



Curriculum in Abdominal imaging (revised 2/11/19)

Faculty point person: Kelli J Andresen, MD

Diagnostic Radiology: Mayo Clinic, Rochester, MN
Abdominal Imaging: University of Iowa, Iowa City, IA

Other UMKC teaching faculty in Abdominal Imaging:

1. Brendan Coleman, MD (SLH)
2. Pablo Delgado, MD (SLH)
3. Daryl Pinedo, MD (SLH)
4. Stephanie Reid, MD (TMC)
5. Melissa Leimkuehler, MD (TMC)
6. Socrates Jamoulis, MD (TMC)
7. Bethlehem Gelaw, MD (TMC)
8. William Reed, MD (KCVA)
9. Yash Sethi, MD (KCVA)
10. Narasimhachar Prativadi, MD (KCVA)

Core lecture series in Abdominal Imaging

Core lectures - - - Twice monthly 7:30am

Gastrointestinal imaging:

1. Imaging of hepatobiliary disease with CT/MRI
2. CT of the pancreas
3. Abdominal trauma
4. On call emergencies
5. Liver ultrasound, hepatic Doppler, evaluation of liver transplants
6. Small bowel and colon disease
7. Upper GI fluoroscopy
8. Abdominal radiography

Genitourinary imaging:

9. Evaluation of renal masses
10. CT Urography/Evaluation of hematuria
11. Contrast reactions
12. MRI of the pelvis
13. Adrenal mass evaluation by CT/MRI
14. Renal transplant ultrasound
15. Ultrasound of the female pelvis
16. Scrotal ultrasound
17. GU fluoroscopic techniques

This curriculum is supplemented by the following interdisciplinary conferences:

1. Weekly, Wed 7:00am GI conference SLH
2. Weekly, Thurs 12:00pm Tumor Board TMC
3. Weekly, Wed 12:30pm Tumor conf TMC

Abdominal Radiology --- Rotation 1:**Fluoroscopy, abdominal radiography and introduction to CT of the abdomen and pelvis**

General overview

Radiology resident rotations in Abdomen (Fluoroscopy, abdominal radiography and introduction to CT of the abdomen and pelvis) will include at least 4 months during the radiology residency. The learning of abdominal radiology will encompass multiple rotations at SLH and TMC. The specific goals include objectives required for every level of training with graded supervision by the attending faculty. All aspects of abdominal imaging are incorporated into the residency, including fluoroscopy, radiography, CT, Ultrasound and MRI.

Resident responsibilities:

1. The resident is involved in the daily conduct of abdominal services. At the start of every working day, the resident should be familiar with the patient schedule and anticipate needs for any procedures. Absent clinical indication or seemingly inappropriate requests will be clarified and discussed with referring physician.
2. The resident assigned to abdominal imaging is expected to be available for consultation by fluoroscopy and CT technologists, clinicians and other health care professionals during regular office hours except during conference times, when attending faculty will cover.
3. Examinations should be checked by the resident before the patient leaves the department if requested to do so by the supervising faculty.
4. Any questions should be referred to the supervising faculty covering abdominal radiology.
5. Preliminary reports may be written for emergency room referrals and patients who are going to clinic appointments on the same day of the examination when appropriate. This is communicated to attending radiologist and documented in the final report with name, date and time of such a communication.
6. Review of cases with the supervising faculty will be conducted as many times in the day as necessary to keep an efficient work flow.
7. All examinations should be dictated by the end of every working day.
8. The resident will check his/her reports prior to final verification by supervising faculty.

Staff responsibilities:

1. Supervising faculty should be available at all times for any questions or consultations needed by the resident.
2. Supervising faculty should review all cases with the resident before the end of the day.
3. Supervising faculty should provide the resident with constructive feedback in any problem areas encountered during the rotation.
4. Supervising faculty should verify resident-generated reports in a timely manner and inform the resident of any major changes he/she made.

Resident evaluation: Residents are evaluated monthly as per description in UMKC Radiology Resident Manual.

Abdominal Radiology --- Rotation 1 – Goals and Objectives

I. Patient Care:

- (a) Residents should be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health in the patient population.
- (b) Residents are required to complete an on line module on Patient Care available at UMKC. Completed on line module certificates are placed in the residents portfolio
- (c) Residents should show ability to interact with referring clinicians when reviewing abdominal imaging studies.
- (d) Residents should demonstrate the ability to recommend additional imaging studies as appropriate to better assess findings on abdominal imaging studies (e.g. CT/US/MRI).
- (e) Residents should be able to use the PACS, voice recognition systems, and hospital information systems.

II. Medical Knowledge: Residents should:

- (a) Demonstrate knowledge of normal and abnormal anatomy as seen on abdominal and abdominal imaging studies.
- (b) Show the ability to formulate a search pattern for plain radiographic evaluation, locate abnormalities and recognize them as abnormal, recognize their significance and formulate a plan for further work-up or diagnosis.
- (c) Show the ability to recognize and describe common medical conditions as depicted on abdominal imaging studies.
- (d) Discuss the proper clinical and radiological indications for the following studies:
 - 1) Video swallowing study
 - 2) Esophagram
 - 3) Upper GI series
 - 4) Single-contrast barium enema
 - 5) Air-contrast barium enema
 - 6) Small bowel follow-through
 - 7) ERCP
 - 8) Voiding cystourethrogram
 - 9) Retrograde urethrogram
 - 10) Contrast injections, including fistulograms, T-tube cholangiograms, loop-a-grams
- (e) State the physiologic properties, proper concentrations and proper indications for the use of the following contrast media:
 - 1) Ionic intravenous contrast media
 - 2) Non-ionic contrast media
 - 3) Standard barium mixtures
- (f) List the risk factors for allergic reaction to intravenous contrast media.
- (g) State the proper assessment and treatment for allergic reactions to contrast media.
- (h) Be able to protocol basic CT examinations, particularly those for patients from the emergency department (trauma, renal stone evaluation, appendicitis, etc).
- (i) Be able to recognize critical findings on emergency CT evaluations of the abdomen and pelvis (e.g.; pneumoperitoneum, appendicitis, renal stones, retroperitoneal hematoma, etc)

III. Practice Based Learning and Improvement: Residents should:

- (a) Show evidence of independent study using textbooks from suggested reading list.
- (b) Demonstrate appropriate follow-up of interesting cases.
- (c) Research interesting cases as directed by faculty.

IV. Interpersonal Skills: Residents must demonstrate the ability to:

- (a) Interact with radiology technologists, medical students, fellow residents, and attending radiologists.
- (b) Interact with clinicians when reviewing cases involving radiographs and abdominal imaging studies. Show ability to provide preliminary readings, follow up with attending radiologists, formulate a plan for follow up of complex cases and communicate any changes to the referring clinicians.

V. Professionalism:

- (a) Residents are required to complete an on line module on professionalism available at UMKC. Completed module certificates are placed in the resident's portfolio
- (b) Residents must demonstrate the ability to interact with the patient/patient's family/clinicians when discussing significant radiology findings.
- (c) Residents must be able to explain the impact of the radiology findings on patient care, including what imaging studies may or may not be appropriate.

VI. Systems Based Practice: Residents should:

- (a) Show 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.

Reading List: The following list includes suggested abdominal imaging reading for radiology residents:

1. Learning Radiology: Recognizing the Basics, 3rd Edition by William Herring, chapters on abdominal radiography and abdominal CT.
2. Fundamentals of Body CT, 3rd edition by Webb, Brant, and Major, chapters on abdominal and pelvic CT.
3. ACR Manual on Contrast Media
http://www.acr.org/SecondaryMainMenuCategories/quality_safety/contrast_manual.aspx
4. Review of appropriate topics in STATdx to complement clinical learning and be familiar with the competency diagnoses for the first rotation (attached).

**Checklist Resident Competency in UGI, Small bowel and
Barium enema examinations** (rev.2/11/2019)

Resident name _____ Date _____

- Washes hands
- Confirms patient identity and that UGI/Small bowel/barium enema is the correct procedure for the history/indications given
- Introduces him/herself to patient/guardian properly
- Explains procedure to patient/guardian and addresses questions and/or concerns before doing the procedure.
- Inserts needed catheters properly and gently (if not already in place)
- Wears appropriate protective garments (e.g. lead apron, gloves)
- Uses fluoroscopy appropriately (i.e. tower close to patient, uses as few spots as necessary)
- Is polite and clear in instruction to the technologist during the procedure
- Recognizes abnormalities on the study (i.e. filling defects, constricting lesions, mucosal lesions)
- Documents and limits fluoroscopy time (applies ALARA concept)
- Dictates accurate report in timely fashion

Based on direct observation of the above performance, I certify that this resident:

- is appropriately trained to perform UGI, Small Bowel and Barium enema examinations with attending supervision
- is not appropriately trained and needs further supervised experience with (explain) _____

Faculty member signature _____

Abdominal Radiology – Rotation 2

Cross-sectional imaging of the abdomen and pelvis/CT and MRI

Resident's Responsibilities:

1. The resident (not the technologist), in consultation with the attending, has primary responsibility for making sure that the entire examination is appropriate and of sufficient quality to address the clinical concerns of the patient and referring physician.
2. The resident should understand scanning protocols and parameters that are used by the technologist. This is essential in being able to assist with solving problems that the technologist may have from time to time.
3. The resident should be able to consult with the technologist, referring physician, look up clinical data and assess issues such as contrast to be used, dosage etc; The resident should be familiar with the contrast screening protocols, MRI screening protocols and use them for his/her decision making.
4. The resident should be able to consent patients at high risk for contrast such as prior allergies and reactions.
5. The resident should be able to use relevant clinical information and previous pertinent examinations (CT/US/MRI/PET) to help determine the appropriate protocols to be used and determine the urgency and priority of all cases.
6. The resident should consult with the CT and MRI attending about eliminating or changing sequences as needed. Resident should not add additional sequences unless approved by the supervising attending.
7. Residents should monitor cases as needed, including checking series to determine that sufficient anatomy is covered, with sufficient spatial resolution, to match the clinical questions. Residents should consult with the CT/MRI attending whenever needed.
8. Residents should preview cases whenever possible, before reading with supervising faculty.
9. Residents should dictate studies and verify reports only after reviewing them with a faculty member. If appropriate, residents should inform the referring clinicians of the results (i.e, if requested or if findings might impact on management that day). Residents should include in the dictation a brief description of the scan technique. Residents should always include in the report the anatomic regions imaged, contrast agents used, presence of contrast associated reactions and treatments, CTA, MRA, MRCP, 3D reconstructions and/or other post-processing performed.
10. Residents should review requisitions as provided by the CT/MRI schedulers and technologists and review them for appropriate clinical history, protocol, use of contrast, etc and clarify any concerns of appropriateness of the exam requested with the referring physician/practitioner.

Staff responsibilities:

1. Supervising faculty should be available at all times for any questions or consultations needed by the resident.
2. Supervising faculty should review all cases with the resident before the end of the working day.
3. Supervising faculty should provide the resident with constructive feedback in any problem areas encountered during the rotation.
4. Supervising faculty should verify resident-generated reports in a timely manner and inform the resident of any major changes he/she made.

Abdominal Radiology -- Rotation 2 – Goals and objectives:

I. Patient care:

- (a) The resident should have knowledge of indications for the examinations requested. When the reason for the examination is not clear, the resident should effectively communicate with the patient or referring physician until this is clarified.

- (b) The resident should be familiar with available medical records and how to access them for purposes of patient care.
- (c) The resident should be able to protocol cases, in consultation with the attending, to assure that the CT/MRI examination is appropriate and of sufficient quality to address the clinical concerns of the patient and referring physician.
- (d) The resident should review all studies with the supervising faculty attending.
- (e) The resident should provide preliminary reports to all referring clinicians if needed prior to final review of cases. When there is a significant discrepancy between the preliminary reading and final reading, the resident should notify the referring clinician immediately.
- (f) The resident should become involved in CT-guided intervention involving the gastrointestinal and genitourinary systems and assist the attending radiologist as appropriate.

II. **Medical Knowledge:** Residents should:

- (a) Be able to identify pulse sequences with a high level of accuracy when presenting to the attending.
- (b) The resident should be familiar with the anatomy of the organs examined in every case.
- (c) Become familiar with imaging findings of common acute and chronic diseases evaluated with CT and MRI
- (d) Be able to identify pathology in order to interpret routine CT and MR body imaging studies with accuracy appropriate to level of training when presenting to the attending.
- (e) Be able to distinguish between normal and abnormal abdomen and pelvis anatomy, particularly as seen on CT and MR images, with at least average accuracy according to level of training when presenting to the attending.

III. **Practice Based Learning and Improvement:**

- (a) The resident should demonstrate evidence of independent reading and learning through the use of printed and electronic sources.
- (b) The resident should follow-up on abnormal or interesting studies through personal communication with the referring physician or patient medical records.
- (c) The resident should be competent in using PACS, Voice Recognition systems, and the patient information system in the daily accomplishment of the workload and instruct others in its use.

IV. **Interpersonal Communication Skills:**

- (a) The resident should be able to communicate effectively results of studies to referring clinicians whenever needed. For emergent studies, this should be in a timely manner.
- (b) The resident should be able to effectively convey the findings of examinations through accurate dictation of reports.

V. **Professionalism:**

- (a) Residents should be able to explain the nature of the examination or findings in an examination to patients and their families when needed.
- (b) Residents should observe ethical principles when recommending further work-up.
- (c) Promptness and availability at work are expected of every resident.
- (d) Residents should dress appropriately when coming to work.
- (e) CT/MRI technologists, nurses and other health workers should be treated with respect and part of the health care team.
- (f) Patient confidentiality should be observed at all times.

I. **System Based practice:**

- (a) Residents should be familiar with departmental procedures, Contrast safety, MRI safety and sedation required in the performance of the examination.
- (b) Residents should use appropriate language in communicating to clinicians through reports or consultations so proper management decisions can be made.

- (c) Thorough dictations should be made with indications, technique, findings and conclusions
- (d) Residents should dictate and correct their reports in a timely fashion to avoid delay in patient disposition.
- (e) Resident should recognize the role that CT/MRI plays in the management of acute and chronic diseases with special reference to geriatric population and make proper recommendations when needed
- (f) Residents should make suggestions to improve methods and systems utilized in radiology whenever appropriate.

Reading List:

1. Begin regular reading of articles from Radiology and American Journal of Roentgenology
2. Continue to use STATdx to review diagnoses seen during the course of the workday and supplement the differential diagnoses.
3. Fundamentals of Body MRI, 2nd Edition, Roth and Deshmukh
4. Expert Consult Abdominal Imaging, 1st Edition, Sahani and Samir
5. Genitourinary Radiology, 6th Edition, Dunnick, et al.

Abdominal Radiology – Rotation 3

Advanced cross-sectional imaging of the abdomen and pelvis/CT and MRI

Resident's Responsibilities:

The resident (not the technologist), in consultation with the attending, has primary responsibility for making sure that the entire examination is appropriate and of sufficient quality to address the clinical concerns of the patient and referring physician.

1. The resident should be initiated into scanning protocols and parameters that are used by the technologist. This is essential in being able to assist with solving problems that the technologist may have from time to time.
2. The resident should be able to consult with the technologist, referring physician, look up clinical data and assess issues such as contrast to be used, dosage etc; The resident should be familiar with the contrast screening protocols, MRI screening protocols and use them for his/her decision making.
3. The resident should be able to consent patients at high risk for contrast such as prior allergies and reactions.
4. The resident should be able to use relevant clinical information and previous pertinent examinations (CT/US/MRI/PET) to help determine the appropriate protocols to be used and determine the urgency and priority of all cases.
5. The resident should consult with the CT and MRI attending about eliminating or changing sequences as needed. Resident should not add additional sequences unless approved by the supervising attending.
6. Residents should monitor cases as needed, including checking series to determine that sufficient anatomy is covered, with sufficient spatial resolution, to match the clinical questions. Residents should consult with the CT/MRI attending whenever needed.
7. Residents should preview cases whenever possible, before reading with supervising faculty.
8. Residents should dictate studies and verify reports only after reviewing them with a faculty member. If appropriate. Residents should inform the referring clinicians of the results (i.e, if requested or if findings might impact on management that day. Residents should include in the dictation a brief description of the scan technique. Residents should always include in

the report the anatomic regions imaged, contrast agents used, presence of contrast associated reactions and treatments, CTA, MRA, MRCP, 3D reconstructions and/or other post-processing performed.

9. Residents should review requisitions as provided by the CT/MRI schedulers and technologists and review them for appropriate clinical history, protocol, use of contrast, etc and clarify any concerns of appropriateness of the exam requested with the referring physician/practitioner.

Staff responsibilities:

1. Supervising faculty should be available at all times for any questions or consultations needed by the resident.
2. Supervising faculty should review all cases with the resident before the end of the working day.
3. Supervising faculty should provide the resident with constructive feedback in any problem areas encountered during the rotation.
4. Supervising faculty should verify resident-generated reports in a timely manner and inform the resident of any major changes he/she made.

Abdominal Radiology -- Rotation 3 – Goals and objectives:

I. Patient care:

- (a) The resident should have knowledge of indications for the examinations requested. When the reason for the examination is not clear, the resident should effectively communicate with the patient or referring physician until this is clarified.
- (b) The resident should be familiar with available medical records and how to access them for purposes of patient care.
- (c) The resident should be able to protocol cases, in consultation with the attending, to assure that the CT/MRI examination is appropriate and of sufficient quality to address the clinical concerns of the patient and referring physician.
- (d) The resident should review all studies with the supervising faculty attending.
- (e) The resident should provide preliminary reports to all referring clinicians if needed prior to final review of cases. When there is a significant discrepancy between the preliminary reading and final reading, the resident should notify the referring clinician immediately.
- (f) The resident should become involved in CT-guided intervention involving the gastrointestinal and genitourinary systems and assist the attending radiologist in planning and completing the intervention.

II. Medical Knowledge: Residents should:

- (a) Be able to identify pulse sequences with a high level of accuracy when presenting to the attending.
- (b) The resident should be familiar with the anatomy of the organs examined in every case.
- (c) Become familiar with imaging findings of common acute and chronic geriatric diseases evaluated with CT and MRI
- (d) Be able to identify pathology in order to interpret routine CT and MR body imaging studies with accuracy appropriate to level of training when presenting to the attending.
- (f) Be able to distinguish between normal and abnormal abdomen and pelvis anatomy, particularly as seen on CT and MR images, with excellent accuracy according to level of training when presenting to the attending as well as demonstrate improvement compared to the prior rotation.

III. Practice Based Learning and Improvement:

- (a) The resident should demonstrate evidence of independent reading and learning through the use of printed and electronic sources.

- (b) The resident should follow-up on abnormal or interesting studies through personal communication with the referring physician or patient medical records.
- (c) The resident should be competent in using PACS, Voice Recognition systems, and the patient information system in the daily accomplishment of the work load and instruct others in its use.

IV. Interpersonal Communication Skills:

- (a) The resident should be able to communicate effectively results of studies to referring clinicians whenever needed. For emergent studies, this should be done in a timely manner.
- (b) The resident should be able to effectively convey the findings of examinations through accurate dictation of reports.

V. Professionalism:

- (a) Residents should be able to explain the nature of the examination or findings in an examination to patients and their families when needed.
- (b) Residents should observe ethical principles when recommending further work-up for cases.
- (c) Promptness and availability at work are expected of every resident.
- (d) Residents should dress appropriately when coming to work.
- (e) CT/MRI technologists, nurses and other health workers should be treated with respect and part of the health care team.
- (f) Patient confidentiality should be observed at all times.

VII. System Based practice:

- (a) Residents should be familiar with departmental procedures, Contrast safety, MRI safety and sedation required in the performance of the examination.
- (b) Residents should use appropriate language in communicating to clinicians through reports or consultations so proper management decisions can be made.
- (c) Thorough dictations should be made with indications, technique, findings and conclusions
- (d) Residents should dictate and correct their reports in a timely fashion to avoid delay in patient disposition.
- (e) Resident should recognize the role that CT/MRI plays in the management of acute and chronic diseases with special reference to geriatric population and make proper recommendations when needed
- (f) Residents should make suggestions to improve methods and systems utilized in radiology whenever appropriate.

Reading List:

1. Recent articles from Radiology and American Journal of Roentgenology.
2. Continue to use STATdx to review diagnoses seen during the course of the workday and supplement the differential diagnoses.
3. Fundamentals of Body MRI, 2nd Edition, Roth and Deshmukh
4. Expert Consult Abdominal Imaging, 1st Edition, Sahani and Samir
5. Genitourinary Radiology, 6th Edition, Dunnick, et al.

Abdominal Imaging Competencies (1st Rotation)

Understand concepts and characteristic findings in different imaging modalities-

U: Ultrasound R: Radiograph C: CT M: MRI F: Fluoroscopy

- Pharynx
 - Aspiration vs. penetration (F)
 - Zenkers Diverticulum (F)
 - Cricopharyngeus muscle
 - Killian Diverticulum (F)
- Esophagus
 - Steps of performing basic fluoroscopic studies (F)
 - Esophagram
 - Upper GI
 - Barium enema
 - Cystogram
 - Achalasia (F)
 - Diffuse esophageal spasms (F)
 - GERD (F)
 - Esophagitis (F)
- Stomach
 - Gastric tube positioning and associated complications (R)
 - Roux-en-Y gastric bypass surgery
 - Post-operative anatomy
 - Complications
 - Gastric Sleeve surgery
 - Post-operative anatomy
 - Complications
 - Lap-Band Surgery
 - Post-operative anatomy
 - Complications
 - Stomach ulcers (F/C)
 - Types of GE hernias (F/R/C)
 - Hiatal hernias
 - Paraesophageal
- Liver
 - Normal liver measurement
 - Couinaud Classification
 - Hepatic steatosis (U/C/M)
 - Cirrhosis (U/C)
 - Hepatic trauma/laceration
 - AAST liver injury scale
 - Hepatic lesions (U/C)
 - Cysts
 - FNH
 - Adenoma
 - Hemangioma
 - Abscess
 - HCC
 - Metastasis

- Gallbladder
 - Normal gallbladder wall measurement (U)
 - Cholelithiasis (U/C)
 - Cholecystitis (U/C)
 - Acute vs. Acalculous
 - Biliary Sludge (U/C)
- Common bile duct and biliary ducts
 - Normal CBD measurement (U)
 - Choledocholithiasis (U/C)
 - Pneumobilia (R/U/C)
- Spleen
 - Normal spleen measurement
 - MDCT grading of splenic trauma
 - Splenic laceration (C)
 - Subcapsular hematoma (C)
 - Splenic infarct (C)
- Pancreas
 - Pancreatitis
 - Atlanta Revised Criteria (C)
 - Complications (U/R/C)
 - Chronic pancreatitis (U/R/C)
 - Pancreatic adenocarcinoma
- Adrenal Glands
 - Characterizing adrenal nodules (Washout criteria)
 - Adenoma vs. malignant neoplasm differentials (C)
- Kidneys
 - Basics of renal mass CT protocol
 - Angiomyolipoma
 - Renal cell carcinoma (U/C)
 - Types
 - Robson classification
 - Renal Calculi (R/U/C)
 - Radiolucent vs. radioopaque stones
 - Hydronephrosis/Hydroureteronephrosis (U/C)
 - Bosniak classification (U/C)
 - Pyelonephritis (U/C)
- Small/Large Bowel
 - Duodenal ulcers (C)
 - Small bowel obstruction (R/C)
 - Large bowel obstruction (R/C)
 - Ileus (R/C)
 - Colitis (C)
 - Inflammatory colitis
 - Infectious colitis
 - Ischemic colitis
 - Diverticulosis vs diverticulitis (C)
 - Intussusception (U/C)
 - Volvulus (U/R/C)
 - Cecal
 - Sigmoid
 - Gastric
 - Pneumatosis/Necrotizing enterocolitis (R)

- Appendix
 - Appendicitis (U/C)
- Mesentery
 - Epiploic appendagitis (C)
 - Mesenteric ischemia (C)
- Lymph nodes
 - Normal lymph node measurement
 - Abdominal and pelvic lymph node distribution
 - Normal lymph node morphology on ultrasound
- Vasculature
 - Concepts of Doppler ultrasound
 - High vs. low resistant waveforms
 - Triphasic vs. biphasic vs. monophasic waveforms
 - Parvus tardus
 - Abdominal aorta branches and associated anatomy (U/C)
 - Abdominal aortic aneurysm (U/C)
 - Ectasia vs. aneurysm
 - Types of aneurysms
 - Hepatic vascular anatomy (U/C)
 - Concepts of post liver transplant ultrasound
 - Portal venous gas (R/U/C)
 - Concepts of post renal transplant ultrasound (U)
 - Carotid stenosis (U)
 - Stenosis consensus criteria
- Soft tissues
 - Umbilical hernias (C)
 - Inguinal hernias (C)
 - Edema (U/C)
- Bladder
 - Bladder Rupture
 - Intraperitoneal
 - Extraperitoneal
 - Combined
- Miscellaneous
 - Basics of CT enhancement protocols
 - Basics of abdominal MRI
 - Signs of intraperitoneal free air (R/C)
 - Bochdalek vs. Morgagni Hernias (R/C)
 - Calcifications in radiographs (R)
 - Hematoma (C)
 - Retroperitoneal
 - Rectus
 - Pelvic
 - Active hemorrhage (C)