Appendix 3B: IR Related Rotation Goals and Objectives with Procedure Estimates

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| **Breast Intervention, ESIR (R4, ESIR)** |
| This rotation involves performance and interpretation of breast sonography, patient selection, preparation and performance of breast interventions including biopsies, aspirations and drainages, cancer localizations, mammography and breast MRI.  Residents on this rotation will prioritize intervention-related tasks such as patient preparation, procedure performance, patient follow up, correlation of results with imaging and expectations, and development of procedure related skills. It is expected that residents will:   1. Preview and work-up of all patients undergoing these procedures, notes and appropriate orders, and, 2. Follow up care for all patients treated with correlation of procedure results and imaging. 3. When not performing procedures, residents are expected to fully function as diagnostic radiology residents including reviewing, interpretation and staff discussion of all mammographic imaging with appropriate faculty members. 4. On average, residents are expected to perform 25 breast biopsies, 7 needle localizations and 10 ultrasound guided cyst aspirations or drainages over the four week block. |
| **Patient Care**  **Goal**  Residents on the Breast Intervention, an IR Related Rotation in the ESIR curriculum, are expected to develop and enhance skills related to procedures as well as develop and enhance skills related to patient selection, image interpretation for intervention and follow up, patient preparation and patient counseling.  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:**   1. Describe common and rare indications and contraindications for breast interventions 2. Describe the BIRADS classification system, likelihood of malignancy based on classification and implications for patient care using this classification system 3. Describe the steps of US guided interventions, equipment used and image optimization 4. Describe equipment, views and steps required for stereotactic biopsy 5. Describe equipment, views and steps required for needle localizaiton 6. Describe basic sequences used in breast MR 7. Describe steps required, including sequences, for MR guided breast biopsy   **Skill Objectives:**   1. Perform routine ultrasound guided biopsies without assistance and advanced biopsies with minimal assistance 2. Perform routine stereotactic guided biopsies without assistance and advanced biopsies with minimal assistance 3. Perform MRI guided biopsies with minimal assistance 4. Perform localizations, ultrasound and stereotactic-guided biopsies, and cyst aspirations with minimal assistance. 5. Perform ductograms successfully, both via nipple and percutaneously with minimal assistance   **Behavior and Attitude Objectives:**   1. Work with the health care team in a professional manner to provide patient-centered care, and 2. 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:**   1. Describe the BIRADS classification system including implications for classification and likelihood of malignancy 2. Describe advantages and disadvantages of various imaging modalities 3. Identify relevant anatomic structures on mammograms, US and MR examinations, 4. Diagnose more complex breast cancer cases, and 5. Describe MR findings of benign and malignant breast disease.   **Skill Objectives:**   1. Correlate breast biopsy results with imaging findings and present them at multidisciplinary breast cancer conference 2. Demonstrate knowledge of breast related interventions through selection of patients for breast biopsy, scheduling to appropriate modality and selection of proper equipment 3. Correlate results of stereotactic localizations with explant imaging and provide appropriate follow up, to be presented at multidisciplinary breast cancer conference   **Behavior and Attitude Objectives:**   1. Recognize limitations of personal competency and ask for guidance when appropriate, and 2. Practice according to MQSA regulations.   **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:**   1. Assess breast imaging for quality including ultrasound optimization, mammography quality and image improvement and MRI quality and imaging improvement. 2. Understand appropriate information required for presentation of cases at multidisciplinary breast conference 3. Understand BIRADS classification as a predictor of   **Skill Objectives:**   1. Correlate mammograms, BIRADS classification, biopsy and surgery results with pathology specimens 2. Present cases at multidisciplinary breast conference and follow up on results and care plans from the multidisciplinary team 3. Demonstrate independent self-study using various resources including texts, journals, teaching files, and other resources on the internet, and 4. Facilitate the learning of students and other health care professionals.   **Behavior and Attitude Objectives:**   1. Incorporate formative feedback into daily practice, positively responding to constructive criticism, and 2. 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:**   1. Understand how their image interpretation affects interventions and patient care.   **Skill Objectives:**   1. Provide accurate and timely recommendations for patient preparation for procedures to patients and other clinicians 2. Provide accurate and timely reports for interventions and follow up care 3. Provide accurate and timely interpretations for imaging studies to decrease patient wait times, 4. Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted; and 5. Practice using cost effective use of time and support personnel.   **Behavior and Attitude Objectives:**   1. 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:**   1. Understanding of the need for respect for patient privacy and autonomy, and 2. 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:**   1. 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:**   1. 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:**   1. Know the importance of accurate, timely, and professional communication.   **Skill Objectives:**   1. Produce concise and accurate reports on most examinations, and 2. Communicate effectively with physicians, other health professionals.   **Behavior and Attitude Objectives:**   1. Work effectively as a member of the patient care team. |

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| **Critical Care, ESIR (R4, ESIR)** |
| This is a four-week rotation within the Trauma and Surgical Intensive Care Unit. There are 72 intensive care unit beds at this Level 1 Trauma Center and it supports 19 operating rooms. Team members include Board Certified Trauma Surgeons, Trauma Fellows, Surgical Residents, Surgical Interns, Medical Students, Nurse Practitioners, Pharmacists and Pharmacy Students. A full complement of subspecialists is available for consultation. |
| **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:**   1. Demonstrate an understanding of pathophysiology of shock and resuscitation 2. Understand normal and abnormal laboratory , ECG, chest radiographs, Swan Ganz data 3. Understand current guidelines on fluid replacement, blood pressure management, treatment of sepsis and prophylaxis 4. Understand radiography of the critically ill patient 5. Be familiar with treatment algorithms for critically ill patients including trauma patients, infection, cardiac, neurologic and other common causes of critical illness   **Skill Objectives:**   1. Competently manage critically ill patients at the level of a medical or surgical intern 2. Perform simple and complex central line and arterial line placement. 3. Assess patient for need for intervention and provide continuity of care into the procedure room   **Behavior and Attitude Objectives:**   1. Work with the health care team in a professional manner to provide patient-centered care, and 2. Act as liaison between critical care team and Interventional Radiology   **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:**   1. Become familiar with the treatment algorithm of the Level 1 trauma victim and non-traumatic medical emergencies, and 2. Become familiar with medical management of critically ill patients 3. Become familiar with indications for intervention in critically ill patients   **Skill Objectives:**   1. Appropriately prescribe and administer medications for management of critical illness 2. Appropriately diagnose medical conditions and recommend medical or surgical management 3. Recommend minimally invasive treatments when indicated   **Behavior and Attitude Objectives**   1. Recognize limitation of personal competency and ask for guidance when appropriate 2. Provide insight into available treatments including image guided procedures   **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:**   1. Assess impact of care based on patient monitors and laboratory data.   **Skill Objectives:**   1. Demonstrate independent self-study using various resources including texts, journals, teaching files, and other resources on the internet, and 2. Facilitate the learning of students and other health care professionals.   **Behavior and Attitude Objectives:**   1. Incorporate formative feedback into daily practice, positively responding to constructive criticism, and 2. 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:**   1. Understand the role of image guided intervention in critically ill patients 2. Understand the role of consulting physicians in critically ill patients 3. Understand the role of the critical care in the angiography suite   **Skill Objectives:**   1. Provide accurate and timely diagnosis and treatment recommendations during rounds 2. Appropriately consult other teams when needed 3. Practice standard of care and evidence based medicine. 4. Provide continuity of care from the ICU to the procedure room and back to the ICU   **Behavior and Attitude Objectives:**   1. 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:**   1. Understanding of the need for respect for patient privacy and autonomy, and 2. Understanding of their responsibility for the patient and the service, including arriving in the ICU promptly each day, fully preparing for rounds, self-education, participation in learning activities in the ICU 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:**   1. 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:**   1. 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:**   1. Know the importance of accurate, timely, and professional communication.   **Skill Objectives:**   1. Produce concise and accurate reports on most examinations, and 2. Communicate effectively with physicians, other health professionals and provide care handoffs to consulted teams   **Behavior and Attitude Objectives:**   1. Work effectively as a member of the patient care team.   **Procedure Expectations for ESIR Residents in ICU**  **During the four week rotation, ESIR residents are expected to function as a liaison between the ICU and the Radiology Department. They are expected to participate in all IR procedures for their patients and to participate in as many procedures as possible within the ICU. This includes**   1. Preview and work-up of all patients undergoing these procedures, notes and appropriate orders, and, 2. Follow up care for all patients treated with correlation of procedure results and imaging. 3. When not performing procedures, residents are expected to fully function as ICU interns while caring for their assigned patients. 4. During rounds, residents are expected to participate in display, interpretation and ordering of radiology studies. 5. On average, residents are expected to place 15 central lines, 10 arterial lines, perform 7 procedures in the angiography suite (angiograms, embolizations, biliary drainages, gastrostomies, etc), 2 thoracentesis and 3 paracentesis procedures, participate in 3 FAST scans, perform sonographic evaluation for pneumothorax in 5 patients. |

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| **Fluoroscopy, ESIR (R4, ESIR)** |
| This rotation involves performance and interpretation of fluoroscopy and emphasizes performance of interventional radiology procedures and patient follow up.  Residents on this rotation will prioritize intervention-related tasks such as patient preparation, procedure performance, patient follow up, correlation of results with imaging and expectations, and development of procedure related skills. All IR procedures performed on the 3rd floor in the multipurpose fluoroscopy room are to be performed by the ESIR resident in addition to the daily fluoroscopy schedule. This includes patient selection, preparation, and performance of procedures or imaging studies, follow up and communication with the fluoroscopy and IR faculty as well as other patient care teams.  Performance and interpretation of contrast fluoroscopy studies of the gastrointestinal and urinary tracts is expected as well as performance of advanced urinary tract diagnostic procedures in conjunction with Urology and detailed ERCP interpretation. Residents are expected to:   1. Preview and work-up of all patients undergoing these procedures, notes and appropriate orders, and, 2. Follow up care for all patients treated with correlation of procedure results and imaging. 3. When not performing procedures, residents are expected to fully function as diagnostic radiology residents including reviewing, interpretation and staff discussion of all fluoroscopic imaging with appropriate faculty members. 4. On average (in addition to the daily diagnostic fluoroscopy schedule), residents are expected to perform 10 drain lavages /checks/repositionings/removals, 15 bone marrow biopsies under fluoroscopy, 5 bone biopsies, 10 spine pain injections, 3 vascular access removals, 10 lumbar punctures, over the four week block. |
| **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:**   1. Describe the indications, risks and benefits of routine non-vascular fluoroscopic procedures 2. Describe steps of routine non-vascular fluoroscopic procedures 3. Understand troubleshooting of central venous access device dysfunction troubleshooting 4. Understand the utility of fluoroscopy in diagnostic and therapeutic procedures relative to other modalities 5. Understand techniques and steps of diagnostic fluoroscopic procedures 6. Differentiate the physical properties of iodinated contrast media and barium contrast agents, including their indications and contraindications, 7. Discuss the classification, symptoms, and signs of contrast reactions and the clinical management including appropriate use of pharmacologic agents and their mode of administration and doses, 8. Understand the pre-medication regimen for contrast sensitive patients including drugs, doses, and dose scheduling, 9. Differentiate between limited and complete IVU examinations, and 10. Discuss the current indications for IVU, VCU, Cystogram, RUG and HSG examinations. 11. Perform and Interpret basic GI Fluoro examinations including upper and lower GIs and Esophageal examinations and Swallowing Studies (both and single and contrast examinations). 12. Perform and Interpret hysterosalpingograms (HSG). 13. Perform and Interpret basic imaging for support of ERCP. 14. Recognize the more subtle findings like pneumatosis or gaseous distension on conventional abdominal radiographs. 15. Accurately prescribe contrast agents in more complex fluoroscopy cases, and 16. Describe postoperative changes of urinary tract including renal transplantation and urinary diversions (including ileal conduit, orthotopic neobladder and other bladder replacement) and appropriate diagnostic evaluation.   **Skill Objectives:**   1. Perform drain checks, repositioning, lavage and removal with minimal supervision 2. Perform bone marrow biopsies with minimal supervision 3. Perform spine pain blocks with minimal supervision 4. Perform port and other central venous access dysfunction troubleshooting 5. Perform urinary and gastrointestinal tract contrast procedures in more complex patients and post-operative patients, including pouchogram, fistulogram, cholangriograms, and conduitogram examinations, 6. Adhere to ALARA radiation principle, and 7. Provide concise, accurate reports on all studies, including more difficult post-operative cases.   **Behavior and Attitude Objectives:**   1. Work with the health care team in a professional manner to provide patient-centered care, with increasing responsibility in providing consultations, and 2. Notify referring clinician for urgent, emergent, or unexpected findings, and document in dictation. 3. Work closely with assigned faculty member to complete the daily workload of fluoroscopic examinations, as well as, all abdominal films for both GI and GU indications, all IVPs, all uroradiology plain films including cystograms and loopograms for example, and the C-arm fluoroscopy list performed outside the radiology department. Any critical or reportable finding should be reported to the originating service and properly documented.   **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:**   1. Diagnose more advanced pathologic conditions in the abdomen and pelvis and understand their pathophysiology. 2. Diagnose and treat central venous access dysfunction 3. Understand management of post drainage care 4. Understand indications for fluoroscopically guided interventions and appropriate tests for specimens   **Skill Objectives:**   1. Safely perform fluoroscopically guided interventions including bone biopsies, spine injections, lumbar punctures, drain assessments/repositioning 2. Accurately interpret most contrast fluoroscopy studies, and 3. Accurately interpret most GU studies, including nephrostograms (antegrade pyelography) and conduit/pouchograms.   **Behavior and Attitude Objectives:**   1. 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:**   1. Assess success of procedures based upon results of specimen testing, clinical success, patient comfort and 2. Assess fluoroscopic and conventional radiographs and fluoroscopy images for quality and suggest methods of improvement, without being prompted.   **Skill Objectives:**   1. Demonstrate independent self-study using various resources including texts, journals, teaching files, and other resources on the internet, 2. Present at least one patient case at multidisciplinary conference, and 3. Facilitate the learning of students and other health care professionals.   **Behavior and Attitude Objectives:**   1. Incorporate formative feedback into daily practice, positively responding to constructive criticism, and 2. 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:**   1. Understand how their image interpretation affects patient care.   **Skill Objectives:**   1. Provide accurate and timely interpretations to decrease length of hospital and emergency department stay, 2. Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted; and 3. Practice using cost effective use of time and support personnel.   **Behavior and Attitude Objectives:**   1. 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:**   1. Understanding of the need for respect for patient privacy and autonomy, and 2. 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:**   1. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation, and 2. 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:**   1. Know the importance of accurate, timely, and professional communication.   **Skill Objectives:**   1. Produce concise and accurate reports on all examinations, and 2. Communicate effectively with physicians, other health professionals.   **Behavior and Attitude Objectives:**   1. Work effectively as a member of the patient care team.   **Procedure Expectations for ESIR Residents in Fluoroscopy**  **During the four week rotation, ESIR residents are expected to involve themselves in fluoroscopy procedures. This includes**   1. Preview and work-up of all patients undergoing these procedures, notes and appropriate orders, and, 2. Follow up care for all patients treated with correlation of procedure results and imaging. 3. When not performing procedures, residents are expected to fully function as diagnostic radiology residents including reviewing, interpretation and staff discussion of all fluoroscopic related imaging with appropriate faculty members. 4. On average, residents are expected to perform 15 bone marrow biopsies, 10 spine injections, 5 vascular access dysfunction evaluations/corrections and removals, 15 lumbar punctures, 3 nephrostograms 5 abscessograms with drain removal, 10 barium enemas, and 15 upper GI procedures over the 4 week block. |

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| **Neuroradiology, ESIR (R4, ESIR)** |
| This rotation involves advanced interpretation of plain films, CT, and MR examinations of the head, neck and spine, fluoroscopically guided lumbar puncture, and contrast myelography. Neuroangiography is also incorporated into the rotation at these levels. See Neuroangiography Goals and Objectives. This rotation will include at-home call responsibilities. |
| **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:**   1. Understand plain film, CT, and MR scanning protocols and contrast media usage well enough to direct CT studies in most neuro patients, and 2. Recognize urgent and emergent findings on CT and MR studies of the head and spine (intracranial hemorrhage, infarct, abscess, tumor, and fracture) and appropriately contact the referring clinician without being prompted.   **Skill Objectives:**   1. Become facile with PACs and utilize available information technology (PACS, GE and Philips Workstations, Voice recognition, Clique etc.) to manage patient information, 2. Perform fluoroscopically-guided lumbar punctures with occasional help from faculty or fellow, and 3. Coordinate activities in the reading room, including providing direction for the technologists, consultation for other clinicians, and answering the phone.   **Behavior and Attitude Objectives:**   1. Work with the health care team in a professional manner to provide patient-centered care, and 2. 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:**   1. Identify relevant anatomic structures on CT and MR images of the head and spine, including CT and MR arteriograms, and 2. Diagnose more common pathologic conditions in the head and spine and understand their pathophysiology.   **Skill Objectives:**   1. Accurately interpret progressively more complex plain films, CTs and MRs of the head, neck and spine, and 2. Perform and interpret intermediate post-processing (3D) of CT and MR arteriograms.   **Behavior and Attitude Objectives:**   1. 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:**   1. Assess CT images for quality and suggest methods of improvement.   **Skill Objectives:**   1. Demonstrate independent self-study using various resources including texts, journals, teaching files, and other resources on the internet, and 2. Facilitate the learning of students and other health care professionals.   **Behavior and Attitude Objectives:**   1. Incorporate formative feedback into daily practice, positively responding to constructive criticism, and 2. 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:**   1. Understand how their image interpretation affects patient care.   **Skill Objectives:**   1. Provide accurate and timely interpretations to decrease length of hospital and emergency department stay, 2. Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted; and 3. Practice using cost effective use of time and support personnel.   **Behavior and Attitude Objectives:**   1. 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:**   1. Understanding of the need for respect for patient privacy and autonomy, and 2. 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:**   1. 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:**   1. 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:**   1. Know the importance of accurate, timely, and professional communication.   **Skill Objectives:**   1. Produce concise and accurate reports on most examinations, 2. Communicate effectively with physicians, other health professionals, and 3. Obtained informed consent with the utmost professionalism.   **Behavior and Attitude Objectives:**   1. Work effectively as a member of the patient care team.   **Procedure Expectations for ESIR Residents in Neuroradiology**  **During the four week rotation, ESIR residents are expected to involve themselves in all neuroradiology procedures including cerebral angiography, lumbar punctures, myelograms and spine injections. This includes**   1. Preview and work-up of all patients undergoing these procedures, notes and appropriate orders, and, 2. Follow up care for all patients treated with correlation of procedure results and imaging. 3. When not performing procedures, residents are expected to fully function as diagnostic radiology residents including reviewing, interpretation and staff discussion of all neuroradiology imaging with appropriate faculty members. 4. On average, residents are expected to perform 15 lumbar punctures, 5 myelograms and 5 cerebral angiograms and 10 spine injections |

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| **Vascular and Interventional Ultrasound, ESIR (R4, ESIR)** |
| This rotation involves performance and interpretation of intermediate sonography of the abdomen, pelvis, thyroid, scrotum, and obstetrical cases. Also, an intermediate level of color and spectral Doppler studies of carotid arteries, upper and lower extremity and abdominal vasculature. Ultrasound-guided aspirations and biopsies of the thyroid and ultrasound guided biopsies of the liver, kidney and paracentesis procedures will be performed on the ultrasound rotation. |
| **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:**   1. Describe more common sonographic artifacts. 2. List indications, contraindications, and patient preparation for sonographically-guided procedures. 3. List the equipment needed for sonographic procedures including thyroid, solid organ biopsy and drainage procedures   **Skill Objectives:**   1. Become facile with scanning and utilize available information technology to manage patient information, 2. Perform US-guided aspirations, biopsies and drainages with occasional help from faculty or fellow, and 3. Coordinate activities in the reading room, including providing direction for the technologists, consultation for other clinicians, and answering the phone. 4. Perform vascular ultrasounds including carotid, lower extremity arterial and venous studies   **Behavior and Attitude Objectives:**   1. Work with the health care team in a professional manner to provide patient-centered care, and 2. 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:**   1. Understand clinical application of ultrasound, 2. Identify relevant anatomic structures on US images, and 3. Diagnose all pathologic conditions in the abdomen and pelvis and understand their pathophysiology. 4. Describe classifictions for carotid artery disease, arterial stenoses in various areas of the body and venous disorders affecting flow   **Skill Objectives:**   1. Accurately interpret all US examinations, and 2. Perform more complex sonographic examinations such as US of the carotid and visceral arteries, extremity arteries and veins, scrotum, and gravid uterus. 3. Safely perform aspiration, biopsy and drainage procedures with US guidance   **Behavior and Attitude Objectives:**   1. 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:**   1. Assess US images for quality and suggest methods of improvement.   **Skill Objectives:**   1. Demonstrate independent self-study using various resources including texts, journals, teaching files, and other resources on the internet, and 2. Facilitate the learning of students and other health care professionals. 3. Collect procedure result data and begin to make changes in practice based on results   **Behavior and Attitude Objectives:**   1. Incorporate formative feedback into daily practice, and 2. 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:**   1. Understand how their image interpretation and procedure performance affects patient care.   **Skill Objectives:**   1. Provide accurate and timely interpretations and performance to decrease length of hospital and emergency department stay, 2. Appropriately notify the referring clinician if there are urgent or unexpected findings and document such without being prompted; and 3. Practice using cost effective use of time and support personnel.   **Behavior and Attitude Objectives:**   1. 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:**   1. Understanding of the need for respect for patient privacy and autonomy, and 2. 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:**   1. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation, and 2. Professionalism and compassion while obtaining informed consent in all patients undergoing US-guided procedure.   **Behavior and Attitude Objectives:**   1. 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:**   1. Know the importance of accurate, timely, and professional communication.   **Skill Objectives:**   1. Produce concise and accurate reports on most examinations, 2. Communicate effectively with physicians, other health professionals, and 3. Obtain informed consent with the utmost professionalism.   **Behavior and Attitude Objectives:**   1. Work effectively as a member of the patient care team.   **Procedure Expectations for ESIR Residents in Ultrasound**  **During the four week rotation, ESIR residents are expected to involve themselves in all ultrasound biopsy procedures within the ultrasound division. This includes**   1. Preview and work-up of all patients undergoing these procedures, notes and appropriate orders, and, 2. Follow up care for all patients treated with correlation of procedure results and imaging. 3. When not performing procedures, residents are expected to fully function as diagnostic radiology residents including reviewing, interpretation and staff discussion of all ultrasound imaging with appropriate faculty members. 4. On average, residents are expected to perform 20 thyroid, cyst and lymph node aspirations over the four week rotation and 20 vascular ultrasounds in which the resident acts as the sonographer and 20 paracentesis procedures |