MUSCULOSKELETAL RADIOLOGY
FELLOWSHIP

SUBSPECIALTIES PROGRAMS

2016

SAUDI FELLOWSHIP MUSCULOSKELETAL RADIOLOGY CURRICULUM


بسم الله الرحمن الرحيم

الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties

SAUDI FELLOWSHIP
MUSCULOSKELETAL RADIOLOGY CURRICULUM

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INTRODUCTION

Musculoskeletal diseases are numerous and diverse. The demographics of the Saudi Arabian population reveal that a high percentage of the population has musculoskeletal (MSK) disease, which dictate the necessity for the appropriate clinical sub-specialization. The diversity of clinical disciplines serving this subspecialty area supports this notion.

Numerous imaging techniques play a central role in the diagnosis and management of these diseases, and various imaging-guided techniques can be helpful in their treatment. Detailed understanding of orthopedic, rheumatological, oncological, and metabolic MSK disease imaging characteristics and procedures is therefore crucial to the appropriate management of these patients within a multi-disciplinary team. The national demands, along with the diversity of the subspecialty, underscores the need for highly trained MSK radiology specialists capable of answering the often complex clinical questions posed during the management of patients being treated within these clinical disciplines. This program aims to take a major step toward fulfilling this goal.

GENERAL OBJECTIVES

The aim of this program is to afford high level training and ensure subspecialty competency in all aspects of MSK radiology, thereby enabling graduates to function as local and national reference points for the diagnosis and radiological evaluation of pathological processes in adults with MSK disease. These graduates should become resources for advanced subspecialty multidisciplinary medical care and education in this field.

- During the program, knowledge of relevant embryological, anatomical, pathophysiological, biochemical, and clinical aspects of MSK diseases should be acquired.
- In-depth understanding of the major imaging techniques relevant to MSK diseases should be gained.
- Graduates should master clinical knowledge relevant to medical and surgical management of the diseases, so that they can confidently discuss the appropriate imaging strategy for the clinical problem with the referring clinician.
- They should also obtain a detailed knowledge of current developments in the specialty.
- They should acquire direct practical exposure with appropriate graded supervision in all forms of current imaging procedures.
- Graduates should acquire appropriate competency and accuracy in the selection, performance, supervision, and reporting of MSK radiology.
- They should further understand and practice appropriate Islamic medical ethics and undertake an attitude of acceptable professional conduct that should be applied throughout their subsequent medical career.

SPECIFIC OBJECTIVES

The MSK radiology training will be tailored to fulfill all aspects of the CanMEDS competency framework (medical expert, communicator, collaborator, manager, health advocate, professional, and scholar).

Medical Expert

GENERAL COMPETENCIES

Knowledge

1) To acquire and demonstrate knowledge of radiological anatomy and normal variants of the peripheral and axial skeleton, including the relevant soft tissues and joints.
2) To demonstrate the ability to develop an approach to assess and diagnose tumors and tumor-like conditions, in particular, the radiographic features that allow discrimination of non-aggressive from aggressive bone lesions.
3) To describe the typical radiographic features of common osseous neoplasms.
4) To demonstrate the ability to develop an understanding of infection and how it affects the MSK system (osteomyelitis, septic arthritis, discitis).
5) To demonstrate an understanding and basic approach to interpretation of common joint diseases.
6) To demonstrate an understanding of fractures and dislocations, their types and general classifications.
7) To demonstrate the ability to recognize and describe complications of orthopedic devices, including fracture fixation, and spine and arthroplasty hardware.
8) To demonstrate the ability to develop an approach to joint diseases, including knowledge of clinical and imaging features that differentiate various forms of arthritis.
9) To demonstrate a basic understanding of the relevant clinical management of common MSK disorders.
10) To demonstrate great efficiency in dealing with plain film examinations and diagnoses, and in experience with CT and MR interpretations and case management.
11) To demonstrate an understanding of metabolic as well as endocrine and toxic disorders.
12) To describe imaging features of miscellaneous MSK disorders (e.g., sarcoidosis, Paget's hypertrophic osteoarthropathy, osteonecrosis, transient osteoporosis, and soft tissue calcification/ossification).
13) To demonstrate an understanding of clinical syndromes with MSK manifestations (e.g., neurofibromatosis).
14) To demonstrate an understanding of imaging findings of soft tissue, ligament, and tendon injuries with their associated manifestations.

SKILLS

1) To become familiar with conventional radiographic techniques including correct positioning for radiographs with special views.
2) To appropriately prescribe the protocols for computed tomography (CT) and magnetic resonance imaging (MRI) techniques.
3) To choose the most suitable method for evaluating MSK diseases.
4) To identify urgent or unexpected findings and communicate them to the referring team in a timely fashion.

5) To participate in MSK procedural activities, demonstrating an understanding of technical skills and familiarity with indications, patient preparation and management of potential complications. In particular, the resident should demonstrate familiarity with the techniques of joint aspirations/injections (e.g., of the shoulder and hip).
6) To demonstrate the ability to direct basic CT protocols with limited supervision.
7) To perform dynamic functional studies of the joints and muscles.
8) To demonstrate familiarity with the appearance of common pathologies on MRI examinations.
9) To perform image guided biopsies under supervision.
10) To perform post processing of musculoskeletal imaging studies and image fusion confidently.
11) To be confident in choosing the optimal imaging parameters for CT and MRI examinations.
12) To demonstrate the ability to perform arthrograms and to take advantage of any opportunity to learn MSK ultrasound techniques.

MSK PLAIN RADIOGRAPHY

1) To demonstrate in-depth knowledge in all aspects of MSK plain radiography.
2) To be able to determine the appropriate radiographic techniques required.
3) To demonstrate competency in MSK radiographic quality assurance.
4) To be aware of radiation safety and hazards for patients.
5) To be competent in reporting arthritis-related radiographs and identifying abnormalities related to these disease for small and large joints including the axial skeleton.
6) To be competent in interpreting various MSK-related radiographs in in-patients, out-patients, and emergency patients, including various types of fractures and their classifications and infective pathologies, including possible complications.
7) To be competent in detecting tumors and metabolic bone disease and their possible complications.

MSK FLUOROSCOPY

1) To demonstrate in-depth knowledge of appropriate fluoroscopic techniques to minimize radiation.
2) To demonstrate in-depth knowledge in the appropriate indications for a variety of fluoroscopic procedures, including emergencies.
3) To be aware of radiation safety and hazards for MSK patients.
4) To demonstrate in-depth knowledge of normal anatomy of joints and spine.
5) To be competent in performing and interpreting various MSK fluoroscopic-guided procedures.

MSK COMPUTED TOMOGRAPHY

1) To demonstrate in-depth knowledge in the appropriate indications for a variety of CT procedures, including emergencies.
2) To demonstrate in-depth knowledge of specific protocols tailored for MSK diseases.
3) To be aware of radiation safety and hazard for MSK patients.

4) To be competent in prescribing the appropriate protocol for specific CT examinations.
5) To be competent in dealing with various contrast reactions, and with asthmatic and renal failure patients.
6) To demonstrate in-depth knowledge in MSK pathologies and their associated CT findings, including emergencies.

MSK SONOGRAPHY

1) To demonstrate in-depth technical knowledge of ultrasound scanning for a wide range of MSK sonographic studies.
2) To be competent in performing and interpreting various MSK sonographic studies.
3) To be competent in the appropriate indications for a variety of MSK sonographic examinations, including emergencies.
4) To demonstrate in-depth knowledge of the normal sonographic anatomy in MSK.
5) To demonstrate in-depth knowledge of MSK pathologies and their associated sonographic findings, including emergencies.

MSK MAGNETIC RESONANCE IMAGING

1) To demonstrate in-depth knowledge in the appropriate indications for a variety of general MSK MRI procedures, including emergencies.
2) To be competent in identifying patients who needs sedation versus those who require general anesthesia.
3) To be competent in prescribing the appropriate protocol for specific MRI examinations.
4) To be competent in supervising and interpreting MSK MR images.
5) To demonstrate in-depth knowledge in general MSK pathologies and their associated MRI findings, including emergencies.

Communicator

1) Responsible for explaining the procedure to the patient/family, including the risks and possible complications, and answering their questions.
2) Responsible for generating clear, concise reports and for providing verbal reports whenever necessary.
3) Should demonstrate effective communication skills when dealing with patients, staff, and referring physicians.

Collaborator

1) Gains experience in reviewing MSK cases presented by clinicians on a daily basis.
2) Uses appropriate history to guide decisions regarding the best imaging modality for a given clinical condition or issue.
3) Demonstrates good consulting skills when interacting with other physicians and health team members.
4) Interacts appropriately with other Radiology Department staff, and demonstrates a team approach to patient care.
5) Plays an important role and take the lead in multidisciplinary (clinical–radiological) team meetings

Manager

1) Gains experience in screening and protocoling of CTs and MRIs in an MSK context.
2) Learns how to prioritize studies.
3) Gains expertise in the proper steps in the imaging investigation of various MSK pathologies.
4) Demonstrates awareness of the indications for various MSK sonographic, MRI, and CT examinations.
5) Considers the advantages and disadvantages of fluoroscopic, ultrasound (US),MRI, and CT studies.
6) Considers the available imaging resources when planning and recommending patient care, using them effectively and efficiently.

Health Advocate

1) Gains expertise in guiding referring clinicians to the imaging study or studies most appropriate for their patients.
2) Demonstrates awareness of radiation issues and radiation doses related to fluoroscopic and CT studies.
3) Recognizes and understands issues and possible complications related to examinations
3) and procedures performed.
4) Recognizes and considers consent issues, patient comfort, and other patient-related issues when participating in and recommending imaging procedures.
5) Demonstrates knowledge of radiation protection (ALARA), contrast dose, and injection parameters.

Professional

1) Demonstrates integrity, honesty, and compassion.
2) Understands ethical and medical-legal requirements of radiologists.
3) Demonstrates awareness of own limitations and consults others where necessary.
4) Shows sensitivity and care to the patient and the patient's family

Scholar

1) A half academic day is assigned per week for fellows to pursue research projects.
2) The scholar presents work at local, national, and international radiology meetings.
3) It is required that the fellow prepares at least one manuscript for presentation and/or publication
4) The scholar should attend and present at various clinical rounds.
5) The scholar should take on a leadership role in teaching others, with teaching/supervision of junior residents on rotation, elective students, and off-service residents.

ADMISSION REQUIREMENTS

To be admitted to the Saudi MSK Radiology Subspecialty Program, a candidate must:

1) Possess a Saudi Specialty Certificate in Radiology or its equivalent (which is approved by the Saudi Commission) or have at least successfully completed the written component of the Saudi Specialty Certificate in Radiology.
2) Be licensed to practice medicine in Saudi Arabia.
3) Provide written permission from the sponsoring institution, allowing him/her to participate in full-time training for the entire 1-year program.
4) Sign an undertaking to abide by the rules and regulations of the Training Program and the Saudi Commission.
5) Successfully pass the interview for this particular subspecialty.
6) Provide three letters of recommendation from consultants with whom the candidate has recently worked.
7) Register as a trainee at the Saudi Commission for Health Specialties

TRAINING REQUIREMENTS

- Training shall be full time. The trainee shall be enrolled for the entire 1-yearperiod
- Training shall be conducted in institutions accredited for training by the Saudi Board of Radiology and the subspecialty of MSK imaging.
- Training shall be comprehensive and include all aspects designated in the structure and content of the program.
- Trainees shall be actively involved in patient care with gradual progression of responsibility.
- Trainees shall abide by the other training regulations and obligations set by the Saudi Board of Radiology and the Saudi Commission for Health Specialties.

CENTER ACCREDITATION

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

- The center has an established subspecialty MSK radiology section.
- The center has a minimum of two subspecialty certified radiologists in MSK radiology.
- The volume of patients is sufficient, as follows:

Examination	Cases per week
Ultrasound	**5**
Conventional radiography	**300**
CT scan	**10**
MRI	**35**
Conventional/MR arthrography	**3**
Bone/soft tissue biopsies	**4**
Therapeutic interventions	**5**

1) Minimum average workload requirements for recognition of the training center for subspecialty rotational training in musculoskeletal imaging (deficiencies may be complemented by rotations at other institutions).
2) The imaging equipment is of satisfactory standard, as follows:
   - Ultrasound: Probe frequencies ranging between 3.5–12 MHz.
   - CT scan: Multi-detector scanner (> 6 detector rows) with radiation dose modulation. Non-ionic IV contrast media must be available.
   - MRI: 1.5 T or above scanner with knee, shoulder and small parts coils. Basic spin-echo, gradient-echo & fat suppression sequences are necessary.
   - Fluoroscopy: Standard digital fluoroscopic capabilities are required for various intervention.
3) The center is already accredited by SCFHS for residency training in Radiology.

STRUCTURE OF THE TRAINING PROGRAM

1) This is a 1-year (52 weeks) fellowship program. (see Appendix 6)
2) The fellow should spend at least 10 months of training in his/her base institution.
3) The structure of the 44 weeks at the base institution will be as follows:

- **ULTRASOUND (4 weeks)**
  - The fellow should be competent in performing and reporting the standard sonographic procedures for MSK, including joints, tendons, muscles, ligaments and nerves
  - The fellow will be expected to personally scan patients, and train the technologist on scanning at a later phase in the fellowship.
  - The fellow should be aware of the indications and contraindications for US-guided MSK procedures.
  - The fellow should discuss the interventional procedures with the attending staff before starting the procedure.
  - At an early stage of the fellowship, the fellow should perform the procedures under supervision, and without supervision once competent.

- **CT SCAN (8 weeks)**
  - The fellow should prescribe, supervise, interpret and report all routine MSK CT examinations.
  - The fellow should be familiar with various CT protocols tailored to MSK diseases.
  - The fellow should be familiar with specialized examinations, such metal artifact reduction.
  - The fellow should become comfortable with manipulating the imaging data at dedicated 3D workstations for both interpretation and illustration.
  - The fellow should learn the application of Dual-energy CT applications pertinent to MSK.
  - The fellow should be aware of the indications and contraindications for CT and fluoroscopic-guided MSK procedures.
  - At an early stage in the fellowship, the fellow should perform CT and fluoroscopic procedures under supervision, and without supervision once competent.

- **MRI (16 weeks)**
  - The fellow should be familiar with practical physical principles related to MSK imaging.
  - The fellow should be intensely involved in direct supervision of examinations, working with technologist to make the necessary adjustments to parameters and protocols as the studies are being performed.
  - The fellow should be competent in the indications and precautions for the use of a variety of MR contrast agents and indications of sedation when needed.
  - The fellow should be aware of proper post-processing of imaging data.
  - All cases should be reviewed by the attending consultant before reporting.

- **CONVENTIONAL RADIOGRAPHY (16 WEEKS)**
  - This should cover all varieties of such examinations, including out-patient, in-patient, intraoperative, and emergency studies of the musculoskeletal system.
  - The fellow should perform quality control on the technique and make a critique on the radiographic procedures.

- **ELECTIVE ROTATION (8 weeks)**
  - This increases flexibility, by enhancing exposure to certain facets of the program or to allow work in areas of particular interest to the fellow, such as in PET-CT, interventional radiology, and pathology. This period should have some relevance to the field of MSK radiology and should be performed in an accredited institution.

Research Activities

The fellow will be given an average of one half-day per week of protected academic time during his/her 1-year training to complete a research project, supervised by a staff member.

Other Requirements

During the entire period, the fellow will be expected to demonstrate scholarly activity, such as providing reviews of specialized texts and recent literature, teaching of residents and junior staff, as well as involvement in relevant clinical–radiological conferences. Conducting an appropriate research project is strongly encouraged.

PROGRAM CONTENT

Modalities

Fellows must become proficient in the physical principles, indications, set-up, logistics, and performance of imaging modalities related to MSK imaging, including but not limited to CT scans and MRI, US, fluoroscopy, and conventional radiography. They must be knowledgeable of advanced protocols, techniques, artifacts, contraindications, and precautions related to the performance of these examinations. They should also become proficient at post-processing techniques of 3D data sets, utilizing dedicated workstations.

Contrast Agents

The fellow will become familiar with the variety of contrast agents available for use in MSK imaging examinations, including but not limited to: intravenous sonographic, iodinated, or gadolinium-based agents, as well as agents used for fluoroscopic intra-articular specification. He/she should be familiar with their preparation, indication, and methods of administration, precautions, contraindications, limitations, and artifacts.

Pathology

The fellow will become familiar with the presentations, imaging findings, differential diagnosis, complications, and management of disease processes related to MSK pathologies.
These processes include, but are not restricted to the following:

- Congenital abnormalities and bone dysplasia
- Infectious diseases (acute and chronic)
- Inflammatory disorders
- Neoplastic diseases (benign or malignant), including detection, staging, and follow-up
- Vascular disorders, involving the soft tissue and osseous structures.
- Musculoskeletal manifestation of metabolic, endocrine, and depositional diseases.
- Traumatic & iatrogenic injuries
- Emergencies: including investigation of acute septic joint and acute trauma.
- Pathology encountered by the following clinical disciplines shall be included (although not limited to these areas):
    - Orthopedic surgery
    - Rheumatology
    - Spine surgery
    - MSK oncology

Procedures

The fellow should become proficient in the performance of various procedures related to MSK imaging, including, but not limited to fluoroscopic-guided injection, imaging-guided soft tissue and bone biopsies and aspiration, sonographic and Doppler techniques, as well as basic sonographic and CT studies.

Teaching And Didactic Activities

The fellow must demonstrate the ability to instruct and guide residents by conducting unknown case tutorial sessions at least once a month, providing advice on imaging techniques and patient management, as well as conveying important teaching points during case readouts and reviews. He/she will also exhibit the capability to assimilate information and data and organize it into concise formal educational presentations. Participation in preparing and moderating relevant clinical–pathological meetings will also be required.

Literature

Fellows should become familiar with the major musculoskeletal imaging journals and should review them critically on a regular basis. They should learn how to conduct research by making efforts to participate in at least one research project during their training. Participation at a conference or scientific is strongly encouraged.

Radiation And Safety

The fellow will acquaint him/herself with all the aspects related to radiation and magnetic field safety and protection, following accepted guidelines of practice to ensure the safety of patients and staff alike. The fellow should follow the "As Low As Reasonably Achievable (ALARA) principles. He should be familiar with new CT technology that minimizes the radiation dose. He should be aware of the common relative and absolute contraindications for MRI.

Professional Attitudes

Professional attitudes will be emphasized, including adherence to medical and Islamic ethics and practices, as well as maintenance of an attitude of continuing education and learning. Constructive interaction with senior staff clinicians and technical staff will be exercised. Attributes, such as responsibility, dedication, cooperation, teamwork, and a solid work-ethic will be reinforced through emphasis of role models.

On-Call Duties

The on-call duties are left to the institutional department's needs and coverage.

Methods Of Instruction/Training

The program objectives shall be achieved through all the following:

- Daily practical case-base teaching and supervision.
- Demonstration of proper indications, protocols, techniques, and procedures.
- Direct supervision of fellows during performance of their duties with appropriate feedback afforded.
- Provision of opportunity for consultation with senior staff to solve clinical problems.
- Discussion of methods of investigation, diagnosis, and management of various clinical problems during readout sessions.

- Conducting unknown case tutorials, both by and for the fellow.
- Review of reports dictated by the fellow prior to verification with the provision of verbal instruction when significant errors are found.
- Provision of guidance and assistance during performance of research projects.
- Each fellow will have a mentor assigned

Vacations

- Fellows will be permitted 4 weeks of annual leave during the program
- Only one of the two Eid vacations (7–10 days) per year may be taken.
- A maximum of 2 weeks of vacation may be taken during rotation through any specific service modality.
- Leave request must be submitted a minimum of 1 month in advance.
- One week per year of appropriately justified emergency leave is permitted
- One week per year of appropriately confirmed study leave to attend international conferences in MSK radiology is allowed.

ASSESSMENT

Description: Evaluation and assessment of fellows throughout the program are undertaken in accordance with the Commission's training and examination rules and regulations. This includes the following:

Continuous Evaluation

To fulfill the CanMEDS competencies based on the end-of-rotation evaluation, the fellow's performance will be evaluated jointly by relevant staff members who will assess the following competencies:

1) Fellows' clinical performance, professional attitude, and assimilation of knowledge will be regularly evaluated by mentoring staff members. Periodic (end of rotation) written evaluations (Appendix 1) will be obtained from concerned staff and summarized by the fellowship director into a single form that will be reviewed and signed by the fellow.
2) Workplace-based assessments will be conducted on a monthly basis, which will include a minimum imaging interpretation exercise (mini-IPX) assessment, as well as a direct observation of practical skills (DOPS) assessment. (See Appendixes 2 and 3).
3) Fellows should submit a log book of the studies and procedures that they had performed.
4) Fellows should demonstrate appropriate effort towards completion of a research project/paper as first author with a view to potential publication. Alternatively, he/she should write a review article, case review series, or present at a national or international meeting, or present a booster at a well-recognized radiology meeting.
5) Fellows should complete and submit a staff/rotation evaluation form (Appendix 4) at the end of each rotation.
6) Evaluations will be reviewed periodically by the fellowship training committee to identify aspects that may require further emphasis or counseling.
7) Attendance of didactic activities will be monitored, with a minimum attendance rate of 75% required.
8) Provided that evaluations, workload (Appendix 5), attendance, and research completion are satisfactory.

Final In-training Evaluation Report (FITER)/Comprehensive Competency Report (CCR)

In addition to the local supervising committee's approval of the completion of the clinical requirements (via the fellow's logbook), the program directors prepare a FITER for each fellow at the end of the program. This could also involve clinical or oral examinations or completion of other academic assignments.

Final Musculoskeletal Radiology Saudi Fellowship Examination

The final Saudi Fellowship examination consists of two parts:

1. **Written Examination**
   This examination assesses the trainee's theoretical knowledge base (including recent advances) and problem-solving capabilities in Musculoskeletal Radiology subspecialty; it is delivered in MCQ format and is held at least once per year. The number of examination items, eligibility, and passing score are established in accordance with the Commission's training, and examination rules and regulations. Examination details and a blueprint are published on the Commission's website, www.scfhs.org.sa
2. **Oral Structure Clinical Examination (OSCE):**
   This examination assesses a broad range of high-level clinical skills, including data gathering, images of different radiological modalities, patient management, communication, and counseling. The examination is held at least once per year, as an objective structured clinical examination (OSCE) in the form of patient management problems (PMPs). Eligibility and the passing score are established in accordance with the Commission's training and examination rules and regulations. Examination details and a blueprint are published on the Commission website, www.scfhs.org.sa

Certification

A certificate acknowledging training completion will only be issued to the fellow upon successful fulfillment of all program requirements. Candidates passing all components of the final specialty examination are awarded the "Saudi Fellowship of Musculoskeletal Radiology" certificate.

APPENDICES

Appendix 1

SCFHS MUSCULOSKELETAL RADIOLOGY FELLOWSHIP
FELLOW EVALUATION FORM

Name:

Period of Training: From _____ To: _____

Institution: _____

Specific rotation included in this evaluation:					
MEDICAL EXPERT	Could Not Judge	Unsatisfactory	Border-line	Satisfactory	Superior
Basic scientific knowledge	☐	☐	☐	☐	☐
Basic clinical knowledge	☐	☐	☐	☐	☐
Clinical judgment & decision making	☐	☐	☐	☐	☐
Technical skills required in the specialty	☐	☐	☐	☐	☐
COMMUNICATION					
Interprofessional relationships with physicians	☐	☐	☐	☐	☐
Communication with other allied health professional	☐	☐	☐	☐	☐
Communication with patients	☐	☐	☐	☐	☐
Communication with families	☐	☐	☐	☐	☐
Written communication & documentation	☐	☐	☐	☐	☐
COLLABORATOR					
Interacts and consults effectively with all health professionals by recognizing and acknowledging their roles & expertise	☐	☐	☐	☐	☐
MANAGER					
Understands & uses information technology	☐	☐	☐	☐	☐

Uses health care resources cost-effectively	☐	☐	☐	☐	☐
Organization of work & time management	☐	☐	☐	☐	☐
HEALTH ADVOCATE	☐	☐	☐	☐	☐
SCHOLAR					
Motivation to read and acquire knowledge	☐	☐	☐	☐	☐
Critically appraises medical literature	☐	☐	☐	☐	☐
Teachings skills	☐	☐	☐	☐	☐
PROFESSIONAL	☐	☐	☐	☐	☐
GLOBAL EVALUATION OF COMPETENCE AND PROGRESS:	☐	☐	☐	☐	☐

COMMENTS (Including Strengths, Weaknesses and Need for Special Attention. Please use reverse side if necessary)

_____

Signature of Supervisor:

Date

Signature of Trainee

Date

DISAGREE ☐ AGREE ☐

Appendix 2

SCFHS MUSCULOSKELETAL RADIOLOGY FELLOWSHIP

Rotation Mini IPX Form

1st	2nd	3rd	Item	1st	2nd	3rd
			Evaluates exam appropriateness/safety			
			Looks for relevant lab/prior imaging			
			Understands exam technique			
			Critiques image quality			
			Detects findings			
			Describes findings appropriately			
			Mentions pertinent negatives			
			Diagnosis /Differential Diagnosis			
			Recommendations			
			Appropriate handling of result urgency			
			Number of cases assessed			
			Date of assessment			
			SUBTOTALS			
			TOTAL			

Feed back provided	

Evaluators:

Session #1	
Session #2	
Prog Dir	

Scoring scale	
Poor	1
Below avg	2
Average	3
Above avg	4
Exceptional	5

Appendix 3

SCFHS MUSCULOSKELETAL RADIOLOGY FELLOWSHIP

Direct Observation of Procedural Skills (DOPS) evaluation form

Proc #1		
Proc #2		

Score #1		Weight	Score #2
	Evaluates indications/risks	15%	
	Procedure preparation	20%	
	Explains procedure to patient/Informed Consent	10%	
	Technical procedures skills	25%	
	Prevents/manages complications	15%	
	Post-procedure management/instructions	15%	
	TOTAL		

Feedback provided	

Evaluator 1	
Evaluator 2	
Resident	
Prog Director	

Scoring scale	
Poor	1
Below avg	2
Average	3
Above avg	4

Appendix 4

SCFHS MUSCULOSKELETAL RADIOLOGY FELLOWSHIP

Staff/Rotation Evaluation Form

Rotation: _____

Date (Month/year) _____

Rating system: (1= low; 4= high; NA= Not Applicable)

ROTATION:

A.	Case Material: Volume	1 ☐	2 ☐	3 ☐	4 ☐	NA ☐
	Diversity of cases	1 ☐	2 ☐	3 ☐	4 ☐	NA ☐
B.	Fellow Workload:	1 ☐	2 ☐	3 ☐	4 ☐	NA ☐
C.	Case Review: How consistent were review sessions?	1 ☐	2 ☐	3 ☐	4 ☐	NA ☐
D.	Procedures: Opportunities to perform procedures in this rotation?	1 ☐	2 ☐	3 ☐	4 ☐	NA ☐
	Degree of expertise acquired by the end of rotation?	1 ☐	2 ☐	3 ☐	4 ☐	NA ☐
E.	Overall: How much do you think you learned during rotation?	1 ☐	2 ☐	3 ☐	4 ☐	NA ☐

STAFF:

Staff Initials:						
1.	Availability					
2.	Teaching interest & ability to teach					
3.	Teaching of technical skills					
4.	Scientific interest					
5.	Staff / resident relationships					
6.	Allowing fellow to report / do procedure					

Overall comments including ways in which you think this rotation could be improved:

Appendix 5

MUSCULOSKELETAL RADIOLOGY FELLOW'S MINIMUM EXPECTED WORKLOAD

Examination	Cases per year
Ultrasound	20
Conventional radiography	4800
CT scan	80
MRI	560
Conventional/MR arthrography	48
Bone/soft tissue biopsies	64
Therapeutic interventions	90