

Goals and Objectives – Bone Radiology (First year)

- I. Patient Care
Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.
 - (a) Shows ability to interact with clinicians when reviewing bone imaging studies.
 - (b) Shows ability to recommend additional imaging studies as appropriate to better assess bone x-ray findings (e.g. CT/US/MRI).
 - (c) Shows ability to use PACS and hospital information systems

- II. Medical Knowledge
 - (a) Demonstrates knowledge of normal/abnormal anatomy as seen on plain films.
 - (b) Shows ability to recognize and describe common medical conditions as depicted on bone plain films.
 - (c) Able to identify common bone fractures.

- I. Practice Based Learning and Improvement
 - (a) Shows evidence of independent study using textbooks from suggested reading list.
 - (b) Demonstrates appropriate follow up of interesting cases.
 - (c) Prepares at least one interesting case for teaching file during first bone rotation.

- I. Interpersonal Skills
Residents must demonstrate skills to:
 - a) Interact with x-ray technologists, medical students, fellow residents, and attending radiologists.
 - b) Interact with clinicians when reviewing cases involving bone imaging studies.
 - c) Interact with patients/family when performing invasive procedures such as arthrograms.

- I. Professionalism
VI) Residents must demonstrate ability to interact with patient/patient's family/clinician when discussing significance of x-ray findings and their impact on patient care including what imaging studies may or may not be appropriate.

- VI. Systems Based Practice
 - a) Shows ability to interact with clinicians regarding cost effective and streamlined patient evaluation for differing clinical entities.
 - b) Able and willing to participate in clinical conferences in which imaging studies used to guide patient care/evaluation.**

Goals and Objectives – Bone Radiology (Second Year)

- VI) I. Patient Care
Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

- a) Shows ability to interact with clinicians when reviewing bone imaging studies.
 - b) Shows ability to recommend additional imaging studies as appropriate to better assess bone x-ray findings (e.g. CT/US/MRI).
 - c) Shows ability to use PACS and hospital information systems
 - d) Is able and willing to assist lower level residents
- II. Medical Knowledge
- a) Demonstrates increasing knowledge of normal/abnormal anatomy as seen on Bone x-rays, MRI's, CT's.
 - b) Shows ability to recognize and describe common medical conditions as depicted on bone imaging studies.
 - c) Is familiar with both common and uncommon bone conditions and can formulate reasonable differential diagnosis for findings on bone imaging studies.
 - d) Is able and willing to teach lower level residents
 - e) Can understand most interventional bone procedures.
- VI) III. Practice Based Learning and Improvement
- a) Shows evidence of independent study using textbooks from suggested reading list.
 - b) Demonstrates appropriate follow up of interesting cases.
 - c) Prepares one interesting bone case for teaching file during rotation.
 - d) Is able and willing to make detailed presentations of bone imaging studies at intradepartmental conferences.
 - e) Upon request, participates in educational courses for clinicians, medical students, and fellow residents.
 - f) Performs invasive procedures with close staff supervision.
- VI) IV. Interpersonal Skills
- Residents must demonstrate skills to:
- a) Interact with x-ray technologists, medical students, fellow residents, and attending radiologists
 - b) Interact with clinicians when reviewing cases involving bone imaging studies.
 - c) Interact with patients/family when performing invasive procedures.
 - d) Can participate in administrative and scholarly committees when asked.
- VI) V. Professionalism
- a) Residents must demonstrate ability to interact with patient/patient's family/clinician when discussing significance of x-ray findings and their impact on patient care including what imaging studies may or may not be appropriate.
 - b) Can participate in activities relative to the role of bone imaging both within the medical community and in public settings.
- VI. Systems Based Practice
- a) Shows ability to interact with clinicians regarding cost effective and streamlined patient evaluation for differing clinical entities.
 - b) Able and willing to participate in clinical conferences in which imaging studies used to guide patient care/evaluation.
 - c) Is able and willing to organize and present case conferences/didactic

- sessions as directed and supervised by radiology staff.
- d) Able to protocol CT and MRI exams with minimal supervision.

Goals and Objectives – Bone Radiology (Third Year)

- VI) I. Patient Care
Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.
- a) Shows ability to interact with clinicians when reviewing bone imaging studies.
- b) Shows ability to recommend additional imaging studies as appropriate to better assess bone x-ray findings (e.g. CT/US/MRI)
- c) Shows ability to use PACS and hospital information systems
- d) Is able and willing to assist lower level residents
- e) Is able and willing to make assigned presentations to various groups on the appropriate application of bone imaging studies.
- f) Is able and willing to make presentations on both local/national level as assisted by staff.
- II. Medical Knowledge
- a) Demonstrates knowledge of normal/abnormal anatomy as seen on Bone x-ray, CT, MRI in bone.
- b) Shows ability to recognize and describe common medical conditions as depicted on bone imaging studies.
- c) Is familiar with both common and uncommon bone conditions.
- d) Can perform most interventional bone procedures with minimal staff input.
- e) Can serve as an authoritative consultant to clinicians on the interpretation of and appropriate use of imaging studies.
- f) Can perform and teach common interventional procedures under staff supervision to lower level residents.
- VI) III. Practice Based Learning and Improvement
- a) Shows evidence of independent study using textbooks from suggested reading list.
- b) Demonstrates appropriate follow up of interesting cases.
- c) Prepares interesting cases for teaching file.
- d) Is able and willing to make detailed presentations of skeletal imaging studies at both intra and interdepartmental conferences.
- e) Upon request, participates in educational courses for clinicians, medical students, and fellow residents.
- f) Upon request, participates in educational activities at the local/national level.
- VI) IV. Interpersonal Skills
Residents must demonstrate skills to:
- a) Interact with x-ray technologists, medical students, fellow residents, and attending radiologists.
- b) Interact with clinicians when reviewing cases involving bone imaging studies.
- c) Interact with patients/family when performing invasive procedures.
- d) Can participate in administrative and scholarly committees when asked.

- e) Can serve as a liaison between our department with both other radiology departments and other specialty groups in our institution.
 - f) Is able and willing to teach lower level residents.
- VI) V. Professionalism
- a) Residents must demonstrate ability to interact with patient/patient's family/clinician when discussing significance of x-ray findings and their impact on patient care.
 - b) Can participate in activities relative to the role of bone imaging both within the medical community and before the general public.
 - c) Is perceived as a role model for radiology from both within and outside the department.
- VI. Systems Based Practice
- a) Shows ability to interact with clinicians regarding cost effective and streamlined patient evaluation for differing clinical entities.
 - b) Able and willing to participate in clinical conferences in which imaging studies used to guide patient care/evaluation.
 - c) Is able and willing to organize and present case conferences/didactic sessions as directed and supervised by radiology staff.
 - d) Is able and willing to participate in activities at the local/national level under staff supervision.
 - e) Is able to protocol advanced bone imaging cases (MRI, CT)

Goals and Objectives – Bone Radiology (Fourth Year)

- VI) I. Patient Care
- Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.
- a) Shows ability to interact with clinicians when reviewing bone imaging studies.
 - b) Shows ability to recommend additional imaging studies as appropriate to better assess bone x-ray findings (e.g. CT/US/MRI)
 - f) Shows ability to use PACS and hospital information systems
 - g) Is able and willing to assist lower level residents
 - h) Is able and willing to make assigned presentations to various groups on the appropriate application of bone imaging studies.
 - i) Is able and willing to make presentations on both local/national level as assisted by staff.
- II. Medical Knowledge
- a) Demonstrates advanced knowledge of normal/abnormal anatomy as seen on Bone x-ray, CT, MRI in bone.
 - b) Shows ability to recognize and describe most medical conditions as depicted on bone imaging studies.
 - c) Is familiar with both common and uncommon bone conditions and can formulate extensive differential diagnosis for findings on imaging studies.
 - d) Can perform most interventional bone procedures with minimal staff input.
 - e) Can serve as an authoritative consultant to clinicians on the interpretation

- of and appropriate use of imaging studies.
 - f) Can perform and teach most interventional procedures under staff supervision to lower level residents.

- VI) III. Practice Based Learning and Improvement
 - a) Shows evidence of independent study using textbooks from suggested reading list.
 - b) Demonstrates appropriate follow up of interesting cases.
 - c) Prepares interesting cases for teaching file.
 - d) Is able and willing to make detailed presentations of skeletal imaging studies at both intra and interdepartmental conferences.
 - e) Upon request, participates in educational courses for clinicians, medical students, and fellow residents.
 - f) Upon request, participates in educational activities at the local/national level.

- VI) IV. Interpersonal Skills

Residents must demonstrate skills to:

 - a) Interact with x-ray technologists, medical students, fellow residents, and attending radiologists.
 - b) Interact with clinicians when reviewing cases involving bone imaging studies.
 - c) Interact with patients/family when performing invasive procedures.
 - d) Can participate in administrative and scholarly committees when asked.
 - e) Can serve as a liaison between our department with both other radiology departments and other specialty groups in our institution.
 - f) Is able and willing to teach lower level residents.

- VI) V. Professionalism
 - a) Residents must demonstrate ability to interact with patient/patient's family/clinician_when discussing significance of x-ray findings and their impact on patient care including what imaging studies may or may not be appropriate.
 - b) Can participate in activities relative to the role of bone imaging both within the medical community and before the general public.
 - c) Is perceived as a role model for radiology from both within and outside the department.

- VI. Systems Based Practice
 - a) Shows ability to interact with clinicians regarding cost effective and streamlined patient evaluation for differing clinical entities.
 - b) Able and willing to participate in clinical conferences in which imaging studies used to guide patient care/evaluation.
 - c) Is able and willing to organize and present case conferences/didactic sessions as directed and supervised by radiology staff.
 - d) Is able and willing to participate in activities at the local/national level under staff supervision.
 - e) Is able to protocol advanced bone imaging cases (MRI, CT)

Required Reading

1. Orthopedic Imaging: A Practical Approach by Greenspan, 4th Edition

Suggested Reading

1. Magnetic Resonance Imaging in Orthopedics and Sports Medicine
D.W. Stollar
2. Paul and Juhl's Essentials of Radiologic Imaging, 6th Edition, Section I, Chapters 1-10
3. Radiology of Bone Diseases by George Greenfield.
4. MRI of the Musculoskeletal System T. Berquist, 2nd Edition

References:

1. Atlas of Human Anatomy, Netter
2. Sectional Anatomy by MRI, El-Khoury, Bergman and Montgomery
3. Bone and Joint Imaging, 3rd Edition, Resnick
4. Diagnosis of Bone and Joint Disorders, 3rd Edition, Resnick
5. Musculoskeletal Disease, ACR Syllabus 37
6. Radiology of Bone Diseases, 5th Edition, Greenfield
7. Skeletal Radiology, the Bare Bones, 2nd Edition, Chew
8. Atlas of Normal Roentgen Variants that May Simulate Disease, 6th Edition, Keats
9. Radiology of Skeletal Trauma, 2nd Edition, Rogers
10. Essentials of Skeletal Radiology, 2nd Edition, Yochum and Rowe
11. MRI of the Musculoskeletal System, A Teaching File, 2nd Edition, Deutsch and Mink
12. MRI of the Knee, 2nd Edition, Munk and Helms
13. Procedures in Skeletal Radiology, Goldman

Bone Evaluation

Patient Care

- 1) Communicates effectively and demonstrate caring and respectful behavior when interacting with patients and families
- 2) Gather essential and accurate information about patients when appropriate (reviews old films, chart, lab work, calls referring MD)
- 3) Use information technology to support patient care decisions and patient education (looks up needed information in books, on-line)
- 4) Work effectively with other health care professionals including other disciplines to provide patient focused care (interpersonal skills, calls reports when needed, affable on call)

Knowledge

- 5) Demonstrate an investigatory and analytic thinking approach to clinical situations (after gathering necessary history and clinical information, tailors studies to answer

clinical questions)

6) Know and apply basic and clinical sciences - Physics (uses physics and radiation biology in daily practice)

7) Know and apply basic and clinical sciences - Is familiar with proper use of various contrast agents

8) Know and apply basic and clinical sciences - Appropriate knowledge of common disease processes

9) Visual perception

10) Ability to formulate a differential diagnosis

11) Knows necessary anatomy

12) Performs completely all invasive procedures appropriate for level of training (manual skills)

PRACTICE-BASED LEARNING AND IMPROVEMENT

13) Locate and assimilate evidence from scientific studies related to patient problems (shows evidence of independent study and choice of journal club articles)

14) Appropriate followup of cases

15) Facilitates learning of students and other health care professionals (teaches others in the reading room - students, other service residents, techs, nurses, etc.)

INTERPERSONAL AND COMMUNICATION SKILLS

16) Work effectively with others as a member of the imaging team (pitches in where and when needed - not a clock watcher, comes on time, stays late, timely return from conf.)

17) Dictate written reports that are correct, concise, meaningful, quality of dictation - timeliness of signing reports

PROFESSIONALISM

18) Considers well being of patients and department ahead of personal needs (availability)

19) Commitment to ethical principles (pt. Confidentiality, obtaining informed consent, business practices)

20) Maintains appropriate professional demeanor in patient care areas and reading room

SYSTEMS-BASED PRACTICE

21) Understands how their patient care and image interpretation affects patient care and other professionals (and vice versa) (demonstrates timely reporting, faxing, calls to referring MD's, careful coding)

22) Concern for cost-effective operation of department, patient imaging work-up,

effect on hospitalization, etc. (adds on studies late when needed, timely reporting, use of most efficient modality to obtain needed information)

23) Assist patients with complexities of medical system when possible