

**THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY,
69, ANNA SALAI, GUINDY, CHENNAI - 600 032.**



Regulations, Syllabus & Guidelines

FOR

POST - DOCTORAL FELLOWSHIP PROGRAMME

IN

BREAST IMAGING

AS APPROVED IN 49TH SAB HELD ON 07.01.2015

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The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

REGULATIONS FOR

POST - DOCTORAL FELLOWSHIP PROGRAMMES IN BREAST IMAGING

1. PREAMBLE :

In exercise of the powers conferred by Section 44 of the Tamil Nadu Dr. M.G.R. Medical University, Chennai Act 1987 (Tamil Nadu Act 37 of 1987) the Standing Academic Board of the Tamil Nadu Dr. M.G.R. Medical University, Chennai hereby makes the following Regulations for Post - Doctoral Fellowship Programme in Breast Imaging.

2. SHORT TITLE AND COMMENCEMENT :

The course shall be called as “POST-DOCTORAL FELLOWSHIP PROGRAMME IN BREAST IMAGING” of the Tamil Nadu Dr. MGR Medical University, Chennai.

This shall come into force from the academic year 2015 - 2016.

The regulations framed are subject to modification from time to time by the Standing Academic Board.

3. AIM AND OBJECTIVES :

Keeping in view the explosion of knowledge in modern medicine, the University introduces a series of Post - Doctoral Fellowship Programmes in different disciplines (speciality or sub - speciality), wherein suitable candidates will be imparted training in the concerned area.

These Post - Doctoral Fellowship Programmes aims that the candidate gets exposure in the concerned disciplines with particular emphasis on their clinical skills. The course is meant to give intensive hands - on clinical training with periodic evaluation by experienced teaching staff.

The Post -Doctoral Fellowship programmes offered by this University

cannot be equated with DM / M.Ch.

4. DURATION OF THE COURSE :

The Duration of the Courses is 1 year.

5. ELIGIBILITY FOR ADMISSION :

a. Candidates who have passed Medical Post Graduate degree Course recognized by the Medical Council of India are eligible to join in **POST-DOCTORAL FELLOWSHIP PROGRAMME IN BREAST IMAGING**. This includes M.D.(R.D.) /DNB (R.D.) One year Post - PG experience is not required for admission to this course.

b. The Ph.D. in the concerned speciality is not considered to be eligible to apply for the Post - Doctoral Fellowship Programme in Breast Imaging.

c. Candidates who have obtained P.G. degree from any recognized University, within India, but outside the state of Tamil Nadu will have to produce Migration Certificate from their qualifying University. No Objection Certificate issued by the National Board of Examinations, New Delhi, is equivalent to Migration Certificate.

d. The candidates shall obtain Eligibility Certificate before the cut off date for admission in that particular Academic year.

6. ELIGIBILITY CRITERIA :

M.D. (R.D.) / DNB (R.D.) candidates are eligible for the Post - Doctoral Fellowship Programme in Breast Imaging.

7. AGE :

No upper Age limit fixed for admission to Post - Doctoral Fellowship Programme in Breast Imaging.

8. ELIGIBILITY CERTIFICATE :

Candidates who have passed the qualifying examination as stated in Regulation No.6 above other than the Tamil Nadu Dr. M.G.R. Medical University, Chennai shall obtain an "Eligibility Certificate" from this University by remitting the prescribed fees along with the application form

and required documents before seeking admission in any one of the affiliated Medical Institutions. The application form is available in the University website: www.tnmgrmu.ac.in.

9. MIGRATION CERTIFICATE :

On completion of Post Doctoral Fellowship Programme in Breast Imaging, Migration Certificate will not be issued.

10. CONDONATION OF BREAK OF STUDY :

The Break of Study for a period of less than 90 days can be condoned by the Course Director and the Break of Study for the period of more than 90 days and less than one year is to be condoned by the University authorities. The application form is available in the University website: www.tnmgrmu.ac.in.

11. RE-ADMISSION OF THE BREAK OF STUDY :

1. The course shall be completed within the period of double the duration from the date of admission.
2. The Regulation for Re-admission are as per the University's common Regulation for Re-admission.

12. NO. OF ATTEMPTS ALLOWED FOR EXAMINATION:

The candidates of 1 year Post Doctoral Fellowship Programme in Breast Imaging, shall be allowed for a maximum of three attempts within a period of two years including the first appearance.

13. ADMISSION :

The admission for the Post - Doctoral Fellowship Programme in Breast Imaging is twice in a year (i.e.,) 1st January and 1st July.

- | | | |
|---------------------------------|---|---------------------------|
| (a) Admission upto 31st January | - | 28th February is the last |
| date for | | Registration. |
| (b) Admission upto 31 st July | - | 31st August is the last |
| date for | | Registration. |

An Institution can admit max. Two (2) students per year for Post-Doctoral Fellowship Programme in Breast Imaging i.e either in January / July sessions or 1 candidate for each session (January or July). However, the total number of candidates per institution per course shall not exceed Two (2) per year.

14. SELECTION OF CANDIDATES :

The candidates for the Post-Doctoral Fellowship Programme in Breast Imaging, can be selected by the centers on their own and the selection to be transparent.

a. The candidates selected by the Institutions will become bonafide student of this University only after registration.

b. The Post-Doctoral Fellowship Programmes of the Affiliated Institutions will be published in the University website.

15. COMMENCEMENT OF THE COURSE :

The one / two years Post - Doctoral Fellowship Programmes will commence on 1st January & 1st July of every year and the candidates are expected to get registered with this University within 30 days of their selection by the Affiliated Institutions. (i.e. 28th February & 31st August).

16. CURRICULUM :

The Regulation, Guidelines, Curriculum and the Syllabus for the Post Doctoral Fellowship Programmes is prescribed in these regulations are subject to modification by the Standing Academic Board from time to time.

17. REGISTRATION :

A Candidate admitted into 'POST-DOCTORAL FELLOWSHIP PROGRAMME IN BREAST IMAGING' under any one of the affiliated institutions of this University shall register his / her name with this University by submitting the prescribed application form for registration duly filled in, along with the prescribed fee and a declaration in the format to the Controller of Examination of this University through the affiliated institution within 30 days from the cut-off date prescribed for admission. The application should

have the date of admission of the course.

18. SCHEME OF EXAMINATION :

Commencement of examination for the Post Doctoral Fellowship Programme in Breast Imaging is on any day within the calendar month of January / July. The examination will be conducted with one internal Examiner i.e. the Course Director who is the Convener of the examination and Two External Examiner of which One from Government & One from Private Institution. The maximum age limit for the examiner is 70.

19. EXAMINATION PATTERN :

There is no theory examination for the Post Doctoral Fellowship Programme in Breast Imaging. The Institution must have periodical assessment on the performance of the students by maintaining a log book.

20. ATTENDANCE :

90% attendance is mandatory to become eligible for the examination and will be certified by the Course Director.

21. MINIMUM / MAXIMUM MARKS FOR PRACTICAL / CLINICAL / ORAL & INTERNAL ASSESSMENT :

The Examination pattern is as follows :

Exam	Maximum	Minimum
Practical	100	50
Orals / Viva	100	50
Internal Assessment	100	50
Log Book	50	25

The log book will be assessed by Examiners during the Clinical Examination. Projects presentation is mandatory and 25% of IA is for the project.

22. EXAMINATION :

There is No Theory Examination. Only Clinical Examination & Viva will be conducted.

A candidate who undergoes the Post-Doctoral Fellowship Programme in Breast Imaging shall satisfy the required eligibility criteria to appear for the Examination.

23. CLINICAL EXAMINATION HOURS :

The Clinical Examination will be conducted between 9 a.m. to 5.00 p.m.

24. PRACTICAL EXAMINATION :

Minimum 10 and Maximum 20 OSCE Stations will be given for examination (Objective Structured Clinical Examination).

Internal Assessment marks and attendance are to be submitted to the University one month before the Examination.

25. EXAMINATION CENTRE :

In case of more than one Centre conducting the same Course, the Examination Centre will be decided by the Controller of Examinations of this University and the Course Director of the Centre will be the Convener of the examination.

26. STIPEND :

The University will not give any stipend to the candidates admitted for Post-Doctoral Fellowship Programme in Breast Imaging, and the University will not interfere, if the private institutions are willing to give a stipend to the candidates admitted under them.

27. LOG BOOK :

The Log Book shall be verified by the Course Director periodically and

should be submitted to the examiners at the time of examination for evaluation and only the marks to be sent to the University for result processing.

Submission of Log Book is compulsory to appear for University examination.

If the examiners suggest minor corrections and resubmission of the Log Book, the results of the candidates shall be with held and the Log Book shall be resubmitted by the candidate within three months. The Log Book shall be revalued by the same set of examiners and after getting approval, the results of the candidate shall be published.

28. Project :

Project should be submitted at the end of the year and it carries 25% of marks in the internal Assessment.

29. PROGRAMME DIRECTOR :

Must have 15 years of work experience with a teaching experience of 10 years and must possess Diploma / Fellowship / Ph.D. in the concerned field.
Programme Director should be responsible for

1. Journal Club
2. C.M.E. Programmes.
3. Internal Assessment
4. Hands on Training
5. Knowledge about complications.

30. VACATION :

There is no vacation.

POST – DOCTORAL FELLOWSHIP PROGRAMME IN BREAST IMAGING

SYLLABUS

Breast Imaging Residency Fellowship Curriculum

By means of clinical experience, lectures, conferences, textbooks, syllabi, journal reprints, online references, teaching files, and other teaching materials, the resident should become familiar with and understand the following topics in breast disease:

I Breast anatomy, physiology, and pathology

A. Breast development

B. Normal breast anatomy and histology; alteration with age, pregnancy, menstrual cycle, and hormonal effects; male breast anatomy

C. Regional lymph node anatomy and drainage patterns

D. Pathologic appearance and clinical significance of:

1. Benign breast processes including fibrocystic changes, usual duct hyperplasia, columnar cell lesions without atypia, fibroadenomas, and fat necrosis

2. Atypical ductal hyperplasia, flat epithelial atypia, lobular neoplasia (atypical lobular hyperplasia and lobular carcinoma in situ), papillary lesions, radial scar/complex sclerosing lesions, and other high risk lesions

3. Ductal carcinoma in situ, including its histologic subtypes

4. Invasive ductal carcinoma

a. not otherwise specified

E. Evidence, indications, and limitations for supplemental screening

III Mammographic equipment and technique

A. For screen-film and full-field digital mammography

- 1. Features of dedicated mammographic units, including target, filtration, automatic exposure control, and grids**
- 2. Factors affecting optical density, contrast, sharpness, and noise**
- 3. Selection of technique factors, including effects of milliamp-seconds, kilovolt peak, target and filter material choice, and density settings on image quality and radiation dose**
- 4. Effect of breast thickness and composition on technique, image quality, and radiation dose**
- 5. Mammographic positioning for craniocaudal and mediolateral oblique views**
- 6. Mammographic positioning for women with breast implants**
- 7. Rationale for breast compression**
- 8. Image quality assessment for proper breast positioning, compression, exposure, contrast, sharpness, noise, and image labeling**

B. For FFDM

- 1. Optimal viewing conditions**
- 2. Characteristics of FFDM systems, including advantages and limitations**
- 3. Effects of post processing on the digital mammographic image**
- 4. Effect of signal-to-noise ratio on radiation dose**
- 5. Dedicated high-luminance, high-resolution viewing monitors**
- 6. ACR Practice Guideline for the Performance of Whole Breast Digital Mammography]**

C. SF mammography

- 1. Characteristics of mammographic SF systems**
- 2. Film processing**
- 3. Effect of screen-film speed, optical density, and film processing on radiation dose**
- 4. High-intensity view boxes, view box masking**

IV Mammography quality assurance

- A. Familiarity with ACR requirements for Mammography Quality Control**
- B. Purpose and frequency of performance of quality control tests performed by the technologist and physicist**
- C. Demonstrate proficiency in recognizing the mammographic appearance of artifacts for both screen-film and digital mammography**
- D. Regulation**
 - 1. Equipment, quality control, and personnel (radiologist, technologist, physicist) requirements**
 - 2. Responsibilities of the lead interpreting physician**
- E. Medical audit**
 - 1. Audit definitions as provided by BI-RADS**
 - 2. Desirable goals and benchmarks for standard outcome parameters, for both screening and diagnostic mammography**

V Mammographic interpretation

- A. Optimal viewing conditions for both analog and digital images, including a low ambient light environment**
- B. Demonstrate proficiency in:**
 - 1. Recognizing normal mammographic anatomy**
 - 2. Recognizing the mammographic features of characteristically benign**

and suspicious breast calcifications

3. Recognizing the mammographic features of characteristically benign and suspicious breast masses

4. Recognizing the mammographic appearance of indirect signs of malignancy (architectural distortion, asymmetries, etc)

5. Familiarity with BI-RADS descriptors

6. Recognizing the mammographic features of the surgically altered breast, including augmentation, reduction mammoplasty, and the reconstructed breast

7. Recognizing the mammographic features of probably benign (BI-RADS category 3) lesions

8. Principles, methods, strengths, and pitfalls of computer-aided detection and double reading

9. Principles, methods, strengths, and pitfalls of digital breast tomosynthesis

VI Screening mammography

A. Randomized clinical trials, case-control studies, service-screening studies: purpose, methods, results

B. Pitfalls in evaluating screening results: lead-time bias, length-bias sampling, selection bias, prevalence versus incidence screening, interval cancer rate, survival rates

C. Relative screening efficacy of clinical breast examination, breast self-examination, and mammography

D. Benefit-risk assessment, including radiation risk and false positives

E. Cost-effectiveness

F. Controversies regarding screening women aged 40-49 years; younger than

age 40

G. Screening guidelines

VII Diagnostic (problem-solving) mammography

A. Techniques and indications for and value of supplementary mammographic views

B. Familiarity with mammography BI-RADS descriptors

C. Demonstrate proficiency in:

- 1. Performing the work-up of lesions seen on only one standard (mediolateral oblique or craniocaudal) screening view**
- 2. Three-dimensional lesion localization**
- 3. Correlation of palpable with imaging findings**
- 4. Evaluation and management of a palpable mass (or other focal symptoms) when there are no associated mammographic findings**
- 5. Assessment of extent of disease for suspicious and for known-malignant lesions**
- 6. Evaluation of the postoperative breast (including reduction, breast conservation, reconstruction and augmentation)**
- 7. Evaluation of the male breast**

VIII Breast ultrasound

A. Equipment and physical principles, including the role of harmonic and color Doppler imaging

B. Techniques, including assessment of image quality, image labeling

C. Indications

D. Demonstrate proficiency in:

- 1. Scanning the breast**
- 2. Recognizing normal sonographic anatomy**

- 3. Recognizing features of simple cysts, complicated cysts, and complex cystic and solid masses**
- 4. Recognizing differential features of benign and malignant solid masses**
- 5. Familiarity with breast US BI-RADS descriptors**
- 6. Correlation with findings at mammography and clinical breast examination**
- 7. Evaluation and management of young women with symptoms**
- 8. Assessment of extent of disease for known malignancy or highly suspicious lesions, including evaluation of the axilla**
- 9. Evaluation and management of the patient with mastitis/abscess symptoms**
- 10. Limitations in the detection and assessment of microcalcifications**
- 11. Controversies regarding the role of screening whole-breast ultrasound examination**

IX Breast MRI

- A. Equipment and physical principles**
- B. Techniques**
- C. Indications**
- D. Strengths and limitations of kinetic and morphologic analysis**
- E. Demonstrate proficiency in:**
 - 1. Recognizing normal MRI anatomy**
 - 2. Categorization of enhancing lesions as mass, nonmass, or focus (foci)**
 - 3. Recognizing differential features of benign and malignant masses**
 - 4. Recognizing differential features of benign and malignant nonmass enhancement**

5. Evaluation of background parenchymal enhancement and tissue composition
6. Familiarity with breast MRI BI-RADS descriptors
7. Evaluating implant integrity and pulse sequences specific to this evaluation
8. Correlation with findings at mammography, ultrasound, and clinical breast examination
9. Use of targeted ultrasound for MRI detected lesions
10. Evaluation of need for and approach to MRI guided biopsy
11. Post MR biopsy evaluation, pathology correlation, and follow-up
12. Limitations in the detection and assessment of lesions presenting as microcalcifications
13. Controversies regarding the role breast MRI examination for screening and extent of disease evaluation

X Reporting

- A. Demonstrate proficiency in producing breast imaging reports, including:
 1. ACR BI-RADS lexicon terms for mammography, ultrasound, and MRI
 2. Lesion location
 3. Categorization of breast composition (BI-RADS breast density descriptors)
 4. Final assessment categories (ACR BI-RADS)
 5. Management recommendations
 6. Concordance between lesion descriptors and assessment categories
 7. Concordance between assessment categories and management recommendations
 8. Reporting of assessment-management discordance scenarios as provided in BI-RADS

XI Interventional procedures

A. Principles, indications and contraindications, equipment, preparation, technique, advantages, disadvantages, accuracy, and auditing for:

- 1. Needle-wire localization (and other localization methods as applicable) guided by mammography, ultrasound and MRI**
- 2. Core needle biopsy by stereotactic, ultrasound, and MRI guidance**
- 3. Fine needle aspiration, if available, with ultrasound guidance**
- 4. Cyst aspiration with ultrasound guidance**

4. Targeted ultrasound to substitute ultrasound guidance for MRI guidance where possible

5. Seroma and other fluid-collection aspirations with ultrasound guidance

6. Use and limitations of using markers to indicate the site of percutaneous biopsy

7. Specimen radiography, including paraffin block radiography

8. Galactography, if available

B. Assessment of imaging-pathologic concordance

C. Postprocedure follow-up imaging

XII Therapeutic and management considerations

A. Basic understanding of breast cancer treatment options

B. Understand the key role of each member of the multidisciplinary team needed to care for a breast cancer patient, including the radiation oncologist, surgeon, medical oncologist, pathologist, radiologist, and the patient

C. Role of breast imaging in planning and monitoring of breast cancer treatment and posttreatment follow-up

XIII Economics of breast imaging practice

- A. Basic understanding of coding and billing**
- B. Revenue positive, revenue neutral, and revenue negative breast imaging examinations**

XIV Other recommendations

- A. Formal teaching conferences (lectures, case presentations)**
- B. Imaging-pathologic correlation conferences and multidisciplinary breast cancer case conferences, if practical**
- C. Direct observation or video image review of mammographic positioning for routine and supplementary views**
- D. Review of teaching file materials (film or digital images), especially using computer-based interactive formats**
- E. Breast imaging textbooks available in department and/or breast imaging section library**
- F. Reprint file or reference library including breast imaging materials**
- G. Log of numbers of mammograms, sonograms, and MRI examinations interpreted and of procedures performed by each resident, as appropriate**
- H. Demonstrate proficiency in interacting with patients, including how to recommend biopsy, how to explain a cancer diagnosis, and how to develop sensitivity to patients' emotional needs**
- I. Experience interacting with members of the multidisciplinary team involved in patient care**
- J. Familiarity with breast molecular imaging**
- K. Familiarity with performing a medial audit**
- L. Teaching medical students and residents**

M.. Encourage participation in research projects

N. Familiarity with performing breast positioning and setting techniques for mammographic examination

O. Familiarity with performing technologists' quality control tests for screen-film and digital mammography

P. Knowledge of quality control tests performed by medical physicist

Q. Knowledge of MRI artifacts and safety issues, including contrast administration

R. Familiarity with emerging technologies, including contrast enhanced mammography

S. Knowledge of nonconventional breast imaging techniques, such as thermography or optical imaging, and the limitations of such methods

T. Familiarity with emerging US techniques, such as elastography and automated breast US

U. Observation of pathology, breast surgery, and radiation therapy practice

V. Familiarity with risk assessment, high risk clinics, and genetic counseling
