UCSF Benioff Children's Hospitals
Fetal Treatment Center

Birthplace of fetal surgery

The UCSF Fetal Treatment Center is a world leader in diagnosing and treating birth defects before delivery. Since 1981, UCSF has continued to be at the forefront of the most significant breakthroughs in fetal surgery and treatment.

40+
years of experience

UCSF Medical Center has led or participated in many of the fetal treatment trials sponsored by the National Institutes of Health (NIH).

First in the world

UCSF Medical Center was the first institution in the world to successfully perform open fetal surgery.

650+
fetal surgeries and endoscopic fetal interventions since 1981

BEST CHILDREN'S HOSPITALS U.S.News & WORLD REPORT RANKED IN 10 SPECIALTIES 2023-2024

UCSF Benioff Children's Hospitals rank among the nation's best in all 10 specialties.

Pioneers

in the diagnosis and treatment of congenital anomalies before birth

10,000+
families cared for from across the U.S. and around the world

ucsfbenioffchildrens.org/fetaltreatment

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Highlights in fetal care

1980s

1981
World's first successful open fetal surgery

1982
Michael Harrison, MD, co-founds the International Fetal Medicine and Surgery Society (IFMSS), designed to promote the development and advancement of fetal diagnosis and therapy.

1990s

1997
Minimally invasive (Fetendo) approach first used for congenital diaphragmatic hernia (CDH)

1997
First in utero treatment of congenital high airway obstruction syndrome (CHAOS)

1998
Radio-frequency ablation (RFA) first used for twin reversed arterial perfusion (TRAP) sequence

1999
First tracheal balloon occlusion used in the U.S. for treating CDH

2000s

2007
Participation in NIH-funded multicenter randomized trial comparing amnioreduction to selective fetoscopic laser for the treatment of twin-twin transfusion syndrome (TTTS)

2010s

2011
Participation in NIH-funded multi-center randomized trial of in utero surgery for spina bifida repair

Conditions managed

- Agenesis of the corpus callosum
- Alpha thalassemia major
- Amniotic band syndrome
- Bowel obstruction
- Congenital diaphragmatic hernia (CDH)
- Congenital high airway obstruction syndrome (CHAOS)
- Comprehensive early anatomic evaluation
- Congenital heart disease
- Congenital pulmonary airway malformation (CPAM)
- Fetal anemia and thrombocytopenia
- Gastroschisis
- Hydrops fetalis
- Lysosomal storage diseases
- Monochorionic twins
- Multiple anomalies
- Omphalocele
- Pulmonary sequestration
- Sacrococcygeal teratoma (SCT)
- Spina bifida
- Stem cell treatments
- Twin reversed arterial perfusion (TRAP) sequence
- Twin-to-twin transfusion syndrome (TTTS)
- Twin pregnancy complications
- Unequal placental sharing
- Urinary tract obstruction
- Ventriculomegaly
- And many others

Beyond surgical intervention

- Fetal magnetic resonance imaging (MRI) as an adjunct to enhance ultrasound in prenatal diagnosis
- Second opinions for complex fetal cases
- Co-management with referring providers to allow care close to home as much as possible
- Advanced prenatal genetic testing and counseling, including rapid whole genome sequencing
- Multidisciplinary approach to supporting families including palliative care and bereavement team

(800) 793-3887 (800-RX-FETUS)
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2014
Tippi MacKenzie, MD, co-founds the International Fetal Transplantation and Immunology Society (iFeTIS) to promote basic and translational research leading to development of fetal therapies.

2015
UCSF Center for Maternal-Fetal Precision Medicine founded

2017
First patient enrolled in FDA-approved clinical trial of fetal stem cell transplantation for alpha thalassemia major

2017
Participation in multicenter NIH-funded Clinical Sequencing Evidence-Generating Research (CSER) consortium initiating fetal exome sequencing at UCSF

2017
Opening of the Alpha Thalassemia Patient Registry

2018
First patient enrolled in HyDROPS study to perform fetal exome sequencing and define genetic etiologies of fetal effusions

2020s

2020
First patient enrolled at UCSF as part of multicenter Renal Anhydramnios Fetal Therapy (RAFT) Trial

2021
First patient treated under FDA-approved protocol for in utero enzyme replacement therapy for lysosomal storage diseases

2023
First in California to offer rapid in-house genomic sequencing for all fetal anomalies, providing fast and accurate diagnosis of rare genetic conditions during pregnancy

Discoveries and inventions

- Repairing simple anatomic anomalies in utero alleviates adverse physiologic consequences.
- Tracheal occlusion creates lung growth.
- Steroids can help stabilize CPAM size and thereby reduce the risk of progression to hydrops fetalis.
- Arterio-arterial anastomoses are protective for twin-twin transfusion syndrome (TTTS).
- Lung-to-head ratio (LHR), liver position and stomach position can be used as ultrasound markers to determine severity of congenital diaphragmatic hernia (CDH) in fetuses.
- Harrison shunt for fetal lower urinary tract obstruction and effusions
- Uterine stapling device for fetal surgery

Care team and specialists

Pediatric specialists from numerous pediatric disciplines provide fetal care at UCSF, including:

- Anesthesiologists
- Cardiologists
- Cardiothoracic surgeons
- Craniofacial surgeons
- Endocrinologists
- Genetic counselors
- Geneticists
- Maternal-fetal medicine specialists
- Neonatologists
- Nephrologists
- Neurologists
- Neuroradiologists
- Neurosurgeons
- Nurse practitioners
- Orthopaedic surgeons
- Otolaryngologists
- Radiologists
- Registered nurses
- Social workers
- Surgeons
- Urologists

50
specialists participate in weekly case conferences

100+
fetal specialists trained since 1981

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Fetal Treatment Center team

Hanmin Lee, MD
Pediatric surgeon
Chief, Division of Pediatric Surgery
Medical Director, Fetal Treatment Center

Mary Norton, MD
Perinatologist and clinical geneticist
Co-Director, Center for Maternal-Fetal Precision Medicine

Tippi MacKenzie, MD
Pediatric surgeon
Co-Director, Center for Maternal-Fetal Precision Medicine

Anita Moon-Grady, MD
Pediatric cardiologist
Medical Director, UCSF Fetal Cardiovascular Program

Shabnam Peyvandi, MD, MAS
Pediatric cardiologist
Director, Healthy Hearts and Minds Program
Associate Director, UCSF Fetal Cardiovascular Program

James Anderson, MD
Neonatologist
Medical Director, Fetal Treatment Center, Oakland

Janice Scudmore, MSN, FNP-BC
Manager, Fetal Treatment Center

Locations

The UCSF Benioff Children's Hospitals Fetal Treatment Center has two locations:

UCSF Betty Irene Moore Women's Hospital
1855 Fourth St., Second Floor, Suite A-2432
San Francisco, CA 94158
Phone: (800) 793-3887 (800-RX-FETUS)

UCSF Benioff Children's Hospital Oakland
Outpatient Center
744 52nd St., Third Floor
Oakland CA 94609
Phone: (510) 428-3156

Leadership

UCSF is a founding partner of the following organizations:

- International Fetal Cardiac Intervention Registry (IFCIR)
- International Fetal Medicine and Surgery Society (IFMSS)
- International Fetal Transplantation and Immunology Society (iFeTIS)
- North American Fetal Therapy Network (NAFTNet)
- Rosenman Institute
- UCSF-Stanford Pediatric Device Consortium
- University of California Fetal Consortium (UCfC)

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