

Meet the Team

Maternal Fetal Medicine Specialists

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To see the full team, visit texaschildrens.org/fetal.

Spotlight

Leading-edge technology, collaborative approach set Fetal Imaging Service apart

The new Texas Children's Pavilion for Women houses an advanced Fetal Imaging Service that provides leading technology and services for prenatal diagnosis and fetal assessment, as well as a distinctive collaborative approach that brings together remarkable expertise and experience.

"In addition to offering state-of-the-art diagnostic imaging systems including 2D, 3D and 4D ultrasound and fetal magnetic resonance imaging (MRI), we bring together a team of renowned experts in maternal fetal medicine, pediatric radiology, pediatric cardiology and prenatal genetics," says Dr. Wesley Lee, Section Chief of Women's and Fetal Imaging at Baylor College of Medicine and Co-Director of Texas Children's Fetal Center.

Typical referrals to the Fetal Imaging Service include:

- Routine mid-trimester screening examinations
- Detailed scans for suspected congenital anomalies
- Amniotic fluid evaluation
- Cervical length measurements
- Biophysical profiles
- Doppler ultrasound studies
- Assessment of pregnancies with maternal diseases such as hypertension and diabetes

** First trimester screening for the risk of aneuploidy is based on nuchal translucency measurements between approximately 11 to 14 weeks, menstrual age.*

Comprehensive, expert care

Ultrasound results are combined with maternal serum markers, and Texas Children's Genetic Counseling services are readily available to provide patients and their doctors with the information they need in a timely manner.

Some complex problems, such as fetal brain anomalies and chest masses, benefit from magnetic resonance scans (MRI), which are performed and interpreted by an experienced pediatric radiology team led by Dr. Chris Cassady.

What's new

Fetal Center enrolls patients for innovative CDH surgery

Texas Children's Fetal Center has received permission from the U.S. Food and Drug Administration for a pilot study of balloon tracheal occlusion for severe congenital diaphragmatic hernia.

Participants are restricted to fetuses with the most severe type of CDH, which otherwise would be fatal. The goal of the study is to find if intervention with the treatment will improve outcomes by allowing the lungs to grow and improve before birth.



Balloon tracheal occlusion is a minimally invasive procedure in which a tiny balloon is inserted into the fetus' trachea. The balloon can be taken out or deflated as the lung grows, so it does not interfere with a normal birth. Advantages are that it may help mothers carry the fetus longer and avoid the possibility of preterm labor which is a common risk of conventional CDH intervention.

For information or to enroll a patient, call the Texas Children's Fetal Center at 832-822-BABY (2229).

A first for in utero fetal cardiac interventions

The team at Texas Children's Fetal Center has successfully completed five in utero fetal cardiac interventions to treat critical aortic stenosis and hypoplastic left heart syndrome (HLHS) with intact atrial septum. Texas Children's Fetal Center is the first center in the Southwest to create a program to treat these defects in utero with a team comprised of Maternal

Fetal Medicine, Fetal Cardiology and Cardiac Interventionalists. Texas Children's Fetal and Heart Centers are proud to be able to offer this procedure to patients, offering hope for their unborn babies. To learn more about the referral criteria for in utero fetal cardiac intervention, please call Texas Children's Fetal Center at 832-822-2229 or visit texaschildrens.org/fetal.

Imaging from page 1

Advanced imaging technologies are particularly helpful for pre- and post-operative evaluation of fetuses undergoing in-utero interventional procedures such as:

- Neural tube defect repair
- Fetal endotracheal occlusion (FETO) balloon procedure for congenital diaphragmatic hernia
- Amniotic band release
- Fetal cystoscopy and shunt placement for lower urinary tract obstruction (LUTO)
- Removal of large sacrococcygeal or neck tumors
- Ex-utero intrapartum treatment (EXIT)
- Laser ablation of abnormal placental vascular connections in monochorionic pregnancies with twin-twin transfusion syndrome

All diagnostic tests and counseling typically occur during the same visit day, and Fetal Center coordinators assist patients with organizing multiple consultations.

Patients also have access to consultation by Texas Children's Maternal Fetal Medicine, which offers comprehensive services for both fetal and maternal complications of pregnancy. Total obstetrical care can be provided if requested.

"Our goal is to provide excellent obstetrical care while preserving the patient's relationship with her primary health care provider," Lee said.

Save the Date

World-class fetal imaging research serves as a cornerstone for advances in prenatal imaging that are being offered at the Fetal Center. Studies involving fetal growth, maternal predictors of pre-eclampsia and advanced imaging of fetuses undergoing prenatal therapy are among focus areas.

Mark your calendars for the Fetal Center's national ultrasound conference, **Advances in Fetal Imaging, January 18 to 21, 2013**. This CME activity will summarize latest advances in prenatal diagnostic imaging as it applies to health care professionals who care for pregnant women. Jim Shwayder, M.D., J.D., Professor and Chair of OB/GYN at University of Mississippi and Beryl Benacerraf, M.D., Clinical Professor of OB/GYN and Radiology at Harvard Medical School, will be guest faculty for this inaugural event.

The two-day conference will include live scanning demonstrations. An optional Nuchal Translucency Quality Review credentialing course will be offered at the Pavilion for Women.

To learn more, visit texaschildrens.org/fetal.

- Alper AB, Yi Y, Rahman M, Webber LS, Magee L, von Dadelszen P, Pridjian G, Aina-Mumuney A, Saade G, Morgan J, Nuwayhid B, Belfort M, Puschett J. "Performance of estimated glomerular filtration rate prediction equations in preeclamptic patients." *Am J Perinatol*. 2011 Jun;28(6):425-30. Doi: 10.1055/s-0030-1268712. Epub 2010 Nov 18. PMID: 21089008 [PubMed – indexed for MEDLINE]
- Belfort MA, White GL, Vermeulen FM. "Association of fetal cranial shape with shoulder dystocia." *Ultrasound Obstet Gynecol*. 2012 Mar;39(3):304-9. Doi: 10.1002/uog.9066. PMID: 21630363 [PubMed – in process]
- Belfort M, Van Veen T, White GL, Koford S, Allred J, Postma I, Varner M. "Low Maternal Middle Cerebral Artery Doppler Resistance Indices Can Predict Future Development of Preeclampsia." *Ultrasound Obstet Gynecol*. 2011 Dec 16. Doi: 10.1002/uog.11078. [Epub ahead of print] PMID: 22173946 [PubMed – as supplied by publisher]
- Belfort MA. "Indicated preterm birth for placenta accreta." *Semin Perinatol*. 2011 Oct;35(5):252-6. PMID: 21962623 [PubMed – in process]
- Belfort MA, Dildy GA, Garrido J, White GL. "Intraluminal pressure in a uterine tamponade balloon is curvilinearly related to the volume of fluid infused." *Am J Perinatol*. 2011 Sep;28(8):659-66. Epub 2011 Apr 15. PMID: 21500144 [PubMed – indexed for MEDLINE]
- Boyer AC, Goncalves LF, Lee W, Shetty A, Holman A, Yeo L, Romero R. "Magnetic resonance diffusion weighted imaging: reproducibility of regional apparent diffusion coefficients for the normal fetal brain." *Ultrasound Obstet Gynecol*, in press.
- Browne LP, Patel J, Guillerman RP, Hanson IC, Cass DL. "Abdominal cocoon: a unique presentation in an immunodeficient infant." *Pediatr Radiol*. 2012 Feb;42(2):263-6. Epub 2011 Jun 29. PMID: 21713442 [PubMed – in process]
- Cass DL, Olutoye OO, Ayres NA, Moise KJ Jr, Altman CA, Johnson A, Cassidy CI, Lazar DA, Lee TC, Lantin MR. "Defining hydrops and indications for open fetal surgery for fetuses with lung masses and vascular tumors." *J Pediatr Surg*. 2012 Jan;47(1):40-5. PMID: 22244390 [PubMed - in process]
- Cass DL. "Impact of prenatal diagnosis and therapy on neonatal surgery." *Semin Fetal Neonatal Med*. 2011 Jun;16(3):130-8. Epub 2011 May 6. Review. PMID: 21530431 [PubMed – indexed for MEDLINE]
- Cassidy CI, Mehollin-Ray AR, Olutoye OO, Cassidy CI. "Jugular vein hypoplasia can preclude extracorporeal membrane oxygenation cannulation in the neonate with congenital diaphragmatic hernia: potential identification of the neonate at risk by fetal magnetic resonance imaging." *Fetal Diagn Ther*. 2011;30(3):225-8. Epub 2011 Sep 28.
- Feng S, Zhou KS, Lee W. "Automatic fetal weight estimation using 3D ultrasonography." *Proc. SPIE* 8315, 83150I (2012). <http://dx.doi.org/10.1117/12.911736>
- Garcia PJ, Olutoye OO, Ivey RT, Olutoye OA. "Case scenario: anesthesia for maternal-fetal surgery: the Ex Utero Intrapartum Therapy (EXIT) procedure." *Anesthesiology*. 2011 Jun;114(7):1446-52. No abstract available. PMID: 21555935 [PubMed – indexed for MEDLINE]
- Gay AN, Mushin OP, Lazar DA, Naik-Mathuria BJ, Yu L, Gobin A, Smith CW, Olutoye OO. "Wound healing characteristics of ICAM-1 null mice devoid of all isoforms of ICAM-1." *J Surg Res*. 2011 Nov;171(1):e1-7. Epub 2011 Jul 23. PMID: 21872884 [PubMed – indexed for MEDLINE]
- Gay AN, Lazar DA, Stoll B, Naik-Mathuria B, Mushin OP, Rodriguez MA, Burrin DG, Olutoye OO. "Near-infrared spectroscopy measurement of abdominal tissue oxygenation is a useful indicator of intestinal blood flow and necrotizing enterocolitis in premature piglets." *J Pediatr Surg*. 2011 Jun;46(6):1034-40. PMID: 21683194 [PubMed – indexed for MEDLINE]
- Knudson JD, Goldberg JF, Ayres NA. "Fibrolamellar Hepatocellular Carcinoma With Cardiac Spread Causing Severe Inferior Vena Cava Obstruction in a 9-Year-Old Child." *Pediatr Cardiol*. 2012 Mar 25. [Epub ahead of print] No abstract available. PMID: 22447385 [PubMed – as supplied by publisher]
- LampI M, Lee W, Koo W, Frongillo EA, Barker D, Romero R. "Ethnic differences in the accumulation of fat and lean mass in late gestation." *Am J Hum Biol*, in press.
- Lazar DA, Olutoye OO, Cass DL, Fernandes CJ, Welty SE, Johnson KE, Rycus PT, Lee TC. "Outcomes of neonates requiring extracorporeal membrane oxygenation for irreversible pulmonary dysplasia: the Extracorporeal Life Support Registry experience." *Pediatr Crit Care Med*. 2012 Mar; 13(2):188-90. PMID: 21666536 [PubMed – in process]
- Lazar DA, Cass DL, Olutoye OO, Kim ES, Welty SE, Fernandes CJ, Lee TC. "Venovenous cannulation for extracorporeal membrane oxygenation using a bicaval dual-lumen catheter in neonates." *J Pediatr Surg*. 2012 Feb;47(2):430-4. PMID: 22325408 [PubMed – in process]
- Lazar DA, Cassidy CI, Olutoye OO, Moise KJ Jr, Johnson A, Lee TC, Cass DL. "Tracheoesophageal displacement index and predictors of airway obstruction for fetuses with neck masses." *J Pediatr Surg*. 2012 Jan;47(1):46-50. PMID: 22244391 [PubMed - in process]
- Lazar DA, Cass DL, Dishop MK, Adam K, Olutoye OA, Ayres NA, Cassidy CI, Olutoye OO. "Fetal lung interstitial tumor: a cause of late gestation fetal hydrops." *J Pediatr Surg*. 2011 Jun; 46(6):1263-6. PMID: 21683234 [PubMed – indexed for MEDLINE]
- Lazar DA, Olutoye OO, Moise KJ Jr, Ivey RT, Johnson A, Ayres N, Olutoye OA, Rodriguez MA, Cass DL. "Ex-utero intrapartum treatment procedure for giant neck masses—fetal and maternal outcomes." *J Pediatr Surg*. 2011 May;46(5):517-22. PMID: 21616233 [PubMed – indexed for MEDLINE]
- Lazar DA, Cass DL, Rodriguez MA, Hassan SF, Cassidy CI, Johnson YR, Johnson KE, Johnson A, Moise KJ, Belleza-Bascon B, Olutoye OO. "Impact of prenatal evaluation and protocol-based perinatal management on congenital diaphragmatic hernia outcomes." *J Pediatr Surg*. 2011 May;46(5):808-13. PMID: 21616231 [PubMed – indexed for MEDLINE]
- Lee TC, Olutoye OO. "Evaluation of the prenatally diagnosed mass." *Semin Fetal Neonatal Med*. 2012 Mar 15. [Epub ahead of print] PMID: 22424723 [PubMed – as supplied by publisher]
- Lee W, Deter R, Sangi-Haghighi H, Yeo L, Romero R. "Prospective validation of fetal weight estimation using fractional limb volume." *Ultrasound Obstet Gynecol*, in press.
- Lee W, Riggs T, Koo W, Deter RL, Yeo L, Romero R. "The relationship of newborn adiposity to fetal growth outcome based on birth weight or the modified neonatal growth assessment score." *Ultrasound Obstet Gynecol*, in press.
- Merz E, Abramowicz J, Baba K, Blaas HGK, Deng J, Gindes L, Lee W, Platt L, Pretorius D, Schild R, Sladkevicius P, Timor-Tritsch I. "3D imaging of the fetal face." Recommendations from the International 3D Focus Group. *Ultrasound in Med* 2012;33:175-182.
- Olutoye OO, Olutoye OA. "EXIT procedure for fetal neck masses." *Curr Opin Pediatr*. 2012 Apr 11. [Epub ahead of print] PMID 22498672 [PubMed – as supplied by publisher]
- Pignatelli R, Law MA, Martinez H, Altman C, Ayres N, Jefferies JL, Ganame J. "Two-dimensional speckle strain imaging: in the management of paraganglioma, acute junctional tachycardia, and myocardial dysfunction in a child." *Tex Heart Inst J*. 2012;39(1):119-21. PMID: 22412245 [PubMed - in process]
- Raygorodskaya NY, Chernykh VB, Morozov DA, Olutoye OO, Bolotova NV, Averyanov AP, Maslyakova GN, Shilova NV, Zolotukhina TV. "A 3-year-old boy with ovotestes: gender reassignment and surgical management." *J Pediatr Endocrinol Metab*. 2011;24(7-8): 587-9. PMID: 21932607 [PubMed – indexed for MEDLINE]

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- Rodriguez MA, Cass DL, Lazar DA, Cassidy CI, Moise KJ, Johnson A, Mushin OP, Hassan SF, Belleza-Bascon B, Olutoye OO. "Tumor volume to fetal weight ratio as an early prognostic classification for fetal sacrococcygeal teratoma." *J Pediatr Surg*. 2011 Jun; 46(6):1182-5. PMID: 21683219 [PubMed – indexed for MEDLINE]
- Ruano R, Ramalho AL, deFreitas RCM, Campos JADB, Lee W, Zugaib M. "Three-dimensional ultrasonographic assessment of fetal total lung volume as a prognostic factor in primary pleural effusion." *J Ultrasound Med*, in press.
- Schlesinger AE, Mazziotti MV, Cassidy CI, Pimpalwar AP. "Recurrent Tracheoesophageal fistula after throacoscopic repair: vanishing clips as a potential sign." *Pediatr Surg Int*. 2011 Dec;27(12):1357-9. Epub 2011 Apr 24. PMID: 215116499 [PubMed – indexed for MEDLINE]
- Shamshirsaz AA, Shamshirsaz AA, Nayeri UA, Bahtiyar MO, Belfort MA, Campbell WA. "Pseudoamniotic Band Syndrome: A rare complication of mono-chorionic triplets with twin-to-twin transfusion syndrome." *Prenat Diagn*. 2012 Jan;32(1):97-8. doi: 10.1002/pd. 2895. Epub 2012 Jan 24. No abstract available. PMID: 22275306 [PubMed - in process]
- Van Veen TR, Belfort MA, Kofford S. "Maternal heart rate patterns in the 1(st) and 2(nd) stages of labor." *Acta Obstet Gynecol Scand*. 2012 Feb 7. doi: 10.1111/j.1600-0412.2012.01371.x. [Epub ahead of print] PMID: 22313165 [PubMed - as supplied by publisher]
- Van Veen TR, Belfort MA, Zeeman GG. "The effect of low-dose oxytocin infusion on cerebral hemodynamics in pregnant women." *A J Perinatol*. 2011 Aug; 28(7):579-84. Epub 2011 Mar 18. PMID:21424987 [PubMed – indexed]

Texas Children's Fetal Center Family Reunion



The 2011 Fetal Center Family Reunion, held Nov. 12, reunited former patients of Texas Children's Fetal Center with physicians, surgeons and staff who cared for them, even before some of them were born. Approximately 50 families – more than 200 people in all – from across the United States and Mexico attended the event, which also provided families with a chance to connect with others who shared experiences similar to theirs. The next reunion is scheduled for 2013.

We want to hear from you

In an effort to engage with you, our partners in maternal fetal care, please tell us if you would like to receive this newsletter online or by mail.

Go to texaschildrens.org/fetal and subscribe to our e-newsletter or use your smartphone to scan the QR code on the right.



Pavilion
for Women

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What we offer

Common fetal abnormalities

Texas Children's Fetal Center evaluates and treats many conditions, including the following:

Abdominal Wall Defects

- Gastroschisis
- Omphalocele

Amniotic Band Syndrome

CNS Lesions

- Anencephaly
- Encephalocele
- Holoprosencephaly
- Hydrancephaly
- Hydrocephalus

Congenital Airway Obstruction (CHAOS)

Congenital Diaphragmatic Hernia

Congenital Heart Disease

Craniofacial Anomalies

- Cleft Lip
- Cleft Palate

Duodenal and Intestinal Atresia

Esophageal Atresia with Tracheoesophageal Fistula

Fetal Cardiac Arrhythmias

Fetal Chylothorax or Hydrothorax

Giant Neck Masses

Lung Lesions

- Congenital Cystic Adenomatoid Malformation (CCAM)
- Hybrid Lesions
- Pleural Effusion
- Pleuro Pulmonary Blastoma
- Pulmonary Sequestration

Maternal Immune Disorders

Affecting the Fetus

- Congenital Heart Block
- Platelet Alloimmunization
- Red Cell Alloimmunization

Myelomeningocele (Spina Bifida)

Non-immune Hydrops

Small Bowel Obstruction

Sacroccygeal Teratoma

Skeletal Dysplasia

Twin Abnormalities

- Discordant Intrauterine Growth Restriction (IUGR)
- Discordant Structural Anomalies
- TRAP Sequence (acardiac twin)
- Twin-Twin Transfusion Syndrome

Urinary Tract Obstruction

- Bladder Outlet Obstruction
- Hydronephrosis

Diagnostic procedures and fetal therapies

We are equipped to offer the full spectrum of prenatal testing and therapies, including:

Imaging

- Chromosomal anomaly screening (nuchal translucency measurements in conjunction with maternal serum analytes)
- Diagnostic fetoscopy
- Fetal cardiac consultation
- Fetal echocardiography
- Fetal MRI

Ultrasound

- Basic
- Comprehensive
- FIRST exam
- 3-D ultrasound

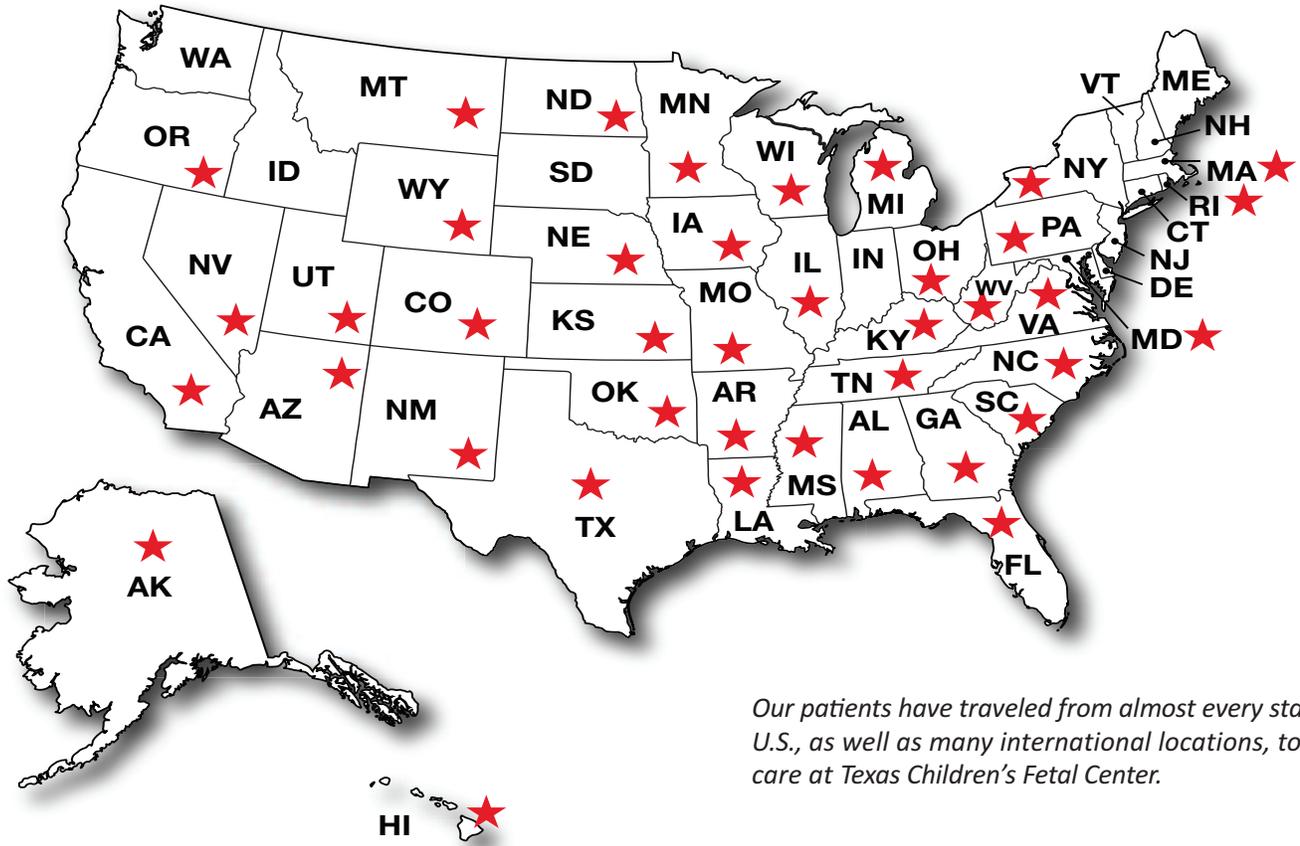
Invasive Diagnostics

- Chorionic villus sampling (transcervical and transabdominal)
- Fetal blood sampling (cordocentesis)

Fetal therapies

- Open fetal surgery for lung masses/CCAM
- Open fetal surgery for SCT and vascular tumors
- Open fetal surgery for myelomeningocele (spina bifida)
- Ex-utero intrapartum treatment (EXIT)
- Fetoscopic laser photocoagulation for twin-twin transfusion syndrome
- Experimental fetal tracheal occlusion for congenital diaphragmatic hernia (FETO)
- Amniotic band resection
- Fetal shunt placement (chest and bladder)
- Intrauterine transfusion
- Radiofrequency ablation or umbilical coagulation for complicated monochorionic pregnancies
- Fetal skin biopsy
- Genetic amniocentesis
- Fetal cardiac interventions for:
 - Severely Restrictive PFO in hypoplastic left heart syndrome
 - Critical aortic stenosis

Our patients



Our patients have traveled from almost every state in the U.S., as well as many international locations, to receive care at Texas Children's Fetal Center.

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ADDRESS SERVICE REQUESTED

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