



Advanced Fetal Care Center



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The mission of Children's Hospital Boston's Advanced Fetal Care Center (AFCC) is to provide the finest diagnosis, care and ongoing screening for a mother carrying a baby with a confirmed or suspected congenital anomaly. For these families, our center offers entry to a continuum of care and support that extends throughout childhood—from prenatal diagnosis and counseling, through treatment and long-term follow-up. Our physicians, who represent all pediatric subspecialty areas, work with a wide range of babies with anomalies. Together, they have developed ground-breaking procedures in fetal medicine and surgery.

Scheduling

Children's Hospital Boston

300 Longwood Avenue, Pavilion 2
Boston, MA 02115
1-866-FETALCARE | 1-617-355-6512
Fax: 617-730-0302 | childrenshospital.org/afcc

International

For families residing outside of the United States, please contact Children's International Health Services, which facilitates the medical review of patient records and appointment scheduling and provides assistance with customs and immigration, transportation, hotel and housing accommodations.
01-617-355-5209 | childrenshospital.org/international
international.center@childrens.harvard.edu

Areas of expertise

Our team evaluates and cares for fetuses with a wide range of conditions, including:

- abdominal wall defects
- airway obstruction
- bladder exstrophy
- bladder outlet obstruction
- cleft lip and palate
- cloacal anomalies
- clubfeet
- congenital chest masses
- congenital diaphragmatic hernia
- congenital heart defects
- congenital limb differences
- corpus callosum abnormalities
- cystic kidneys
- Down syndrome
- lymphatic malformations and hemangiomas
- posterior fossa abnormalities
- renal malformations
- sacrococcygeal teratoma
- skeletal abnormalities
- spina bifida
- twin-twin transfusion syndrome
- ventriculomegaly/hydrocephalus

Highlights

- World's first and most experienced center in performing successful fetal cardiac interventions, including stent placement, to treat cardiac anomalies *in utero*.
- Provides expert, in-hospital coordination of EXIT (ex utero intrapartum treatment) deliveries for airway obstruction and CDH.
- Performed the first successful laser separation in Massachusetts for twin-to-twin transfusion syndrome.
- Collaborates with maternal fetal medicine specialists throughout the region to ensure a continuum of care.
- Multidisciplinary team of more than 40 clinicians, representing all pediatric subspecialties, provides consultation at every step of pregnancy and following birth.
- At the heart of an institution ranked among the top three of all pediatric hospitals in ten pediatric specialties by *U.S. News & World Report* in 2011. We are #1 in cancer, cardiology & heart surgery, neurology & neurosurgery, nephrology, orthopedics and urology.
- Hosts weekly academic conference attended by more than 80 health care professionals from the Harvard consortium of hospitals. Cases are presented to discuss their treatment options, management and outcomes.
- Specialized nursing staff including nurse practitioners
- Dedicated AFCC genetic counselor and social worker on staff

Comprehensive fetal care

Initial referral

Patients are referred to the AFCC from all over the world for diagnostic imaging and specialist consultation. Appointments are coordinated by our staff to ensure timely scheduling.

Diagnostics

Our team's expertise, coupled with state-of-the-art technology, enables us to provide an accurate and targeted diagnosis of complex fetal anomalies. Diagnostic tests may include a fetal ultrasound, plain films, fetal magnetic resonance imaging (MRI) or fetal echocardiogram (fetal echo).

Pediatric specialist consultation

After patients undergo diagnostic imaging, the family will meet with the multidisciplinary clinical team to review findings, confirm the diagnosis and discuss the impact this may have on the pregnancy and the baby's life.

Support

Our clinical staff includes experienced nurses and a genetic counselor, all of whom provide ongoing education, support and communication to parents and referring providers through pregnancy and after delivery. Our clinical social worker is available for confidential supportive counseling and resource assistance, including providing information about travel and accommodations, arranging tours of the hospital, scheduling prenatal lactation consultations and connecting parents to the AFCC's family-to-family network and the hospital's Center for Families.

Fetal surgery and interventions

Fetal intervention may be recommended prior to delivery when a specialist believes that it may improve the chances of fetal survival or long-term outcome. If there is a recommendation for fetal intervention, the AFCC team will discuss options with the parents, including risks and prognosis based on our experience and the most current data. All necessary services are centrally coordinated by our team.

Coordination of delivery

Our outcomes are a result of in-depth prenatal consultation and carefully coordinated care during the critical period surrounding delivery. Many patients deliver and continue care in their local community hospital with follow-up from an AFCC specialist after birth. In other cases, AFCC patients deliver their babies at either Brigham and Women's Hospital or Beth Israel Deaconess Medical Center, two of the nation's most highly ranked hospitals, both of which are located adjacent to Children's. Whenever appropriate, Children's specialists are on-hand at the delivery.

After delivery

The AFCC's specialists, through their clinics, routinely care for children for years after birth, to monitor the impact of any anomaly and provide treatment when appropriate.

Research

In addition to the study of advances in clinical care, AFCC specialists are conducting basic research to examine and understand fetal anomalies. Areas of inquiry include enhanced detection of fetal anomalies through imaging and safe surgical intervention using minimally invasive techniques. Researchers are also studying the disease processes in various fetal anomalies *in utero* and developing intervention strategies with cellular, biological and/or genetic solutions.

Our specialists have published numerous textbook chapters and articles in peer-reviewed medical journals. They are regularly invited to give lectures and presentations nationally and internationally about advances in research and clinical care at the AFCC. Our team is recognized for their leadership in fetal intervention and clinical care, cardiology, anesthesiology and diagnosis of fetal anomalies.

Partial list of publications

- Rosen H, Chiou G, Stoler J, Mulliken J, Tarui T, Meara J, Estroff J. "Magnetic resonance imaging for detection of brain abnormalities in fetuses with cleft lip and/or cleft palate." *Cleft Palate Craniofac J*. Epub 2010 Aug 17.
- Beeghly M, Ware J, Soul J, du Plessis A, Khwaja O, Senapati GM, Robson CD, Robertson RL, Poussaint TY, Barnewolt CE, Feldman HA, Estroff JA, Levine D. "Neurodevelopmental outcome of fetuses referred for ventriculomegaly." *Ultrasound Obstet Gynecol*. 2010 Apr; 35(4): 405-416.
- Limperopoulos C, Tworetzky W, McElhinney DB, Newburger JW, Brown DW, Robertson RL Jr, Guizard N, McGrath E, Geva J, Annese D, Dunbar-Masterson C, Trainor B, Laussen PC, du Plessis AJ. "Brain volume and metabolism in fetuses with congenital heart disease: evaluation with quantitative magnetic resonance imaging and spectroscopy." *Circulation*. 2010 Jan 5; 121(1): 26-33. Epub 2009 Dec 21.
- Tworetzky W, McElhinney DB, Marx GR, Benson CB, Brusseau R, Morash D, Wilkins-Haug LE, Lock JE, Marshall AC. "In utero valvuloplasty for pulmonary atresia with hypoplastic right ventricle: techniques and outcomes." *Pediatrics*. 2009 Sep; 124(3): e510-8. Epub 2009 Aug 24.
- Bae DS, Barnewolt CE, Jennings RW. "Prenatal diagnosis and treatment of congenital differences of the hand and upper limb." *J Bone Joint Surg Am*. 2009 Jul; 91 Suppl 4: 31-9. Review.
- Turner CG, Tworetzky W, Wilkins-Haug LE, Jennings RW. "Cardiac anomalies in the fetus." *Clin Perinatol*. 2009 Jun; 36(2): 439-49. xi. Review.
- Klein J, Barnewolt CE, Jennings RW. "Current and future treatment of fetal thoracic masses." *Expert Review of Obstetrics and Gynecology*. 2009 March; 4(2): 201-217.
- Estrada CR Jr. "Prenatal hydronephrosis: early evaluation." *Curr Opin Urol*. 2008 Jul; 18(4): 401-3. Review.
- Kunisaki SM, Jennings RW. "Fetal surgery." *J Intensive Care Med*. 2008 Jan-Feb; 23(1): 33-51. Review.
- Kunisaki SM, Armant M, Kao GS, Stevenson K, Kim H, Fauza DO. "Tissue engineering from human mesenchymal amniocytes: a prelude to clinical trials." *J Pediatr Surg*. 2007 Jun; 42(6): 974-9; discussion 979-80.