

Mini Rotation in CT

1. During this rotation you will be exposed to many routine as well as emergency studies performed daily at university hospital.
2. You should concentrate learning normal anatomy of chest(mediastinal, tracheobronchial tree and lung lobes), abdomen and pelvis(liver, pancreas, kidneys, retroperitoneal, etc.). Learning anatomy makes understanding CT, US and MRI much easier.
3. You must learn protocols of routine and emergency studies. Every day we protocol cases for the next day.
4. You will also learn to dictate the studies. All studies, you dictate must include history, technique, findings and impressions. If there are comparison studies, you mention it in dictation. Learning proper dictation goes a long way. Also you must answer why the study was done in your impression. I will give you an article about the dictation method to you.
5. You need to learn the PACS.
6. There are three major books on body CT. There is a brand new Hagga's book on whole body and another 3rd edition book by Lee and Stanely. Moss book is now old and not recommended for reading except for anatomy.
7. Major Journals you should read are- Grey journal-Radiology, yellow journal-AJR and blue journal-JCAT.
8. Work starts at 7:30AM. You should come to reading room as soon as conference is over. Friday we don't have conference, you should come to reading room at 7:30 and not 8AM. If for any reason you are delayed to come to work, you must inform appropriate authority, who informs CT reading room staff.

Body CT Rotation

1. You are required to attend 7AM morning conferences. The day you don't have conference you should be in reading room at 7:30AM. Also after the morning conference you should go to reading room as soon as possible at UAMS and VA.
2. Every morning you protocol cases which are not protocol the day before. Also you check the unread box and prioritize the inpatients done during night and read the sick patient's CT as soon as possible, such as PE, r/o abscess etc. This applies to both hospitals.
3. Protocol the cases for the next day. From July 2, 2003, we are introducing a form where we prescribe the protocol to reduce the confusion by technologist.
4. You are required to do a presentation on a topic for about 15-20 minutes. This exercise gives you to prepare a talk, do literature search and also do a power point presentation. Power point presentation is optional, but I assure you that if you have not done power point presentation, you should learn it and once you do one, it becomes very easy. You don't have to be fancy. Donna will help you in preparation.
5. You will be given a test in your last week, depending on your level of training.

6. I want you to dictate eight cases on your own and present to me during our daily reading session which will be a test to document your observation and dictation ability. You do this in 2nd, 3rd and 4th week.
7. During rotation when you are on vacation, please inform the staff that you will be on vacation or going for ACLS, etc. so staff is aware of your absence. You need to tell the ultrasound resident so he/she will be responsible for covering your duty. That responsibility is also a part of your evaluation, weather you work as a team player or not? In a situation where you and ultrasound resident are on vacation, please inform the chief resident and he would take necessary steps.

Hemendra R. Shah

July, 1 2004

CT BODY – PROTOCOLS

Toshiba and GE Scanner- Multi slice- 4 slice scanner- means it takes 4 slices during each revolution. We have one GE old scanner at UAMS and VA. Our routine slice thickness is 3mm(T)/3.75(GE). We reconstruct images at 5mm for daily work. When we need thinner slices we can obtain slices 3mm at 0.5 to 3mm interval. So when you have a lesion in the kidney or liver or lung needs thin slices for detail evaluation, we need to tell technologist exact location, so they can reformat the images. As data gets over written we need to tell technologist as soon as possible. We have capacity for storage for one day or more and remember we can always protect the data, so they can store it till we tell them to discard. Lesions less than 2cm will need \approx 1mm slices.

Toshiba-16 slice MDCT- The slice thickness is either 0.5mm or 1mm. Most of the body cases are acquired at 1mm and reconstructed at 5mm. There are situations where we will acquire at 0.5mm, especially for bone cases or CTA. PE protocol is now performed on 16 slices only, unless it is not working.

Most of the chest, abdomen and pelvis are done using 3mm slices with 5mm reconstruction slices.

Chest- most of our CT of the chest is done with IV contrast except patient is allergic reaction to Iodine or poor renal function. Also evaluation of nodule in young patient or patient with normal chest x-ray, CT can be done without contrast. Repeat study for nodule should be done without contrast, unless one needs to evaluate the hilar and mediastinal region.

The high resolution CT is done with two 1mm scans at 1cm interval for Toshiba scanner. In this situation images are taken four 0.5mm and reconstructed at two 1mm images.

Abdomen- most of the CT of the abdomen is done with oral and IV contrast. Biphasic liver – all cancer patients except lymphoma, kidney mass evaluation, unusual/nonspecific abdominal pain, and evaluation of patients with weight loss, etc. In short obtain biphasic liver images whenever you are in doubt. It is not going to hurt the patient and it may actually be helpful. In non cancer patients, the arterial phase study should extend to iliac crest as we are going to evaluate aorta and its branches.

Pre contrast abdomen should be included for patient's evaluated for hepatoma when Triple phase study is ordered by the clinician, usually Gastro-enterologist. Also many physicians are ordering CT for the abdominal pain and also looking for kidney stones, make sure you also do pre contrast kidneys, even though the study ordered is post contrast abdomen. In many situations, pre and post contrast study of the chest or abdomen and pelvis are ordered. We usually do only post contrast study. When in doubt, you may do pre contrast study, but you must have reason to do it.

Pancreas cancer patients do not need pre contrast study. Make sure you have biphasic liver including pancreas region and ask the technologist later to obtain reconstructed images at 3mm at 1mm interval from above the pancreas to below the pancreas, in arterial phase, if needed.

Kidney mass- must obtain pre contrast, biphasic liver and kidney and delayed images of the whole kidney. Also when mass is small you will need to obtain 3mm at 1mm interval reconstructed images. For small lesions we should use **16 slice scanner**, so we can reconstruct using smaller slices. In hematuria patients, if pelvis is also ordered, than we need complete delayed images of bladder. Our stone protocol is now changed and we reconstruct the images at 3mm, rather than 5mm.

When urologist order pre and post contrast abdomen and pelvis, we usually do pre kidneys looking for stone or mass and don't obtain complete stone protocol. Rest of the study is done as above.

Gyn Cancer- One should ask for tampon and rectal contrast except for ovarian cancer. Also when cancer is of vagina, vulva, low rectum, anus, perineum, scrotum and penis, one must get scans through the perineum, means below the split thighs or in few cases below the tumor/mass.

Musculoskeletal- For bone tumors or lesions you will need more information about the size of the lesion to obtain appropriate slice thickness. If the lesion is small we may need 0.5mm or 1mm thick images. Always follow what is ordered by orthopedic surgeons. If necessary call them and obtain more information. If you fail to do so than patient suffers and they have to come back.

As a rule read the requisition and understand what is ordered. For example, some one ordered CT of the lower abdomen, please do pelvis and not the upper abdomen, unless the clinical information dictates you to do so. Remember that clinician and their assistants, so many time do not understand what we do. By doing what they have ordered and not using common sense you are punishing the patient. If abdomen is ordered and patient also needs pelvis than we have to contact the physician to add pelvis. For in patient is usually an easy task. For out patient we have to try and call the clinic or the doctor's office to change the order.

There are set protocols for bones and joints and emergency situations.

Most of the protocols are set and there are no major changes in last 12 months. The protocol will change once we get 16 slice scanner.

I urge all of you to familiarize with protocols, as CT is one of the most commonly used modality 24 hours a day. It is very important that you don't change the routine protocol unless you have a strong reason to change it.

AAA Endo Vascular Stent CT imaging Protocols

Prep: No oral contrast. NPO 4 hours prior to exam.

IV access: 18 or 20 gauge angiocath. If 22 gauge, than reduce the injection rate.

Contrast: 100cc of 300 Iohexol- Omnipaque.

Pre Stent Graft Protocol

Pre-Contrast scan:

Helical scanning, 5mm from above the celiac axis (bottom of T12) to roof of the acetabulum, pitch of 1.5 to 2, reconstruction every 5mm. Film every image. Obtain for pre and post stent evaluation.

Post-Contrast:

Helical scanning at 3mm collimation at pitch of 2 (table speed of 6mm), start scanning at 20 seconds from the start of injection. Injection rate of 3-4ml/sec. Reconstruction every 3mm. Film every image. Scan from above the celiac axis (T12) to below the ischium.

Post-Contrast Delayed --None

Post stent graft Protocol-

Pre-Contrast scan:

Helical scanning, 5mm from above the celiac axis (bottom of T12) to roof of the acetabulum, pitch of 1.5 to 2, reconstruction every 5mm. Film every image. Obtain for pre and post stent evaluation.

Post -Contrast:

Helical scanning at 3mm collimation at pitch of 2 (table speed of 6mm), start scanning at 20 seconds from the start of injection. Injection rate of 3-4ml/sec. Reconstruction every 3mm. Film every image. Scan from above the celiac axis (T12) to below the ischium.

Post-Contrast Delayed:

Helical scanning, 5mm with pitch of 1.5 to 2, from diaphragm to pubic symphysis, reconstruct at 5mm. Delay of 70-90 seconds. Film every image.

Revised: July 1, 2005

Emergency CT Protocols – Multi-slice scanner

1. **Stone:** 3mm 1:1 pitch – Above kidneys to below bladder – No oral & IV .
2. **Abdominal Aortic Aneurysm Rupture:**

No oral and IV contrast, 5mm at 5mm xiphoid to below bifurcation
If no rupture than repeat the study with IV contrast with 3mm at 3mm from diaphragm to below the bifurcation or to pubic symphysis in arterial phase.

3. **Aorta (Chest) Dissection:**
Pre contrast – 10mm at 10mm above apex to diaphragm
Post IV contrast –Arterial phase, 3/5mm at 3/5mm from apex to diaphragm or to aortic bifurcation. May need reconstruction -3mm at 2mm interval.
4. **Aorta (Chest) Transection: Trauma Patient**
Post IV contrast – Do routine CT of Chest, etc. at 20 sec delay and than recon chest -3mm at 3mm from apex to diaphragm
5. **Pulmonary Embolus:**
Post IV contrast(**125-150ccs**) - 3mm at 1.5mm from below the heart/lungs to apex of the chest at 20-25 sec delay. For patient with CHF and other cardiac problems, you will need to increase the delay to 40-60 sec. If you notice during the routine scanning that the contrast is not in the pulmonary arteries, than repeat the scanning again without wasting time to call us, so you do not waste the contrast.
Now we do all PE cases on 16 slices – 2mm at 1mm interval from apex of the lungs to below the heart/lungs using smart prep with density measurement on pulmonary artery.
6. **Abdomen – Pelvis (Trauma):**
5mm with oral and IV contrast, **Some patient may not receive oral contrast at the discretion of Trauma attending in charge.**
Patient with hematuria with kidney injury, please obtain complete delayed kidney images to evaluate for collecting system injury.
7. **Abdomen - Pelvis (Non trauma):**
As # 6 with oral and IV contrast. In selected cases rectal contrast should be used in case of diverticulitis or Gyn problem such as TOA, endometriosis, etc. to better evaluate the pelvic mass. Also biphasic liver/abdomen should be obtained in patient with nonspecific abdominal symptoms, in patients over 40years of age.
8. **R/O Intra Abdominal Bleed:**
No oral and IV contrast, 5mm at 5mm abdomen and pelvis.
9. **Pelvis, Knee, Ankle, and Shoulder Trauma as in the protocol book.**

Hemendra R. Shah, MD

Revised –1 July, 2005

Bone and Joint Protocols

1. **Clavicle:** 1mm sections at 1mm interval. For Toshiba scanner- 0.5 or 1mm/4 sections, recon at 1mm at 0.5mm interval. Make sure to include both ends of the clavicles.
2. **Sternum:** 5mm sections at 4mm interval. For Toshiba scanner- Routine 3mm/4 and recon at 3mm at 2mm. Do Sag/Cor recon.
3. **Wrist:** 1mm/0.5mm with minimum ulnar deviation. For Toshiba scanner- 0.5 or

1mm/4 and recon at 1mm/0.5mm. Also need sag /cor recon. If we can obtain scans in sagittal plane with arm in the gentry flat and bend at elbow with patient prone.

4. **Shoulder, elbow, knee, and ankle:** 2mm/1mm and do sag/cor recon. Please make sure you include skin to skin. For shoulder, you must include complete scapula. If patient is large and one needs to see only bones, than you should do retro-recon, so we have complete data set. This is very important in cases of oncology patients. In trauma case also we need to evaluate soft tissue injury.
5. **Pelvis and Hip joints:** For GE – 5mm/4mm with 3mm/1 Or 2 mm for hip joints. We need sag/cor recon as needed.

All trauma patient you follow above protocol. All non-trauma patient, you need 5mm/4mm and may require thin cuts depending on the history. Also oral and iv contrast needed unless we are evaluating bones only, such as Myeloma. For Toshiba scanner – 3mm/4 with recon as 3mm at 1/2mm interval. Patient with orthopedic hardware 1mm/4 with recon at 5mm at 3mm or 3mm at 1mm depending on case. Sag/cor and 3D recon as needed.

6. **Long bones- Humerus, femur, fore arm and leg bones:** When whole long bone is Ordered, make sure you get scout view of the whole bone including the proximal and distal joints. Scans are done using 5, 6, 7, 8, or 10mm sections depending on the indications. For humerus, tibia, femur and forearm 5mm or less is adequate.

Also if patient has a lesion, than we have to do thin cuts depending on the size of the lesion, such as 1mm sections for lesion less than 2cm, 2mm for 3-4cm, 3mm for 5cm, etc.

For Toshiba scanner- for whole bone -- 3mm/4 and recon at 5mm at 4mm. Small lesions are evaluated as above.

Hemendra R. Shah, MD
Revised – 2 July,2005

Goals and Objectives
Body CT Radiology
First Year Residents

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.

Knowledge Based Objectives

By the final rotation in Body CT Radiology as a first year Radiology Resident, the resident

WILL DEMONSTRATE:

Use of effective communication and caring and respectful behavior when interacting with

patients of all ages and their families

Ability to gather essential and accurate information about patients when appropriate (from chart, old films, lab, referring MD)

Ability to work with other health care professionals to provide patient focused care in the radiology department including technologists and nurses in the CT, obtaining consent for Biopsy and IV contrast at VA medical center, providing help locating films in the reading room, and consultation in the reading room, answering the phone, calling referring MD's.

Recognition of principles of physics and radiation biology in daily radiology practice especially as it relates to the unique problems of imaging of the adult UAMS and VA Hospital patient population.

Skill based objectives

By the final rotation in Body CT as a first year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to use the E chart, Linx, Adac and Vista star system to obtain needed patient information

Ability to protocol various studies in daily practice with direct supervision from staff

Medical Knowledge

Residents must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavior) sciences and the application of this knowledge to patient care.

Knowledge based objectives

By the final rotation in Body CT as a first year Radiology Resident, the resident **WILL DEMONSTRATE:**

Recognition of normal and abnormal anatomy necessary to interpret ER and routine CT images

Recognition of importance of obtaining all relevant information before image interpretation or performance of exam

Recognition of limitations in personal knowledge and not make decisions beyond level of personal competence

Skill based objectives

By the final rotation in Body CT as a first year Radiology Resident, the resident **WILL DEMONSTRATE:**

Recognition of normal and abnormal findings on CT scans of the body exams ordered by ER.

Practiced Based Learning and Improvement

Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.

Knowledge based objectives

By the final rotation in Body CT as a first year Radiology Resident, the resident

WILL DEMONSTRATE:

Evidence of independent study using textbooks from suggested reading list

Appropriate follow-up of interesting cases (looks up biopsy results, gets follow-up from surgeons, etc.)

Skill based objectives

By the final rotation in Body CT as a first year Radiology Resident, the resident

WILL DEMONSTRATE:

Operation of use UAMS and VA Hospital PAC's systems

Interpersonal and Communication Skills

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange with patients, patient's families, and all levels of professional associates.

Knowledge Based Objectives:

By the final rotation in Body CT as a first year Radiology Resident, the resident

WILL DEMONSTRATE:

Ability to work as an effective member of the imaging team and contribute to the clinical care of patients when appropriate

Skills Based Objectives:

By the final rotation in Body CT as a first year Radiology Resident, the resident

WILL DEMONSTRATE:

Ability to dictate written reports for routine fluoro, plain films, routine CT exams

Professionalism

Resident must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Knowledge Based Objectives:

By the final rotation in Body CT as a first year Radiology Resident, the resident

WILL DEMONSTRATE:

Commitment to ethical principles especially to unique problems inherent in the adult population (informed consent, confidentiality, radiation exposure)

Professional dress, demeanor and attitude in the reading room and patient care areas

System Based Practice

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

Knowledge Based Objectives:

By the final rotation in Body CT as a first year Radiology Resident, the resident **WILL DEMONSTRATE:**

Knowledge of how their image interpretation and communication affects patient care

Practice of techniques for cost effective utilization of supplies, time, and personnel in the Radiology Department

Use of timely performance and interpretation of studies to decrease length of hospital stay for inpatients.

Concern for assisting patients with complexities of the health care system whenever possible

Skills Based Objectives:

By the final rotation in Body CT as a first year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to use UA/VH normal code dictations appropriately for routine CT exams

Ability to use ICD-9 coding with staff guidance on CT

Goals and Objectives
Body CT Radiology
Second Year Residents

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.

Knowledge Based Objectives

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Effective communication and caring and respectful behavior when interacting with patients of all ages and their families

Ability to gather and interpret essential and accurate information about patients when appropriate (from chart, old films, lab, referring MD)

Ability to work with other health care professionals to provide patient focused care in the radiology department including technologists and nurses in the CT room, obtaining consent for sedation, providing help locating films and consultation for most common adult problems in the reading room, answering the phone, calling referring MD's.

Application of principles of physics and radiation biology in daily radiology practice especially as it relates to the unique problems of imaging of the adult patient population.

Skill based objectives

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to use the Webchart, Adac, CPRS and Vista star systems to obtain needed patient information

Ability to protocol routine CT studies independently with review of staff.

Ability to perform some non-routine and invasive studies such as complicated CT exams, such as CT cystograms, CTA for PE, Aneurysm, Renal arteries and masses, Pancreas masses, etc.

Ability to interpret all body CT exams with staff guidance

Medical Knowledge

Residents must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavior) sciences and the application of this knowledge to patient care.

Knowledge based objectives

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Identification of normal and abnormal anatomy necessary to interpret all CT exams

Analysis of all relevant information before image interpretation in order to tailor exams to specific patient problems and needs.

Understanding of the advantages and disadvantages of available modalities especially as they relate to the various adult population

Recognition of limitations in personal knowledge and not make decisions beyond level of personal competence

Skill based objectives

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Recognition of normal and abnormal findings on routine adult imaging studies and ability to discuss their implications for diagnosis and treatment

Practiced Based Learning and Improvement

Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.

Knowledge based objectives

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Evidence of independent study including textbooks from suggested reading list, journal articles, and web-based learning

Appropriate follow-up of interesting cases (looks up biopsy results, gets follow-up from surgeons, etc.)

Interest in teaching medical students, other service resident teams, radiologic technologists and RN's about interesting cases in reading room including participation in team rounds

Skill based objectives

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to do a web-based literature search pertinent to Adult Radiology

Operation of UAMS/VA PAC's systems

Interpersonal and Communication Skills

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patient's families, and professional associates.

Knowledge Based Objectives:

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to work as an effective member of the imaging team and contribute to the clinical care of patients when appropriate

Discuss imaging results with residents and medical students on telephone and in reading room

Skills Based Objectives:

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to dictate correct and concise written reports for all studies, after review with staff

Professionalism

Resident must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Knowledge Based Objectives:

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to explain all imaging modalities, techniques, etc. to patients and families with concern for cultural differences

Commitment to ethical principles especially to unique problems inherent in the adult population (informed consent, confidentiality, radiation exposure)

Professional dress, demeanor and attitude in the reading room and patient care areas

System Based Practice

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

Knowledge Based Objectives:

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Knowledge of how the timeliness and content of their image interpretation and communication affects patient care

Practice of techniques for cost effective utilization of supplies and personnel in the Radiology Department

Use of timely performance and interpretation of studies to decrease length of hospital stay for in-patients.

Assistance of patients with complexities of the health care system

Skills Based Objectives:

By the final rotation in Body CT as a 2nd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to use UAMS/VA normal code dictations appropriately

Ability to use ICD-9 coding appropriately on all studies

Goals and Objectives
Body CT Radiology
Third Year Residents

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.

Knowledge Based Objectives

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Effective communication and caring and respectful behavior when interacting with patients of all ages and their families

Ability to gather and interpret essential and accurate information about patients when appropriate (from chart, old films, lab, referring MD)

Ability to work with other health care professionals to provide patient focused care in the radiology department including technologists and nurses in the CT room, obtaining consent for sedation, providing help locating films and consultation for most common adult problems in the reading room, answering the phone, calling referring MD's.

Application of principles of physics and radiation biology in daily radiology practice especially as it relates to the unique problems of imaging of the adult patient population.

Skill based objectives

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to use the Webchart, Adac, CPRS and Vista star systems to obtain needed patient information

Ability to protocol routine CT studies independently with review of staff.

Ability to perform non-routine and invasive studies such as complicated CT exams, such as CT cystograms, CTA for PE, Aneurysm, Renal arteries and masses, Pancreas

masses, etc.

Ability to interpret all body CT exams with staff guidance

Medical Knowledge

Residents must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavior) sciences and the application of this knowledge to patient care.

Knowledge based objectives

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident

WILL DEMONSTRATE:

Identification of normal and abnormal anatomy necessary to interpret all CT exams

Analysis of all relevant information before image interpretation in order to tailor exams to specific patient problems and needs.

Understanding of the advantages and disadvantages of available modalities especially as they relate to the various adult population

Recognition of limitations in personal knowledge and not make decisions beyond level of personal competence

Skill based objectives

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident

WILL DEMONSTRATE:

Recognition of normal and abnormal findings on routine adult imaging studies and ability to discuss their implications for diagnosis and treatment

Practiced Based Learning and Improvement

Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.

Knowledge based objectives

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident

WILL DEMONSTRATE:

Evidence of independent study including textbooks from suggested reading list, journal articles, and web-based learning

Appropriate follow-up of interesting cases (looks up biopsy results, gets follow-up from surgeons, etc.)

Interest in teaching medical students, other service resident teams, radiologic

technologists
and RN's about interesting cases in reading room including participation in team rounds

Skill based objectives

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to do a web-based literature search pertinent to Adult Radiology

Operation of UAMS/VA PAC's systems

Interpersonal and Communication Skills

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patient's families, and professional associates.

Knowledge Based Objectives:

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to work as an effective member of the imaging team and contribute to the clinical care of patients when appropriate

Discuss imaging results with residents and medical students on telephone and in reading room

Skills Based Objectives:

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to dictate correct and concise written reports for all studies, after review with staff

Professionalism

Resident must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Knowledge Based Objectives:

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to explain all imaging modalities, techniques, etc. to patients and families with concern for cultural differences

Commitment to ethical principles especially to unique problems inherent in the Adult population (informed consent, confidentiality, radiation exposure)

Professional dress, demeanor and attitude in the reading room and patient care areas

System Based Practice

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

Knowledge Based Objectives:

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident

WILL DEMONSTRATE:

Knowledge of how the timeliness and content of their image interpretation and communication affects patient care

Practice of techniques for cost effective utilization of supplies and personnel in the Radiology Department

Use of timely performance and interpretation of studies to decrease length of hospital stay for in-patients.

Assistance of patients with complexities of the health care system

Skills Based Objectives:

By the final rotation in Body CT as a 3rd year Radiology Resident, the resident

WILL DEMONSTRATE:

Ability to use UAMS/VA normal code dictations appropriately

Ability to use ICD-9 coding appropriately on all studies

Goals and Objectives
Body CT- Radiology
Fourth Year Residents

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.

Knowledge Based Objectives

By the final rotation in Body CT as a 4th year Radiology Resident, the resident

WILL DEMONSTRATE:

Effective communication and caring and respectful behavior when interacting with patients of all ages and their families

Ability to collect and analyze information about patients in order to optimize choice of

imaging modality, and select protocols to provide maximum information needed for diagnosis and treatment.

Ability to work with other health care professionals to provide patient focused care in the radiology department including triage of cases in MR, CT, fluoro when needed and provide consultation to clinicians in the reading room.

Application of principles of physics and radiation biology in daily radiology practice especially as it relates to the unique problems of imaging of the adult patient population, including managing imaging studies in pregnancy and consultations about radiation exposure in undiagnosed pregnant patients.

Skill based objectives

By the final rotation in Body CT as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to use the Echart, Adac, Linx and Vista star systems to obtain needed patient information

Ability to protocol with all but the most complicated CT procedures used in the adult population.

Ability to interpret all imaging studies to the level expected of the community diagnostic radiologist with staff oversight and consultation.

Medical Knowledge

Residents must demonstrate knowledge about established and evolving biomedical, clinical, and cognate (e.g. epidemiological and social-behavior) sciences and the application of this knowledge to patient care.

Knowledge based objectives

By the final rotation in Body CT as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

Identification of normal and abnormal anatomy necessary to interpret various CT studies to the level expected of the community diagnostic radiologist

Analysis of all relevant information before image interpretation in order to tailor exams to specific patient problems and needs, and to suggest more appropriate or additional studies as needed

Ability to select the best modality to provide needed information based on ability to compare and contrast characteristics of each

Recognition of limitations in personal knowledge and not make decisions beyond level of personal competence

Skill based objectives

By the final rotation in Body CT as a 4th year Radiology Resident, the resident

WILL DEMONSTRATE:

Recognition of normal and abnormal findings on all adult imaging studies and assessment of their implications for diagnosis and treatment

Practiced Based Learning and Improvement

Residents must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.

Knowledge based objectives

By the final rotation in Body CT as a 4th year Radiology Resident, the resident

WILL DEMONSTRATE:

Evidence of independent study including textbooks from suggested reading list, journal articles, and web-based learning, including information needed for difficult case management

Appropriate follow-up of interesting cases (looks up biopsy results, gets follow-up from surgeons, makes rounds on interventional cases)

Interest in teaching medical students, other service resident teams, radiologic technologists and RN's about interesting cases in reading room including conducting team rounds (ICU, PICU and ward teams)

Skill based objectives

By the final rotation in Body CT as a 4th year Radiology Resident, the resident

WILL DEMONSTRATE:

Ability to do a web-based literature search pertinent to Adult Radiology

Operation of UAMS/VA PAC's systems

Interpersonal and Communication Skills

Residents must be able to demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, their patient's families, and professional associates.

Knowledge Based Objectives:

By the final rotation in Body CT as a 4th year Radiology Resident, the resident

WILL DEMONSTRATE:

Ability to work as an effective member of the imaging team with the goal of optimizing contribution to diagnosis and clinical care of patients.

Ability to provide consultation with residents and medical students on telephone and in reading room and formulate plans for further imaging of patients when needed.

Skills Based Objectives:

By the final rotation in Body CT as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to dictate correct and concise and helpful written reports for all studies with minimal oversight from staff

Professionalism

Resident must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Knowledge Based Objectives:

By the final rotation in Body CT as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to explain all imaging modalities, techniques, etc. to patients and families with concern for cultural differences

Commitment to ethical principles especially to unique problems inherent in the adult population (informed consent, confidentiality, radiation exposure)

Professional dress, demeanor and attitude in the reading room and patient care areas

Interpretive skills and non-interpretive behaviors which are known to be assets in group practice such as reliability, availability, sharing in all work to be done, voluntary pitching in during times of crisis, affability at all times including times of stress, minimizing influence of personal problems on professional duties

System Based Practice

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

Knowledge Based Objectives:

By the final rotation in Body CT as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

Timely and accurate image interpretation (with staff oversight) to maximize efficient and medically appropriate patient care

Ability to offer constructive criticism of inefficient or ineffective departmental activities

Assistance of patients with complexities of the health care system including anticipation and proactive prevention of likely problems

Skills Based Objectives:

By the final rotation in Body CT as a 4th year Radiology Resident, the resident **WILL DEMONSTRATE:**

Ability to use UAMS/VA normal code dictations appropriately

Ability to use complete and accurate ICD-9 coding on all studies

Reference Books and Journals

Whole Body CT – 3rd Edition – Hagga

Body CT – 3rd Edition – Lee and Stanley

Textbook of GI Radiology – 2nd edition – Gore and Levine

Clinical Urology – 2nd Edition – Pollock

Grey Journal – RSNA (Radiology)

Yellow Journal – ARRS

Journal of Computed Assisted Tomography – blue journal

CT Evaluation

Patient Care

- 1) Communicate 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, ie: proper protocol for studies, proper size thickness, appropriate repeat of studies)
- 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