NBIA BREAST RADIOLOGY FELLOWSHIP PROGRAMME: TRAINING CURRICULUM

The National Breast Imaging Academy (NBIA) Breast Radiology Fellowship programme is run by the NBIA in collaboration with Health Education England. Fellowship posts are open to radiologists trained in the UK who have obtained their CCT and radiologists from other countries who have completed the radiology registrar or resident training equivalent to CCT level and meet the person specification. Applicants entering the fellowship programme will have completed core Breast training equivalent as described in the Royal College of Radiologists Training Curriculum for Clinical Radiology. The fellowship programme offers in depth sub -specialty Level 1 and 2 training complimented by an opportunity to gain additional experience in teaching, leadership and research aspects if the fellow wishes to.. Breast fellows will gain deeper knowledge and understanding of breast pathology as per the outline of the curriculum.

The sub specialty training will offer deeper knowledge of breast radiology at centres that meet the eligibility criteria for breast fellowship training. The training programme will include teaching modules, competency- based modules, hands on experience for interventional breast radiology, active MDT attendance and participation, journal clubs, breast fellowship national study days, involvement in audit, research, management and leadership and activities that support continuous medical education (CME) and continuous professional development (CPD). The fellow will gain knowledge, clinical skills and a deeper understanding of the communication and managerial skills required to perform a breast radiology consultant job during this year of training.

Fellows are to follow the Good Medical Practical professional guidance set out by the GMC during their period of training. They will be supported locally by a named Educational Supervisor or Clinical Supervisor who will assist the fellow, outline educational goals and objectives and organise rotations to enhance their training. Where required rotations may include neighbouring hospitals to gain specific training such as MR guided biopsy. Trainee Assessment will be module and competency based at the local hospital. It is expected that a minimum number of cases and procedures will be completed as outlined in the curriculum. Research and audit will be accessible to fellows and they will be expected to participate in these activities. In addition to the deeper knowledge and skills gained in Breast Imaging, fellows will become familiar with teaching, management, governance and leadership tasks and responsibilities. The programme will also cover softer skills including the importance of team work in maintaining patient safety and the art of good communication in the workplace.

KNOWLEDGE

1. Breast Imaging Services in the UK
a. Symptomatic services: 2 WW GP referral system, NICE, Best Practice Symptomatic guidelines
b. NHS Breast Screening Programme: In depth knowledge of the programme to include Key Performance Indicators, NHSBSP published guidelines including Assessment and High Risk, arbitration and consensus, same site assessment audits, Quality Assurance, FRQA and BSIS. Attending regional QA Study Days. Training on use of the NBSS system. Radiology led clinics in screening assessment.
c. Family history clinics and assessing risk: referral pathways for moderate, high and very high risk screening according to NICE and NHSBSP guidelines
d. Duty of Candour and interval cancers in the screening and symptomatic services: in depth knowledge on how to classify intervals and communication with colleagues and patients. Attending interval cancer reviews
e. The breast screening review: overtreatment and overdiagnosis

2.Breast anatomy, physiology and epidemiology
a. Normal breast development, anatomy and its variants: male and female breast, hormonal effect, menstrual cycle, pregnancy, lactation, menopause
b. Lymph node anatomy and drainage patterns
c. Risk factors for developing breast cancer. Family history and genetic predisposition and other risk factors egg dense breasts and high risk lesions. Understanding risk and risk stratification. Screening strategies for moderate, high and very high risk of breast cancer. Equivalent high risk. Genetic testing and counselling.
d. Breast cancer incidence and mortality, survival rates. TNM staging. Prognostic tools – Nottingham prognostic index, Predict
e. Evidence based rationale for screening and screening diagnostic tests. Lead time and length bias

3. Breast Pathology, clinical presentation and radiological appearance
a. Benign Breast disease: fibrocystic change, fibroadenomas, fat necrosis, usual ductal hyperplasia, columnar cell change without atypia, PASH
b. Male breast pathology
c. DCIS and histological subtypes
d. Invasive ductal, invasive lobular breast cancer and subtypes including papillary, medullary, mucinous and tubular
e. Inflammatory breast cancer and locally advanced breast cancer
f. Occult breast cancer
g. Others Malignant: Paget's, Sarcoma, lymphoma, metastasis, metaplastic carcinoma, leukaemia
h. Benign disease : Mastitis, abscess/sepsis, atypical infection - TB, granulomatous mastitis, diabetic mastopathy
i. B3 high risk lesions: ADH, LCIS, FEA, radial scar, fibroepithelial lesions, etc
j. Understanding the clinical presentation of benign and malignant disease: breast pain, breast nodularity and thickening, nipple discharge, breast mass, axillary mass, breast erythema, skin thickening and tethering

4. Imaging Techniques, indications, limitations, interpretation and contraindications: advising on the best imaging modality for specific clinical problems
a. Mammography: Radiation safety, ionising radiation regulations, Digital Mammography, Breast Tomosynthesis, Contrast Enhanced Spectral Mammography. BIRADS reporting and BIRADS breast density classification systems
b. Ultrasound: Principles of imaging, elastography, contrast enhancement, ABUS, intervention including cyst aspirations, biopsies, clip markers, localisations, VAB. Appearances of benign and malignant disease. Reporting and classification of US lesions. Imaging the axilla.
c. CT staging and MR Spine indications. Breast staging to RECIST criteria, equivocal lesions and imaging strategies. The management of incidental findings at staging including small lung nodules, adrenal masses and bone lesions. Follow up.
d. Breast MR: Physics, sequences, DWI, artefacts, pitfalls and protocols. Indications and contraindications. Background parenchymal enhancement. Breast MR reporting including the BIRADS classification system. Recognising benign and malignant pathology on MR. MR interpretation of enhancing and non-enhancing lesions. Breast implants. Second look US. MR follow up for screening and symptomatic cases. MR guided biopsy and presurgical localisation. MR as a biomarker, radiomics and spectroscopy.
e. PET CT: uses in breast cancer
f. Sentinel node biopsy and localisations: radio isotopes and seeds
g. Artificial Intelligence: CAD and Deep learning in Breast Imaging

5. Management and treatment
a. Staging breast cancer at initial presentation: Unifocal, multifocal and multicentric disease. Staging the axilla. Imaging strategies and treatment implications
b. Biomolecular subtypes of breast cancer, imaging and therapeutic implications
c. Neoadjuvant chemotherapy: Understanding response to treatment on different imaging modality and surgical options according to initial presentation and response.
d. Surgical management of the breast: Management of unifocal, multifocal and multicentric disease. Breast conservation and mastectomy. Oncoplastic surgery. Breast reconstruction, implant and flap based. . Risk reducing surgery
e. Surgical management of the axilla
f. Radiotherapy: intra operative and postoperative. Total and partial breast irradiation.
g. Adjuvant chemotherapy, hormone treatment and chemoprevention. Understanding Predict and Oncotype DX
h. Non-surgical management : Patients with co-morbidities and elderly patients with breast cancer
i. The MDT in Breast Cancer: Presentation of radiology cases. Ensuring MDT outcomes are recorded accurately.
j.B3 high risk lesions: Indications for VAE and surgical excision
k. Genomics
l. imaging guided therapeutic options: Laser, cryotherapy, radio frequency ablation, etc

SKILLS

6. Competency based skills	
a. Clinical Examination and history taking in screening and symptomatic	
b. Mammography interpretation	5000 MXR per year (at least 4000 screening)
c. Ultrasound	
US cases	100
US guided procedures to include wire localisation, clip insertion, drainage of seroma and VAB	20
e. Stereo procedures	
14 gauge biopsies	40
VAB or VAE	10
Wire localisations	10
f. MRI	
Reporting	100
Biopsy (exposure)	5
g. CT reporting	
CT staging	50
Exposure CT Angiography for DIEP reconstruction	5

COMMUNICATION, RESEARCH, LEADERSHIP AND MANAGEMENT

7. Communication
a. Team working including trainees and colleagues in difficulty
b. Communicating with patients and relatives in symptomatic
c. Communicating with clients and relatives in screening
d. Breaking bad news
e. Informed consent
f. The importance of soft skills in the workplace

8. Research and Education
a. Appraisal, CPD and CME
b. Teaching
c. Audit
d. Mentoring and preceptorship
e. Getting started in Radiology Research
f. Journal Club: how to review a paper
g. How to write a paper
h. How to present at meetings
i. Update on Current National and international Trials in Breast

9. Understanding of Leadership and Management to include
a. Leading a Breast Screening Service
b. Leading a Symptomatic Service
c. NHS Structure: Breast service commissioning
d. The NHS Cancer Plan
e. Site Specific Groups and Networks
f. Leadership Skills
g. Workforce crisis and skill mixing
h. Clinical governance
i. Complaints and medicolegal processes
j. Peer review process