

Resident Core Curriculum Obstetric Ultrasound

General Goals: The specific goals include objectives required for every level of training with graduate levels of supervision and responsibility. All aspects of obstetric ultrasound imaging are incorporated into the residency. During every training rotation, the resident will read the required literature and study the teaching file in obstetric ultrasound radiology. Over time, the resident will be proficient in interpreting obstetrical ultrasounds on routine and high risk women. While gynecological and first trimester obstetrical ultrasound is also incorporated into the general adult ultrasound rotation, this rotation will provide the fourth year resident with exposure to ultrasound studies done during all three trimesters of pregnancy.

Resident Daily Work Responsibilities (OVERALL BENCHMARKS/OBJECTIVES for Self-Evaluation)

1. Residents assigned to obstetric ultrasound imaging will be available for consultations except during conference times, when the attending faculty will cover.
2. Resident questions will be referred to the supervising faculty covering obstetric ultrasound.
3. Resident review of cases with the supervising faculty will be conducted as many times in the day as necessary to keep an efficient workflow.
4. All resident examinations will be dictated by the end of every working day.
5. Residents will check and sign his/her reports prior to final verification by supervising faculty.
6. Residents must be familiar with the operation of all ultrasound equipment.
7. Residents must become proficient at detecting abnormalities demonstrated by ultrasounds and be able to generate meaningful differential diagnosis.
8. Absent clinical indication or seemingly inappropriate requests should be clarified and discussed with the referring physician.
9. Residents will do in-depth reading and study, along with a review of teaching file cases, to become knowledgeable about the normal development and appearance of the fetus in the first, second, and third trimester.
10. Residents will serve as a secondary consultant to referring physicians regarding obstetric ultrasound imaging.
11. Residents will become prepared to pass the core examination of the American Board of Radiology.
12. Residents will teach and share knowledge to medical students, radiologic technologist students, and junior residents.

Supervising Faculty Responsibilities:

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

Educational Goals and Objectives R1-R4:

Patient Care:

PC1:Reporting; **PC2:**Clinical Consulting; **PC3:**Image Interpretation; **PC4:**Competence in procedures

- Demonstrate knowledge of the ACR practice guidelines and technical standards for obstetric ultrasound
- Makes preliminary decisions on all matters of ultrasound interpretation and consultation.
- Observe and learn the techniques to achieve high-quality ultrasounds
- Know how to perform an amniotic fluid index and biophysical profile
- Continue to improve skills for performing obstetric ultrasound examinations, and tailor examinations to answer all questions being asked by the referring provider

Medical Knowledge

MK1:Diagnostic Knowledge; **MK2:**Physics; **MK3:**Protocol selection and contrast agent selecting/dosing; **MK3:**Imaging technology and Image acquisition

- Understand the risks associated with twin pregnancy, risk of congenital anomalies in general and specific to populations (e.g. diabetes, specific ethnicities, women on medication, maternal age)
- Distinguish between normal and abnormal development and appearance of fetus in the first, second, and third trimester.
- Learn the accepted indications for prenatal ultrasound and the appropriate timing of such studies
- Review all studies with the supervising faculty attending

Systems-based Practice

SBP1: Patient Safety; **SBP2:** Quality Improvement; **SBP3:** System navigation for patient-centered care; **SBP4:** Physician role in health care systems; **SBP5:** Contrast agent safety; **SBP6:** Radiation Safety; **SBP7:** ~~Magnetic resonance (MR) safety~~; **SBP8:** Informatics

- Dictate and correct reports in a timely fashion to avoid delay in patient disposition
- Make suggestions to improve methods and systems utilized in radiology whenever appropriate
- Demonstrate knowledge of ACR appropriateness criteria and cost effective imaging evaluations
- Show ability to interact with clinicians regarding cost effective and streamlined evaluation for differing clinical entities

Practice-based Learning and Improvement

PBLI1: Evidence-based and informed practice; **PBLI2:** Reflective practice and commitment to professional growth

- Able to self-evaluate his/her performance and identify areas of weakness
- Incorporate feedback into improved performance
- Demonstrate evidence of independent reading and learning through use of printed and electronic resources
- Follow up on abnormal or interesting cases through personal communication with the referring physician or patient medical records

Professionalism

P1: Professional behavior and ethical principles; **P2:** Accountability/Conscientiousness; **P3:** Self-awareness and help seeking

- Demonstrate respect for patients, families, and all members of the healthcare team.
- Respect patient confidentiality at all times
- Present oneself as a professional in appearance and communication
- Demonstrate a responsible work ethic with regard to work assignments

Interpersonal and Communication skills

ICS1: Patient and family-centered communication; **ICS2:** Interpersonal and team communication,

ICS3: Communication within health care systems

- Communicate with the patient at all times during the examination to ensure that patient remains comfortable
- Explain the nature of the examination or findings in an examination to patients and their families when needed
- Communicate effectively with all members of the health care team.
- Communicate effectively the results of studies to referring clinicians whenever needed (for emergent studies, this will be accomplished in a timely manner)
- Produce concise reports that include all relevant information and be able to effectively convey the findings of examinations through accurate dictation of reports
- Assist with supervision and teaching of medical students
- Use appropriate language in communicating to clinicians through reports or consultations so proper management decisions can be made

Monitoring and Assessment of Resident Performance

The resident's progress will be monitored by the faculty on the service. Residents are evaluated at the end of their rotation in consensus of faculty on service. Deficiencies or substandard performance will be discussed personally and privately with the resident and will be brought to the attention of the Residency Program Director by the attending radiologist.

Reading List

1. William D. Middleton and Alfred B. Kurtz. *Ultrasound: The Requisites*. Mosby, 2nd Edition, 2003.
2. William E. Brant. *The Core Curriculum: Ultrasound*. Lippincott Williams & Wilkins, 1st Edition, 2001.
3. Carol Rumak, Stephanie Wilson, J. William Charboneau, and Jo-Ann Johnson. *Diagnostic Ultrasound: 2-volume Set*. Mosby, 3rd Edition, 2004.
4. Peter W. Callen. *Ultrasonography in Obstetrics and Gynecology*. Saunders, 5th Edition, 2007.

Other Requirements/Expectations**Schedule**

Hours: Monday-Friday

8:30am to 5:00 pm: Fetal care center 1st floor Hospital

Faculty supervision provided by Dr. Chris Chisholm, Dr. Susan Lashley, and Dr. James Ferguson.

12:00 pm to 1:00 pm: Return to Radiology department for lunch/noon lecture.

Core Knowledge Topics

First Trimester Ultrasound

- Normal findings: gestational sac appearance, size, gestational sac growth, yolk sac, embryo, cardiac activity including normal embryonic heart rate, amnion, chorion, normal early fetal anatomy/growth, crown-rump length measurement, ~~eo~~[relation](#)~~correlation~~ with BHCG levels and menstrual dates
- Multiple gestations (chorionicity and amnioicity), failed early pregnancy, spontaneous complete/incomplete abortion, ectopic pregnancy, blighted ovum, embryonic death, subchorionic hematoma, gestational trophoblastic disease, gross embryonic structural abnormalities, anencephaly
- Unusual ectopic pregnancy: interstitial, cervical, ovarian, scar, abdominal, rudimentary horn
- Nuchal translucency
- Chorionic villous sampling

Second and Third Trimester Ultrasound

- Normal findings: normal fetal anatomy/situs/development, placenta, biometry, amniotic fluid volume, and multiple gestations
- Anencephaly
- Oligohydramnios (spontaneous premature rupture of membranes, renal disease, fetal death, intrauterine growth retardation, infection)
- Polyhydramnios, placenta previa
- Cervical appearance and length
- Recognition of fetal abnormalities that require high risk obstetrics referral, including intrauterine growth retardation, hydrops, holoprosencephaly, hydrocephalus, neural tube defects, multicystic dysplastic kidney, hydronephrosis
- Placental abruption, placental masses, two-vessel umbilical cord, cord masses, retained products of conception
- Recognition of fetal abnormalities that require high risk obstetrics referral, including congenital anomalies/chromosomal abnormalities and syndromes such as Down's syndrome and Turner's syndrome, hydrops, congenital infections, chest masses, cardiac malformations and arrhythmias, diaphragmatic hernia, abdominal wall defects, abdominal masses, gastrointestinal tract obstruction/abnormalities, ascities, skeletal dysplasias, cleft lip/palate, complications of twin pregnancy, hydrocephaly
- Borderline findings: nuchal thickening, choroid plexus cyst, echogenic cardiac focus, echogenic bowel, borderline hydrocephalus
- Placental cord insertion site/vasa previa, velamentous cord insertion, cord prolapse, succenturiate placenta, cervical incompetence
- Umbilical cord Doppler, fetal cranial Doppler, biophysical profile
- Guidance for amniocentesis
- Placenta accrete, percreta, increta

Updated: 2/1/2010; Revised 3/4/2012; Revised 1/30/2015; Revised 8/2022