Breast Radiology Entrustable Activity Supervision Tool

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Trainee Resources:

Each Entrustable Professional Activity - Breast Radiology (EPA-BR) outlines key functions trainees must perform to show mastery of the EPA, and includes links to educational resources (articles, videos, interactive PowerPoints) to build their fund of knowledge.

- **Breast Imaging EPAs:**
  - EPA1a: Screening Mammography
  - EPA 1b: Screening US
  - EPA 1c: Screening MRI
  - EPA2: Diagnostic imaging
  - EPA3: Biopsies
  - EPA4: Evaluating patients with new or previous Breast Cancer
  - EPA5: Image-guided Localization

- **What is an Entrustable Professional Activity (EPA)**? EPA Basics

Background Information

- **Why create EPAs for Breast Imaging Radiology (EPA-BRs)?** To provide a guide and learning tool for trainees that can supplement training at their own institutions

- **How were EPA-BRs created?** A group of five breast imaging radiologists with a focus in education and an educational health care leader used a 6-step process, based on a double Delphi consensus technique to develop a validated list of 5 EPA-BRs. Our work was funded by an Education Grant awarded to lead investigator, Dr. Monica Sheth, through the Radiologic Society of North America Research & Education Foundation.

Access to Resources:

IMPORTANT

There are a number of links throughout this document to resources from organizations such as **RSNA, ACR, ARRS and their respective journals.** In most instances, residents receive free membership from these associations and can access this information at no charge. If you click on a **link and are denied access,** please contact the association directly for assistance.

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Questions/comments?

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EPA1a-BR Worksheet

Title	Identifying and managing abnormalities on screening examinations - EPA1a: Mammography
Description of Activity	A radiologist involved in breast imaging must be able to identify abnormalities on screening examinations while adhering to Mammography Quality Standards Act and Program (MQSA) and determine the next steps in patient management. The key function which define this EPA in regards breast screening examinations include: ❏ Lists indications for each screening modality[1,12,13] ❏ Understand technique, patient positioning, standard imaging views and study protocol[1,17,19 20,21] ❏ Differentiate technically adequate and inadequate studies[1] ❏ Differentiate benign findings from those that warrant additional work-up[6,9,21] ❏ Identify imaging artifacts and explain methods for correction[4,13] ❏ Identify the normal and abnormal appearance of the breast after surgical procedures (reduction, augmentation, implants, breast conserving therapy, or mastectomy)[B,D,E,16] ❏ Demonstrate the correct use of the BI-RADS lexicon terminology pertinent to the examination including assessment/management categories[A,1,6,9] ❏ Report and communicate results with the patient, referring physician (including primary physician, oncologist, surgeon), and staff when indicated[F,11] The key functions in regards to screening mammography include: ● Explain ACR/SBI screening mammography guidelines and how they vary from USPSTF guidelines (starting age, interval, etc, why different recommendations, general statistics)[2,3,12] ● Recognize the 4 breast density parenchymal patterns[C,7,8,18,22] ● Describe essential components of the mammogram report ● Identify findings that warrant additional work-up (masses, calcifications, architectural distortion, asymmetries, focal asymmetries, global asymmetry, developing asymmetry, and abnormal lymph nodes)[6,9,10,21,23] ● Explain additional imaging needed in the diagnostic setting[3,5,21] ● Identify the normal and abnormal appearance of the breast after surgical procedures (augmentation, reduction, lift, implants; breast conserving therapy)[D,E,16] ● Identify artifacts on mammography and determine how to correct[4,13] ● *Counsel patients and referring physicians about supplemental screening modalities (US, MRI)[F,G,12] ● Understand the basic requirements of the MQSA as it pertains to screening mammography[14,15] ● *Calculate basic screening mammography audit metrics including recall rate, positive predictive value 1 (PPV1), and cancer detection rate[14,15]

	• Understand QA/QC requirements of analog and digital mammography[4] Superscript indicate resources below which address the key function **Context:** Outpatient imaging center **Targeted transition point:** Depending on the institution - First month for screening mammography, second month for ultrasound, third month for MRI. Items marked * may be more suitable for month 3 of mini-fellowship or fellowship for some programs
Mapping to Domains of Competence	X Patient Care X Medical Knowledge X Systems-Based Practice X Practice-Based Learning and Improvement X Professionalism X Interpersonal and Communication Skills
Competencies within each domain critical to entrustment decisions	PC1: Reporting PC2: Clinical Consultation PC3: Image Interpretation MK1: Diagnostic Knowledge MK2: Physics MK4: Imaging Technology and Image Acquisition SBP6: Radiation Safety SBP8: Informatics P2: Accountability/Conscientiousness P3: Self-Awareness and Help Seeking ICS1: Patient- and Family-Centered Communication ICS2: Interprofessional and Team Communication
Suggested Resources (A) Article (B) Book Chapter (D) Document (S) Slides (W) Widget - interactive powerpoint (V) Video	A. A Pictorial Review of Changes in BI-RADS 5th Edition (A) Slides B. Update on Imaging of the Postsurgical Breast (A) C. Hormonal Effects on Breast Density, Fibroglandular Tissue, and Background Parenchymal Enhancement (A) D. Imaging of Breast Implant-associated Complications and Pathologic Conditions: Breast Imaging (A) E. Breast Reconstruction: Review of Surgical Methods and Spectrum of Imaging Findings (A) F. Maximizing Value Through Innovations in Radiologist-Driven Communications in Breast Imaging (A) G. Training and Standards for Performance, Interpretation, and Structured Reporting for Supplemental Breast Cancer Screening (A) Mammography 1. Screening Mammography - Presentation (V) 2. Screening and Diagnostic DBT SBI White Paper (A) 3. ACR Practice Guideline for Screening and Diagnostic Mammography (A) 4. Optimizing Digital Mammographic Image Quality for Full-Field Digital Detectors: Artifacts Encountered during the QC Process (A) 5. Digital Breast Tomosynthesis in the Diagnostic Setting: Indications and Clinical Applications (A)

	6. Developing Asymmetries at Mammography: A Multimodality Approach to Assessment and Management (A) 7. Mammographic Breast Density: Impact on Breast Cancer Risk and Implications for Screening (A) 8. Breast Density: Clinical Implications and Assessment Methods (A) 9. Interpreting One-View Mammographic Findings: Minimizing Callbacks While Maximizing Cancer Detection (A) 10. Mammographic Signs of Systemic Disease (A) 11. Communication in Breast Imaging: Lessons Learned at Diagnostic Evaluation (A) 12. ACR Appropriateness Criteria Breast Cancer Screening (A) 13. Digital breast tomosynthesis: Image acquisition principles and artifacts (A) 14. National Performance Benchmarks for Modern Screening Digital Mammography: Update from the Breast Cancer Surveillance Consortium (A) 15. Audits, Benchmarks and Performance: What You Need to Know (S) 16. Implants on Breast Mammogram Widget (W) 17. Breast Anatomy Quiz (W) 18. Breast Density Quiz (W) 19. CC Breast Anatomy Interactive tool (W) 20. MLO Breast Anatomy Interactive tool (W) 21. Screening Mammography Need to Know Quick Review Document (D) 22. Breast Density ACR Brochure (D) 23. Introduction to Mammography (V)
Required knowledge, skills, attitude and behavior, and experience	Knowledge ● Knowledge of imaging abnormalities on mammography ● Knowledge of correct BI-RADS terminology to describe imaging findings. ● Knowledge of markers of image quality. Skills ● Skill in identifying abnormalities on mammography screening exams. ● Skill in discussing results of imaging exams with patients, referring physicians, and staff Attitude and Behavior ● Professional communication of screening exam results with patients, referring physicians, and staff. Experience ● Screening mammography: 250-400 screening mammograms
Assessment Information sources to assess progress and ground summative entrustment decision	Knowledge Assessment: RadExam Breast EPA1: Screening (under construction) RadExam Breast EPA1: MQSA & Audit (under construction) Review of interpretation of screening mammography with gradual decline in recall rate over time, if available (for example: 1st month: <50%; 2nd month: 30-50%; 3rd month: <30%) 5-10 informal case-based discussions per modality with attending radiologist
Entrustment level of supervision to be reached at	*Imaging studies should always be overread by an attending physician Residents: Indirect supervision (level 3) prior to graduation - ability to identify at least 50% of the abnormalities identified by the attending radiologist

which stage of training	Mini-fellows: Distant supervision (level 4) prior to graduation - ability to identify 50-75% of the abnormalities identified by the attending radiologist Fellows: Trust to perform unsupervised (level 5) or to supervise others (level 6) prior to graduation (ability to identify 75-100% of abnormalities identified by the attending radiologist and ability to teach concepts to residents)
Expiration	1 year after graduation

*Modified from the work of Olle ten Cate, PhD

EPA1b-BR Worksheet

Title	Identifying and managing abnormalities on screening examinations - EPA1b: Ultrasound
Description of Activity	A radiologist involved in breast imaging must be able to identify abnormalities on screening ultrasound examinations and determine the next steps in patient management. The key function which define this EPA in regards to all breast screening examinations include: ❏ Lists indications for the screening modality[1] ❏ Understand technique, patient positioning, standard imaging views and study protocol[1,4,5,7] ❏ Differentiate technically adequate and inadequate studies[1,4,5] ❏ Differentiate benign findings from those that warrant additional work-up[C,2,3,4,5] ❏ Identify imaging artifacts and explain methods for correction[4,5] ❏ Identify the normal and abnormal appearance of the breast after surgical procedures (reduction, augmentation, implants, breast conserving therapy, or mastectomy)[D,E] ❏ Demonstrate the correct use of the BI-RADS lexicon terminology pertinent to the examination including assessment/management categories[A,1] ❏ Report and communicate results with the patient, referring physician (including primary physician, oncologist, surgeon), and staff when indicated[F,H] The key functions in regards to screening ultrasound include: ● Recognize the 3 different background parenchymal echotextures[C,1,4] ● Differentiate benign findings from those that warrant diagnostic ultrasound work-up (cyst, mass)[C,E,3,4,7] ● Correlate ultrasound findings with mammography[4,7] ● Demonstrate understanding of ultrasound settings to optimize image quality[4,5] ● Identify imaging artifacts and explain methods for correction[5] Superscript indicate resources below which address the key function **Context:** Outpatient imaging center **Targeted transition point:** Depending on the institution - First month for screening mammography, second month for ultrasound, third month for MRI. Items marked * may be more suitable for month 3 of mini-fellowship or fellowship for some programs
Mapping to Domains of Competence	X Patient Care X Medical Knowledge X Systems-Based Practice

	X Practice-Based Learning and Improvement X Professionalism X Interpersonal and Communication Skills
Competencies within each domain critical to entrustment decisions	PC1: Reporting PC2: Clinical Consultation PC3: Image Interpretation MK1: Diagnostic Knowledge MK2: Physics MK3: Protocol Selection and Contrast Agent Selection/Dosing MK4: Imaging Technology and Image Acquisition SBP3: System Navigation for Patient-Centered Care SBP6: Radiation Safety SBP8: Informatics PBLI1: Evidenced-Based and Informed Practice PBLI2: Reflective Practice and Commitment to Professional Growth P1: Professional Behavior and Ethical Principles P2: Accountability/Conscientiousness ICS1: Patient- and Family-Centered Communication ICS2: Interprofessional and Team Communication ICS3: Communication with Health Care Systems
Suggested Resources (A) Article (B) Book Chapter (D) Document (S) Slides (W) Widget - interactive powerpoint (V) Video	All A. A Pictorial Review of Changes in BI-RADS 5th Edition (A) Slides B. Update on Imaging of the Postsurgical Breast (A) C. Hormonal Effects on Breast Density, Fibroglandular Tissue, and Background Parenchymal Enhancement (A) D. Imaging of Breast Implant-associated Complications and Pathologic Conditions: Breast Imaging (A) E. Breast Reconstruction: Review of Surgical Methods and Spectrum of Imaging Findings (A) F. Maximizing Value Through Innovations in Radiologist-Driven Communications in Breast Imaging (A) G. Training and Standards for Performance, Interpretation, and Structured Reporting for Supplemental Breast Cancer Screening (A) H. Communication in Breast Imaging: Lessons Learned at Diagnostic Evaluation (A) Ultrasound 1. ACR Practice Guideline for Breast Ultrasound (A) 2. Resident and Fellow Education Feature: US Evaluation of Abnormal Axillary Lymph Nodes (S) 3. Distinguishing Breast Skin Lesions from Superficial Breast Parenchymal Lesions: Diagnostic Criteria, Imaging Characteristics, and Pitfalls (A) 4. Breast Ultrasonography: State of the Art (A) 5. Artifacts and Pitfalls in Sonographic Imaging of the Breast (A) 6. Screening Breast Ultrasound: Past, Present, and Future (A) 7. Approach to Ultrasound (S)
Required knowledge, skills, attitude and	Knowledge ● Knowledge of imaging abnormalities on ultrasound. ● Knowledge of correct BI-RADS terminology to describe imaging

behavior, and experience	findings. ● Knowledge of markers of image quality. Skills ● Skill in identifying abnormalities on breast screening exams. ● Skill in discussing results of imaging exams with patients, referring physicians, and staff Attitude and Behavior ● Professional communication of screening exam results with patients, referring physicians, and staff. Experience ● Screening ultrasound: 10-50 screening ultrasounds * institution specific
Assessment Information sources to assess progress and ground summative entrustment decision	Knowledge Assessment: RadExam Breast EPA1: Screening (under construction) Review of interpretation of screening ultrasound 5-10 informal case-based discussions per modality with attending radiologist
Entrustment level of supervision to be reached at which stage of training	*Imaging studies should always be overread by an attending physician Residents: Indirect supervision (level 3) prior to graduation - ability to identify at least 50% of the abnormalities identified by the attending radiologist Mini-fellows: Distant supervision (level 4) prior to graduation - ability to identify 50-75% of the abnormalities identified by the attending radiologist Fellows: Trust to perform unsupervised (level 5) or to supervise others (level 6) prior to graduation (ability to identify 75-100% of abnormalities identified by the attending radiologist and ability to teach concepts to residents)
Expiration	1 year after graduation

*Modified from the work of Olle ten Cate, PhD

EPA1c-BR Worksheet

Title	Identifying and managing abnormalities on screening examinations - EPA1c: MRI
Description of Activity	A radiologist involved in breast imaging must be able to identify abnormalities on screening MRI examinations and determine the next steps in patient management. The key function which define this EPA in regards to all breast examinations include: ❏ Lists indications for breast MRI[A,2,8] ❏ Understand technique, patient positioning, standard imaging views and study protocol[1] ❏ Differentiate technically adequate and inadequate studies[1] ❏ Differentiate benign findings from those that warrant additional work-up[D,E,F,3,4,5] ❏ Identify imaging artifacts and explain methods for correction[6] ❏ Identify the normal and abnormal appearance of the breast after surgical procedures (reduction, augmentation, implants, breast conserving therapy, or mastectomy)[E,F] ❏ Demonstrate the correct use of the BI-RADS lexicon terminology pertinent to the examination including assessment/management categories[A,7] ❏ Report and communicate results with the patient, referring physician (including primary physician, oncologist, surgeon), and staff when indicated[G] The key functions in regards to screening breast MRI include: ● Protocol breast MRI exams for technique (e.g. use of contrast)[1,2] ● Differentiate benign from suspicious abnormalities on breast MRI including masses, non-mass enhancement, postoperative findings, and lymph nodes[D,E,F,3,5,8] ● Correlate MRI findings with recent mammogram and ultrasound to determine which abnormalities require biopsy, follow-up, or additional imaging[3,4] ● Identify imaging artifacts and explain methods for correction[6] Superscript indicate resources below which address the key function **Context:** Outpatient imaging center **Targeted transition point:** Depending on the institution - First month for screening mammography, second month for ultrasound, third month for MRI. Items marked * may be more suitable for month 3 of mini-fellowship or fellowship for some programs
Mapping to Domains of	X Patient Care X Medical Knowledge

Competence	X Systems-Based Practice X Practice-Based Learning and Improvement X Professionalism X Interpersonal and Communication Skills
Competencies within each domain critical to entrustment decisions	PC1: Reporting PC2: Clinical Consultation PC3: Image Interpretation MK1: Diagnostic Knowledge MK2: Physics MK3: Protocol Selection and Contrast Agent Selection/Dosing MK4: Imaging Technology and Image Acquisition SBP1: Patient Safety SBP5: Contrast Agent Safety SBP7: Magnetic Resonance (MR) Safety SBP8: Informatics PBLI1: Evidenced-Based and Informed Practice PBLI2: Reflective Practice and Commitment to Professional Growth P2: Accountability/Conscientiousness ICS1: Patient- and Family-Centered Communication ICS2: Interprofessional and Team Communication ICS3: Communication with Health Care Systems
Suggested Resources (A) Article (B) Book Chapter (D) Document (S) Slides (W) Widget - interactive powerpoint (V) Video	A. A Pictorial Review of Changes in BI-RADS 5th Edition (A) Slides B. Update on Imaging of the Postsurgical Breast (A) C. American Joint Committee on Cancer's Staging System for Breast Cancer, Eighth Edition: What the Radiologist Needs to Know (A) D. Hormonal Effects on Breast Density, Fibroglandular Tissue, and Background Parenchymal Enhancement (A) E. Imaging of Breast Implant-associated Complications and Pathologic Conditions: Breast Imaging (A) F. Breast Reconstruction: Review of Surgical Methods and Spectrum of Imaging Findings (A) G. Maximizing Value Through Innovations in Radiologist-Driven Communications in Breast Imaging (A) H. Training and Standards for Performance, Interpretation, and Structured Reporting for Supplemental Breast Cancer Screening (A) I. Imaging the Axilla Widget (W) MRI 1. Positioning in Breast MR Imaging to Optimize Image Quality (A) 2. ACR Practice Guideline for Breast MRI (A) 3. Breast MR Imaging for Equivocal Mammographic Findings: Help or Hindrance? (A) 4. Second-Look US: How to Find Breast Lesions with a Suspicious MR Imaging Appearance (A) 5. MR Imaging Assessment of the Breast after Breast Conservation Therapy: Distinguishing Benign from Malignant Lesions (A) 6. Recognizing Artifacts and Optimizing Breast MRI at 1.5 and 3T (A) 7. Auditing a Breast MRI Practice: Performance Measures for Screening and Diagnostic Breast MRI (A) 8. MRI of the Breast and Emerging Technologies (A)

Required knowledge, skills, attitude and behavior, and experience	Knowledge ● Knowledge of imaging abnormalities on MRI. ● Knowledge of correct BI-RADS terminology to describe imaging findings. ● Knowledge of markers of image quality. Skills ● Skill in identifying abnormalities on breast screening exams. ● Skill in discussing results of imaging exams with patients, referring physicians, and staff Attitude and Behavior ● Professional communication of screening exam results with patients, referring physicians, and staff. Experience ● Screening MRI: 20-50 screening MRIs
Assessment Information sources to assess progress and ground summative entrustment decision	Knowledge Assessment: RadExam Breast EPA1: Screening (under construction) Review of interpretation of screening MRI 5-10 informal case-based discussions per modality with attending radiologist
Entrustment level of supervision to be reached at which stage of training	*Imaging studies should always be overread by an attending physician Residents: Indirect supervision (level 3) prior to graduation - ability to identify at least 50% of the abnormalities identified by the attending radiologist Mini-fellows: Distant supervision (level 4) prior to graduation - ability to identify 50-75% of the abnormalities identified by the attending radiologist Fellows: Trust to perform unsupervised (level 5) or to supervise others (level 6) prior to graduation (ability to identify 75-100% of abnormalities identified by the attending radiologist and ability to teach concepts to residents)
Expiration	1 year after graduation

*Modified from the work of Olle ten Cate, PhD

EPA2-BR Worksheet

Title	Work-up and managing patients in the diagnostic imaging setting EPA2a: Mammographic and sonographic abnormalities in the asymptomatic patient (screening callbacks) EPA2b: Patients presenting with breast symptoms
Description of Activity 2b. Symptomatic patients are patients who present with: a palpable breast mass, palpable axillary mass, breast pain, nipple discharge, nipple changes, inflamed breast. The patient population includes pregnant and lactating women, men, and children.	A breast imaging radiologist is able to work-up abnormalities detected on screening mammography and determine whether additional mammography or sonography, alone or in conjunction, may be indicated for evaluation. Similarly, when a patient presents with a breast symptom, a radiologist must be able to determine the appropriate sequence and type of imaging evaluation and when biopsy is necessary. Once diagnostic imaging is complete, the appropriate BIRADS assessment must be determined along with management. The physician must be able to clearly and effectively convey the results and recommendations to the referring clinician and patient, using layman's terms when appropriate to increase understanding without raising alarm. [27,28] The key functions which define this EPA include: ● Determine which mammographic and/or sonographic views are indicated to evaluate an abnormal finding on screening mammography (technical recall, calcifications, asymmetry, focal asymmetry, mass, architectural distortion).[1-6, 7-13] ● Differentiate benign, probably benign, suspicious and malignant findings on mammography and sonography and determine appropriate management. [1-6, 7-13] ● Correlate ultrasound findings with screening mammography. [7,8,10-12] ● Understand age and gender appropriate sequential imaging work-up for a male or female presenting with a breast symptom(s) and how that differs if patient is pregnant or breastfeeding. Symptoms include: ○ Palpable breast or axillary mass [2,14] ○ Breast pain [16] ○ Nipple discharge & changes (recognize key history and clinical findings that suggest benign or malignant etiology) [17] ○ Inflamed breast [18, 20-23] ● Differentiate mammographic and sonographic findings that are benign, probably benign, suspicious and malignant, including but not limited to: ○ Inflammatory breast cancer from abscess [14,15,18] ○ Gynecomastia from male breast cancer [22, 24-26] ● Manage focal symptoms when there is no associated imaging finding [5,14] ● Recommend the appropriate modality for biopsy of suspicious findings [6,8,14,16,17,19,24] ● Identify when surgical referral is needed [6] ● Apply evidence based medicine to patient care [6,8,16,17,19,24]

	• Display professional and compassionate communication with the patient, ordering physician, and ancillary staff and document in medical record when appropriate [27,28] Superscript indicate resources below which address the key function **Context:** outpatient imaging center **Targeted transition point:** third month rotation on breast imaging
Suggested Resources (A) Article (B) Book Chapter (D) Document (S) Slides (W) Widget - interactive powerpoint (V) Video	The BIRADS Atlas should be a go to resource for this section A Pictorial Review of Changes in BI-RADS 5th Edition BIRADS Widget (W) Mammography 1. Calcifications a. Segmental breast calcifications (A) b. Breast calcifications – the focal group (A) c. Linear breast calcifications (A) d. Breast Calcifications Morphology interactive tool (W) e. Breast Calcification Distribution interactive tool (W) f. Calcifications at Digital Breast Tomosynthesis: Imaging Features and Biopsy Techniques (A) 2. Masses a. Breast Lesion Localization Mammography Widget (W) b. Cystic masses of the breast(A) 3. Asymmetries a. Developing Asymmetries at Mammography: A Multimodality Approach to Assessment and Management (A) b. Interpreting One-View Mammographic Findings: Minimizing Callbacks While Maximizing Cancer Detection (A) 4. Architectural distortion a. Tomosynthesis-detected Architectural Distortion: Management Algorithm with Radiologic-Pathologic Correlation (A) b. Architectural Distortion of the Breast (A) c. Spectrum of diseases presenting as architectural distortion on mammography: multimodality radiologic imaging with pathologic correlation (A) d. The postconservation breast: Part 1, Expected imaging findings (A) e. The postconservation breast: part 2, Imaging findings of tumor recurrence and other long-term sequelae. (A) 5. Diagnostic work-up a. Rolled Views Mammography Widget (W) b. Mammographic Projection and Breast Lesion Localization (animated S) 6. Miscellaneous a. ACR Practice Guideline for Screening and Diagnostic Mammography (D) b. Digital Breast Tomosynthesis in the Diagnostic Setting: Indications and Clinical Applications (A) c. Mammographic Signs of Systemic Disease (A) d. Breast Reconstruction: Review of Surgical Methods and Spectrum of Imaging Findings (A)

e. Assessment and Management of Challenging BI-RADS Category 3 Mammographic Lesions (A)
f. Utility of Breast MRI for Further Evaluation of Equivocal Findings on Digital Breast Tomosynthesis (A)

Ultrasound

7. Breast Masses on Ultrasound Widget (W)
8. ACR Practice Guideline for Breast Ultrasound (D)
9. US Evaluation of Abnormal Axillary Lymph Nodes (A)
10. Distinguishing Breast Skin Lesions from Superficial Breast Parenchymal Lesions: Diagnostic Criteria, Imaging Characteristics, and Pitfalls (A)
11. Breast Ultrasonography: State of the Art (A)
12. Artifacts and Pitfalls in Sonographic Imaging of the Breast (A)
13. Echogenic breast masses at US: to biopsy or not to biopsy? (A)

Symptomatic breast

14. Palpable breast or axillary mass
    a. Imaging Management of Palpable Breast Abnormalities (A)
    b. ACR Appropriateness Criteria Palpable Breast Masses (A)
15. Pregnant Patient
    a. Breast Imaging of the Pregnant and Lactating Patient: Imaging Modalities and Pregnancy-Associated Breast Cancer (A)
    b. Breast Imaging of the Pregnant and Lactating Patient: Physiologic Changes and Common Benign Entities (A)
16. Breast pain
    a. ACR Appropriateness Criteria Breast Pain (D)
17. Nipple discharge & changes
    a. ACR Appropriateness Criteria Nipple Discharge (D)
    b. Nipple-Areolar Complex: Normal Anatomy and Benign and Malignant Processes (D)
    c. Imaging approaches to diagnosis and management of common ductal abnormalities
18. Inflamed breast
    a. What Radiologists Need to Know about Diagnosis and Treatment of Inflammatory Breast Cancer: A Multidisciplinary Approach (A)
    b. Infections in the breast – common imaging presentations and mimics (A)
    c. Uncommon infections in the breast (A)
19. Pediatric patient
    a. Pediatric and Adolescent Breast Masses: A review of pathophysiology, imaging, diagnosis and treatment (A)
20. Breast Emergencies: Types, Imaging Features, and Management (A)
21. Emergency Breast Video Module (V)
22. Transgender Patients
    a. Breast Imaging in Transgender Patients: What the Radiologist Should Know (A)
    b. Breast Masses in Men, Transgender, Pregnant & Post-partum powerpoint (S)
23. Nonpuerperal Mastitis and Subareolar Abscess of the Breast (A)

	Male Breast 24. ACR Appropriateness Criteria Evaluation of the symptomatic male breast (A) 25. Male Breast - Presentation (S) 26. From the Radiologic Pathology Archives: Diseases of the Male Breast: Radiologic-Pathologic Correlation (A) Communication 27. Communication in Breast Imaging: Lessons Learned at Diagnostic Evaluation (A)
Mapping to Domains of Competence	X Patient Care X Medical Knowledge X Systems-Based Practice X Practice-Based Learning and Improvement X Professionalism X Interpersonal and Communication Skills
Competencies within each domain critical to entrustment decisions	PC1: Reporting PC2: Clinical Consultation PC3: Image Interpretation MK1: Diagnostic Knowledge MK2: Physics MK3: Protocol Selection and Contrast Agent Selection/Dosing MK4: Imaging Technology and Image Acquisition SBP1: Patient Safety SBP3: System Navigation for Patient-Centered Care SBP6: Radiation Safety SBP8: Informatics PBLI1: Evidenced-Based and Informed Practice PBLI2: Reflective Practice and Commitment to Professional Growth P1: Professional Behavior and Ethical Principles P2: Accountability/Conscientiousness ICS1: Patient- and Family-Centered Communication ICS2: Interprofessional and Team Communication ICS3: Communication with Health Care Systems
Required knowledge, skills, attitude and behavior, and experience	Knowledge ● Knowledge of breast and axillary anatomy on imaging ● Ability to synthesize Imaging findings on multiple modalities ● Basic knowledge of indications for and technique of image-guided biopsies Skill ● Recognize imaging findings of benign and malignant breast disease on mammography and ultrasound ● Request appropriate additional imaging, such as additional mammographic projections and ultrasound, as needed ● Generate concise and accurate reports of pertinent findings on imaging Attitude and Behavior ● Professional communication with patient, colleagues, and referring physicians

	● Recognize limits and know when to ask colleague for assistance Experience ● Work up of a minimum of 20-50 abnormal screening mammograms and 10-30 symptomatic women
Assessment Information sources to assess progress and ground summative entrustment decision	Knowledge Assessment: RadExam Breast EPA2: Diagnostic Work-up (under construction) Case-based discussion of a minimum of 30-80 total cases with gradually increasing independence
Entrustment level of supervision to be reached at which stage of training	Residents: Indirect supervision (level 3) prior to graduation Mini-fellows: Distant supervision (level 4) prior to graduation Fellows: Able to perform unsupervised (level 5) or supervise others (level 6) prior to graduation
Expiration	1 year after graduation

*Modified from the work of Olle ten Cate, PhD

EPA3-BR Worksheet

Title	Performing biopsies using imaging guidance and determining appropriate post-procedural management - EPA3a: Stereotactic biopsy - EPA3b: Ultrasound - EPA3c: MRI *elective EPA
Description of Activity	A key role of breast imaging radiologists is to accurately perform image-guided procedures by means of stereotactic, ultrasound and MRI guidance (those with fellowship training) from pre-procedure planning and execution to post-procedure follow-up, including radiologic-pathologic concordance. The key functions which define this EPA include: ● Understand indications/contraindications for each case[1,2,3] ● Determine appropriate patient positioning and biopsy approach[1,2,3] ● Obtain informed consent[2] ● Display technical skills with guidance modality and procedure equipment while using sterile technique[4-17] ○ Understand the physics behind 2D and 3D guided stereotactic biopsy[3,4,5,6,7] ○ Determine appropriate adjustments when encountering technical limitations (needle repositioning, machine errors)[1,4,5,6,16] ● Procure a sufficient sample and properly label the specimen[2,23] ● Determine if the sample is adequate prior to clip placement/procedure termination[25] ● Provide appropriate post-biopsy care to obtain hemostasis[2,18-20] ● Document procedural report including pathology addenda into the electronic medical record[2] ● Determine, communicate and document radiology-pathology concordance and post-procedural management[2,21,22] ● Recognize symptoms and clinical signs of post-biopsy complications (infection, hematoma, expanding hematoma/continued bleeding from the puncture site, allergic reaction, milk fistula) and determine appropriate management[18-20] ● Display professional and compassionate communication with the patient, ordering physician, and ancillary staff and document in the medical record when appropriate[26-28] Superscript indicate resources below which address the key function **Context:** Outpatient clinic, hospital **Targeted transition point:** Third-month rotation in training

Suggested Resources
(A) Article
(B) Book Chapter
(D) Document
(S) Slides
(W) Widget - interactive powerpoint
(V) Video

1. Troubleshooting to Overcome Technical Challenges in Image-guided Breast Biopsy (A)

2. Breast Intervention: How I do It (A)
3. SBI : Breast Biopsy: Beyond the Basics (S)

Stereotactic/Tomosynthesis biopsy

4. Breast Stereo Pairs Widget (W)
5. Tomosynthesis guided biopsy (A)
6. Calcifications at Digital Breast Tomosynthesis: Imaging Features and Biopsy Techniques (A)
7. Comparison of Upright Digital Tomosynthesis-guided versus Prone Stereotactic Vacuum-assisted Breast Biopsy (A)
8. Upright Stereo Mammotome (V)
   Prone Stereotactic biopsy (V)
   Tomosynthesis guided biopsy (V)

Ultrasound biopsy

9. Centering on a lesion on US breast biopsy (V)
10. Biopsy deep breast lesions (V)
11. Concordant or Discordant? Imaging-Pathology Correlation in a Sonography Guided Core Needle Biopsy of Breast Lesion (A)
12. Imaging-Histological Discordance after Sonographically Guided Percutaneous Breast Core Biopsy (A)
13. A Novel technique for teaching Challenging Ultrasound Breast Biopsies to Radiology Residents (A)
14. US guided Procedure Videos (V)
    a. Positioning
    b. Preparation
    c. Basic core biopsy technique
    d. Tips and tricks 1
    e. Tips and tricks 2
    f. Tips and tricks 3
    g. NLOC techniques
    h. Vacuum needle techniques

MRI biopsy

15. MRI Breast Biopsy Challenges (W)
16. Manual targeting Breast MRI Biopsies (W)
17. MRI Guided Biopsy (V)
    a. General Concepts
    b. Basic Biopsy Technique
    c. Tips and Tricks: Preparation to Biopsy
    d. Tips and Tricks: Equipment
    e. Tips and Tricks:Targeting

Biopsy Complications

18. Breast Emergencies: Types, Imaging Features, and Management (A)
19. Breast Emergencies and Guide to Management
20. A Pictorial Review of Breast Procedures Complication (S)

Radiology/Pathology Concordance (or we can put this in each respective section)

21. Pathologists and Radiologists Stress Concordance Between Imaging

	and Lab (A) 22. Tomosynthesis Detected Architectural Distortion: Management Algorithm with Rad-Path Correlation (A) 23. Core Needle of the Breast; Updates (S) 24. Triple-Negative Breast Cancer: Correlation between MR Imaging and Pathologic Findings (A) 25. Fibrous Lesions of the Breast: Imaging-Pathologic Correlation (A) Communication 26. Patient Anxiety Before and Immediately After Imaging-Guided Breast Biopsy Procedures: Impact of Radiologist-Patient Communication (A) 27. Breaking Bad News (A) 28. Breaking Bad News: A Primer for Radiologists in Breast Imaging (A)
Mapping to Domains of Competence	X Patient Care X Medical Knowledge X Systems-Based Practice X Practice-Based Learning and Improvement X Professionalism X Interpersonal and Communication Skills
Competencies within each domain critical to entrustment decisions	PC1: Reporting PC2: Clinical Consultation PC3: Image Interpretation PC4: Competence in Procedures MK1: Diagnostic Knowledge MK2: Physics MK3: Protocol Selection and Contrast Agent Selection/Dosing MK4: Imaging Technology and Image Acquisition SBP1: Patient Safety SBP3: System Navigation for Patient-Centered Care SBP4: Physician Role in Health Care Systems SBP5: Contrast Agent Safety SBP6: Radiation Safety SBP7: Magnetic Resonance (MR) Safety SBP8: Informatics PBLI1: Evidenced-Based and Informed Practice PBLI2: Reflective Practice and Commitment to Professional Growth P1: Professional Behavior and Ethical Principles P2: Accountability/Conscientiousness ICS1: Patient- and Family-Centered Communication ICS2: Interprofessional and Team Communication ICS3: Communication with Health Care Systems
Required knowledge, skills, attitude and behavior, and experience	Knowledge 1. Knowledge of breast and axillary anatomy 2. Ability to synthesize image findings and data prior and during the procedure Skills 1. Using necessary devices for biopsy and clip placement 2. Positioning patient appropriately to aide in localization 3. Acquiring proper pre-procedural data (allergies, anticoagulation, etc) 4. Obtaining adequate samples from the target

	Attitude and Behaviour 1. Professional and compassionate communication and behavior with the patient, families, referring physicians and ancillary staff Experience 1. All measures completed at least 3-10 times per biopsy approach
Assessment Information sources to assess progress and ground summative entrustment decision	Knowledge Assessment: RadExam Breast EPA3: Biopsies (under construction) Observation: satisfactory observation of technical procedure from start (informed consent) to finish (communication of results to patient/ordering physician) at least 5-10 times. 10-20 Informal Case-based discussion per modality with an attending radiologist
Entrustment level of supervision to be reached at which stage of training	Residents: Indirect supervision (level 3) prior to graduation Mini-fellows: Distant supervision (level 4) prior to graduation Fellows: Able to execute without supervision (level 5) or supervise others (level 6) prior to graduation
Expiration	One year after completion

*Modified from the work of Olle ten Cate, PhD

EPA4-BR Worksheet

Title	Evaluation and staging patients with newly and previously diagnosed breast cancer
Description of Activity	Key roles for radiologists involved in breast imaging are to stage and restage breast cancer, both locoregionally and systemically, and to be an imaging consultant to multidisciplinary teams involved in the patient's care. The key functions which define this EPA include: ● Perform ultrasound evaluation and biopsy of the axilla for metastatic nodal disease[3] ○ Describe the 3 surgical levels of axillary lymph nodes[2,3,4] ○ Recognize findings of abnormal lymphadenopathy ○ Determine when tissue sampling is indicated ○ Apply evidenced based criteria to the evaluation of axillary disease[1] ● Interpret breast MRI scans for multifocal, multicentric, contralateral or locally recurrent disease[19,20,21,22,23] ○ Identify signs of lymphadenopathy (internal mammary and axillary) ○ *Determine when second-look ultrasound, short interval follow up, or MRI guided biopsy are indicated[9] ○ Recommend the appropriate modality for biopsy of suspicious findings (MR, US, MG) correlating findings with recent imaging[10] ● *Describe key changes in tumor size, node involvement, and metastasis that change cancer staging using National Comprehensive Cancer Network (NCCN) and American Cancer Society (ACS) guidelines[8] ● Describe the typical appearance of post surgical/radiation changes on mammography, ultrasound and MRI[11,13,14] ● Differentiate fat necrosis, post-surgical scar or other benign post-treatment change from recurrent disease on mammography, ultrasound and MRI[11,13,14] ● *Identify typical changes associated with common types of breast reconstruction on mammography and MRI[13] ● *Evaluate the effects of neoadjuvant chemotherapy by MRI, ultrasound and/or mammography[15,16] ● *Describe the utility in PET/CT and bone scanning in staging patients with breast cancer[8] ● *Collaborate with surgeons, radiation therapists, pathologists, oncologists and other specialists involved with the care of the breast cancer patient to define appropriate problem solving imaging strategies[17,18] Superscript indicate resources below which address the key function **Context:** Outpatient imaging, ambulatory care, hospital

	Targeted transition point: Depending on the institution - End of 3rd month of mammography. Items marked * may be more suitable for month 3 of mini-fellowship or fellowship for some programs
Suggested Resources (A) Article (B) Book Chapter (D) Document (S) Slides (W) Widget - interactive powerpoint (V) Video	Breast Cancer Staging 1. Axillary Staging of Breast Cancer: What the Radiologist Needs to Know (A) 2. Resident and Fellow Education Feature: US Evaluation of Axillary Lymph Nodes (S) 3. Stavros' YouTube US eval of the Axilla (V) 4. Imaging the Axilla Widget (W) 5. American Joint Committee on Cancer Staging System for Breast Cancer, Eighth Edition: What the Radiologist Needs to Know (A) 6. Powerpoint: Breast Cancer workup for Medical Students and Residents (S) 7. What Radiologists Need to Know about Diagnosis and Treatment of Inflammatory Breast Cancer: A Multidisciplinary Approach (A) 8. NCCN breast cancer staging guidelines (need free sign up) 9. MR-Directed ("Second-Look") Ultrasound Examination for Breast Lesions Detected Initially on MRI: MR and Sonographic Findings (A) 10. ACR Practice PArameter for Performance of Contrast Enhanced Magnetic Resonance Imaging (MRI) of the Breast (A) Post Surgical Breast 11. Update on Imaging of the Postsurgical Breast (A) 12. Imaging of Breast Implant-associated Complications and Pathologic Conditions: Breast Imaging (A) 13. Breast Reconstruction: Review of Surgical Methods and Spectrum of Imaging Findings (A) 14. MR Imaging Assessment of the Breast after Breast Conservation Therapy: Distinguishing Benign from Malignant Lesions (A) Neoadjuvant Therapy 15. Imaging Neoadjuvant Therapy Response in Breast Cancer (A) 16. Multimodality Imaging for Evaluating Response to Neoadjuvant Chemotherapy in Breast Cancer (A) Multi-disciplinary Team 17. A Multidisciplinary Approach to the Management of Breast Cancer, Part 1: Prevention and Diagnosis (A) 18. You tube video: Working with breast interdisciplinary teams as a radiologist (V) Breast MRI interpretation 19. You tube video: Breast MRI interpretation (V) 20. You tube video: 2013 ACR Bi-RADS for Breast MRI (V) 21. Non-mass Enhancement on Breast MRI: Review of Patterns With Radiologic-Pathologic Correlation and Discussion of Management (A) 22. You tube video: Breast MRI current uses (V) 23. You tube video: Breast MRI Common Findings and cases (V)

Mapping to Domains of Competence	X Patient Care X Medical Knowledge X Systems-Based Practice X Practice-Based Learning and Improvement X Professionalism X Interpersonal and Communication Skills
Competencies within each domain critical to entrustment decisions	PC1: Reporting PC2: Clinical Consultation PC3: Image Interpretation MK1: Diagnostic Knowledge MK3: Protocol Selection and Contrast Agent Selection/Dosing MK4: Imaging Technology and Image Acquisition SBP1: Patient Safety SBP3: System Navigation for Patient-Centered Care SBP4: Physician Role in Health Care Systems SBP5: Contrast Agent Safety SBP6: Radiation Safety SBP7: Magnetic Resonance (MR) Safety SBP8: Informatics PBLI1: Evidenced-Based and Informed Practice PBLI2: Reflective Practice and Commitment to Professional Growth P1: Professional Behavior and Ethical Principles P2: Accountability/Conscientiousness ICS1: Patient- and Family-Centered Communication ICS2: Interprofessional and Team Communication ICS3: Communication with Health Care Systems
Required knowledge, skills, attitude and behavior, and experience	Knowledge ● Knowledge of the normal and abnormal appearance of axillary nodes and on ultrasound, mammography and MRI ● Knowledge of the defining criteria for multifocal, multicentric, locally advanced and metastatic disease ● Explain how specific imaging findings may impact surgical and medical approaches to management ● Knowledge of the role of auxiliary imaging studies eg PET, CT for staging Skill ● Identifying findings on MRI, ultrasound and mammography that indicate more extensive or recurrent disease ● Interpreting imaging findings that indicate treatment response ● Identifying typical treatment changes ● Synthesizing current and previous imaging findings into an assessment of patient's stage and further potential imaging options Attitude and behavior ● Professional communication with patients and multiple providers ● Ability to present imaging data concisely and coherently in a multidisciplinary conference setting ● Willingness to consult with others on complex cases Experience ● Independent axillary scanning (>10) ● Independent interpretation of follow up mammography after BCT (>50) ● *Independent MRI interpretation of staging studies (>15)

	• Attendance and observation at multidisciplinary conferences (>5) • *Preparation of cases for multidisciplinary conferences (>5) • *Presenting at multidisciplinary conferences (>2) * Institution specific, as may be more suitable for breast imaging mini-fellows and fellows
Assessment Information sources to assess progress and ground summative entrustment decision	Knowledge Assessment: RadExam Breast EPA4: Breast Cancer Management (under construction) Observation of axillary scanning (>10 cases) Reviews of interpretations of staging and follow up imaging studies (>20 cases) Discussion of cases prepared for conference (>5) Observation of multidisciplinary conference presentations(>2) 10-20 Informal case-based discussion with attending radiologist (either cases for tumor board or diagnostic mammograms/ultrasound/MRI).
Entrustment level of supervision to be reached at which stage of training	Residents: Indirect supervision (level 3) prior to graduation Mini-fellows: Distant supervision (level 4) prior to graduation Fellows: Able to execute without supervision (level 5) or supervise others (level 6) prior to graduation
Expiration	2 years after graduation

*Modified from the work of Olle ten Cate, PhD

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EPA5-BR Worksheet

EPA Title	Performing presurgical localization using ultrasound or mammographic guidance
Description of Activity	A breast imaging radiologist should be able to accurately perform presurgical localization of breast pathology using modality specific imaging guidance prior to surgical management. The key functions which define this EPA include: ● List indications for pre-surgical localization[1] ● Determine appropriate localization modality, needle length and localization approach[1,2] ● Obtain informed consent[5] ● Display technical skill to perform localization procedure using the locally available methods (Needle/wire, radioactive seed, magnetic seed, savi scout)[1,2,3,4,6,8] ● Label post localization images[1] ● Determine adequacy of specimen radiography[1] ● Report and communicate results with the surgeon[1,6] ● Display professional and compassionate communication with the patient, ordering physician, and ancillary staff and document in medical record when appropriate[6] Superscript indicate resources below which address the key function **Context:** Ambulatory surgery, operating room, or outpatient center **Targeted transition point:** second or third month rotation on breast imaging (institution specific)
Suggested Resources (A) Article (B) Book Chapter (D) Document (S) Slides (W) Widget - interactive powerpoint (V) Video	1. Mammographically guided needle localization (V) 2. Ultrasound guided needle localization (V) 3. Savi Scout Reflector Placement (S) 4. The Wire and Beyond: Recent Advances in Breast Imaging Pre-operative Localization (S) 5. Obtaining informed consent (A) 6. ACR Radiology Communication Skills training module & Breast Imaging video 1 and videos 2 (V) 7. Preoperative Radioactive Seed Localization for Nonpalpable Breast Lesions: Technique, Pitfalls, and Solutions (A) 8. Beyond Wires and Seeds: Reflector-guided Breast Lesion Localization and Excision (A)
Mapping to Domains of Competence	X Patient Care X Medical Knowledge X Systems-Based Practice X Practice-Based Learning and Improvement X Professionalism X Interpersonal and Communication Skills

Competencies within each domain critical to entrustment decisions	PC1: Reporting PC2: Clinical Consultation PC3: Image Interpretation PC4: Competence in Procedures MK4: Imaging Technology and Image Acquisition SBP1: Patient Safety SBP3: System Navigation for Patient-Centered Care SBP4: Physician Role in Health Care Systems SBP6: Radiation Safety SBP8: Informatics PBLI2: Reflective Practice and Commitment to Professional Growth P1: Professional Behavior and Ethical Principles P2: Accountability/Conscientiousness ICS1: Patient- and Family-Centered Communication ICS2: Interprofessional and Team Communication ICS3: Communication with Health Care Systems
Required experience, knowledge, skills, attitude and behavior	Knowledge ● Knowledge of breast and axillary anatomy on imaging and real time ● Ability to synthesize imaging findings and pathology to understand when deviations from standard one site localization is indicated Skill ● Skill in using necessary devices for localization ● Skill in positioning patient appropriately to aide in localization Attitude and behavior ● Professional communication with patient and surgeon ● Proactive alertness in case of patient fainting ● Willingness to ask for assistant from technologist or nurse if needed Experience ● All measures done at least 5 times
Assessment Information sources to assess progress and ground summative entrustment decision	<u>Knowledge Assessment:</u> RadExam Breast EPA5: Surgical Localization (under construction) Observation (Attending Checklist): satisfactory observation of technical procedure from start (informed consent) to finish (post localization image labelling) at least 5-10 times and specimen radiography evaluation 5-10 times 5-10 Informal case-based discussion with an attending radiologist
Entrustment level of supervision to be reached at which stage of training	Residents: Indirect supervision (level 3) prior to graduation Mini-fellows: Distant supervision (level 4) prior to graduation Fellows: Able to supervise others (level 5) prior to graduation
Expiration	1 year after graduation

*Modified from the work of Olle ten Cate, PhD

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Entrustable Professional Activities in Radiology Training and Assessment

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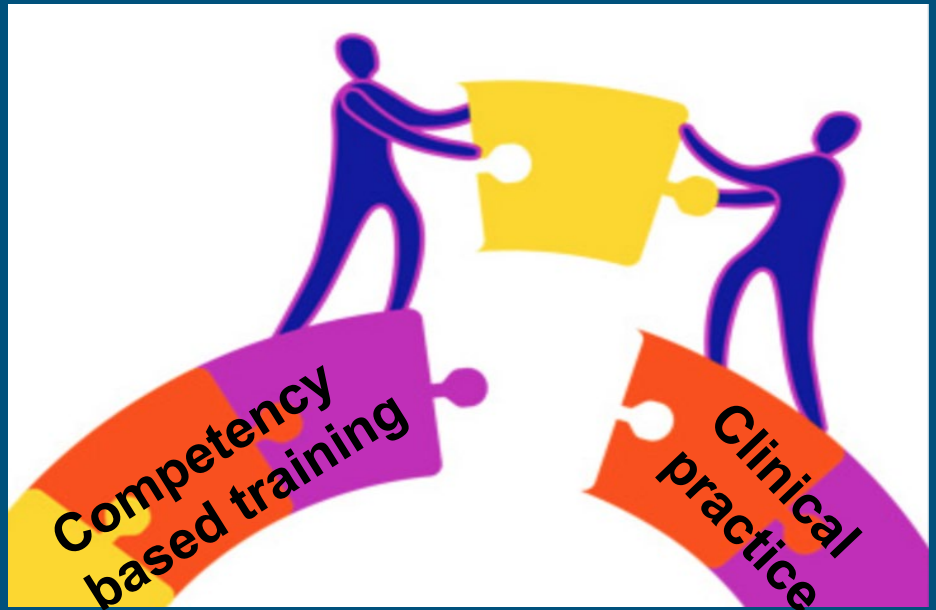

Reforms in postgraduate medical education have revealed a gap between the theoretical aspects of competency-based training and real-world clinical practice. In 2007, Olle ten Cate proposed entrusted professional activities (EPAs) as a means of bridging this gap.

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Learning Objectives

After this presentation, you will be able to:

1) Explain the concept of EPAs
2) Illustrate the relationship between EPAs, competencies and milestones
3) Summarize EPA assessment options

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What is an Entrustable Professional Activity (EPA)?

Basic skill or task

Essential to the daily practice of medicine

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EPA characteristics

- Executable within time frame
- Observable
- Measurable in process/outcome

→ Suitable for entrustment

→ Assessed as permission to do with certain level of supervision

→ Allocated to individuals

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EPA Supervision Scale

A clinician can evaluate a trainees level of to perform a task:

Level 1: Observe a task
Level 2: Execute task with direct supervision
Level 3: Execute with reactive supervision
Level 4: Execute with supervision at distance
Level 5: Execute without supervision
Level 6: Provide supervision to juniors

* Goal prior to graduation

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Once a trainee reaches level 4 or 5, an attending physician can entrust a trainee to independently perform a core activity, i.e. they are ready for unsupervised practice.

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Why EPAs?

EPAs are practical. They define the actual activities a competent physician must perform in practice WHILE also integrating our current competency based training model.

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How do EPAs differ from Competencies?

- EPAs are not an alternative to competencies BUT a means to translate competencies into clinical practice
- Competencies are descriptors of physicians; EPAs are descriptors of work
- EPAs require multiple competencies in an integrative, holistic manner
- The next slide will provide further insight into this difference

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EPAs	Competencies
Work descriptors	Person Descriptors
Essential task in professional practice	Knowledge, skills, attitudes, values
Discharge patient Counsel Patient Lead Family Meeting Design treatment plan Insert central line Resuscitate patient	Content expertise Health system knowledge Communication ability Management ability Professional attitude Scholarly skills

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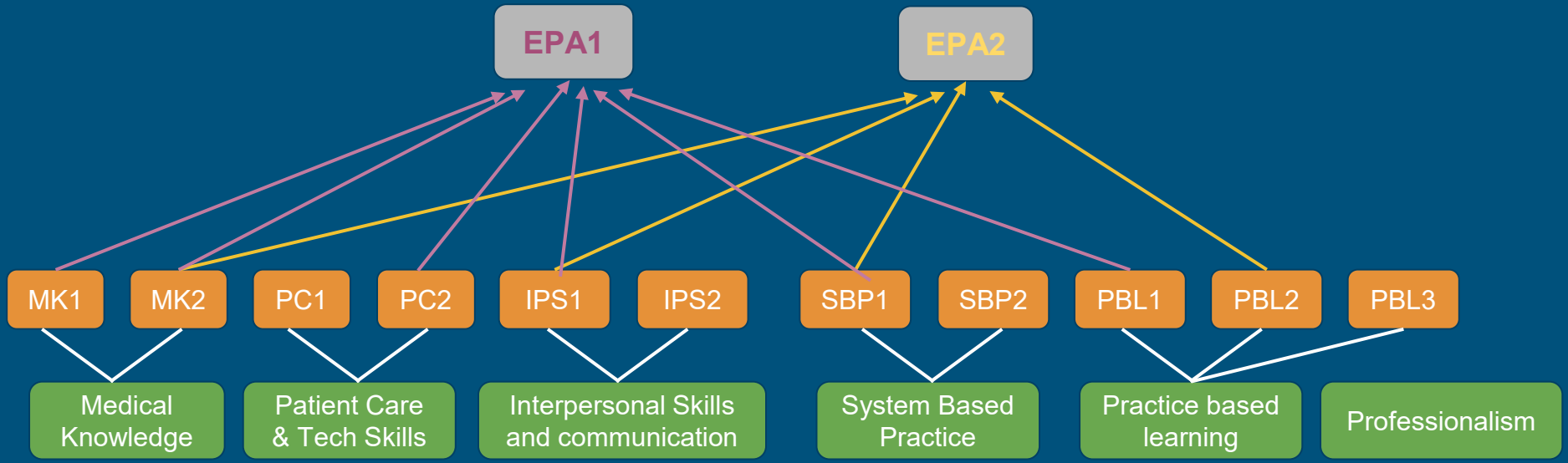
EPAs are linked to ≥1 appropriate ACGME competencies & sub-competencies that are required for its successful completion.



Competencies (green)

Sub-competencies (orange)

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Milestones

- A residents' performance of each sub-competency is measured by ACGMEmilestones (level 1 → 5)
- Level 1 (demonstrates some education in radiology) to Level 5 (advanced beyond performance targets).
- Milestone levels are very similar to EPA supervision levels.

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How to milestones fit in?

When a trainee is observed to reach supervision level 3 for an EPA, it is similar to reaching milestone 3 for each subcompetency linked to the EPA.

Thus successful execution of an EPA infers successful attainment of associated competencies & subcompetencies, providing a larger more practical picture of a trainees abilities.

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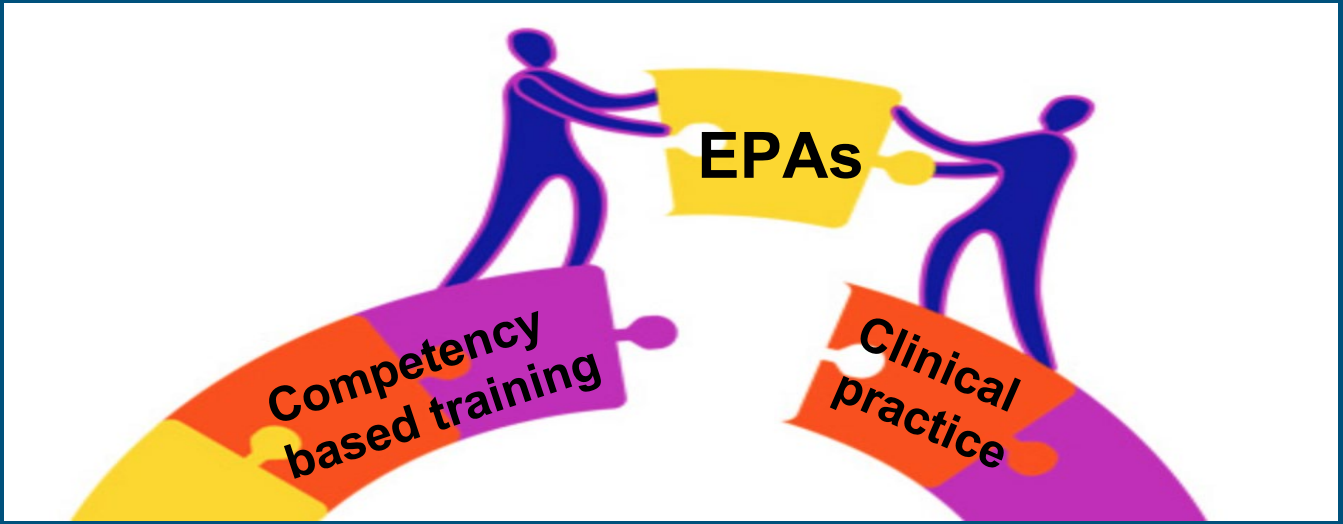
EPAs Bridge the gap

- EPAs frame competencies into a clinical context and bridge the theoretical gap between competency based training and clinical practice.



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Assessment tools for Entrustment Decisions

Multifactorial:

- **Electronic simulation knowledge test:** e.g. RadExam, Core, ACR DXIT
- **Short practice observations:** 5-15 minute snapshot with feedback (procedures, presentation, read out)
- **Case-based discussions:** 5-15 minute informal mini-exam after encounter or procedure ("what if the patient…" "what if the images would have shown…"
- **Long-practice observation:** during weeks/months on rotation, building view on professionalism and behavior

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Statement of Awarded Responsibility (STAR)

When a trainee reaches an EPA entrustment level:

- It acknowledges a formal moments of competence
- Reflects a trainees ability
- Gives them the right and duty to enact EPA with less (or no) supervision (institutionally dependent)

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Summary: EPAs

- Focus on observed competence
- Practical way to ensure a trainee to ready for clinical practice
- Incorporate 1 or more competencies and sub-competencies
- Have similar levels to milestones
- Need multi-factorial means for assessment
- Awarded to a trainee

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Thank you!

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