

Cardiothoracic Imaging Resident Rotation (2019)

Source: What's New in 10 Years? A Revised Cardiothoracic Curriculum for Diagnostic Radiology Residency with Goals and Objectives Related to General Competencies
<https://thoracicrad.org/wp-content/uploads/2016/07/curriculum.pdf>

Introduction

Components of a cardiothoracic radiology curriculum (see Appendix) may occur during one or more rotations during residency including rotations in chest imaging, body imaging and interventional radiology (lung biopsies and pleural drainages).

The expectations below are specific to Chest imaging which currently includes chest and cardiac CT and MRI

General Clinical Responsibilities

During the first year, emphasis is primarily on chest CT examinations. During the second year, in addition to chest CT's, residents will be introduced to cardiac MR and CT. During third and fourth year, greater emphasis is placed on cardiac MR and CT, but Chest CT will still represent the bulk of the cases seen.

Resident Responsibilities

During the rotation, residents should begin review of cases by 8 am (unless there is a preceding conference which does not permit an 8 am start time). Although most work is completely by approximately 5 pm, it is expected that the resident stays until all work is complete, including review, editing and signage of dictated reports (unless on call at 5 pm or has prior approval from attending, chief resident or program director).

Report Generation

Resident draft and preliminary reports are reviewed with the diagnostic imaging together by the attending and resident, then edited and signed. Although the attending staff is ultimately responsible for the content of imaging reports, it is expected that the resident not offer a report to the attending for review, unless the report has been proofread and edited as needed so that the draft or preliminary report constitutes the resident's "best work".

It is understood that a first year resident cannot be expected to produce a report equivalent to a senior resident or attending and that all residents make steady, significant progress in report accuracy and quality, using the appropriate lexicon

Protocolling

The resident assigned to the rotation is expected to protocol all chest imaging studies. Outpatient studies need to be protocolled at least 7 days in advance.

Critical Findings

All urgent critical findings (Code Red) will be brought to the attention of the attending radiologist for review and results verbally communicated directly to the referring clinical as quickly as possible. Documentation of communication including who was called and the date and time is required in dictated reports. See department list of Critical Findings.

Unexpected/non urgent findings that are not deemed of immediate concern can be communicated with the clinician via the critical finding alert (Code Yellow)

Conferences

Attending resident specific cardiothoracic radiology teaching conferences are mandatory.

It is very beneficial for the resident to attend multidisciplinary conferences to learn the role of imaging in making decisions that affect patient care. Third and fourth year residents may be required to present at the multi-disciplinary conferences. Conferences include

- Multidisciplinary thoracic oncology conference (every Friday 11-12 pm)
- Interstitial lung disease conference (last Tuesday of each month from 11-12 pm)

Assessment of performance on rotation

Performance assessments will consist of division faculty as a group (rather than individual attending assessment)

Specific goals for Year 1, Year 2 and Years 3/4

Year 1

Arrive at the rotation on time and prepared after reviewing recommended study materials

Dictate concise and accurate chest CT reports using appropriate terminology.

Aim to dictate at least 10 -15 cross-sectional studies each day

Decide when it is appropriate to obtain help faculty when assisting referring clinicians with imaging interpretation and patient management

Protocol all Chest CT scans at least 7 days ahead of time. Ask help from senior resident or attending as needed.

Monitor and check scans for technologist as needed.

Manage an intravenous contrast reaction that occurs during a cardiothoracic CT or MR examination

Teach medical students rotating in the service

Knowledge base

At the end of the first year, the resident should demonstrate learning of at least one-third of the knowledge-based objectives in the Appendix

Year 2

Arrive at the rotation on time and prepared after reviewing recommended study materials

Continue to build on chest CT interpretive skills.

Aim to dictate between 15-20 cross-sectional studies

Learn clinical indications for the performance of cardiac CT and MRI. Begin to develop skills in protocoling, monitoring, understand ECG gating techniques and typical medications administered during cardiac imaging studies

Begin learning to interpret cardiac CT and MR. Learn to generate and interpret reformatted images

Learn the role of focused MRI of the chest in the evaluation focal thoracic lesions

Act as a contact person for technologist for managing patient and imaging issues as needed.

Manage an intravenous contrast reaction that occurs during a cardiothoracic CT or MR examination

Assist referring clinicians in the reading room with imaging interpretation

Teach junior residents and medical students

Knowledge base

The resident will demonstrate learning of at least two-thirds of the knowledge-based objectives listed in the Appendix

Years 3/4

Demonstrate a responsible work ethic. Arrive at the rotation on time and prepared after reviewing recommended study materials

Refine skills in interpretation of cardiothoracic CT and MRI's. Dictate accurate, concise cardiothoracic CT and MR reports with at least 75% accuracy

Aim to dictate at least 20 cross-sectional studies

Learn clinical indications for the performance of cardiac CT and MRI. Develop skills in protocoling, monitoring; understand ECG gating techniques and typical medications administered during cardiac imaging

Learn to interpret cardiac CT and MRI. Demonstrate competency in performing post-processing of cardiac MR/CT imaging datasets on dedicated software

Learn the role of focused MRI of the chest in the evaluation focal thoracic lesions

Act as a contact person for technologist for managing patient and imaging issues as needed.

Manage an intravenous contrast reaction that occurs during a cardiothoracic CT or MR examination

Work in the reading room independently, assisting clinicians with radiologic interpretation.

Teach junior residents and medical students assigned to the service.

Knowledge base

The resident should be able to demonstrate knowledge of all of the knowledge-based objectives listed in the Appendix

Study Material

Text books

Felson's Principles of Chest Roentgenology.

Thoracic Imaging: Pulmonary and Cardiovascular Radiology by W.Richard Webb, Charles B. Higgins

Thoracic Imaging: The Requisites 3rd edition by JoAnne Shepard
Chest Radiology: The Essentials by Jannette Collins and Eric J. Stern

Cardiac Imaging: The Requisites 4th edition, by Suhny Abbara

Diagnostic Imaging: Cardiovascular by Suhny Abbara

Online resources

STR online Education Resources. There are free online courses by ABR study guide topics
<https://thoracicrad.org/?portfolio=education>

“Cardiac MRI Basics” online module:

<https://www.med-ed.virginia.edu/courses/rad/cardiacmr/index.html>

Journal articles

Radiographics is a good resource for review articles.

Few recommendations

Fleischner Society: Glossary of Terms for Thoracic Imaging

David M. Hansell, Alexander A. Bankier, Heber MacMahon, Theresa C. McLoud, Nestor L. Müller, Jacques Remy. Radiology 2008

Revisions to the TNM Staging of Lung Cancer: Rationale, Significance, and Clinical Application

Brett W. Carter, John P. Lichtenberger, Marcelo K. Benveniste, Patricia M. de Groot, Carol C. Wu, Jeremy J. Erasmus, Mylene T. Truong. Radiographics Mar 2018

What Every Radiologist Should Know about Idiopathic Interstitial Pneumonias

Christina Mueller-Mang, Claudia Grosse, Katharina Schmid, Leopold Stiebellehner, Alexander A. Bankier. Radiographics May 2007

American Thoracic Society–European Respiratory Society Classification of the Idiopathic Interstitial Pneumonias: Advances in Knowledge since 2002

Nicola Sverzellati , David A. Lynch, David M. Hansell, Takeshi Johkoh, Talmadge E. King, William D. Travis. Radiographics Oct 2015