

Goals & Objectives

Rotation: Obstetrical Ultrasound
BC Women's Hospital
4500 Oak Street, Vancouver, BC V6H 3N1

Total: 1 month elective

Level: PGY 4, PGY 5

Rotation Supervisor: Dr. Denise Pugash, Co-supervisor Amanda Easton, RDMS

Objectives:

Guidance will be given to each resident at the commencement of a rotation, an interim evaluation will occur halfway through the rotation, and a final evaluation will be given at the end of each rotation. Each final evaluation will be submitted to the residency training program director.

All residents are expected to arrive in the department by 0800 or 0900 hours (depending on the scheduled start time of the reporting physician as posted in the reporting room) and stay until approximately 1600 hours. Ongoing teaching and interaction with staff occurs throughout the day. If a resident is absent from his/her ultrasound rotation for any reason, he/she should give ample warning to Amanda Easton, RDMS, Education Coordinator (aeaston@cw.bc.ca), and Dr Pugash (dpugash@cw.bc.ca) or by calling 604-875-2156 to speak with either supervisor.

During the rotation, the resident is integrated into the BC Children's/UBC Hospital call schedule as, *at the present time*, no call is required at BC's Women's Hospital.

As per departmental educational policy, the resident will be required to document attendance for each half-day of the rotation by obtaining a signature to confirm participation. A form will be supplied.

Medical Expert:

By the end of the rotation, the resident will be expected to:

- understand US physics, artifacts and understanding imaging protocols, including use of different scanning probes and Doppler
- demonstrate knowledge of multi-planar fetal anatomy
- demonstrate knowledge of clinical fetal radiology and pathology
- Detect and interpret findings into an appropriate differential diagnosis
- be able to summarize case, offer recommendations, understands treatment and clinical implications
- demonstrate knowledge of the prenatal procedures: indications, complications, appropriate alternatives
- Perform, document, and report a complete detailed normal obstetrical ultrasound scan at 18 to 19 weeks (see list of standard views below), recognize the presence of pathology and expand the scan appropriately.
- Perform, document, and report a complete normal third trimester scan including assessment of fetal growth, amniotic fluid volume, cord Doppler, and fetal well-being.

- Demonstrate diagnostic and therapeutic skills for ethical and effective patient care
- Access and apply relevant information to clinical practice
- Demonstrate effective consultation services with respect to patient care, education and legal opinions

I. Technical skills

The resident is assumed to have already mastered basic ultrasound skills, knowledge of ultrasound physics, and ability to utilize the equipment before starting the rotation, as this is a senior resident rotation. The resident will spend half of each day scanning one-on-one under the supervision of a technologist, who will focus on the technical aspects of obtaining standard views.

Specific objectives for this one-month elective include:

- To determine placenta location, cervical length, amniotic fluid index, fetal lie and presentation; and to detect the presence or absence of normal fetal cardiac activity (to include rate and rhythm).
- To obtain acceptable quality images of the head, trunk, and femur for standard biometry measurements including BPD, HC, AC and FL. For first trimester scans, the crown-rump length should be accurately measured.
- To assess and obtain acceptable quality images of the fetal stomach, bladder, kidneys, umbilical cord, heart (to include four chamber and short axis/outflow views), spine and long bones, as well as to include major intracranial structures.
- To assess and obtain acceptable quality images of gestational age-appropriate fetal markers for aneuploidy as are presently used in the department.
- To recognize the presence of maternal and fetal pathology as it relates to obstetrics and to expand the scan to include appropriate additional assessment and images.
- To understand the parameters used to assess fetal well-being and to be able to perform a scan to assess these components (AFI, Doppler, growth, fetal movement, biophysical profile).
- To assess and document images to assess normal and abnormal findings in scans done for maternal indications (maternal abdomen, pelvic, renal, postpartum and venous Doppler scans).

By the end of the rotation, the resident should be able to independently perform (1) a normal routine 19-20 week screening scan, and (2) a normal third trimester scan.

II. Interpretive skills

- To use standard departmental criteria for dating a pregnancy using menstrual and ultrasound dates.
- To understand the scientific basis and provenance of fetal biometry charts, and to use these appropriately.
- To assess common indications for obstetrical ultrasound and tailor the scan accordingly.

- d) To generate appropriate reports for normal 18 week detailed scans.
- e) To generate appropriate ultrasound reports for third trimester scans to include assessment of fetal well-being.
- f) To understand the significance of maternal screen results and the factors relevant to interpreting scans.
- g) To recognize abnormal fetal development, to generate a differential diagnosis, and to have knowledge of subsequent diagnostic or therapeutic steps
- h) To assess the criteria for evaluating markers for aneuploidy and to understand the significance of markers.
- i) To understand indications for fetal echocardiography.
- j) To interpret normal and abnormal findings in maternal abdomen, renal, pelvic, postpartum and venous Doppler scans.
- k) To recognize obstetrical ultrasound findings that may require urgent referral and/or intervention.
- l) To understand indications for fetal karyotyping, methods of karyotyping, and inherent risks.

Communicator:

- establish therapeutic relationship with patients/families
- obtain and synthesize relevant history from patients/families/communities
- listen effectively and sensitively
- discuss appropriate information with patients/families and the other health professionals in the health care team
- Interpret and communicate results of obstetrical ultrasound scans to supervising and referring physician, and request other relevant consultations and investigations
- understand that the role of the radiologist is to primarily provide imaging information and to develop strategies to interact with patients and families without providing counseling and discussion of clinical implications of findings
- *Demonstrate appropriate and timely communication of findings to referring physicians*
- Give accurate, concise, complete reports

Collaborator

- consult effectively with other physicians and health care professionals
- contribute effectively to other interdisciplinary team activities, including research activities
- Respects, recognizes the roles of, and consult effectively with the healthcare team, including nurses and technologists
- Contribute effectively to other interdisciplinary team activities
- Work collaboratively with the technologists, learning scanning techniques in first through third trimester obstetrical ultrasounds
- Work collaboratively or at least three half-days per week with the attending perinatologist/radiologist, interpreting scan results and providing recommendations. A smaller component of

the rotation involves observing procedures such as chorionic villous sampling and amniocentesis.

- Work effectively with all members of the ultrasound team including technologists, nurses, medical geneticists, and genetic counselors.
- Recognize the team relationship between radiologists and obstetricians in the care of the obstetrical patient and understand the importance of physician-patient communication in the setting of pregnancy, especially in the presence of complication or loss.

LEADER ROLE:

- *Implement processes to ensure personal practice improvement*
- *Set priorities and manage time to integrate practice and personal life*
- *Apply the science of quality improvement (ie discussion of potential audit) to contribute to improving*
- *systems of patient care*
- *Contribute to a culture that promotes patient safety, including recognition of patient safety issues, and utilization of health informatics to improve patient safety*
- *Demonstrate leadership skills to enhance health care*
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Health Advocate

- identifies the important determinants of health affecting patients
- contributes effectively to improved health of patients and communities
- recognizes and responds to those issues where advocacy is appropriate

Scholar

- Attends ultrasound case review rounds (Tuesdays 08:00- 09:00)
- Attends Fetal Diagnostic Service case rounds (Mondays, Tuesdays and Thursdays 12:00 – 13:00)
- Attends FDS multidisciplinary conferences (alternate Fridays 15:00 – 16:00)
- Presents a topic of general interest at departmental rounds (topic and venue to be discussed)
- Effectively teaches others, including residents, medical students, patients and other health professionals
- Demonstrates continuous self-directed learning (reads around cases and topics)
- Demonstrates evidence based medical approach and critical appraisal with regards to radiology literature
- Develops, implement and monitors a personal continuing education strategy
- Contributes to development of new knowledge

Professional

- Delivers highest quality care with integrity, honesty and compassion
- Exhibits appropriate personal and interpersonal professional behaviours
- Practices medicine ethically consistent with obligations of a physician

- Demonstrates insight with regards to own limitations, strength and weaknesses, asks for help when appropriate
- Accepts constructive criticism and suggestions for improvement

Reading List:

Recommended Textbook:

Diagnostic imaging of fetal anomalies - David A. Nyberg, John P. McGahan, Dolores H. Pretorius (Lippincott, Williams and Wilkins). This is the most comprehensive textbook for fetal diagnosis, written from a radiological point of view. .A copy is available in the Hamber Library and can be signed out.

<http://www.sonoworld.com/TheFetus/Home.aspx> This site is a good resource for examples and discussions of specific fetal anomalies. It is especially good for reading around cases or looking at very rare fetal anomalies that are not commonly seen in day-to-day reporting.