**EPA3-BR Worksheet**

<table>
<thead>
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<th>Title</th>
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<tbody>
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<td>Performing biopsies using imaging guidance and determining appropriate post-procedural management</td>
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<tr>
<td>- EPA3a: Stereotactic biopsy</td>
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<td>- EPA3b: Ultrasound</td>
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<td>- EPA3c: MRI *elective EPA</td>
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<table>
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<tr>
<th>Description of Activity</th>
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<td>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.</td>
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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 $^{4,9,10}$
  - 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) $^{1,4,5,6}$
- Procure a sufficient sample and properly label the specimen $^{2,28}$
- Determine if the sample is adequate prior to clip placement/procedure termination $^{28}$
- Provide appropriate post-biopsy care to obtain hemostasis $^{2,23,24,25}$
- Document procedural report including pathology addenda into the electronic medical record $^2$
- Determine, communicate and document radiology-pathology concordance and post-procedural management $^{2,26,27}$
- 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 $^{23,24,25}$
- Display professional and compassionate communication with the patient, ordering physician, and ancillary staff and document in the medical record when appropriate $^{32,33,34}$

Superscript indicate resources below which address the key function

**Context:** Outpatient clinic, hospital
**Targeted transition point:** Third-month rotation in training

This is from:

**Breast Radiology Entrustable Activity Supervision Tool**
Monica Sheth, MD; S; Ryan Woods, MD; Katherine Klein, MD Priscilla Slanetz, MD; Alice Fornari, EdD; Petra Lewis, MBBS, 2019
| Suggested Resources | 1. Troubleshooting to Overcome Technical Challenges in Image-guided Breast Biopsy  
2. Breast Intervention: How I do It  
3. SBI : Breast Biopsy: Beyond the Basics |
|---------------------|-------------------------------------------------------------------------------------|
| Stereotactic/Tomosynthesis biopsy | 4. Breast Stereo Pairs Widget  
5. Tomosynthesis guided biopsy  
6. Calcifications at Digital Breast Tomosynthesis: Imaging Features and Biopsy Techniques  
7. Comparison of Upright Digital Tomosynthesis-guided versus Prone Stereotactic Vacuum-assisted Breast Biopsy  
8. UPright Stereo Mammothome (Video) |
| Ultrasound biopsy | 9. Centering on a lesion on US breast biopsy video  
10. Biopsy deep breast lesions video  
11. Concordant or Discordant? Imaging-Pathology Correlation in a Sonography Guided Core Needle Biopsy of Breast Lesion  
12. Imaging-Histological Discordance after Sonographically Guided Percutaneous Breast Core Biopsy  
13. A Novel technique for teaching Challenging Ultrasound Breast Biopsies to Radiology Residents  
14. Evaluations of Newly Adapted Clip Marker System in Ultrasound-guided core Needle Biopsy for Suspicion of Breast Cancer  
15. Training modules to teach ultrasound-guided breast biopsy skills to residents improves accuracy  
16. Ultrasound Technique Part 1 (Video)  
17. Ultrasound Technique Part 2 (Video)  
18. Temno Technique (Video) |
| MRI biopsy | 19. MRI Breast Biopsy Challenges - Widget  
20. Manual targeting Breast MRI Biopsies - Widget  
21. MRI Biopsy Demo (Video)  
22. MRI Biopsy Demo (Video) |
25. Breast Emergencies (Book Chapter) |
| Radiology/Pathology Concordance (or we can put this in each respective section) | 26. Pathologists and Radiologists Stress Concordance Between Imaging and Lab  
27. Tomosynthesis Detected Architectural Distortion: Management Algorithm with Rad-Path Correlation |

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| 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 |

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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: (in progress)

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*