OB/GYN Ultrasound for Midwives eCourse

Summary

This comprehensive OB/GYN Ultrasound for Midwives eCourse, presented by Jim Baun, BS, RDMS, RVT, FSDMS, consists of three sections: Gynecology, First Trimester, Second and Third Trimesters with an optional, fourth section on Fetal Studies. Each section emphasizes normal anatomy and sonographic appearance followed by common abnormalities, identifying clinical factors, sonographic findings, and sonographic pitfalls. Extensive graphics and images illuminate the concepts taught, reinforce key sonographic concepts, and enhance sonographic recognition.

Instructor Biography

Jim Baun, BS, RDMS, RVT, FSDMS
Senior Clinical and Education Manager, Mindray/ZONARE
San Francisco, CA

Jim Baun BS, RDMS, RVT, FSDMS is a long time educator, clinician, and leader in the field of diagnostic medical sonography. Author of multiple academic texts and numerous articles published in the peer-reviewed medical literature, he has also, over a multiple decade long career, served on the faculty and advisory councils of a number of educational organizations. Since 2011 and to date, Jim serves as an advisory council member volunteer for the International Foundation for Sonography Education and Research (IFSER). In recognition of his contributions to the profession, the Society of Diagnostic Medical Sonography elevated Jim to Fellow status in 1997 and recently awarded him the Joan Baker Pioneer Award. Jim resides in San Francisco with his dog Mickey.
Jim Baun, BS, RDMS, RVT, FSDMS presents a comprehensive gynecological review beginning with Pelvic Anatomy, Menstrual Cycle, Nonporous Gynecology, and Reproductive Medicine. After building a foundational understanding of normal pelvic anatomy and ultrasound appearance, Jim provides a review of Uterine, Ovarian, Tubal and Adnexal Pathology. Extensive illustrations and ultrasound case examples are integrated into the presentations.

Module 1: Pelvic Anatomy

Module 1 of the Gynecology section begins with an overview of the skeletal pelvic anatomy, cavities, true/false pelvis, suspensory ligaments, and muscular anatomy. Additional topics include uterine segmental anatomy, layers, size, and positional variants. Ultrasound appearance of cervical and vaginal positions are identified in addition to pelvic recesses and ovarian location, appearance, and size. The module concludes with a discussion of vascular anatomy, including ovarian artery Doppler.

Core Concepts: 37 min
Focus Session: 28 min
CME: 1

Module 2: Menstrual Cycle

Beginning with a discussion of the stages of menstruation, hormonal regulation, uterine response, and menstrual phases, the ultrasound appearance of the uterus is viewed. The response of the ovaries to pituitary hormones is covered with review of the sonographic appearance of the follicular, ovulatory, and luteal phases. The sonographic signs of ovulation are demonstrated by case examples.

Core Concepts: 16 min
Focus Session: 12 min
CME: .5

Module 3: Reproductive Medicine

Module 3 of the Gynecology Section begins with a review of the male and female factors associated with infertility including ovulation disorders, dysfunctional dominant follicle, polycystic ovarian syndrome, endometrial polyps, Asherman syndrome, and submucosal fibroids. The treatment of infertility is covered with review of complications such as ovarian hyperstimulation syndrome (OHS), multiple gestations, assisted reproductive technologies, and indices of ovulation. The module concludes with tubal patency, oral contraception, and intrauterine contraceptive devices (IUDs).

Core Concepts: 24 min
Focus Session: 18 min
CME: .75
Module 4: Uterine Pathology

Uterine pathology is explored in this module by discussions of congenital and acquired anomalies, uterine masses, and endometrial pathology. Congenital vaginal anomalies discussed include agenesis, atresia, imperforate hymen, persistent uterovaginal septum, Gartner's duct cysts, and hydrometrocolpos. Congenital cervical topics include atresia, Nabothian cysts, and DES-related anomalies. Müllerian duct anomalies are also covered. Acquired anomalies such asAsherman syndrome, uterine fibroids, and uterine masses are reviewed. This module concludes with endometrial pathology including hyperplasia, dysfunctional uterine bleeding, endometritis, endometrial carcinomas, and polyps.

Core Concepts: 38 min
Focus Session: 29 min
CME: 1

Module 5: Ovarian Pathology

Module 5, Ovarian Pathology, introduces categories of ovarian pathology. The material is organized into three categories: non-neoplastic lesions and functional cysts, neoplastic ovarian masses, and ovarian torsion. In each section the clinical presentation and sonographic findings are explored. Case examples are presented throughout, aiding the participant in identifying various pathologies.

Core Concepts: 33 min
Focus Session: 25 min
CME: 1.25

Module 6: Tubal and Adnexal Pathology

This module presents the clinical presentation and sonographic findings of pelvic inflammatory disease through various examples of pathology. Risk factors, clinical findings, and sonographic signs of endometriosis are demonstrated though case examples. In conclusion, ovarian vein thrombosis is discussed.

Core Concepts: 12 min
Focus Session: 9 min
CME: .5

Module 7: Nonparous Gynecology

Module 7 begins with a section of Pediatric Sonography, in which the anatomy and physiology of the neonatal and premenarchal uterus and ovaries is discussed and common abnormalities are presented. The second half of the module covers postmenopausal sonography including anatomy and physiology, sonographic findings, gynecologic pathology, and hormone replacement therapy (HRT). The module concludes with pelvic masses and ovarian cancer screening.

Core Concepts: 24 min
Focus Session: 18 min
CME: .75
In this section of the OB/GYN series, Jim Baun, BS, RDMS, RVT, FSDMS begins with Module 1: First Trimester in which he presents the normal sonographic signs of an early intrauterine pregnancy and confirmatory studies of gestational viability. The second module, Early Pregnancy Failure, discusses clinical and sonographic findings with various types of spontaneous abortion and ectopic pregnancy. First Trimester section concludes with Module 3: Gestational Trophoblastic Disease which provides an overview of the spectrum of pathological entities resulting from excessive proliferation of trophoblastic tissue.

Module 1: Normal Trimester

Jim Baun, BS, RDMS, RVT, FSDMS begins this section by presenting the gestational age of the early pregnancy timeline and the qualitative and quantitative aspects of human chorionic gonadotropin. He discusses fertilization and embryonic sonographic findings including early placentation and assessment of the chorio-amniotic separation, gestational sac, decidual signs, yolk, and embryo. Signs of gestational viability are reviewed with discussions of cardiovascular activity, embryonic anatomy, and biometric measurements. The module concludes with sonographic examples of mean sac diameter and crown rump length measurements.

Core Concepts: 25 min  
Focus Session: 19 min  
CME: .75

Module 2: Early Failed Pregnancy

This module concentrates on the clinical symptoms and sonographic indicators of an early failed pregnancy. The presentation of a spontaneous abortion is reviewed with discussions of the complete, incomplete, and threatened abortion in terms of differentiation of clinical and sonographic findings. The inevitable abortion is defined with a review of the clinical symptoms, and sonographic confirmation. Case examples demonstrate the anembryonic pregnancy. Included also is a section covering ectopic pregnancy etiology, risk factors, various implantation locations, sonographic findings, and imaging pitfalls. In conclusion, pseudogestational sac, corpus luteum cyst, and diagnostic procedures are discussed.

Core Concepts: 25 min  
Focus Session: 19 min  
CME: .75

Module 3: Gestational Trophoblastic Disease

Beginning with a review of possible causes and the clinical manifestations of gestational trophoblastic disease, Jim Baun, BS, RDMS, RVT, FSDMS presents case examples of complete and partial hydatidiform mole formation and a molar placenta with a coexisting normal fetus. Pathologic entities that may present following a treated complete or partial mole are covered, including the invasive mole, uterine choriocarcinoma, placental site trophoblastic tumors, and epitheloid trophoblastic disease.

Core Concepts: 16 min  
Focus Session: 12 min  
CME: .5
Second and Third Trimester

The Second and Third Trimester section of the OB/GYN series begins with a presentation of normal and abnormal findings with fetal biometry and amniotic fluid, followed by modules discussing normal and pathologic findings of the placenta and umbilical cord. Extensive sonographic images aid in identifying these 2nd and 3rd trimester complications. Module 4 presents the various aspects of the prenatal genetic workup followed by Module 5 in which genetic abnormalities and syndromes are explained. The final three modules in this section present an extensive discussion of maternal complications, fetal complications, and multiple gestations.

Module 1: Fetal Biometry and Amniotic Fluid

Jim Baun, BS, RDMS, RVT, FSDMS begins the Second and Third Trimester section by discussing biometric parameters and “Rule of Thumb” of normal measurements. The technique is demonstrated for assessment of biparietal diameter, head circumference, cephalic index, abdominal circumference, and femur length. Technical pitfalls are discussed to improve accuracy of sonographic measurements. Gestational age estimation by epiphyseal appearance is shown through case examples. Techniques for orbital and transcerebellar diameter measurements are shown as useful adjuncts to the standard biometric determinations. Biophysical profile scoring is covered as well. This module concludes with a section on assessment of amniotic fluid, including estimation of amniotic fluid volume, the amniotic fluid index (AFI), and amniotic abnormalities.

Core Concepts: 34 min
Focus Session: 26 min
CME: 1

Module 2: Placenta

Module 2 of the Second and Third Trimester section of the OB/GYN series covers the placenta and begins with a review of embryology, the formation of membranes, and placental anatomy. Maternal circulation, fetal circulation, and placental vascularization are covered in the normal anatomy section. Following a review of normal chorial attachments, placental abnormalities are discussed including circummarginate and circumvallate placenta variants and accessory types such as succenturiate, bipartite, and annular placenta. Sonographic findings of intraplacental lesions including subchorionic, intraplacental, and retroplacental hematomas, placental calcifications and chorioangiomas are demonstrated through case examples. The final section of this module addressers placenta previa variants, placental abruption, chronic retroplacental hematoma, and abnormalities of adherence.

Core Concepts: 32 min
Focus Session: 24 min
CME: 1
Module 3: Umbilical Cord
Beginning with identification of the long and short axis sonographic anatomy of the umbilical cord and normal cord insertion, this modular discussion progresses to cord abnormalities including single umbilical artery, cord stricture, umbilical vein thrombosis, and umbilical cord cysts. Other cord abnormalities covered are long, short, and nuchal cords, as well as cord prolapse and entanglement. The module concludes by addressing structural cord abnormalities such as battledore placenta, velamentous insertion, and cord cysts, masses, and hemangiomas.

Core Concepts: 23 min
Focus Session: 18 min
CME: .75

Module 4: Prenatal Genetic Workup
This module, covering genetic testing, begins with a discussion of the components of the diagnostic triad: maternal serum testing, invasive procedures, and the sonographic fetal anatomy survey. The significance of elevated or reduced levels detected on maternal serum testing (triple screen) is addressed. Jim Baun, BS, RDMS, RVT, FSDMS introduces the sonographic guidance technique for chorionic villus sampling and amniocentesis. The final section of this module covers the genetic sonogram including nuchal translucency and thickening, hyperechoic bowel, echogenic intracardiac focus, choroid plexus cysts, and pyelectasis.

Core Concepts: 21 min
Focus Session: 16 min
CME: .75

Module 5: Genetic Abnormalities
This module begins with a discussion of autosomal recessive and autosomal dominant disorders and X-linked abnormalities. The sonographic presentation and markers of common genetic abnormalities such as Trisomy 13 (Patau Syndrome), Trisomy 18 (Edwards Syndrome), Trisomy 21 (Down Syndrome), and Turner Syndrome are presented. Nonaneuploidic syndromes, associations, and sequences covered include amniotic band, Beckwith-Wiedemann, caudal regression, sirenomelia, Mecker Gruber and Ellis van Creveld syndromes. In conclusion, Jim Baun BS, RDMS, RVT, FSDMS presents congenital anomalies with VACTERL and CHARGE association.

Core Concepts: 25 min
Focus Session: 19 min
CME: .75

Module 6: Maternal Complications
Module 6 in the Second and Third Trimester section begins with an overview of complicating fetal and maternal conditions. The sonographic characteristics of an incompetent cervix are presented with case examples. Maternal and fetal effects of diabetes mellitus and hypertension are addressed as well as TORCH complications and sonographic findings, fibroids, ovarian cysts, and solid masses. The module concludes by covering antepartum risks, postpartum bleeding and infections, Cesarean section, hematomas, and predisposing risks for deep venous thrombosis.

Core Concepts: 40 min
Focus Session: 30 min
CME: 1
Module 7: Fetal Complications

In the seventh module of the Second and Third Trimester series, Jim Baun BS, RDMS, RVT, FSDMS discusses the sonographic findings and types of hydrops fetalis through multiple case examples. In the section covering growth restriction, Jim covers contributing maternal conditions, Doppler findings, and the differentiation between symmetric and asymmetric IUGR. This module concludes with fetal anemia, risk factors, placental factors, and fetal demise.

Core Concepts: 21 min  
Focus Session: 16 min  
CME: .75

Module 8: Multiple Gestations

Following a discussion of the incidence, complications, and clinical findings with multiple gestations, Jim Baun, BS, RDMS, RVT, FSDMS presents an overview of monozygotic twin types: monochorionic/monoamniotic, monochorionic/diamniotic, and dichorionic/diamniotic and dizygotic twins. Specific sonographic tips and signs are integrated for first trimester and second/third trimester imaging. Abnormalities of multiple gestations include vanishing twin, twin-twin transfusion, twin reversed arterial perfusion sequence, twin embolization syndrome, stuck twin, cord entanglement, and conjoined twins.

Core Concepts: 27 min  
Focus Session: 21 min  
CME: .75

Fetal Studies

The final, eight module section of the OB/GYN series begins with a discussion of normal fetal central nervous system (CNS) anatomy followed by two modules of fetal CNS anomalies and associated clinical and sonographic findings. Module 4 covers normal gastrointestinal anatomy and herniation abnormalities. In Module 5, Jim Baun, BS, RDMS, RVT, FSDMS presents internal abdominal abnormalities, solid and cystic masses, and pelvic masses. Normal and abnormal aspects of the fetal skeleton are reviewed in Module 6. Genitourinary abnormalities and obstructive uropathies are presented in Modules 7 and 8. In conclusion of the fetal studies section, the last modules cover the fetal chest, face and neck, and the fetal cardiac assessment.

Module 1: Central Nervous System Anatomy

In the first of the eleven fetal studies modules, we begin with a review of embryology of the prosencephalon (forebrain), mesencephalon (midbrain), and rhombencephalon (hindbrain). Normal anatomy covered includes intracranial, spinal, and brain structures as well as brain landmarks, blood supply, and the ventricular system.

Core Concepts: 21 min  
Focus Session: 16 min  
CME: .75
Module 2: CNS Anomalies, Part 1

The second module in the OB/GYN: Fetal Studies section, covering Part 1 of the central nervous system, begins with coverage of the sonographic signs of neural tube defects such as spina bifida, anencephaly, acrania, encephalocele, and iniencephaly. Extensive graphics and ultrasound images clarify the sonographic findings of these CNS anomalies.

Core Concepts: 20 min
Focus Session: 15 min
CME: .75

Module 3: CNS Anomalies, Part 2

Part 2: CNS Anomalies begins with a discussion of intracranial cystic abnormalities including gross pathology and associated sonographic findings. Pathology discussed includes hydrocephalus, hydranencephaly, holoprosencephaly, Dandy-Walker malformation, Vein of Galen aneurysm, and choroid plexus cysts. The second half of the module covers intracranial solid abnormalities including agenesis of the corpus callosum, tumors, intrauterine hemorrhage, porencephaly, schizencephaly, intracranial calcifications, and microcephaly.

Core Concepts: 33 min
Focus Session: 25 min
CME: 1

Module 4: Gastrointestinal Tract, Part 1

Beginning with discussion of the embryology of the primitive GI tract, Part 1 of the gastrointestinal tract covers normal gut anatomy, physiological herniation, liver anatomy, and the portal sinus. Jim Baun BS, RDMS, RVT, FSDMS discusses the arterial and venous vessels of the umbilical cord, cord insertion, and umbilical cord Doppler. The sonographic appearance of the gallbladder, aorta, stomach, and bowel are demonstrated. Herniation abnormalities cover omphalocele, gastroschisis, limb-body wall complex, and cloacal extrophy.

Core Concepts: 21 min
Focus Session: 16 min
CME: .75

Module 5: Gastrointestinal Tract, Part 2

Part 2, Gastrointestinal Tract starts by covering internal abdominal abnormalities including gastrointestinal duodenal atresia, small bowel obstruction, imperforate anus, meconium peritonitis, echogenic fetal bowel, hepatomegaly, solid hepatic masses, cystic hepatic masses, hepatic calcifications, and splenic abnormalities. This module concludes with the sonographic findings of pelvic masses, including ovarian cysts and sacral teratomas.

Core Concepts: 25 min
Focus Session: 19 min
CME: 1

Module 6: Fetal Skeleton

Module 6 of the Fetal Studies section begins by reviewing normal sonographic anatomy of the face, cranium, pelvis, spine, femur, humerus, forearm, hand, leg, and foot. The second section of this module discusses six major categories of fetal skeletal abnormalities: osteochondrodysplasias, dysostoses, idiopathic osteolyses, miscellaneous disorders with osseous involvement, chromosomal aberrations, and primary metabolic abnormalities. Ultrasound images aid in differentiating the fetal skeletal abnormalities.

Core Concepts: 37 min
Focus Session: 28 min
CME: 1.25
Module 7: Genitourinary System, Part 1
Part 1 of the Genitourinary System begins with a review of kidney and renal pelvis anatomy, renal pelvis measurements, the adrenal gland, genitalia, and normal function of the fetal urinary bladder. The second half of this module discusses genitourinary abnormalities including unilateral and bilateral renal agenesis. Specific anomalies addressed are the Potter sequence, renal ectopia, Potter Type I, II, III, and IV.
Core Concepts: 24 min
Focus Session: 18 min
CME: .75

Module 8: Genitourinary System, Part 2
Part 2 of the Genitourinary System covers obstructive uropathies, with categorization based on the level of obstruction. At the level of the kidney, hydronephrosis is the primary obstructive disease discussed. Ureteral level obstructions include ureteropelvic junction, ectopic ureterocele, congenital primary megaureter, and a duplicated collecting system. At the level of the urethra, abnormalities include bladder outlet obstruction, posterior urethral valves, urethral atresia, and prune belly syndrome. This module concludes with a review of genitourinary neoplasms.
Core Concepts: 17 min
Focus Session: 13 min
CME: .5

Module 9: Fetal Chest
Beginning with a review of normal sonographic anatomy of the bony thorax, lung, and diaphragm, this module progresses to cover thoracic and pulmonary abnormalities. Pulmonary hypertension, pleural effusion, pulmonary sequestration, and congenital diaphragmatic hernias are presented. In conclusion, cystic adenomatoid malformation of lung (CAML) Types I, II, and III, tracheal atresia, and chest masses are discussed.
Core Concepts: 17 min
Focus Session: 13 min
CME: .5

Module 10: Face and Neck
Module 10, Face and Neck, begins by discussing embryology and anatomy of the primary palate, pharyngeal arches, mouth, nasopharynx, brow, eyelid, cheek, lens, orbits, nasal septum, lips, and nose. A discussion of clefting anomalies includes sonographic findings of facial cleft palate and cleft lip. The module concludes by presenting examples of ocular/orbital and chin/neck anomalies.
Core Concepts: 26 min
Focus Session: 20 min
CME: 1

Module 11: Fetal Cardiac
The final module in the OB/GYN: Fetal Studies section begins with a review of normal cardiac anatomy and the sonographic appearance of the four chamber view, left ventricular outflow tract, and right ventricular outflow tract. Cardiac anatomic anomalies discussed include Tetrology of Fallot, transposition of great vessels, persistent truncus arteriosus, double outlet right ventricle, tricuspid atresia, double inlet left ventricle, Ebstein's anomaly, and coarctation of the aorta. The module concludes with coverage of ectopia cordis, ventricular and atrial septal defects.
Core Concepts: 27 min
Focus Session: 21 min
CME: 1
OB/GYN Midwife eCourse Summary:

Viewing Time: 12.75 hours
Focus Sessions: 9.5 hours

CME by Section:
Gynecology: 5.75 CME
First Trimester: 2.0 CME
Second and Third Trimester: 6.75 CME
Fetal Studies (optional): 9.25 CME

For more information:
Carol Gannon RN, RVT, RDCS
cgannon@pegasuslectures.com
972-564-3056 Ext 205