

OSUMC Cardiothoracic (First Year)

*This rotation involves interpretation of digital chest radiographs, chest CT, and guided lung biopsies.

PATIENT CARE

Goal

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. Residents are expected to:

Knowledge Objectives:

- List standard positions for chest examinations.
- Describe chest CT scanning protocols and contrast media usage well enough to direct
- CT studies in most patients, and recognize the findings of life-threatening conditions and notify referring clinician without being prompted.

Skill Objectives:

- Become facile with RIS/PACs and utilize available information to manage patient information,
- Perform guided biopsies with assistance from faculty or fellow
- Provide accurate and timely reports on most cases, and
- Coordinate activities in the reading room, including providing direction for the technologists, consultation for other clinicians, and answering the phone.

Behavior and Attitude Objectives:

- Work with the health care team in a professional manner to provide patient-centered care, and
- Notify referring clinician for urgent, emergent, or unexpected findings, and document in dictation.

MEDICAL KNOWLEDGE

Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

Knowledge Objectives:

- Describe key points of each of the diagnoses.
- Describe basic digital and conventional x-ray physics in the chest,
- Identify relevant anatomic structures on CT images of the chest, and
- Be familiar with the more common pathologic conditions in the upper abdomen and understanding their pathophysiology.

Skill Objectives:

- Accurately and concisely dictate chest radiograph reports,
- Demonstrate knowledge of the clinical indications for obtaining a chest x-ray and when a chest CT or MR may be necessary,
- Identify normal radiographic pulmonary anatomy and be able to define and identify various signs in thoracic radiology described in the detailed thoracic curriculum,
- List and identify on a chest radiograph and CT four patterns (nodular, reticular, reticulonodular, and linear) of interstitial lung disease, and
- Separate pulmonary from pleural or extrapleural processes.

Behavior and Attitude Objectives:

- Recognize limitations of personal competency and ask for guidance when appropriate.

PRACTICE-BASED LEARNING AND IMPROVEMENT**Goal**

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

Knowledge Objectives:

- Assess CT images for quality and suggest methods of improvement.

Skill Objectives:

- Demonstrate independent self-study using various resources including texts, journals, teaching files, and other resources on the internet, and
- Facilitate the learning of students and other health care professionals.

Behavior and Attitude Objectives:

- Incorporate formative feedback into daily practice, positively responding to constructive criticism, and
- Follow-up interesting or difficult cases without prompting and share this information with appropriate faculty and fellow residents.

SYSTEMS BASED PRACTICE**Goal**

Residents must demonstrate an awareness of, and responsiveness to, the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

Knowledge Objectives:

- Understand how their image interpretation affects patient care.

Skill Objectives:

- Provide accurate and timely interpretations to decrease length of hospital and emergency department stay,
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted; and
- Practice using cost effective use of time and support personnel.

Behavior and Attitude Objectives:

- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues.

PROFESSIONALISM

Goal

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

Knowledge Objectives:

- Understanding of the need for respect for patient privacy and autonomy, and
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing the work in a timely fashion, and not leaving at the end of the day until all work is complete. If the resident will be away from a service (for time off, meeting, board review, etc.), this must be arranged in advance with the appropriate faculty.

Skill Objectives:

- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

Behavior and Attitude Objectives:

- Respect, compassion, integrity, and responsiveness to patient care needs that supersede self-interest.

INTERPERSONAL AND COMMUNICATION SKILLS

Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

Knowledge Objectives:

- Know the importance of accurate, timely, and professional communication.

Skill Objectives:

- Produce concise and accurate reports on most examinations,
- Communicate effectively with physicians, other health professionals, and
- Obtain informed consent with the utmost professionalism.

Behavior and Attitude Objectives:

- Work effectively as a member of the patient care team.

Cardiothoracic (Second Year)

*This rotation involves interpretation of digital chest radiographs, chest CT, and guided lung biopsies.

PATIENT CARE

Goal

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. Residents are expected to:

Knowledge Objectives:

- Appropriately protocol all requests for chest CT to include thin-section images, high resolution images, expiratory images, or prone images when appropriate, and use of intravenous contrast, given the patients history,
- Demonstrate knowledge of CT parameters contribution to patient radiation exposure and techniques that can be used to limit radiation exposure,
- Demonstrate the ability to manage an intravenous contrast reaction that occurs during a chest CT examination, and
- Recognize the radiographic findings of life-threatening conditions and notify referring clinician without being prompted.
- Identify coronary angiographic anatomy, different views used and basic understanding of coronary angiography and CT-coronary angiography,

Skill Objectives:

- Provide accurate and timely reports on all cases with the supervision of faculty,
- Perform guided biopsies with little assistance from faculty but with supervision from faculty
- Coordinate activities in the reading room, including providing direction for the technologists, consultation for other clinicians, and answering the phone.
- Actively participate in cardiac CT supervision, protocoling, post processing, and interpretation.

Behavior and Attitude Objectives:

- Work with the health care team in a professional manner to provide patient-centered care, and
- Notify referring clinician for urgent, emergent, or unexpected findings, and document in dictation

MEDICAL KNOWLEDGE

Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

Knowledge Objectives:

- List key points of level appropriate diagnoses.

Skill Objectives:

- Perform and interpret more complex post-processing (3D) images, and
- Describe the principles of chest fluoroscopy, including the assessment of the diaphragm.

Behavior and Attitude Objectives:

- Recognize limitations of personal competency and ask for guidance when appropriate.

PRACTICE-BASED LEARNING AND IMPROVEMENT**Goal**

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

Knowledge Objectives:

- Assess CT images for quality and suggest methods of improvement.

Skill Objectives:

- Demonstrate independent self-study using various resources including texts, journals, teaching files, and other resources on the internet
- Supervise or act as consultant to junior residents and medical students, and
- Act as a consultant for referring clinicians and recommend the appropriate use of imaging studies.

Behavior and Attitude Objectives:

- Incorporate formative feedback into daily practice, positively responding to constructive criticism, and
- Follow-up interesting or difficult cases without prompting and share this information with appropriate faculty and fellow residents.

SYSTEMS BASED PRACTICE**Goal**

Residents must demonstrate an awareness of, and responsiveness to, the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

Knowledge Objectives:

- Understand how their image interpretation affects patient care.

Skill Objectives:

- Provide accurate and timely interpretations to decrease length of hospital and emergency department stay,
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted; and
- Practice using cost effective use of time and support personnel.

Behavior and Attitude Objectives:

- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues.

PROFESSIONALISM**Goal**

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

Knowledge Objectives:

- Understanding of the need for respect for patient privacy and autonomy, and
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing the work in a timely fashion, and not leaving at the end of the day until all work is complete. If the resident will be away from a service (for time off, meeting, board review, etc.), this must be arranged in advance with the appropriate faculty and/or fellow.

Skill Objectives:

- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

Behavior and Attitude Objectives:

- Respect, compassion, integrity, and responsiveness to patient care needs that supersede self-interest.

INTERPERSONAL AND COMMUNICATION SKILLS**Goal**

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

Knowledge Objectives:

- Know the importance of accurate, timely, and professional communication.

Skill Objectives:

- Produce concise and accurate reports on most examinations,
- Communicate effectively with physicians, other health professionals, and
- Obtain informed consent with the utmost professionalism.

Behavior and Attitude Objectives:

- Work effectively as a member of the patient care team.

Cardiothoracic (Third Year)

*This rotation involves interpretation of chest radiographs, cardiac CT and MR, and CT-cardiac angiography. Elective time will be used to focus on specific modalities and develop expertise which include time spent in cardiac MR at Children's Mercy Hospital.

PATIENT CARE

Goal

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. Residents are expected to:

Knowledge Objectives:

- Describe indications and basic principles of cardiac CT and MRI,
- Identify coronary angiographic anatomy, different views used and basic understanding of coronary angiography and CT-coronary angiography,
- Demonstrate knowledge of CT parameters contributing to patient radiation exposure and techniques that can be used to limit radiation exposure, and
- Demonstrate the ability to manage an intravenous contrast reaction that occurs during a cardiac CT examination.

Skill Objectives:

- Become facile with RIS/PACs and utilize available information technology to manage patient information,
- Actively participate in cardiac CT supervision, protocoling, post processing, and interpretation,
- Actively participate on the cardiac MR service, including protocoling, post processing, and interpretation,
- documenting participation in ACGME Case log, and
- Provide concise, accurate reports on most studies.

Behavior and Attitude Objectives:

- Work with the health care team in a professional manner to provide patient-centered care, and
- Notify referring clinician for urgent, emergent, or unexpected findings, and document in dictation.

Medical Knowledge

Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

Knowledge Objectives:

- Acquired cardiac disease:
 - List the common acute and late complications of myocardial infarction and recognize radiographic findings that may indicate these complications.
 - State the most common benign and malignant primary cardiac tumors.
 - Distinguish cardiac tumor from thrombus on CT and MR
 - State the advantages and disadvantages of echocardiography, CT, MR in the evaluation of cardiomyopathy and cardiac tumors.
 - Identify and describe the following abnormalities on MR: Aortic stenosis, Aortic insufficiency, Mitral insufficiency, Left ventricular aneurysm of focal wall motion abnormality, Constrictive pericarditis
 - Describe the most common benign and malignant cardiac tumors, and
- Congenital heart disease:
 - Cyanotic admixture shunts – understand the radiographic and clinical presentation of truncus arteriosus, transposition of the great vessels, single ventricle, total anomalous pulmonary venous connection, double-outlet right ventricle.
 - Heart failure in the infant or child – give a differential diagnosis for pulmonary edema in the following situations: Newborn, 3 months of age, 6 months of age, 2 years of age, 6 years of age.
 - State the definition and describe the abnormalities associated with atrial isomerism.
 - Know the commonly performed surgical corrections for congenital heart disease including procedures performed through thoracotomy vs. sternotomy.
 - Recognize devices in the post-operative patient with congenital heart disease including PDA ligation clip, pulmonary artery band, ASD closure devices, embolization of Blalock or aortapulmonary collateral, pulmonary conduit.
- Identify anatomy and basic pathology on cardiac angiography in children and adults including the coronary arteries.

Skill Objectives:

- Accurately identify and interpret findings of acquired and congenital heart disease on chest radiographs, cardiac CT and CMRI.

Behavior and Attitude Objectives:

- Recognize limitations of personal competency and ask for guidance when appropriate.

PRACTICE-BASED LEARNING AND IMPROVEMENT

Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

Knowledge Objectives:

- Assess CT and MR images for quality and suggest methods of improvement.

Skill Objectives:

- Demonstrate independent self-study using various resources including texts, journals, teaching files, and other resources on the internet,
- Facilitate the learning of students and other health care professionals, and
- Prepare four teaching cases: two MR and two non-MR cases.

Behavior and Attitude Objectives:

- Incorporate formative feedback into daily practice, positively responding to constructive criticism, and
- Follow-up interesting or difficult cases without prompting and share this information with appropriate faculty and fellow residents.

SYSTEMS BASED PRACTICE**Goal**

Residents must demonstrate an awareness of, and responsiveness to, the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

Knowledge Objectives:

- Understand how their image interpretation affects patient care.

Skill Objectives:

- Provide accurate and timely interpretations to decrease length of hospital and emergency department stay,
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted; and
- Practice using cost effective use of time and support personnel.

Behavior and Attitude Objectives:

- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues.

Professionalism**Goal**

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

Knowledge Objectives:

- Understanding of the need for respect for patient privacy and autonomy, and

- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing the work in a timely fashion, and not leaving at the end of the day until all work is complete. If the resident will be away from a service (for time off, meeting, board review, etc.), this must be arranged in advance with the appropriate faculty.

Skill Objectives:

- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

Behavior and Attitude Objectives:

- Respect, compassion, integrity, and responsiveness to patient care needs that supersede self-interest.

INTERPERSONAL AND COMMUNICATION SKILLS

Goal

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

Knowledge Objectives:

- Know the importance of accurate, timely, and professional communication.

Skill Objectives:

- Produce concise and accurate reports on most examinations,
- Communicate effectively with physicians, other health professionals

Behavior and Attitude Objectives:

- Work effectively as a member of the patient care team.

Cardiothoracic (Fourth Year)

*This rotation involves interpretation of digital chest radiographs, chest CT, and guided lung biopsies.

PATIENT CARE

Goal

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. Residents are expected to:

Knowledge Objectives:

- Develop skills in protocoling, monitoring, and interpreting chest MR studies, including cardiovascular MRI, and
- Recognize the findings of life-threatening conditions and notify referring clinician without being prompted.
- Describe indications and basic principles of cardiac CT and MRI,
- Identify coronary angiographic anatomy, different views used and basic understanding of coronary angiography and CT-coronary angiography,
- Demonstrate knowledge of CT parameters contributing to patient radiation exposure and techniques that can be used to limit radiation exposure, and
- Demonstrate the ability to manage an intravenous contrast reaction that occurs during a cardiac CT examination.

Skill Objectives:

- Provide accurate and timely reports on all cases,
- Perform guided biopsies with little assistance from faculty, but with supervision from faculty, and
- Coordinate activities in the reading room, including providing direction for the technologists, consultation for other clinicians, and answering the phone.
- Become facile with PACs and utilize available information technology to manage patient information,
- Actively participate in cardiac CT supervision, protocoling, post processing, and interpretation

Behavior and Attitude Objectives:

- Work with the health care team in a professional manner to provide patient-centered care, and
- Notify referring clinician for urgent, emergent, or unexpected findings, and document in dictation.

MEDICAL KNOWLEDGE

Goal

Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care. Residents are expected to:

Knowledge Objectives:

- Identify anatomy and basic pathology on cardiac angiography in children and adults including the coronary arteries.
- Acquired cardiac disease:
 - List the common acute and late complications of myocardial infarction and recognize radiographic findings that may indicate these complications.
 - State the most common benign and malignant primary cardiac tumors.
 - Distinguish cardiac tumor from thrombus on CT and MR
 - State the advantages and disadvantages of echocardiography, CT, MR in the evaluation of cardiomyopathy and cardiac tumors.
 - Identify and describe the following abnormalities on MR: Aortic stenosis, Aortic insufficiency, Mitral insufficiency, Left ventricular aneurysm of focal wall motion abnormality, Constrictive pericarditis
 - Describe the most common benign and malignant cardiac tumors, and
- Congenital heart disease:
 - Cyanotic admixture shunts – understand the radiographic and clinical presentation of truncus arteriosus, transposition of the great vessels, single ventricle, total anomalous pulmonary venous connection, double-outlet right ventricle.
 - Heart failure in the infant or child – give a differential diagnosis for pulmonary edema in the following situations: Newborn, 3 months of age, 6 months of age, 2 years of age, 6 years of age.
 - State the definition and describe the abnormalities associated with atrial isomerism.
 - Know the commonly performed surgical corrections for congenital heart disease including procedures performed through thoracotomy vs. sternotomy.
 - Recognize devices in the post-operative patient with congenital heart disease including PDA ligation clip, pulmonary artery band, ASD closure devices, embolization of Blalock or aortapulmonary collateral, pulmonary conduit.

Skill Objectives:

- Perform and interpret more complex post-processing (3D) images,
- Refine skills in interpretation of chest radiographs and chest CT scans, and
- Correlate pathologic and clinical data with radiographic and chest CT findings
- Accurately identify and interpret findings of acquired and congenital heart disease on chest radiographs, cardiac CT and MRI
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Behavior and Attitude Objectives:

- Recognize limitations of personal competency and ask for guidance when appropriate.

PRACTICE-BASED LEARNING AND IMPROVEMENT

Goal

Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning. Residents are expected to develop skills and habits to be able to:

Knowledge Objectives:

- Assess CT images for quality and suggest methods of improvement.

Skill Objectives:

- Demonstrate independent self-study using various resources including texts, journals, teaching files, and other resources on the internet, and
- Facilitate the learning of students and other health care professionals.

Behavior and Attitude Objectives:

- Incorporate formative feedback into daily practice, positively responding to constructive criticism, and
- Follow-up interesting or difficult cases without prompting and share this information with appropriate faculty and fellow residents.

Systems Based Practice

Goal

Residents must demonstrate an awareness of, and responsiveness to, the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

Knowledge Objectives:

- Understand how their image interpretation affects patient care.

Skill Objectives:

- Provide accurate and timely interpretations to decrease length of hospital and emergency department stay, with the supervision of faculty,
- Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted; and
- Practice using cost effective use of time and support personnel.

Behavior and Attitude Objectives:

- Advocate for quality patient care in a professional manner, particularly concerning imaging utilization issues.

PROFESSIONALISM

Goal

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

Knowledge Objectives:

- Understanding of the need for respect for patient privacy and autonomy, and
- Understanding of their responsibility for the patient and the service, including arriving in the reading room promptly each day, promptly returning to the reading room after conferences, completing the work in a timely fashion, and not leaving at the end of the day until all work is complete. If the resident will be away from a service (for time off, meeting, board review, etc.), this must be arranged in advance with the appropriate faculty.

Skill Objectives:

- Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

Behavior and Attitude Objectives:

- Respect, compassion, integrity, and responsiveness to patient care needs that supersede self-interest.

INTERPERSONAL AND COMMUNICATION SKILLS**Goal**

Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families, and professional associates. Residents are expected to:

Knowledge Objectives:

- Know the importance of accurate, timely, and professional communication.

Skill Objectives:

- Produce concise and accurate reports on most examinations,
- Communicate effectively with physicians, other health professionals, and
- Obtain informed consent with the utmost professionalism.

Behavior and Attitude Objectives:

- Work effectively as a member of the patient care team.