



الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties

Breast Imaging Fellowship



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I PREFACE

- This document is developed to enrich the training experience of postgraduate trainees in breast imaging by outlining the learning objectives for them to become independent and competent breast imagers and the essential skills required for the successful completion of breast imaging training.
- The breast imaging curriculum aims to inform trainers and training supervisors of the goals and objectives of training. It also provides trainers with the essential elements to cover as they plan and execute their training activities, with particular emphasis on quality assurance of training outcomes.
- The Saudi Commission for Health Specialties (SCFHS) is the national regulatory body of postgraduate training programs across all health professions in Saudi Arabia.
- This document may contain sections outlining some regulations of training; however, such regulations need to be sought from the “General Bylaws” and “Executive Policies” for training published by the Saudi Commission for Health Specialties (SCFHS). They can be accessed online through the official SCFHS website.
- If there is a discrepancy in regulation statements, then the most updated bylaws and executive policies will be the reference to apply. For further support, please do not hesitate to contact us at: Curricula@scfhs.org.sa
- As this curriculum is subject to periodic refinements, please refer to the electronic version posted online for the most up-to-date edition at: www.scfhs.org.sa

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This version should replace the Women's Imaging Curriculum to reflect the changes in clinical practice.



III COPYRIGHT STATEMENTS

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III FOREWORD

The Breast Imaging Fellowship Curriculum Development Team acknowledges the valuable contributions and feedback from the Scientific Committee Members in the development of this program. We extend special appreciation and gratitude to all the members who have been pivotal in the completion of this booklet, especially the Curriculum Group, the Curriculum Specialists, and the Scientific Council. We would also like to acknowledge that the CanMEDS framework is a copyright of the Royal College of Physicians and Surgeons of Canada, and many of the descriptions of competencies have been acquired from their resources.



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V INTRODUCTION

1. Context of Practice

Breast cancer (BC) is the most common malignancy affecting women in Saudi Arabia, accounting for approximately 31% of female reported malignancies (1, 2). The Saudi Cancer Registry documented an increase in the age-specific rate (ASR) of breast cancer from 24.3 cases per 100,000 in 2015 to 30 per 100,000 in 2017 (1, 3). The proportion of Saudi women diagnosed with BC under 50 years of age is higher than the reported rate in the USA. Approximately, 41% of the diagnosed cases of BC in Saudi Arabia show regional metastasis. BC is also the second leading cause of cancer-related deaths worldwide and is the most common cause of cancer-related mortality in Saudi Arabia (4). The Women's Imaging Fellowship was established at King Faisal Specialist Hospital and Research Centre, Riyadh, in 2004 to train radiologists in breast and female pelvic imaging, with approximately 28 graduates. Due to the growing national need for subspecialized breast radiologists, on February 10, 2021, the Saudi Commission for Health Specialties (SCFHS) approved the request to modify the curriculum and content of the training program to focus on breast imaging. The Breast Imaging Fellowship program is also developed to ensure the competencies of graduates in screening, diagnostic, and interventional applications of various breast imaging modalities, including mammography (MG), digital breast tomosynthesis (DBT), breast ultrasound (BUS), magnetic resonance imaging (MRI), and contrast-enhanced mammography (CEM). The graduate should be able to manage all breast-related conditions encountered from adulthood to post-menopausal age, including physiologic, benign, and malignant neoplasms. The graduate should also be able to address acute postoperative breast complications such as hematomas/seromas, scarring, abscesses, and fat necrosis.

2. Goals and Responsibilities of Curriculum Implementation

The curriculum ultimately seeks to guide trainees to become competent in breast imaging. This requires a significant amount of effort and coordination from all stakeholders involved in postgraduate training. As adult learners, **trainees** must be proactive and fully engaged and exhibit a full understanding of learning objectives, self-directed learning, problem-solving, an eagerness to apply learning through reflective practice from feedback and formative assessment, self-awareness, and willingness to ask for support when needed. The program is supervised by the **Program Director** (PD) to ensure the successful implementation of the curriculum, including the collection of continuous evaluation reports. The **Training Committee** (TC) members, particularly the program administrator and chief fellow, have a significant impact on program implementation. Trainees are required to share responsibilities during curriculum implementation.

The **Academic and Training Affairs** (ATA) in training centers and the regional advisory training committee play a major role in training supervision and implementation. The Breast Imaging **Scientific Committee** (SC) will guarantee that the content of the curriculum is constantly updated to match the highest standards in breast imaging. The **SCFHS** applies the best models of training governance to achieve the highest quality of training.

3. What is New in This Edition?

This edition replaces the previous Women's Imaging curriculum in response to the memo from the SCFHS dated 26/01/2021 approving the modification of the program from Women's to Breast Imaging. This entails omitting body imaging rotations and establishing a set of goals and objectives focusing exclusively on breast imaging.



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VI ABBREVIATIONS

Abbreviation	Description
BC	Breast Cancer
ASR	Age-Specific Rate
SCFHS	Saudi Commission for Health Specialties
MG	Mammography
DBT	Digital Breast Tomosynthesis
BUS	Breast Ultrasound
MRI	Magnetic Resonance Imaging
PD	Program Director
TC	Training Committee
ATA	Academic and Training Committee
SC	Scientific Committee
OSCE	Objective Structured Clinical Examination
DOPS	Direct Observation of Procedural Skills
CBD	Case-Based Discussion Report



The Breast Imaging Fellowship aims to provide comprehensive and integrated multimodality training in breast imaging on a large number of clinical cases and common and uncommon disease presentations. The training is designed to provide sufficient exposure to screening, diagnostic, and interventional breast imaging, including the essential elements of research.

By the end of the training program, graduates will be able to interpret the screening and diagnostic breast imaging examinations, including mammography, digital breast tomosynthesis, contrast-enhanced mammography, breast ultrasound, and breast MRI. Candidates are expected to understand the indications for each imaging modality, as well as the indication for intervention under each imaging modality. Graduates should also be comfortable handling image-guided interventions, including US, tomosynthesis, and MRI-guided interventions. Graduates will be able to manage various breast-related presentations through their understanding of the indications and contraindications of breast imaging modalities.

VII PROGRAM ENTRY REQUIREMENTS

Candidates must:

1. Be certified by the Saudi Specialty Certificate in Radiology (SSC-Rad) or its equivalent or have at least successfully completed the written part of the Saudi Specialty Certificate in Radiology.
2. Be licensed to practice medicine in Saudi Arabia.
3. Be registered as trainees at SCFHS.
4. Provide an up-to-date curriculum vitae.
5. Provide written permission from the sponsoring institution allowing the candidate to participate in full-time training for the entire one-year program.
6. Sign an undertaking to abide by the rules and regulations of the training program and SCFHS.
7. Provide three recent reference letters of recommendations (within the previous six months) from consultants with whom the candidate has recently worked.
8. Successfully passed the interview for the Breast Imaging Fellowship.

Three positions are offered per year. The program duration is one year spent in the breast imaging sections in the outpatient and breast cancer units in the main hospital and King Abdullah Cancer Center for Oncology and Liver Disease KACOLD, respectively.

Vacations:

The trainee is permitted four weeks of annual leave in total, with a maximum of 10 days per rotation. Leave requests should be submitted well in advance (one



month). One week of appropriately justified emergency leave and one week of properly confirmed professional leave may be allowed.



VIII LEARNING AND COMPETENCIES

Breast Imaging Competencies

At the completion of training, the graduate should demonstrate the following competencies and function effectively as follows:

1-Medical Expert:

As Medical Experts, breast imaging radiologists integrate all the CanMEDS Roles, applying their knowledge, clinical skills, and professional attitudes to provide patient-centered care pertinent to breast imaging.

Key and Enabling Competencies: Breast imagers should be able to:

1. Function effectively as consultants, integrating all the CanMEDS Roles to provide optimal, ethical, and patient-centered medical care

1.1. Provide effective consultation, including the presentation of well-documented assessment recommendations in written and/or oral form, in response to a request from the healthcare provider

1.2. Demonstrate use of all CanMEDS competencies relevant to breast Imaging

1.3. Identify and respond to the relevant ethical issues arising in patient care

1.4. Demonstrate the ability to handle and prioritize professional duties when faced with multiple patients and/or problems

1.4.1. Manage immediate complications related to breast interventions

1.5. Demonstrate compassionate and patient-centered care



- 1.6. Recognize and respond to ethical dimensions other than patient care, such as providing expert opinion for legal testimony or advising governments, when needed
2. Establish and maintain the clinical knowledge, skills, and attitudes appropriate to breast imaging
 - 2.1. Apply knowledge of the clinical, socio-behavioral, and fundamental biomedical sciences relevant to breast imaging
 - 2.1.1. Demonstrate knowledge of anatomy, including embryology, and its radiological applications in adults, including adolescents, to the breast and axilla.
 - 2.1.2. Demonstrate knowledge of the radiologic and pathologic correlation of breast diseases
 - 2.1.2.1. Demonstrate appropriate application and interpretation of the various breast imaging modalities
 - 2.1.3. Describe the appropriate imaging protocols for breast imaging studies for specific disease entities (e.g., implant vs. tumor protocol for breast MRI)
 - 2.1.4. Apply knowledge of physical and technical principles for performance and interpretation of screening and diagnostic breast imaging, including but not limited to
 - 2.1.4.1. Digital mammography
 - 2.1.4.2. Digital breast tomosynthesis
 - 2.1.4.3. Breast ultrasound
 - 2.1.4.4. Breast MRI
 - 2.1.5. Demonstrate knowledge of the strengths, limitations, and indications for the following modalities:
 - 2.1.5.1. Digital mammography
 - 2.1.5.2. Digital breast tomosynthesis
 - 2.1.5.3. Contrast-enhanced mammography
 - 2.1.5.4. Breast ultrasound
 - 2.1.5.5. Magnetic resonance imaging
 - 2.1.6. Demonstrate knowledge of pharmacology as applied to breast imaging, particularly iodinated contrast agents and gadolinium

- 2.2. Describe the CanMEDS Competencies relevant to breast imaging
 - 2.3. Acquire lifelong learning skills of the Scholar Role to develop a personal program to keep up-to-date and enhance areas of professional development
 - 2.4. Integrate the available best evidence and best practices to enhance the quality of care and patient safety in breast imaging
 - 2.4.1. Demonstrate knowledge of the hazards and potential complications of interventional breast procedures
 - 2.4.2. Demonstrate knowledge of patient protection and safety with respect to various breast imaging modalities
- 3. Perform a complete and appropriate assessment of a patient**
- 3.1. Identify the relevant clinical issues to be addressed in a patient encounter, including the patient context and preferences
 - 3.2. Elicit a relevant, clear, concise history that is accurate to context and preferences for the purposes of diagnosis, management, health promotion, and disease prevention history that is relevant, clear, concise, and accurate to context and preferences for the purposes of diagnosis, management, health promotion, and disease prevention
 - 3.3. Perform a focused physical exam that is accurate and relevant to breast care or procedures for the purpose of diagnosis, management, health promotion, and disease prevention
 - 3.4. Select the most appropriate imaging modality to answer the clinical question in a resource-effective and ethical manner
 - 3.5. Demonstrate effective clinical problem solving and judgment to address patients' problems, including interpreting available data and integrating information to generate a differential diagnosis and management plans
- 4. Use preventive and therapeutic interventions effectively**
- 4.1. Implement a management plan in collaboration with the referring health practitioner and patient.
 - 4.2. Recommend appropriate and timely application of preventive interventions relevant to breast imaging



- 4.3. Recommend appropriate and timely application of therapeutic interventions relevant to breast imaging
 - 4.4. Ensure appropriate informed consent is obtained for diagnostic and interventional procedures
 - 4.5. Ensure patients receive optimum diagnostic imaging and therapeutic procedures
- 5. Demonstrate appropriate use of procedural skills, both diagnostic and interventional**
- 5.1. Demonstrate effective, appropriate, and timely performance of procedures relevant to breast imaging
 - 5.1.1. Stereotactic/tomosynthesis guided breast biopsy
 - 5.1.2. Ultrasound-guided biopsy, both tru-cut and vacuum-assisted biopsy
 - 5.1.3. MRI-guided biopsy
 - 5.1.4. Mammographic guided wire localization
 - 5.1.5. Ultrasound-guided wire localization
 - 5.2. Describe the clinical indications and techniques and interpretation of the following:
 - 5.2.1. Stereotactic/Tomosynthesis guided biopsy
 - 5.2.2. Ultrasound-guided biopsy
 - 5.2.3. MRI-guided biopsy
 - 5.2.4. Mammographic guided wire localization
 - 5.2.5. Ultrasound-guided wire localization
 - 5.3. Demonstrate effective, appropriate, and timely performance of interventional breast procedures
 - 5.4. Ensure appropriate informed consent is obtained for procedures
 - 5.5. Document and disseminate information related to procedures performed and their outcomes
 - 5.5.1. Ensure adequate follow-up is arranged for procedures performed
 - 5.5.2. Manage post-procedure care for invasive procedures
- 6. Recognize the limits of their own expertise and seek appropriate consultation from other health professionals when needed**

- 6.1. Demonstrate insight into their own limits of expertise
- 6.2. Demonstrate effective, appropriate, documented and timely consultation of another health professional as needed for optimal patient care
- 6.3. Advise on the appropriate follow up for patients and their families/caregivers

2-Communicator:

As Communicators, breast imagers effectively facilitate the doctor-patient relationship and the dynamic exchange that occurs before, during, and after the breast imaging examination.

Key and enabling competencies: Breast imagers should be able to...

1. Develop rapport, trust, and ethical diagnostic and therapeutic relationships with patients and families

- 1.1. Recognize good communication as a core clinical skill, and that effective physician-patient communication can foster patient satisfaction, adherence, and improved clinical outcomes and compliance
- 1.2. Establish positive diagnostic relationships with patients and their families that are characterized by understanding, trust, respect, honesty, and empathy.
- 1.3. Respect patient privacy, confidentiality, and autonomy
- 1.4. Listen effectively
- 1.5. Be aware and responsive to non-verbal cues
- 1.6. Facilitate a structured clinical encounter effectively

2. Accurately elicit and synthesize relevant information and perspectives of patients and families, colleagues, and other professionals

- 2.1. Gather information about a disease and about a patient's beliefs, concerns, expectations, and illness experience



- 2.2. Seek out and synthesize relevant information from other sources, such as the patient's family, caregivers, electronic medical records, and other professionals while respecting individual privacy and confidentiality
3. **Convey relevant information and explanations accurately to patients and families, colleagues, and other professionals**
 - 3.1. Deliver information to a patient and family, colleagues, and other professionals in a humane manner and in an understandable way, and encourage discussion and participation in decision-making to the degree that they wish
4. **Develop a common understanding of issues, problems, and plans with patients, families, and other professionals to develop a shared plan of care**
 - 4.1. Identify and effectively explore problems to be addressed from a patient encounter, including the patient's context, responses, concerns, and preferences
 - 4.2. Respect diversity and differences, including but not limited to the impact of gender, religion, and cultural beliefs on decision-making
 - 4.3. Encourage discussion, questions, and interaction in the encounter
 - 4.4. Engage patients, families, and relevant health professionals in shared decision-making to develop the most appropriate plan of care.
 - 4.4.1. Demonstrate the importance of cooperation and communication among health professionals involved in the care of individual patients, such that the roles of these professionals are delineated, and consistent messages are delivered to patients and their families.
 - 4.5. Address challenging communication issues effectively, such as obtaining informed consent, delivering bad news, and addressing anger, confusion, and misunderstanding
5. **Convey oral and written information effectively about a medical encounter**

5.1. Maintain clear, concise, accurate, and appropriate records of clinical encounters and plans

5.1.1 Use a systematic style of reporting

5.1.2 Report clinically important or unexpected findings in a timely fashion

5.1.3 Present oral reports of clinical encounters and plans

5.1.4 Convey medical information appropriately to ensure safe transfer of care

5.1.5 Present medical information effectively to the public or media

3-Collaborator

Definition:

As a Collaborator, breast imagers work effectively within a healthcare team to achieve optimal patient care.

Key enabling competencies: Breast imagers should be able to

1. Participate effectively and appropriately in an interprofessional healthcare team meeting

1.1. Describe the breast imager's role and responsibility to other professionals

1.2. Describe the roles and responsibilities of other professionals within the breast care team

1.2.1. Identify and describe the role, expertise, and limitations of all members of an interdisciplinary team required to optimally achieve a goal related to patient care, research problems, educational tasks, or administrative responsibilities.

1.3. Recognize and respect the diverse roles, responsibilities, and competencies of other professionals in relation to their own

1.4. Work with others to assess, plan, provide, and integrate care for individuals and groups of patients



- 1.4.1. Assist in developing a care plan for a patient, including investigation, treatment, and continuing care, in collaboration with the other members of the interdisciplinary team
- 1.5. Work with others to assess, plan, provide, and review other tasks such as research problems, education of work, program review, or administrative responsibilities
- 1.6. Participate effectively in multidisciplinary team meetings, demonstrating the ability to accept, consider, and respect the opinions of other team members while contributing specialty-specific expertise.
- 1.7. Enter into inter-department relationships with other professions for the provision of quality care
- 1.8. Describe the principles of team dynamics
- 1.9. Respect team ethics, including confidentiality, resource allocation, and professionalism
- 1.10. Demonstrate leadership in a healthcare team as appropriate
2. **Work with other professionals effectively to prevent, negotiate, and resolve interprofessional conflict**
 - 2.1. Demonstrate a respectful attitude toward other colleagues and members of an interprofessional team
 - 2.2. Work with other professionals to prevent conflicts
 - 2.3. Employ collaborative negotiation to resolve conflicts
 - 2.4. Respect differences and address misunderstandings and limits of the scope of practice in other professions
 - 2.5. Recognize their own differences, misunderstandings, and limits of the scope of practice that may contribute to interprofessional tension
 - 2.6. Demonstrate the ability to reflect on the interprofessional team

4-Advocate

Definition:

As a Health Advocate, the trainee uses their expertise and influences responsibly to advance the health and wellbeing of individual patients, communities, and population.

Key enabling competencies: Breast imagers should be able to

1. Respond to individual patient's health needs and issues as part of patient care

- 1.1. Identify the health needs of an individual patient
- 1.2. Identify opportunities for advocacy, health promotion, and disease prevention with individuals to whom they provide care
 - 1.2.1. Promote awareness of appropriate imaging to minimize unnecessary radiation exposure, and apply knowledge of radiation protection and radiobiology
 - 1.2.2. Promote awareness of contrast use and safety for different imaging modalities
 - 1.2.3. Promote patient safety in the hospital setting
- 1.3. Demonstrate an appreciation of the possibility of competing interests between individual advocacy issues and the community at large

2. Respond to the health needs of the communities they serve

- 2.1. Describe the practice communities that they serve
- 2.2. Identify opportunities for advocacy, health promotion, radiation protection, and disease prevention in the community, and respond appropriately
- 2.3. Develop and promote breast cancer screening protocols for patients and population at risk

3. Identify the determinants of health for the population

- 3.1. Identify the determinants of health for the population, including barriers to access to care and resources.
- 3.2. Identify vulnerable or marginalized populations within the community and respond appropriately
 - 3.2.1. Identify groups at risk, convey this information to other health practitioners, and appropriately image the patients at risk
 - 3.2.2. Convey the available knowledge about prevention to groups at risk
 - 3.2.3. Contribute group data for better understanding of health problems within the population



4. Promote the health of individual patients, communities, and the population

- 4.1. Describe an approach to implementing a change in the determinants of health and its relevance to breast imaging
- 4.2. Demonstrate awareness of radiation doses of mammography
- 4.3. Describe the utility of screening
- 4.4. Describe how public policy impacts the health of the population
- 4.5. Describe the role of the medical profession and advocate for health and patient safety

5-Manager:

Definition:

As managers, breast imagers are integral participants in healthcare organizations, organizing sustainable practices, making decisions concerning the allocation of resources, and contributing to the effectiveness of the entire health care system.

Key and enabling competencies: Breast imagers should be able to...

1. Participate in activities that contribute to the effectiveness of their health care organization

1.1. Work collaboratively with others and their institutions

1.2.1. Describe how to function effectively as a breast imager and healthcare organization, ranging from individual clinical practice to organizations at the local, regional, and national levels.

1.2.2. Work effectively and accomplish tasks as a leader or member of a team or partnership

1.2. Participate in systemic quality assessment and improvement programs, including patient safety initiatives

1.2.1. Describe the fundamentals of quality assurance and breast imaging

1.2.2. Conduct or supervise quality assurance projects and implement results into practice

- 1.2.3. Demonstrate commitment to the continuing assessment of the quality of breast imaging studies, interpretation, and clinical utility
- 1.2.4. Demonstrate a commitment to patient safety initiatives directed at improving patient care, including but not limited to radiation protection
- 1.3. Describe the structure and function of the healthcare system as it relates to breast imaging, including the roles of physicians
 - 1.3.1. Describe the structure and operation of the health care system and its facilities, function effectively within it, and be capable of playing an effective role in its evolution
 - 1.3.2. Describe how healthcare governance influences patient care, research, and education activities at the local, prevention, regional, and national levels
2. **Manage their practice and career effectively**
 - 2.1. Manage time and set priorities to balance patient care, practice requirements, community services, and personal life
 - 2.2. Manage a practice including management of finances and human resources
 - 2.3. Implement processes to ensure personal practice improvement
 - 2.4. Employ information technology appropriately for patient care
3. **Allocate health care resources appropriately**
 - 3.1. Recognize the importance of the just allocation of healthcare resources, balancing effectiveness and efficiency with access to optimal patient care
 - 3.1.1. Participate in the planning, budgeting, evaluation, and outcome of patient care programs
 - 3.2. Apply evidence and management processes for most appropriate care
 - 3.2.1. Make clinical decisions and judgments based on sound evidence for the benefit of individual patients and the population
 - 3.2.2. Use these evidence-based decisions to support the Advocacy Role for patients in the context of allocating resources (supplementary screening with breast ultrasound or MRI)



4. Serve in administration and leadership roles

- 4.1. Chair or participate effectively in committees and meetings
- 4.2. Lead or implement changes in healthcare
- 4.3. Plan relevant elements of healthcare delivery such as work schedules

6-Scholar

Definition:

As Scholars, breast imagers demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application, and translation of medical knowledge.

Key enabling competencies: Breast imagers should be able to...

1. Maintain professional competence through ongoing learning activities

- 1.1. Describe the principles of maintenance of competence
- 1.2. Describe the strategies for implementing a personal knowledge management system
- 1.3. Recognize and reflect on learning issues in breast imaging practice
- 1.4. Conduct personal practice audits
- 1.5. Ask an appropriate learning question
- 1.6. Access and interpret the relevant evidence
- 1.7. Integrate new learning into practice
- 1.8. Evaluate the impact of any change in practice
- 1.9. Document the learning process

2. Critically evaluate medical information and its sources, and apply this appropriately to practice decisions

- 2.1. Describe the principles of critical appraisal
- 2.2. Critically appraise retrieved evidence to address a clinical question
- 2.3. Integrate critical appraisal and conclusions into clinical care

3. Facilitate the learning of patients, families, students, residents, other health professionals, the public, and others

- 3.1. Describe and apply the principle of learning relevant to medical education

- 3.2. Identify collaboratively the learning needs and desired learning outcome of others
 - 3.3. Select effective teaching strategies and content to facilitate the learning of others, including but not limited to peers, residents, and other health care professionals
 - 3.2.1. Demonstrate an awareness of and respond to different preferred learning methods
 - 3.4. Deliver effective presentations
 - 3.5. Assess and reflect on teaching encounters
 - 3.6. Ask for and incorporate feedback regarding their teaching
 - 3.7. Provide effective and constructive feedback
 - 3.8. Describe the principles of ethics with respect to teaching
- 4. Contribute to the development and dissemination of new knowledge and practices**
- 4.1. Describe the principles of research and scholarly inquiry
 - 4.2. Describe the principles of research ethics
 - 4.3. Identify practice areas for research, and from these derive a scholarly question
 - 4.4. Conduct a systematic search for evidence
 - 4.4.1. Identify gaps in knowledge and expertise regarding a clinical question
 - 4.4.2. Formulate a plan to fill the knowledge gap
 - 4.4.2.1. Conduct an appropriate literature search based on the clinical question
 - 4.4.2.2. Assimilate and appraise the literature
 - 4.4.2.3. Develop a system to store and retrieve the relevant literature
 - 4.4.2.4. Propose a solution to the clinical question
 - 4.5. Select and apply appropriate research methods to address the clinical question
 - 4.6. Disseminate the findings of a study



- 4.7. Complete a scholarly research, quality assurance, or educational project relevant to breast imaging that is suitable for a peer review publication or presentation at academic meeting or conference

7-Professional:

As Professionals, breast imagers are committed to the health and well-being of individuals and society through ethical practice and high standards of behavior.

Key and enabling competencies: Breast imagers should be able to...

1. Demonstrate their commitment to their patients, professions, and community through ethical practice

- 1.1. Exhibit appropriate professional behavior and practice, including honesty, integrity, commitment, compassion, and respect
- 1.2. Demonstrate a commitment to delivering the highest quality of care and maintenance of competence
 - 1.2.1. Evaluate their abilities, knowledge, and skills continually and know the limits of their professional competence
- 1.3. Recognize and appropriately respond to ethical issues encountered in practice
 - 1.3.1. Recognize, analyze, and attempt to resolve ethical issues in clinical practice, including truth-telling, consent, confidentiality, conflict of interest, and resource allocation
- 1.4. Identify and declare conflicts of interest
- 1.5. Recognize the principles and limits of patients' privacy and confidentiality as defined by law and professional practice standards
- 1.6. Maintain appropriate boundaries with patients

2. Demonstrate commitment to their patients, profession, and community through participation in professional-led regulation

- 2.1. Demonstrate knowledge and understanding of professional, legal, and ethical codes of practice
- 2.2. Fulfill the regulatory and legal obligations required of current practice

- 2.2.1. Abide by accepted guidelines of ethical interactions with industry with respect to research, education, and clinical care
- 2.3. Demonstrate accountability to professional regulatory bodies
- 2.4. Recognize and respond appropriately to other unprofessional behaviors and practices
- 2.5. Participate in peer review
- 3. Demonstrate their commitment to physician health and sustainable practice**
 - 3.1 Balance personal and professional priorities to ensure personal health and sustainable practice
 - 3.2 Understand that learning is a lifelong experience that incorporates various opportunities for continuous professional development to meet the demands of the profession
 - 3.3 Strive to heighten personal and professional awareness and insight
 - 3.4 Adopt strategies to heighten personal and professional awareness and explore and resolve interpersonal difficulties and professional relationships
 - 3.5 Strive to balance personal and professional roles and responsibilities and demonstrate ways to resolve conflicts and role strain
 - 3.6 Recognize other professionals in need and respond to them appropriately



IX PROGRAM DURATION

One year training, during which the trainee is exposed to all breast imaging examinations and procedures performed across the 2 breast imaging units at King Faisal Specialist Hospital and Research Centre

Facilities: Breast Imaging units in

KACOLD L 13

OPD, main hospital

X PROGRAM ROTATIONS

Breast Imaging Fellowship: Rotations				
#	Month	F1	F2	F3
1	JANUARY	KACOLD	KACOLD + MRI	OPD
2	FEBRUARY	KACOLD	KACOLD + MRI	OPD
3	MARCH	OPD	OPD+MRI	KACOLD
4	APRIL	OPD + MRI	OPD	KACOLD
5	MAY	KACOLD + MRI	KACOLD	OPD
6	JUNE	KACOLD + MRI	KACOLD	Elective
7	JULY	Elective	OPD	KACOLD + MRI
8	AUGUST	OPD	OPD	KACOLD + MRI
9	SEPTEMBER	KACOLD	KACOLD	OPD + MRI
10	OCTOBER	KACOLD + MRI	KACOLD	OPD
11	NOVEMBER	OPD + MRI	Elective	KACOLD
12	DECEMBER	OPD + MRI	OPD + MRI	KACOLD



XI SPECIFIC LEARNING OBJECTIVES

- Mammography:
 - Describe the indications of mammography
 - Identify the differences between conventional mammography and digital breast tomosynthesis
 - Recognize the added value of digital breast tomosynthesis in clinical imaging
 - Understand the strengths and weaknesses of both conventional mammography and DBT
 - Identify and judge the adequacy of mammographic positioning
 - Identify the normal appearance of mammography in lactating women
 - Physics applied to mammography, including digital breast tomosynthesis
 - Recognize the appearance of typically benign and malignant mammographic findings
 - Recognize and recommend the most appropriate examination from mammography
 - Recognize the limitation of mammography
 - Application of contrast-enhanced mammography
 - Physics of contrast-enhanced mammography
 - Understand the principles of radiation protection
 - Manage contrast reactions
 - Perform tomosynthesis-guided biopsy and wire localization
- Ultrasound:
 - Describe the indications of breast ultrasound
 - Recognize the benign and malignant findings on ultrasound
 - Physics related to ultrasound
 - How to optimize ultrasound images

- Perform ultrasound interventional procedures such as US-guided cyst aspiration, US-guided tru-cut and vacuum-assisted biopsy, and ultrasound-guided wire localization
- MRI:
 - Understand the indications of breast MRI
 - Describe the essential sequences in the MRI protocol
 - Identify the benign and malignant findings on MRI
 - List the steps to successful MRI-guided biopsy



XII CONTINUUM OF LEARNING

Specialty General Practice	Sub-specialty Practice (F1)
non-practicing	Dependent/supervised practice
Obtain basic health science and foundational level to core discipline knowledge	<ul style="list-style-type: none">• Obtain knowledge related to core clinical problem• Apply knowledge to provide appropriate clinical care related to core clinical problems
Internship to the practice of discipline	Analyze and interpret the findings from clinical skills to develop appropriate differential diagnoses and management plan for the patient

XIII TEACHING METHODS

Adult learning: Trainee feels the importance of learning to achieve the desired goal at their own learning pace.

Formal training is offered through the following activities:

- Weekly educational activities (Sunday 8–9 am): varieties of journal club, interesting case discussion, and didactic presentations
- Grand rounds
- CPD relevant to breast imaging including radiology pathology correlation
- M&M conferences
- Practice-based learning



XIV ASSESSMENT

1. Evaluation: Monthly on one45
2. Logbook: Below is the minimum acceptable no. of cases required to pass a rotation (cases/month):
 - a. 200 mammograms
 - b. 20 CESM
 - c. 100 US
 - d. 30 US-guided biopsies
 - e. 5 stereotactic biopsies
 - f. 10 breast MRIs
3. Research paper
4. Academic Presentation (journal club, grand round)
5. Case-Based Discussion (CBD): pass mark of 70%
6. End-of-year written exam, 120 MCQs: pass mark of 70%
7. End-of-year oral exam (OSCE): pass mark of 70%

The evaluation of each component will be based on the following equation:

Percentage	< 50%	50–59.4%	60–69.4%	> 70%
Description	Clear fail	Borderline fail	Borderline pass	Clear pass

To achieve unconditional promotion, the candidate must score a minimum of “borderline pass” in all five components.

The program director can still recommend the promotion of candidates if the above is not met in certain situations.

- If the candidate scored “borderline failure” in one or two components at maximum, and these scores should not belong to the same area of

assessment (for example, both borderline failures should not belong to skills).

- The candidate must have passed all the other components and scored a minimum of clear pass in at least two components.

Candidates are required to have a minimum of 70% to pass the end-of-year written exam in order to sit for the oral examination.



XV CERTIFICATION OF TRAINING-COMPLETION

To be eligible to sit for the final specialty examinations, each trainee is required to obtain the “Certification of Training-Completion.” Based on the training bylaws and executive policy (please refer to www.scfhs.org) trainees will be granted the “Certification of Training-Completion” once the following criteria are fulfilled:

- a. Successful completion of all training rotations.
- b. Completion of training requirements (e.g., logbook, research, others) as outlined in the ITER that have been approved by the Scientific Committee of the specialty.

XVI PROGRAM AND COURSE EVALUATION

SCFHS will apply variable measures to evaluate the implementation of this curriculum. The training outcomes of this program will undergo evaluation under the quality assurance framework endorsed by the Central Training Committee at the SCFHS. Trainees' assessment (both formative and summative) results will be analyzed and mapped to curriculum content. Other indicators that will be incorporated are as follows.

- Report of the annual trainees' satisfaction survey.
- Reports from trainees' evaluation of faculty members.
- Reports from trainees' evaluation of rotations.
- Reports from the annual survey of program directors.
- Data available from program accreditations.
- Reports from direct field communications with trainees and trainers.

Goal-Based Evaluation: The achievement of intended milestones will be evaluated at the end of each stage to assess the progress of the curriculum delivery, and any deficiency will be addressed in the following stage, utilizing the time devoted to trainee-selected topics and professional sessions.

In addition to subject-matter opinion and best practices from benchmarked international programs, SCFHS will apply a robust method to ensure that this curriculum will utilize all the data that will be available during revisions of this curriculum in the future.



XVII CENTER ACCREDITATION

Centers will be accredited to participate in the program based on the fulfillment of several criteria that include but are not limited to the following:

1. The department is accredited by SCFHS for fellowship training in radiology
2. The imaging department has an established women's/breast imaging section
3. The section has a minimum of three subspecialty-certified radiologists in breast (women's) imaging
4. Sufficient volume of cases (minimum cases per week)
 - 25 MRI
 - Breast MRI 15–20
 - MG 100
 - Breast US 60
 - US-Guided Biopsy 15
 - Stereotactic Biopsy 2
 - MRI-Guided Biopsy 2 /mo.
 - CESM 40

XVIII REFERENCES

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<https://nhic.gov.sa/eServices/Pages/TumorRegistration.aspx>
2. World Health Organization. Breast Cancer Factsheet 2021 [Available from:
<https://www.who.int/news-room/fact-sheets/detail/breast-cancer>.
3. National Health Information Center. Cancer Incidence Report, Saudi Arabia:
2015. September 2018.
4. American Cancer Society. How Common is Breast Cancer?

