imaging department to include universal precautions.
b. Observe, assist with or participate in interventional/special procedures.

Course Outcome(s):

Discuss quality management as it applies to mammography.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Participate in the performance of mammographic quality control tests.
b. Evaluate the test results and determine their implication for breast imaging processes.
c. Record the performance and results of quality control tests in compliance with accreditation requirements.

Course Outcome(s):

Explore new technologies in the mammographic modality.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.
Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Discuss new and upcoming technologies and their application in the clinical setting.

Course Outcome(s):

Employ critical thinking and problem-solving to routine screening and diagnostic mammographic positioning.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Select exposure factors based upon breast tissue density, patient's age, numerical compression scale and equipment characteristics.
b. Position patient and equipment to provide projections specified by departmental protocol or requisition.
c. Evaluate images to assure proper identification and diagnostic quality.

Course Outcome(s):

Recognize the role sonography plays in the diagnosis of specific breast diseases.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Correlate mammographic findings with ultrasound.
b. Discuss when ultrasound is indicated.

Course Outcome(s):

Employ proper technical applications under the direct supervision of a qualified mammographer or physician.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Use proper radiation protection devices during the handling of patients and the operation of mammographic equipment.

Methods of Evaluation:

a. Direct observation and assessment
b. Competency performance evaluations through the use of the Examination Competency Form
c. Evaluations of technical skills and professional behavior through use of the Evaluation of Technical Skill and Professional Behavior Form
d. Midterm and final summative evaluations through the use of the Student Conference Form
e. Verification of all MQSA requirements
f. Completion of American Registry of Radiologic Technologists (ARRT) clinical experience requirements

Course Content Outline:

a. Patient preparation and education
    i. Clinical history
    ii. Procedure explanation
    iii. Compression
    iv. Psychological support
b. Initial MQSA and ARRT mandatory procedures
    i. Positioning
    ii. Exposure factors
    iii. Equipment selection
    iv. Radiation protection
    v. Anatomical marking
    vi. Image documentation
    vii. Patient care procedures
    viii. PACS and RIS functions
    ix. Supervised procedures
        1. Screening
        2. Diagnostic
        3. Full-field digital mammography (FFDM)
        4. Digital breast tomosynthesis (DBT)
c. Radiographic critique and interpretation
    i. Observe evaluations by interpreting radiologist
d. Interventional/special procedures
    i. Needle localization
    ii. Breast MRI
    iii. Breast ultrasound imaging, biopsy, fine-needle aspiration or cyst aspiration
    iv. Stereotactic procedure
    v. Breast implant imaging
    vi. Ductography/galactography
    vii. Tissue marker clip placement
    viii. Diagnostic mammogram
    ix. Recall from a screening mammogram

e. Quality Control
   i. Interpretation workstation
   ii. Monitor cleaning
   iii. Phantom images
   iv. Artifact evaluation
   v. Signal-to-Noise Ratio (SNR), Contrast-to-Noise Ratio (CNR), Modulation Transfer Function (MTF)
   vi. Compression force
   vii. Repeat analysis
   viii. Visual checklist
   ix. Review of medical physicist's annual survey report

Resources

American Registry of Radiologic Technologists (ARRT). (2018) *Mammography Clinical Experience Requirements*, St. Paul, MN. https://www.arrt.org/docs/default-source/discipline-documents/mammography/mammography-clinical-experience-requirements.pdf?sfvrsn=856303fc_12

American Registry of Radiologic Technologists (ARRT). (2018) *Postprimary Handbook*, St. Paul, MN. https://www.arrt.org/docs/default-source/handbooks/postprimary-eligibility-pathway-handbook.pdf?sfvrsn=dc9502fc_36

American Society of Radiologic Technologists. *Mammography Curriculum*. Current. Albuquerque, NM, Current. https://www.asrt.org/docs/default-source/educators/curriculum/mammography/2018-adopted-mammography-curriculum.pdf

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Cuyahoga Community College. (Current) *Clinical Manual for Mammography*,

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American College of Radiology . *Mammography Quality Control Manual*. Current. https://www.acraccreditation.org/modalities/mammography

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FDA: U.S. Food & Drug Administration. (Current) *Policy Guidance Help System*, https://www.accessdata.fda.gov/cdrh_docs/presentations/pghs/Polic_Guidance_Help_System.htm

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Lille, Shelly, Marshall, Wendy. (2019) *Mammographic Imaging: A practical guide*, Philadelphia: Walters-Kluwer.

Resources Other

a. Mammography Quality Standards Act https://www.fda.gov/radiation-emitting-products/mammography-quality-standards-act-and-program (https://www.fda.gov/radiation-emitting-products/mammography-quality-standards-act-and-program/)
b. ARRT Mammography Clinical Experience Requirements
c. ARRT Mammography Examination Content Specifications
d. Peart, Olive (2022) 5th Edition. Lange Q and A: Mammography Examination, New York: McGraw-Hill.
e. Peart, Olive (2022) 3rd Edition. Mammography and Breast Imaging Prep: Program Review and Exam Prep, New York: McGraw-Hill.

Top of page
Key: 3886