



**CENTERS OF
EXCELLENCE AND
DISTINGUISHED
PROGRAMS**

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Our office is open from Monday – Friday 8.00 AM – 5:30 PM ET.
Outside normal businesshours, on-call staff will receive your call.

For emergency transports outside normal business hours, please contact CHOP's
transport team at 001 215 590 2160

Operational Statistics and Facts (Fiscal Year 2023)

33,681 Inpatient Admissions
123,476 Emergency Department Encounters
1.58 million Outpatient Encounters

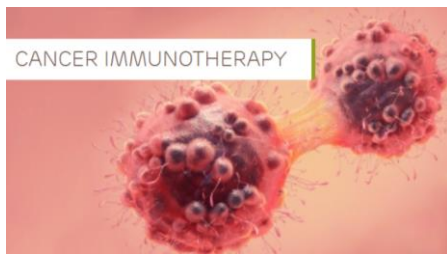
667 Beds Including:

103 Bed Neonatal Infant Intensive Care Unit
36 Bed Cardiac Intensive Care Unit
84 Bed Pediatric Intensive Care Unit
17 Bed Special Delivery Unit (Obstetrics)

Operating Rooms: 21 general; 4 Cardiothoracic

Frontier Programs: Trailblazing Initiatives

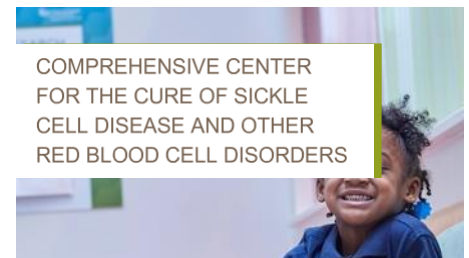
Frontier Programs at CHOP conduct visionary research that translates to cutting-edge clinical care. They offer answers often not available anywhere else in the world. CHOP champions these programs and ensures that they receive critical support to accelerate their progress. By investing in Frontier Programs that bring the best minds to the most challenging conditions, CHOP is once again redefining what's possible. The frontier programs below offer unique care that attracts children from around the world. Program names link to more information on the research.



Shifting the paradigm to treat the toughest pediatric cancers with new cell therapies that reprogram a patient's own immune system to kill cancer cells.



Developing advanced imaging and interventional techniques to more accurately identify and manage lymphatic leaks and lymphatic flow disorders.



Pioneering new approaches to diagnosis, care, and treatment for patients with red blood cell disorders with novel gene therapies and stem-cell-based treatments that aim to reduce symptoms and prolong life.



Revolutionizing our understanding of the genetic causes and mechanisms of hyperinsulinism, developing diagnostic tools for a precision-medicine approach to treatment, and discovering new treatment options.

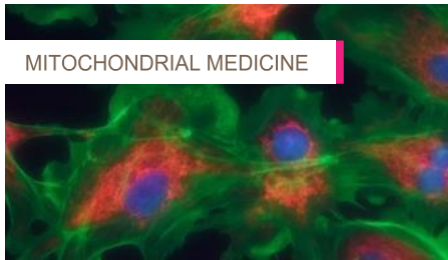


Expanding access to genetic testing to all children with epilepsy and offering individualized treatment plans informed by novel genetic findings.

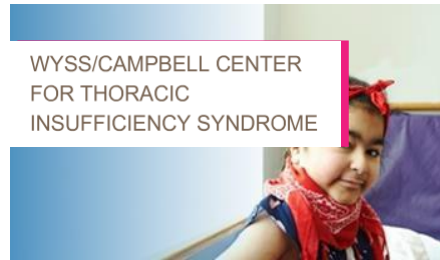


Expanding ways to rapidly evaluate immune function, identifying genetic defects underlying immune dysregulation, and accelerating new immunotherapeutics.

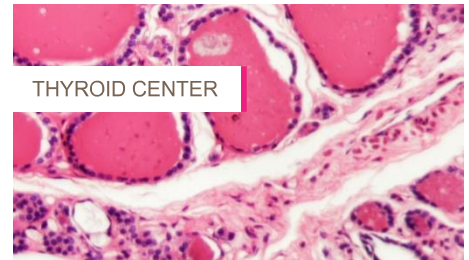
Frontier Programs at CHOP



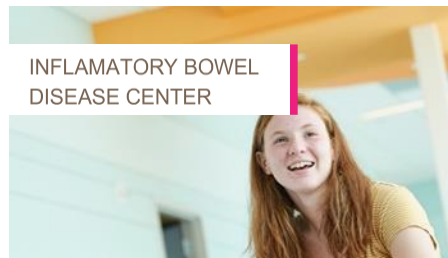
Converging individualized basic, translational, and clinical research programs dedicated to improving the health of patients of all ages living with mitochondrial disease.



Developing a deeper understanding of diseases that cause thoracic insufficiency syndrome (TIS) and pioneering new devices to provide the best care in the world for patients with TIS.



Leading the treatment of pediatric thyroid disorders, and thyroidectomy surgery. Researching the molecular landscape of pediatric thyroid cancer, confirming diagnosis targets and determining invasive behavior markers.



Generating new insights from multidisciplinary translational research to provide personalized therapy worldwide for more children with inflammatory bowel disease.



Combining extraordinary care, innovative translational research, and novel innovations to improve outcomes for children with common and complex airway disorders.



Continuously building upon multidisciplinary expertise to improve care and understanding of long-term outcomes for babies born with CDH and developing new treatment modalities.



Creating a multidisciplinary team to provide evidence-based care for patients with complex vascular anomalies and researching the genetic basis for these cases to inform new therapeutic approaches.



Conducting laboratory, translational, and clinical research to revolutionize medications and therapies aimed at eradicating childhood food allergies.



Combining unmatched expertise in diagnostics, surgical intervention and transcatheter procedures with groundbreaking research and the most advanced imaging techniques available.

Cell and Gene Therapies at CHOP

For more than 3 decades CHOP has been driving the world's understanding of genetics in pediatric medicine and translating this into improved care for children. The first two FDA approved cell and gene therapies for children were developed by experts at CHOP, most others were tested in clinical trials at CHOP, and 9 are currently offered to patients at CHOP.

CHOP's world leading expertise in providing FDA approved therapies:

- **Kymriah** - CAR T-Cell therapy for relapsed leukemia
- **Luxturna** - Gene therapy for Leber's Congenital anomaly
- **Zolgensma** - Gene therapy for spinal muscular atrophy
- **Zynteglo, Hemegenix** - Gene therapies for beta thalassemia
- **Skysona** - Gene therapy for adrenoleukodystrophy
- **Vyjuvek** - Gene therapy for epidermolysis bullosa
- **Elevidys** - Gene therapy for Duchene Muscular Dystrophy
- **Lyfgenia** - Gene therapy for sickle cell disease

Discovering the next life changing therapies

CHOP researchers, clinicians and scientists are actively investigating cell and gene therapies that will transform care for pediatric diseases – from the rare to the common. Looking beyond drug discovery, CHOP is rapidly expanding expertise in manufacturing, administration and clinical management of new therapies, including significant infrastructure investments in our:

- **Center for Cellular and Molecular Therapeutics Clinical Vector Core**
- **Clinical In-Vivo Gene Therapy group**
- **Cell and Gene Therapy Laboratory**

80+

faculty engaged
in research

20+

unique clinical
and pre-clinical
programs

45+

active clinical
trials

Allergy and Immunology

The Division of Allergy at CHOP, a designated Center of Excellence by the World Allergy Organization, provides comprehensive evaluation and treatment of allergic diseases and asthma. The division is one of the largest pediatric allergy groups in the region, caring for patients from around the world.

[Kathleen Sullivan, MD, PhD](#), Chief of the Division of Allergy and Immunology

Allergy & Immunology Program	Key Physicians	Description
Immune Dysregulation Frontier Program	Ed Behrens, MD , Chief, Division of Rheumatology Kate Sullivan, MD, PhD , Chief, Division of Allergy and Immunology Michele Lambert, MD , Attending Physician, Hematology David Teachey, MD , Attending Physician, Hematology-Oncology	No other pediatric hospital that combines the expertise of so many subspecialists to aid in the evaluation and treatment of children with immune dysregulation disorders. The program can find answers to unexplained symptoms that affect multiple organs. The program offers coordinated care from experts in every specialty, state-of-the-art diagnostic and genetic tests, and personalized treatments.
Food Allergy Center Frontier Program	Jonathan Spergel, MD, PhD , Chief, Allergy Section Kathleen E. Sullivan, MD, PhD Division Chief, Allergy and Immunology	The Food Allergy Center has already established itself as one of the leading programs in the country and is the only center with national expertise in all four types of food allergy. CHOP has been named a center of excellence by the Clinical Network for Food Allergy. The center also played a pivotal role in developing the first FDA approved immunotherapy to treat a food allergy (Palforzia™ for peanut allergies).

Allergy & Immunology Program	Key Physicians	Description
Eosinophilic Disorders Center	Chris Liacouras, MD , Co-Director of the Eosinophilic Disorders Center Jonathan Spergel, MD, PhD , Co-Director of the Eosinophilic Disorders Center	<p>The Center treats children with eosinophilic esophagitis, referred to as EoE, as well as other eosinophilic disorders, such as eosinophilic gastroenteritis. The team of specialists come from four disciplines: gastroenterology, allergy, nutrition and pathology. The center treats 1,500 infants, children and teenagers with EoE — the largest clinical population in the world</p>
Program for Integrated Immunodeficiency and Cellular Therapy	Nancy J. Bunin, MD Medical Director Jennifer Heimall, MD Medical Director	<p>The Program for Integrated Immunodeficiency and Cellular Therapy (PIICT) provides comprehensive, patient-focused, long-term care to children with primary immune deficiencies treated with cellular therapies, and those with immune dysfunction after receiving cellular therapy for other diseases such as leukemia, metabolic or other blood cell diseases.</p> <p>Conditions Treated</p> <ul style="list-style-type: none"> • Severe Combined Immunodeficiency (SCID) and combined immunodeficiencies • Chronic Granulomatous Disease (CGD) • Hemophagocytic Lymphohistiocytosis (HLH) • Wiskott-Aldrich syndrome (WAS) • Very Early Onset Inflammatory Bowel Disease (VEO-IBD) • IPEX syndrome and related immune dysregulation disorders • Hyper-IGM syndromes Immune abnormalities following cellular therapy

Allergy & Immunology Program	Key Physicians	Description
<p><u>Undiagnosed Disease Program (UDP)</u> – Solving the Unsolvable</p>	<p><u>Kathleen E. Sullivan, MD, PhD</u> Medical Director <u>Rebecca Ganetzky, MD</u> Mitochondrial Medicine & Diagnostics <u>Cara M. Skraban, MD</u> Human Genetics <u>Adeline Vanderver, MD</u> Neurologic Disorders and inherited neuropathies <u>Edward M. Behrens, MD</u> Rheumatology</p>	<p>The UDP provides personalized care for families who are struggling to pinpoint the cause of their child’s symptoms. The UDP harnesses the knowledge of clinical and research experts from across CHOP plus the power of comprehensive genetic analysis and other advanced diagnostic tools to improve diagnosis and treatment of undiagnosed diseases</p>

Cancer Center/Oncology

The Cancer Center is a pediatric cancer treatment facility staffed by internationally recognized pediatric oncologists and teams with expertise in every type of pediatric cancer.

The center's oncologists are not only experts in delivering treatment, but are involved in the development of new ways to treat these diseases more safely, effectively and with fewer side effects. Some of the most significant breakthroughs in the treatment of pediatric cancers have happened at CHOP.

[Stephen P. Hunger, MD](#), Chief of Division of Oncology, Director of the Center for Childhood Cancer Research

Cancer Center Program	Key Physicians	Description
<u>Cancer Immunotherapy Program, CAR T-Cell Therapy</u> Frontier Program	<u>Stephen A. Grupp, MD, PhD</u> , Chief, Cellular Therapy & Transplant Section, Director of the Cancer Immunotherapy Program <u>Shannon L. Maude, MD, PhD</u> , Attending Physician in the Cancer Center	The Cancer Immunotherapy team at CHOP was the first to use CAR T-cell therapy in a child with acute lymphoblastic leukemia. They have since treated more than 500 children with this therapy. Our doctors and researchers helped develop the first national and international clinical trials for an immunotherapy known as chimeric antigen receptor ("CAR") T-cell therapy for children with advanced acute lymphoblastic leukemia (ALL).
<u>Pediatric Proton Therapy Center</u>	<u>Christine Hill-Kayser, MD</u> , Pediatric Oncologist, Senior Author of the Proton Beam Therapy (PBT) Study <u>Stephen P. Hunger, MD</u> Chief, Division of Oncology, Director of the Center of Childhood Cancer Research	The Cancer Center at CHOP (CHOP) offers one of the most established and experienced pediatric proton therapy programs, in collaboration with Penn Medicine at the Roberts Proton Therapy Center. It was the first facility of its kind, designed specifically with children in mind.

Cancer Center Program	Key Physicians	Description
Solid Tumor Program	<p>Rochelle Bagatell, MD Pediatric Oncologist and Director of the Solid Tumor Program</p> <p>John M. Maris, MD Pediatric Oncologist and Co-head of the Pediatric Cancer Dream Team</p>	The Solid Tumor Program team is one of the largest programs, with experts in every specific type of tumor, who develop a treatment plan unique to each child. Solid tumor specialists at CHOP include: medical oncologists, expert pediatric surgeons, radiation oncologists and other care providers.
Leukemia and Lymphoma	<p>Stephen P. Hunger, MD Chief, Division of Oncology, Director of the Center for Childhood Cancer Research</p>	There's no other hospital in the United States with the depth of expertise in pediatric leukemia and lymphoma, cellular immunotherapy and stem cell transplantation as you'll find at CHOP. CHOP is specially equipped to effectively treat all newly diagnosed and relapsed leukemias and lymphomas that occur in children, adolescents and young adults, and to care for critically ill patients.
<p>Advanced Pediatric Thyroid Cancer Therapeutics Clinic</p> <p>Frontier Program</p>	<p>Andrew J. Bauer, MD Endocrinologist, Medical Director of Thyroid Center</p> <p>Theodore W. Laetsch, MD Oncologist,</p> <p>Sogol (Goli) Mostoufi-Moab, MD, MSCE dual-board certified in pediatric endocrinology and oncology</p> <p>Frank M. Balis, MD Oncology</p>	Pediatric patients with progressive thyroid cancer that does not respond to radioactive iodine therapy now have new options for treatment. These cutting-edge therapies are offered in the Advanced Pediatric Thyroid Cancer Therapeutics Clinic- the only established, collaborative clinic in the US.

Cancer Center Program	Key Physicians	Description
<p>Complex Vascular Anomalies Program Frontier Program</p>	<p>Denise Adams, MD Director, Comprehensive Vascular Anomalies Program Hakon Hakonarson, MD, PhD Director, Center for Applied Genomics</p>	<p>Vascular anomalies – which occur when arteries, capillaries, veins or lymphatic vessels fail to develop correctly – can range from mild to very complex. The complex cases can be debilitating through disrupting blood and lymph flow, exerting physical pressure on nearby structures, and affecting normal metabolic processes. The Comprehensive Vascular Anomalies Program (CVAP) at Children’s Hospital of Philadelphia (CHOP) includes state-of-the-art genomics and personalized research strategies to determine the causes of these conditions and identify targeted therapies. These innovative options are based on standards of excellent interdisciplinary clinical care.</p>
<p>Blood and Bone Marrow Transplant</p>	<p>Stephen A. Grupp, MD, PhD, Chief, Cellular Therapy and Transplant Section Timothy S. Olson, MD, PhD, Transplant Medical Director, Jason Freedman, MD, MSCE Inpatient Medical Director, Oncology</p>	<p>The Blood and Marrow Transplant program is recognized for its quality, service, innovative approaches and excellent patient outcomes. It offers families a state-of-the-art facility where all transplant services are provided at a single location and where patient comfort and safety are the priority. It is one of the few centers to have a stem cell processing lab with the Good Manufacturing Process designation, the highest standards in drugs and biologics manufacturing in the eyes of the FDA. CHOP also has the most advanced immunogenetics laboratory on site.</p>

Cancer Center Program	Key Physicians	Description
Comprehensive Bone Marrow Failure Program	Peter Kurre, MD Director, Pediatric Comprehensive Bone Marrow Failure Center and the Division of Hematology Timothy S. Olson, MD, PhD , Transplant Medical Director, Pediatric Comprehensive Bone Marrow Failure Center	The program offers complete diagnostic, therapeutic and support services for children with acquired and inherited bone marrow disorders. The team's medical and transfusion therapies have achieved results that are among the best nationally.
Brain Tumors/Neuro-oncology	Jane E. Minturn, MD, PhD Neuro-oncology Michael J. Fisher, MD Neuro-oncology Jean B. Belasco, MD Neuro-oncology Benjamin C. Kennedy, MD Neurosurgery Phillip B. Storm, MD Division Chief, Neurosurgery	The Neuro-Oncology Program at CHOP is staffed by a group of seven full-time, dedicated pediatric neuro-oncologists, and is one of the largest such groups dedicated to treating pediatric brain and spinal cord tumors, neurofibromatosis and associated tumors. The Neuro-Oncology Program is internationally recognized for having the highest quality neurosurgical, neuro-imaging and neuro-pathology support. We see about 200 new patients a year.
Hemophagocytic lymphohistiocytosis (HLH) Treatment Team	Anne F. Reilly, MD, MPH David T. Teachey, MD	Hemophagocytic lymphohistiocytosis (HLH) is a disorder in which too many infection-fighting cells are produced and activated, causing organ inflammation and damage. If HLH is diagnosed quickly and accurately, a cure is possible for this complicated disease. CHOP has a team of experts dedicated to treating HLH.

Cancer Center Program	Key Physicians	Description
Cancer Predisposition Program	<p>Garrett M. Brodeur, MD, Director of the Cancer Predisposition Program</p> <p>Jennifer Kalish, MD, PhD Pediatric Genetics</p>	<p>Health professionals from pediatric oncology, medical genetics, hematology, neurology, endocrinology, genetic counseling, social work, psychology and nursing form a team that addresses the needs of children with genetic cancer predisposition.</p>
Center for Precision Medicine for High-Risk Pediatric Cancer	<p>Theodore Laetsch, MD Development therapeutics Program Leader</p> <p>Marilyn Li, MD, MS, Vice Chief of the Division of Genomic Diagnostics, Director of Cancer Genomic Diagnostics</p> <p>Kai Tan, PhD, Director Center for Single Cell Biology</p> <p>Adam Resnick, PhD Director, Center for Data-Driven Discovery in Biomedicine</p>	<p>The Center for Precision Medicine for High-Risk Pediatric Cancer is a unified “single stop” for children, adolescents and young adults whose cancers lack an effective standard of care, fail to respond to standard therapy or relapse after initial therapy. The center integrates next-generation tumor genetic profiling with individual patient and tumor characteristics and any prior treatment to find a personalized treatment strategy.</p>
Refractory Neuroblastoma Program	<p>Rochelle Bagatell, MD</p> <p>Stephan A. Grupp, MD, PhD</p> <p>John M. Maris, MD</p> <p>Yael P. Mossé, MD</p>	<p>The Refractory Neuroblastoma Program offers exceptional personalized care to children with refractory (relapsed) neuroblastoma, including treatment with unique therapies. Our group is comprised of international leaders in neuroblastoma treatment who are able to offer families a large portfolio of clinical trial options and unrivaled support services.</p>

Cancer Center Program	Key Physicians	Description
Very Rare Malignant Tumors Program	Theodore Laetsch, MD Development Therapeutics Program Leader	<p>The program specializes in treatment of very rare tumors, which come in different forms and are individually very rare, but as an aggregate, they comprise more than 10% of all pediatric cancers. Our program will give these patients a pediatric medical home and access to potential treatments.</p> <p><u>Conditions Seen</u></p> <ul style="list-style-type: none"> • Rare Subtypes of Sarcomas • Cancers Usually Found in Adults • Neuroendocrine Tumors • Pigmented Lesions
Neurofibromatosis Program	Michael J. Fisher, MD Director, NF Program Section Chief of Neuro-Oncology Grant T. Liu, MD Pediatric Neuro ophthalmology Elaine H. Zackai, MD Director of Clinical Genetics	<p>CHOP neurofibromatosis clinic is one of the oldest and most experienced programs in the world dedicated to diagnosis, surveillance and treatment of NF type 1 and 2. With a large team of dedicated physicians with multiple subspecialties including genetics, pediatrics, neuro-oncology, neuro-ophthalmology, ophthalmology orthopedics, and otolaryngology. The team also closely works with numerous pediatric subspecialists who have committed to providing specialized care to NF patients.</p>

Cardiac Center

Our team is one of the largest and most accomplished in the world: We have more than 125 experts, including pediatric cardiologists, cardiothoracic surgeons, critical care intensivists, pediatric cardiac anesthesiologists, advanced practice nurses and physician assistants. These experts are pioneers in the treatment of congenital and acquired heart conditions, and international leaders in diagnosis, patient care, research and education. Our CICU is one of the largest in the world dedicated to the treatment of children with congenital heart disease. This state-of-the-art CICU is designed and staffed to care for infants and children during the most intense period of their treatment. The Cardiac Prep and Recovery Unit (CPRU) provides specialized care for cardiac patients before and after their procedures. A Cardiac Operative and Imaging Complex, one of the most advanced in the world, includes an XMR Suite (catheterization lab/MRI), Hybrid Suite (catheterization lab/operating room), an additional catheterization lab, and two additional cardiac operating rooms – all on the same floor as our inpatient units. Patient outcomes at the Cardiac Center are among the best in the world, placing us in the top tier of pediatric cardiac programs.

[Johnathan Chen, MD](#), Chief of the Division of Cardiothoracic Surgery

[Joseph Rossano, MD, MS, FAAP, FACC](#), Chief of the Division of Cardiology

[Jack Rychik, MD](#), Director of the Fetal Heart Program and the Single Ventricle Survivorship Program

Cardiac Center Program	Key Physician	Description
Center for Lymphatic Imaging and Interventions Frontier Program	Yoav Dori, MD, PhD , Director of Pediatric Lymphatic Imaging and Interventions and Lymphatic Research	CHOP experts have treated hundreds of adults and children with lymphatic leaks and lymphatic disorders, making ours the largest and most active treatment program in the world. The program includes clinicians who are world leaders in managing rare lymphatic disorders.

Cardiac Center Program	Key Physician	Description
Pediatric Heart Valve Center Frontier Program	Jonathan Chen, MD Division Chief, Cardiac Surgery Matthew Gillespie, MD Medical Director, Cardiac Catheterization Lab Michael D. Quartermain, MD Medical Director, Echocardiography Lab	The Pediatric Heart Valve Center brings together a comprehensive team of experts from across the Cardiac Center, including cardiac surgeons, cardiologists with expertise in interventional cardiology and cardiac imaging, scientists and researchers. The center combines unmatched expertise in diagnostics, surgical intervention and transcatheter procedures with groundbreaking research and the most advanced imaging techniques available.
Hypertension and Vascular Evaluation (HAVE) Program	Kevin Meyers, MBBCh, Director, Hypertension Clinic, Attending Nephrologist Shobha S. Natarajan, MD Attending Cardiologist	HAVE Program team members are experts in treating hypertension and vascular disease. The HAVE team evaluates children of all ages who have hypertension secondary to a significant pediatric condition.
Pulmonary Hypertension Program	Catherine Avitabile, MD Attending Cardiologist	The Pulmonary Hypertension Program at CHOP is one of a very few pediatric programs in North America dedicated to the care of children with pulmonary hypertension (PH). Here, children are cared for by a team of physicians and nurse practitioners who are recognized experts in pediatric pulmonary hypertension.

Cardiac Center Program	Key Physician	Description
Cardiac Kids Developmental Follow-up Program	<p>Alisa A. Burnham, MD Co-Director of the Cardiac Kids Developmental Follow-up Program</p> <p>Lyla El-Messidi Hampton, PhD, ABPP-CN Co-Director of the Cardiac Kids Developmental Follow-up Program</p>	The Cardiac Kids Developmental Follow-up Program provides screening, evaluation and coordinated care for children with complex congenital heart disease (CHD) who have or are at risk for neurodevelopmental issues.
Fontan Rehabilitation, Wellness, Activity and Resilience Development Program(FORWARD)	<p>Jack Rychik, MD Director of the Fetal Heart Program and the Fontan FORWARD Program</p>	For nearly four decades, CHOP has been a pioneer in treating children with single ventricle heart disease. We've performed more than 1,700 Fontan procedures to reconstruct the hearts of children born with only a single pumping heart chamber. Our Single Ventricle Survivorship Clinic, established in 2011, has treated more than 500 patients in our first-of-its-kind clinic that is a model for Fontan-related care throughout the world.
Fetal Heart Program	<p>Jack Rychik, MD Director of the Fetal Heart Program</p>	The largest and most experienced comprehensive fetal heart program in the world offers the most advanced imaging, the best treatment at the best time for parents and their babies. The Fetal Heart program's Special Delivery Unit, is the first birth facility in the world exclusively for mothers carrying babies prenatally diagnosed.

Dermatology

Our team of pediatric dermatologists offers diagnosis and treatment of chronic and acute disorders affecting the skin, from the routine to the rare. We can evaluate everything from birthmarks, scars and warts to a wide variety of genetic skin diseases and skin infections.

[Marissa J. Perman, MD](#) Section Chief, Dermatology Section

Dermatology Program	Key Physician	Description
Epidermolysis Bullosa Clinic	Marissa Perman, MD , Director of the Epidermolysis Bullosa Multidisciplinary Clinic	Our team has many years of experience providing specialized care for children with all types of epidermolysis bullosa. We are prepared and well-equipped to provide the high-level care needed by patients with EB, including access to the First FDA approved topical Gene therapy – Vyjuvek.
Comprehensive PTEN Hamartoma Tumor Syndrome (PHTS) Multidisciplinary Clinic	Garrett M. Brodeur, MD Director, PTEN Clinic	The PHTS Clinic is led by a group of specialists with expertise in multidisciplinary care for pediatric patients with PTEN hamartoma tumor syndrome. The team clinicians include specialists in oncology, complex vascular anomalies, genetics, endocrinology, gastroenterology, dermatology, neurology, immunology, developmental pediatrics, psychology and genetic counseling.

Endocrinology & Diabetes

The Division of Endocrinology and Diabetes at CHOP is one of the largest pediatric endocrinology and diabetes centers in the nation. Our team of experts works with patients in the Philadelphia region and from around the world.

[Diva D. De León-Crutchlow, MD, MSCE](#), Chief of the Division of Endocrinology, Director Hyperinsulinism Center

Endocrinology Program	Key Physician	Description
Hyperinsulinism (HI) Center Frontier Program	Diva D. De León-Crutchlow, MD, MSCE Director Hyperinsulinism Center	The Congenital Hyperinsulinism Center has treated more than 1,000 children with congenital HI, and performed more than 500 pancreatectomies – making our Center the largest and most active HI center in the world. Our team of congenital hyperinsulinism experts work together to provide specialized, patient-centered and seamless care for children with congenital HI and their families.
Thyroid Center Frontier Program	Andrew J. Bauer, MD Director of the Pediatric Thyroid Center Sogol Mostoufi-Moab, MD, MSCE , Dual certified Pediatric Oncologist and Pediatric Endocrinologist	The Pediatric Thyroid Center at CHOP is one of the few centers in the nation dedicated to the unique medical needs of children and adolescents with thyroid disease. Most experienced surgical teams will complete at least 30 thyroid surgeries per year, but the surgeons at the Pediatric Thyroid Center at CHOP perform more than 80 thyroid surgeries a year.

Endocrinology Program	Key Physicians	Description
Bone Health Center	<p>David R. Weber, MD, MSCE Medical Director, Center for Bone Health</p> <p>Michael A. Levine, MD, FAAP, FACP, MACE Former Bone Health Center Director, and Pediatric Endocrinologist</p>	<p>The Center for Bone Health at CHOP is the only pediatric bone center in the region that provides both clinical care and bone densitometry (DXA) interpretation. The center is recognized as a leader in the field of pediatric bone research and has the enthusiastic support and collaboration from many divisions within the hospital.</p>
Diabetes Center	<p>Steven Willi, MD Director of the Diabetes Center</p>	<p>Effective diabetes management requires a team of medical professionals who each bring unique expertise to children's care. Our diabetes team partners with patients and families to encourage independence, self-reliance and collaboration.</p>
Glycogen Storage Disease Clinic & Lysosomal Storage Disease Center	<p>Diva D. De León-Crutchlow, MD, MSCE Director Hyperinsulinism Center</p> <p>Can Ficicioglu, MD, PhD Director, Lysosomal Storage Disease Center Clinical Director, Metabolic Disease Program</p>	<p>The Glycogen Storage Disease (GSD) Clinic. The goal of the GSD Clinic is to provide expert care to children with GSD types O, Ia, Ib, III, VI and IX – types manifested by hypoglycemia. Patient with other types of GSD are seen by the Lysosomal Storage Disease Center, part of the Metabolic Disease Program.</p>

Center for Fetal Diagnosis and Treatment

Our multidisciplinary team has been together since 1995 and has experience treating some of the most complex fetal anomalies in the world, many so rare that a physician may encounter only one or two cases in a career.

One of the only maternal-fetal centers located within a pediatric hospital in the U.S., we offer comprehensive, family-centered care in one location from diagnosis, prenatal management and birth in a special delivery unit for mothers carrying babies with known birth defects through postnatal care and long-term follow-up.

Our board-certified maternal-fetal medicine specialists, pediatric and fetal surgeons, physicians, and clinicians are pioneers in the field of fetal medicine. Our pediatric and fetal surgeons are recognized worldwide for their skill and excellent outcomes. As one of the most active maternal-fetal centers in the nation, the expertise and experience of our Center staff is evident in our [high volumes of patients](#): since 1995, we've cared for more than 30,400 expectant parents from all 50 states and 50 countries. Our team has performed more than 2,200 fetal surgeries, more than any other program.

[N. Scott Adzick, MD, MMM, FACS, FAAP](#), Surgeon-in-Chief, Founder & Director of the Center for Fetal Diagnosis and Treatment

Fetal Diagnosis and Treatment Program	Key Physician	Description
<p><u>Fetal Surgery:</u></p> <ul style="list-style-type: none"> • CCAM • Fetal Lung Lesions • Gastroschisis • Omphalocele • Small Bowel Atresia • Spina Bifida • Twin-Twin Transfusion Syndrome 	<p>N. Scott Adzick, MD, MMM, FACS, FAAP Surgeon-in-Chief, Founder & Director of the Center for Fetal Diagnosis and Treatment</p> <p>Alan W. Flake, MD, FACS, FAAP Attending Pediatric and Fetal Surgeon</p> <p>Pablo Laje, MD Attending Pediatric Surgeon, Division of General, Thoracic and Fetal Surgery</p>	<p>Our fetal surgery experts are pioneers in fetal medicine with the greatest collective experience in the world. Our surgical expertise, multidisciplinary team approach, and commitment to patient safety means the best outcomes for babies.</p>

Fetal Diagnosis and Treatment Program	Key Physician	Description
<p><u>Congenital Diaphragmatic Hernia</u> Frontier Program</p>	<p><u>Holly Hedrick, MD</u> Attending Pediatric and Fetal Surgeon <u>Emily Partridge, MD, PhD, MHS</u> Attending Pediatric and Fetal Surgeon</p>	<p>Congenital diaphragmatic hernia (CDH) is a structural birth defect in which the diaphragm fails to close, allowing contents from the abdomen to move into the chest and resulting in respiratory distress and a high likelihood of premature death. Leveraging CHOP's standing as the largest CDH treatment center in the country, this program aims to become the international epicenter for the care of CDH and to eliminate mortality and morbidity through new research and the development of novel devices.</p>
<p><u>Fetal Heart Program</u></p>	<p><u>Jack Rychik, MD</u>, Medical Director, Fetal Heart Program</p>	<p>The fetal heart program has the most advanced imaging and world-class cardiac care. The team is unique in that it includes a dedicated team of fetal sonographers, specially trained fetal cardiologists, nurse coordinators and social workers.</p>

Gastroenterology

The Division of Gastroenterology, Hepatology and Nutrition at CHOP is among the largest of its kind in the world. The division is staffed by more than 60 attending physicians and hundreds of support staff who collaborate to treat children with any gastrointestinal (GI), liver or pancreatic disorder. We offer more than 20 specialty clinical programs focused on specific disorders, ranging from common to complex.

[David A. Piccoli, MD](#), Division Chief of Gastroenterology

GI Program	Key Physician	Description
Center for Pediatric Inflammatory Bowel Disease Frontier Program	Robert N. Baldassano, MD , Co-Director of the Center of Pediatric Inflammatory Bowel Disease Andrew B. Grossman, MD , Co-Director of the Center of Pediatric Inflammatory Bowel Disease	The Center for Pediatric Inflammatory Bowel Disease (IBD) is one of the largest centers of its kind in the United States, while still providing individualized care so each child can experience optimal health. Each year, about 1,800 children with IBD come from around the world to receive the latest treatments. Our team of pediatric IBD experts provide expert care, from initial testing and diagnosis through long-term disease management. Our multi-specialty team works closely with the departments of Rheumatology , Dermatology , Radiology , Pathology , and Nutrition .
Very Early Onset - Pediatric Inflammatory Bowel Disease (VEO-IBD) Program Frontier Program	Judith R. Kelson, MD , Director, Very Early Onset Inflammatory Bowel Disease (VEO-IBD) Clinic	Children less than 5 typically do not respond to traditional treatments for IBD. These children require specialized evaluation and targeted treatments. At the VEO-IBD Program at CHOP, our gastroenterologists, immunologists and geneticists use cutting edge technologies to find targeted treatments for children with very early onset IBD.

GI Program	Key Physician	Description
Alagille Syndrome Clinical Care Program	David A. Piccoli, MD , Division Chief of Gastroenterology and Director of the Liver Center	The Alagille Syndrome Clinical Care Program is dedicated to providing comprehensive care for children with Alagille syndrome , an inherited liver disorder that affects the heart, eyes, bones and facial features. Program physicians have extensive experience with a large number of patients with Alagille syndrome and designated experts care for our patients' liver, heart, kidney, bone and other issues.
Anorectal Continence Evaluation (PACE) Program	Edward J. Doolin, MD, FACS, FAAP Director, PACE Clinic Attending Pediatric Surgeon, Division of General, Pediatric and Thoracic Surgery and	The PACE Program brings together pediatric surgical specialists and gastroenterology experts to provide comprehensive care for children with anorectal continence issues related to conditions such as Hirschsprung's disease, anorectal malformation, spina bifida and functional constipation that has failed to respond to other therapies.
Biliary Atresia Clinical Care Program/ Living Donor Program	Elizabeth B. Rand, MD Pediatric Gastroenterologist Medical Director of the Liver Transplant Program	At CHOP, experts have been caring for children with biliary atresia since the 1970's. Today, the team remains dedicated to providing children with state-of-the-art care. CHOP Transplant Center has met extensive quality criteria and we are recognized experts in living donor transplantation.
Adolescent Bariatric Program & Healthy Weight Program	Rachana D. Shah, MD, MsTR Director, Healthy Weight Program Elizabeth Parks Prout, MD, MSCE Medical Director, Adolescent Bariatric Program	Adolescent Bariatric Program is a unique collaboration of staff from the Healthy Weight Program at Children's Hospital of Philadelphia and Hospital of the University of Pennsylvania.

Genetics

The Division of Human Genetics at CHOP offers some of the most complete arrays of human genetics services for children and their families. The division includes a [Clinical Genetics](#) section and two full-service, state-of-the-art testing laboratories.

[Daniel J. Rader, MD](#), Chief of the Division of Human Genetics

[Elaine Zackai, MD](#), Director of Clinical Genetics

Genetics Program	Key Physician	Description
Mitochondrial Medicine Program Frontier Program	Douglas C. Wallace, PhD , Director of the Center for Mitochondrial and Epigenomic Medicine Marni Falk, MD Executive Director of Mitochondrial Medicine	Mitochondrial Medicine at CHOP is emerging as the premiere center in the world for multidisciplinary clinical care, advanced diagnostics and therapies, and individualized basic, translational, and clinical research programs dedicated to improving the health of patients of all ages living with mitochondrial disease.
Individualized Medical Genetics Center (IMGC)	Ian Krantz, MD Director of the Roberts Individualized Medical Genetics Center Livija Medne, MS, LCGC System Director of Genetic Counseling	The IMGC team is made up of a specialized group of physicians and genetic counselors with extensive experience in genetics. IMGC coordinates a range of genetic testing for a patient, which may include multiple gene panels, microarray-based testing, exome sequencing and genome sequencing. IMGC also provides genetic counseling following testing.

Genetics Program	Key Physician	Description
<u>Cornelia de Lange Syndrome and Related Diagnoses Center</u>	<u>Ian Krantz, MD</u> Director of the Center for Cornelia de Lange Syndrome and Related Diagnoses Center	The Center for Cornelia de Lange Syndrome is composed of an internationally known team committed to children with conditions affecting multiple systems of the body. The team has a high level of expertise specific to these rare conditions.
<u>Trisomy 21 Program</u>	<u>Mary Pipan, MD</u> Director of the Trisomy 21 program	The Trisomy 21 team consists of experts who specialize in patients with trisomy 21, including pediatricians, neurologists, nurse practitioners, physical therapists and social workers.
<u>22Q Deletion Syndrome Center "22q and You Center"</u>	<u>Elaine Zackai, MD</u> Medical Director of the 22Q and You Center <u>Donna M. McDonald-McGinn, MS, CGC</u> Director, 22q and You Center	Our staff includes providers who specialize in 22q11.2 deletion and duplication syndrome. They have evaluated more than 1500 patients at the 22q and You Center.
<u>Metabolic Disease Program</u>	<u>Daniel J. Rader, MD</u> Division Chief, Metabolic Diseases	The Metabolic Disease Program provides state-of-the-art diagnostic and treatment services for genetic metabolic disorders. By using advanced tools for the diagnosis and treatment of these conditions, clinicians can manage the disorder and live a longer, healthier life.

Hematology

In the Division of Hematology at CHOP, we provide inpatient and outpatient services for children with hematologic disorders. Our patients are cared for by a multidisciplinary team in a setting designed specifically for children and their families.

[Alexis A. Thompson, MD, MPH](#), Chief, Division of Hematology

Hematology Program	Key Physician	Description
Sickle Cell and Red Cell Disorders Curative Therapy Center (CuRED) Frontier Program	<p>Timothy S. Olson, MD, PhD Transplant Medical Director, Comprehensive BoneMarrow Failure Center</p> <p>Kim Smith-Whitley, MD Janet Kwiatkowski, MD, MSCE Director, Thalassemia Center</p> <p>Stephano Rivella, PhD Research Investigator</p>	<p>The Sickle Cell and Red Cell Disorders Curative Therapy Center (CuRED) is the first clinical center in the United States to offer a family-focused integrated care model to help patients with red blood cell disorders on the journey from chronic disease to cure. The most cutting-edge curative therapies for red blood cell disorders are available at CHOP, whether through clinical trials or approved therapies.</p>
Hemophilia and Bleeding Disorders Program	<p>Leslie J. Raffini, MD Director, Hemophilia and Bleeding Disorders Program</p> <p>Char Witmer, MD, MSCE Assistant Director, Hemophilia and Bleeding Disorders Program</p>	<p>The Hemophilia and Bleeding Disorders Program at CHOP is a center of excellence for the diagnosis, treatment and prevention of bleeding in children and adolescents with</p> <ul style="list-style-type: none"> • Hemophilia • Von Willebrand disease • Platelet disorders • Other bleeding disorders <p>Established in 1973, the Hemophilia and Bleeding Disorders Program provides families with a comprehensive, family-centered approach to care. The emphasis of our team is education and developing an individualized care plan for children to prevent complications of bleeding and treatment.</p>

Hematology Program	Key Physician	Description
Comprehensive Sickle Cell Center	Kim Smith-Whitley, MD Janet Kwiatkowski, MD, MSCE	Sickle cell disease is a complicated condition with various manifestations. A broad range of specialty services are required to meet the needs of children with the disease. Our children have access to pediatric general surgeons, orthopedists, ophthalmologists and pulmonologists with expertise in the care of children with sickle cell disease.
Thalassemia Center	Janet Kwiatkowski, MD, MSCE Director of the Thalassemia Center	Children, adolescents, and adults with Cooley's anemia (beta thalassemia) , alpha thalassemia and other thalassemia syndromes are cared for by the Thalassemia Center at CHOP. For more than 30 years, the Division of Hematology has sustained a program of treatment and research in thalassemia syndromes.

Neonatology

We are world-recognized leaders in caring for critically ill infants. At CHOP's Division of Neonatology, your child will benefit from the expertise of our multidisciplinary team, our strong history of innovation and family-focused care.

Each year, more than 4,000 babies across our network receive comprehensive, high-quality care from our multidisciplinary team of physicians, advanced practice nurses, physician assistants, RNs, developmental therapists and others. Together, they provide around-the-clock care to critically ill babies with health issues related to birth defects, pulmonary, cardiac, gastrointestinal issues and other disorders.

[Eric C. Eichenwald, MD](#), Chief of the Division of Neonatology

[David A. Munson, MD](#), Neonatologist, Medical Director of CHOP's Newborn/Infant Intensive Care Unit

Neonatology Program	Key Physicians	Description
Newborn and Infant Chronic Lung Disease Program and Neonatal Liquid Ventilation Frontier Program	William J. Fox, MD , Medical Director, Infant Breathing Center Huayan Zhang, MD , Director, Newborn and Infant Chronic Lung Disease Program Kathleen A. Gibbs, MD , Medical Director, Newborn and Infant Chronic Lung Disease Program	The NeoCLD Program is one of the first programs dedicated solely to meeting the growing clinical needs of infants with severe CLD, also known as bronchopulmonary dysplasia (BPD) - without compromising their long-term quality of life. A breakthrough clinical trial led by the Newborn and Infant Chronic Lung Disease (NeoCLD) Program at Children's Hospital of Philadelphia seeks to change the outlook and treatment options for these patients using partial fluid filled lung oxygenation.

Neonatology Program	Key Physicians	Description
Neonatal Surgery Team	Scott Adzick, MD Surgeon-in-Chief Natalie Rintoul, MD Medical Director, Neonatal Surgery Center	<p>The Neonatal Surgical Team is made up of a dedicated group of clinicians devoted to the care of babies who will need surgery, complex procedures by interventional radiology and/or oncology services during their time in the Newborn/Infant Intensive Care Unit (N/IICU). The multidisciplinary team provides comprehensive care in the crucial perioperative time period and throughout their hospitalization. Conditions treated include:</p> <ul style="list-style-type: none"> • Congenital diaphragmatic hernia • Lung lesions • Neck and mediastinal masses • Esophageal atresia/tracheoesophageal fistula • Intestinal atresia • Abdominal wall defects • Sacrococcygeal teratoma (SCT) • Bladder exstrophy • Cloacal exstrophy • Hyperinsulinism • Conjoined twins • Neural tube defects • Lymphangioma • Chylothorax
Neonatal Neurocritical Care Program	John Flibotte, MD Co-Medical Director, Neonatal Neurocritical Care Program Gregory Heuer, MD, PhD Neurosurgery	<p>The Neonatal Neurocritical Care Program is one of only a few programs in the nation currently offering specialized care for babies with neurologic diseases and brain injury beginning before birth and extending throughout childhood.</p> <p>Conditions treated:</p> <ul style="list-style-type: none"> • AIS • CSVT • Epilepsy • Hemorrhagic Stroke • Hydrocephalus • Seizures • Stroke

Nephrology

The Division of Nephrology at CHOP provides children with world-class care for and treatment of kidney diseases.

The Division of Nephrology at among the largest of its kind in the world and is consistently ranked as one of the top programs in the nation by *U.S. News & World Report*. The division is staffed by 25 attending physicians and pediatric nephrology fellows who collaborate with support staff to treat children with all forms of kidney disease. We offer eight specialty clinical programs focused on conditions ranging from common to complex. Last year alone, our division had 7,300 outpatient visits and more than 3,900 inpatient encounters.

Benjamin L. Laskin, MD, MS, Chief of the Division of Nephrology

Program	Key Physician	Description
Kidney Transplant and Dialysis Program	Sandra Amaral, MD, MHS Kidney Transplant Medical Director Matthew Levine, MD, PhD Surgical Director, Kidney Transplant Program	The Pediatric Kidney Transplant and Dialysis Program at CHOP provides comprehensive care for infants, children and adolescents diagnosed with kidney failure. Since the inception of the Program in 1992, we have performed 300 kidney transplants, with outcomes among the best in the nation. For international patients we will provide living donor kidney transplantation if a living donor is identified.
Hypertension Clinic	Kevin Meyers, MBBCh Director, Hypertension Clinic Attending Nephrologist Shobha S. Natarajan, MD Attending Cardiologist	The Hypertension Clinic is a cutting-edge collaborative program between Nephrology and Cardiology that evaluates children of all ages who have hypertension or are at risk for hypertension secondary to a significant pediatric condition.

Neurosciences(Neurology & Neurosurgery)

Our neurologists have advanced training and experience in pediatric stroke, epilepsy, neuromuscular disorders, sleep disorders, developmental delay, neurogenetic disorders, multiple sclerosis and neonatal neurology, among other neurological disorders in children. As part of our Neuroscience Center, our world-renowned specialists in neurosurgery collaborate with neurology specialists to provide a precise diagnosis, individualized clinical care, and cutting-edge surgical treatment, and to achieve groundbreaking discoveries. Our divisions of Neurology and Neurosurgery are consistently ranked among the top 10 pediatric programs in the nation by *U.S. News & World Report*.

The Neuroscience Center is a recognized leader in pediatric neurology and neurosurgery clinical care and research. We have one of the largest and most accomplished teams of neurologists and neurosurgeons. Our team has the experience and comprehensive resources needed to diagnose and care for the full spectrum of neurological conditions.

[Brenda Banwell, MD](#), Chief of the Division of Neurology

[Phillip “Jay” B. Storm, MD](#), Chief of the Division of Neurosurgery

Neurology Program	Key Physicians	Description
Epilepsy NeuroGenetics Initiative (ENGIN) Frontier Program	Ethan Goldberg, MD, PhD Co- Director, ENGIN Mark P. Fitzgerald, MD, PhD Medical Director, ENGiN Ingo Helbig, MD Director, Genomic Science Eric Marsh, MD, PhD Attending Neurologist Benjamin Kennedy, MD Attending Neurosurgeon	<p>The Epilepsy Neurogenetics Initiative (ENGIN) integrates genetic testing into the diagnosis and treatment of children with difficult-to-treat or unexplained epilepsies, and provides access to expert care for children with genetic epilepsy syndromes and other genetic neurodevelopmental disorders. The program combines cutting-edge clinical care and advanced genetic testing with innovative research to identify the genetic variants causing a child’s epilepsy and develop an individualized approach to treatment and management.</p> <p>Since its launch in 2019, ENGIN has evaluated thousands of children from around the world with epilepsy and has identified a clear underlying genetic cause for hundreds of patients and families. Establishing a genetic diagnosis can have meaningful implications not only for the child with epilepsy, but also for the whole family.</p>

Neurology Program	Key Physicians	Description
Minds Matter Concussion Care Frontier Program	Christina Master, MD Sports Medicine Pediatrician Kristy Arbogast, PhD Concussion Research	An interdisciplinary team of concussion experts from across CHOP works together in a comprehensive, network-wide concussion management program. The goal is to streamline and standardize concussion diagnosis, treatment and follow-up care.
Leukodystrophy Center	Adeline Vanderver, MD Attending Physician in the Division of Neurology, Program Director of the Leukodystrophy Center	The Leukodystrophy Center at CHOP provides comprehensive clinical care, diagnostic testing and the most advanced treatments available to infants, children and adolescents living with these inherited white matter diseases. Here, children have access to doctors and nurses who are experienced in caring for individuals with Leukodystrophies. CHOP is one of the first centers to offer gene therapies for Leukodystrophies, including Skysona for Adrenoleukodystrophy.
Pediatric Epilepsy Program	Nicholas S. Abend, MD, MSCE Medical Director of Clinical Neurophysiology Dennis Dlugos, MD, MSCE , Director, Section of Clinical Neurophysiology	The Pediatric Epilepsy Program specializes in the diagnosis, evaluation and treatment of children and infants with seizures and epilepsy . For each child, we strive to understand why seizures have developed and then design a personalized, comprehensive treatment plan that best controls seizures with the fewest possible side effects. As an accredited level 4 epilepsy center, we have been recognized by the National Association of Epilepsy Centers as having the expertise and facilities to provide the highest-level medical and surgical evaluation and treatment for patients with epilepsy.

Neurology Program	Key Physicians	Description
Neuromuscular Program	John Brandsema, MD, Attending Neurologist	<p>CHOP's Neuromuscular Program is staffed by experts in the diagnosis and treatment of children with neuromuscular diseases. These diseases require timely evaluations and expert diagnosis and testing. Our team is committed to providing the most current, comprehensive and specialized care possible. We treat:</p> <ul style="list-style-type: none"> • All forms of muscular dystrophy (Duchenne, Becker, Limb-Girdle, Ullrich congenital, Bethlem myopathy, facioscapulohumeral [FSH] and myotonic dystrophy) • Congenital, Metabolic and Inflammatory myopathies • Spinal Muscular Atrophy(SMA) – including the breakthrough gene replacement therapy Zolgensma
Multiple Sclerosis and Neuroinflammatory Disorders Clinic	Brenda Banwell, MD Chief of the Division of Neurology	<p>The Pediatric Multiple Sclerosis (MS) and Neuroinflammatory Disorders Clinic at Children's Hospital of Philadelphia (CHOP) offers cutting-edge, multidisciplinary diagnosis and clinical care for children with multiple sclerosis and other neuroinflammatory disorders. The clinic is led by world-renowned experts in MS and related disorders, and is recognized as a Partner in MS Care – Center for Comprehensive Care by the National Multiple Sclerosis Society</p>
Headache Program	Christina Szperka, MD Director, Headache Program	<p>Our Pediatric Headache Program offers a team of experts with specialized experience, an innovative and collaborative approach to treatment, and a full range of treatment options.</p>

Neurology Program	Key Physicians	Description
Stroke Program	Rebecca N. Ichord, MD , Pediatric Neurologist	The Pediatric Stroke Program provides comprehensive assessment and treatment for children and infants who suffer from strokes. We provide inpatient and outpatient consultation and coordination of care and recovery services, including family education and support. Conditions we treat: <ul style="list-style-type: none"> • Arterial Ischemic Stroke (AIS) • Cerebral Sinovenous Thrombosis (CSVT) • Hemorrhagic Stroke • Moyamoya Disease • Pediatric Stroke
Infantile Hemangioma Program	Marissa J. Perman, MD , Pediatric Dermatologist	The team includes all of the pediatric subspecialists children may need — dermatology, cardiology, gastroenterology, neurology, oculoplastic surgery and ophthalmology, otolaryngology, plastic surgery, radiology and urology.
Friedreich's Ataxia Program	David Lynch, MD, PhD Director of the Friedreich's Ataxia Program	As a Friedreich's Ataxia Center of Excellence and the largest FA clinical program in the world, we are uniquely equipped to provide specialized care to patients with this rare, progressive neurogenetic condition.
Chiari Malformation	Alexander Tucker, MD Neurosurgeon	CHOP has one of the few centers in the world to diagnose and treat Chiari Malformations. CHOP is at the forefront of new approaches to surgical management of these malformation, some of which are life threatening. In addition to management of these conditions, our team has extensive expertise in the diagnosis and identification of ideal candidates for surgical treatment.

Neurosurgery Program	Key Physicians	Description
<u>Neuro-oncology Program</u>	<p><u>Phillip B. Storm, MD</u> Chief, Division of Neurosurgery</p> <p><u>Michael J. Fisher, MD</u> Director, NF Program Section Chief of Neuro-Oncology</p> <p><u>Benjamin C. Kennedy, MD</u> Attending Neurosurgeon</p>	<p>The Neuro-Oncology Program at CHOP is staffed by a group of seven full-time, dedicated pediatric neuro-oncologists, and is one of the largest such groups dedicated to treating pediatric brain and spinal cord tumors, neurofibromatosis and associated tumors.</p> <p>The Neuro-Oncology Program is internationally recognized for having the highest quality neurosurgical, neuro-imaging and neuro-pathology support. We see about 200 new patients a year.</p>
<u>Epilepsy Surgery Program</u>	<p><u>Benjamin C. Kennedy, MD,</u> Director, Epilepsy and Functional Neurosurgery</p>	<p>Our program offers the most advanced surgical techniques available in the treatment of children with epilepsy. Our highly skilled pediatric surgical teams are experts in the latest minimally invasive diagnostic approaches. These innovative techniques include robotic-assisted stereoelectroencephalography (sEEG) and a variety of minimally invasive surgical techniques such as laser ablation, responsive neurostimulation, and vagal nerve stimulation.</p>

Ophthalmology

Children with a wide range of eye and vision problems come to CHOP's Division of Ophthalmology for comprehensive evaluation, coordinated care and cutting-edge treatment.

As one of the leading pediatric ophthalmology centers in the U.S., the division attracts families from across the country and around the world. The multidisciplinary team of ophthalmologists, surgeons, optometrists, orthoptists, nurse practitioners and certified ophthalmic technicians is dedicated to providing the best possible care for your child's eye or vision condition. The division offers advanced diagnosis and treatment for many rare and complex ophthalmologic conditions including glaucoma, retinopathy of prematurity, [uveitis](#) and cataracts.

[Gil Binenbaum, MD, MSCE](#), Chief of the Division of Ophthalmology

Ophthalmology Program	Key Physicians	Description
Childhood Cataracts	William Anninger, MD Pediatric Ophthalmology Priyanka Kumar, MD Pediatric Ophthalmology	The cataract team is comprised of leaders in the field of pediatric ophthalmology clinical care, surgery and research. CHOP completes a high volume of pediatric cataract surgeries every year, and CHOP ophthalmologists have extensive experience in all types of pediatric cataracts. Patients have access to all aspects of expert care required for cataract surgery and subsequent follow-up management.
Childhood Glaucoma	Stephanie L. Davidson, MD Pediatric Ophthalmology Priyanka Kumar, MD Pediatric Ophthalmology Monte D. Mills, MD Director of Ophthalmology	Glaucoma is rare in children, however when it does occur, the symptoms may not be as obvious in children. Our specialized team evaluates and treats glaucoma at every age. CHOP's experts assess both primary and secondary glaucoma. Treatments can come in the form of medications and surgery, if needed, which have been successfully used to treat childhood glaucoma.

Ophthalmology Program	Key Physicians	Description
Ophthalmic Genetics Clinic	Tomas Aleman, MD Director, Retinal Structure & Function Laboratory	<p>The Ophthalmic Genetics Clinic provides advanced imaging, genetic counseling, patient-family education, and breakthrough treatment options for many inherited eye disorders, including isolated inherited diseases of the eye and genetic syndromes that affect the eye and other parts of the body. The clinic treats children and adults.</p> <p>Physicians in the clinic developed the world's first FDA approved gene therapy for a genetic disease. This groundbreaking gene therapy, Luxturna, provides treatment for one form of Leber's congenital amaurosis (LCA).</p>
Uveitis Coordinated Care Clinic(UCCC)	Stephanie L. Davidson, Co-Director, UCCC Pediatric Ophthalmology Melissa Lerman, MD, PhD, MSCE Co-Director, UCCC Pediatric Rheumatology	<p>In the Uveitis Coordinated Care Clinic (UCCC), experts from the Division of Rheumatology and the Department of Ophthalmology collaborate with each other and your family. Children are seen by both a rheumatologist and an ophthalmologist during the same visit.</p> <p>The experienced clinical team has access to state-of-the-art diagnostic and therapeutic measures, and are leaders in applying new treatments to reduce eye inflammation and restore vision.</p>

Orthopaedics

The Division of Orthopaedics is one of the largest and most active pediatric orthopaedic centers in the world, and has provided safe and effective care to children and young adults for over 120 years. *U.S. News & World Report* consistently ranks Division of Orthopaedics as one of the best pediatric orthopaedic programs, including the #1 rank on the 2023-24 Honor Roll of Best Children's Hospitals.

[John M. Flynn, MD](#), Chief of the Division of Orthopaedics

Orthopaedics Program	Key Physicians	Description
Center for Thoracic Insufficiency Syndrome Frontier Program	Patrick J. Cahill, MD , Attending Physician in the Division of Orthopaedics	The Center for Thoracic Insufficiency is the first national, multidisciplinary program devoted solely to the treatment of thoracic insufficiency syndrome. This syndrome is most often caused by progressive scoliosis and severe rib fusion conditions such as: <ul style="list-style-type: none"> • Jeune syndrome (spondylocostal dysplasia) • Jarcho-Levin syndrome • Spinal muscular atrophy (SMA) • cerebrocostomandibular syndrome • Arthrogryposis • VATER syndrome

Orthopaedics Program	Key Physicians	Description
<u>Bone and Soft Tissue Tumor Program</u>	<p><u>Alexandre Arkader, MD</u> Attending Surgeon, Oncology</p> <p>Attending Surgeon, Orthopaedics</p> <p><u>Kristy Weber, MD, FACS</u> Attending Surgeon, Oncology</p> <p>Attending Surgeon, Orthopaedics</p> <p><u>Rochelle Bagatell, MD</u> Pediatric Oncology</p>	<p>CHOP has a long history of providing outstanding care for children and adolescents with both benign and malignant tumors of the bones and soft tissues. Our highly skilled doctors have the training and experience needed to perform complex and advanced procedures when necessary. The multidisciplinary team develops a unique treatment plan that can involve experts in pediatric orthopaedic surgery, diagnostic radiology, oncology, radiation oncology, general surgery, plastic surgery, pathology, physical and occupational therapy, nursing, and psychosocial services.</p>
<u>Brachial Plexus Injury Program and Peripheral Nerve Injuries</u>	<p><u>Apurva Shah, MD, MBA</u> Co-Director, Orthopaedic Surgeon</p> <p><u>Sabrina Yum, MD</u> Co-Director, Neurology</p>	<p>The nationally-recognized, multidisciplinary team supports the development of a personalized care strategy for each patient avoids unnecessary testing, and incorporates surgery only when absolutely necessary.</p>
<u>Cerebral Palsy Program</u>	<p><u>Chong-Tae Kim, MD, PhD</u> Rehabilitation Medicine Physician</p>	<p>Our treatment team includes orthopaedic surgeons, developmental pediatricians, physical, occupational and speech therapists, social workers and more.</p>

Orthopaedics Program	Key Physicians	Description
<u>Spina Bifida Program</u>	<u>Gregory Heuer, MD, PhD</u> Neurosurgery	Our Spina Bifida Program is a multidisciplinary program providing comprehensive evaluation and long-term management for infants, children and teens with spina bifida, spinal cord injuries and other spinal cord abnormalities.
<u>Spine Program</u>	<u>Patrick J. Cahill, MD,</u> Orthopaedic Surgeon <u>Jason Anari, MD</u> Orthopaedic Surgeon	Our Spine Program provides comprehensive evaluation and treatment to thousands of babies, children and teens with spinal deformities, trauma-related spinal conditions, benign and malignant musculoskeletal tumors, genetic cervical spine conditions and other conditions that affect the spine.
<u>Young Adult Hip Preservation Program</u>	<u>Wudbhav N. Sankar, MD,</u> Director of the Young Adult Hip Preservation Program	Our Young Adult Hip Preservation Program offers evaluation, testing and treatment for hip conditions that affect older teens. In many cases, these conditions are best treated by experts who have experience with the potentially underlying pediatric hip condition. The treatment for congenital, pediatric hip disorders requires the knowledge and expertise of doctors who understand the full developmental spectrum of the human hip joint.

<p><u>Limb Preservation and Reconstruction Program</u></p>	<p><u>Christina M Goodbody, MD</u> Attending Orthopedic Surgeon</p>	<p>The team finds solutions to improve functionality for children with congenital limb deformities, a traumatic injuries that impact a limb or growth plate, or tumors that affects the length or strength of a limb. The team has advanced diagnostics (including the low dose 3-d EOS Imaging System), procedures and treatments. Guided by years of experience watching limbs grow, we offer access to a cutting edge surgical therapies, education and prosthetics that meet goals of each patient.</p>
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Otolaryngology/ ENT

At the Division of Otolaryngology — also known as Ear, Nose and Throat (ENT) — our multidisciplinary staff diagnoses and treats the common conditions of childhood, such as ear infections (otitis), sore throats, tonsillitis and sinus problems, and the uncommon, such as hearing and speech disorders, airway problems, and tumors of the head and neck.

[Karen B. Zur, MD](#), Division Chief

ENT Program	Key Physicians	Description
Center for Pediatric Airway Disorders -Airway Reconstruction Program -Voice Program Frontier Program	Ian N. Jacobs, MD Medical Director, Center for Pediatric Airway Disorders Karen B. Zur, MD Director, Pediatric Voice Program Associate Director, Center of Pediatric Airways Disorders Luv R. Javia, MD Attending Physician and Surgeon, ENT Steven E. Sobol, MD MSc, FRCS(c) Attending Physician and Surgeon, ENT	The airway team has treated some of the most complex airway disorders in the world. We are uniquely qualified to care for the most complex cases due to the depth and breadth of our experience. A multidisciplinary, coordinated approach to care, bridging many specialties, makes it possible to meet the complex needs of the children who come to the Center. Reconstruction surgeries include: laryngotracheal reconstruction (LTR) , cricotracheal resection (CTR) , and slide tracheoplasty
Pediatric Feeding and Swallowing Center	Sherri S. Cohen, MD, MPH, FAAP Medical Director, Feeding and Swallowing Center	The Pediatric Feeding and Swallowing Center brings together an interdisciplinary team of specialists to offer a comprehensive approach to treating feeding and swallowing problems.
Cochlear Implant Program (Part of the Center for Childhood Communication)	Ken Kazahaya, MD, MBA, FACS Medical Director and ENT Surgeon	The Cochlear Implant Program provides cochlear implant evaluation, treatment and follow-up care to children with severe to profound sensorineural hearing loss. The program gives children the tools and support needed to effectively communicate and understand language.

Plastic Surgery

The Division of Plastic Reconstructive and Oral Surgery is one of the largest, most active in the United States. We are dedicated to giving children the individualized care they need and deserve. Our reputation attracts families from across the country and around the world who seek our expertise and treatment.

[Jesse A. Taylor, MD](#), Division Chief, Plastic Surgery and Reconstruction

Plastic Surgery Program	Key Physicians	Description
<u>Cleft Lip and Palate Program</u>	<u>Jesse Taylor, MD</u> Co-Director of the Cleft Lip and Palate Program <u>Jordan Swanson, MD, MSc</u> Attending Surgeon, Plastic and Reconstructive Surgery	Our multidisciplinary team offers surgical repair, nasoalveolar molding, orthodontics, speech and feeding support, and more.
<u>Craniofacial Program</u>	<u>Jesse Taylor, MD</u> Co-Director of the Craniofacial Program <u>Scott Bartlett, MD</u> Co-Director of the Craniofacial Program	Our Craniofacial Program is one of the nation's leading treatment programs for children with both congenital and acquired anomalies of the face and skull. Founded in 1972, our team has pioneered craniofacial surgical techniques and features one of the largest and most experienced teams dedicated to evaluating and treating these complex conditions in children and adolescents. Additionally the <u>Facial Motion Disorders Program</u> is one of the few centers treating facial motion disorders and facial nerve injuries in children.

Pulmonary Medicine

The Division of Pulmonary Medicine is one of the top ranked programs on *U.S. News & World Report's* Honor Roll of Best Children's Hospitals. We offer patients an unmatched level of experience. We treat the most complex and rare respiratory problems, some of which many physicians may never see during their careers. Each year, our [multidisciplinary team](#) sees more than 7,000 outpatients and another 7,200 inpatients.

[Lisa R. Young, MD](#), Chief of the Division of Pulmonary and Sleep Medicine

[Oscar H. Mayer, MD](#), Attending Pulmonologist and Director of the Pulmonary Function Laboratory

Pulmonology Program	Key Physicians	Description
Cystic Fibrosis Center	Ronald Rubenstein, MD, PhD Clinical Director, Cystic Fibrosis Center	The Cystic Fibrosis Center has repeatedly been recognized for its integrated, multidisciplinary care for children with cystic fibrosis . Our clinical services range from evaluation and diagnosis to treatment
Interstitial and Diffuse Lung Disease Center	Maureen Josephson, MD Director of the Interstitial and Diffuse Lung Disease Center	Our program brings together pediatric specialists from across the hospital in order to provide the most comprehensive care for children with interstitial and diffuse lung disease, a rare assortment of disorders that can be life threatening and often slow to develop and show symptoms.

Pulmonology Program	Key Physicians	Description
<u>Primary Ciliary Dyskinesia Center</u>	<u>Maureen B. Josephson, DO</u> Director of the Primary Ciliary Dyskinesia Center	Our clinical team's experience and access to state-of-the-art diagnostic technologies are integral in confirming the diagnosis of PCD and establishing the best course of treatment. Given the current absence of standardized treatments for primary ciliary dyskinesia, we focus on the individual needs of each patient and family while operating under the guidance of available research and expert practice guidelines.
<u>Sleep Center</u>	<u>Suzanne E. Beck, MD,</u> Attending Pulmonologist and Medical Director, Sleep Laboratory	Our Sleep Center cares for children with a wide variety of sleep problems, including obstructive sleep apnea, sleep-disordered breathing, CPAP therapy, apnea of infancy, narcolepsy, central hypoventilation, bedtime problems, frequent night wakings, insomnia, sleep walking, night terrors, circadian rhythm disorders, movement disorders and more.

Rheumatology

The division of rheumatology offers children unparalleled expertise and family-centered care for rheumatic diseases.

Edward M. Behrens, MD, Division Chief, Rheumatology

Rheumatology Program	Key Physicians	Description
<u>Immune Dysregulation Program</u> Frontier Program	<u>Kathleen Sullivan, MD, PhD</u> Allergy & Immunology <u>Hamid Bassiri, MD, PhD</u> Infectious Diseases <u>David Teachey, MD</u> Oncology <u>Edward Behrens, MD</u> Rheumatology	No other pediatric hospital combines the expertise of so many subspecialists to aid in the evaluation and treatment of children with immune dysregulation disorders. The program offers state-of-the-art diagnostic and genetic tests, interpretation of test results and personalized treatments. The team includes specialists from immunology, oncology, rheumatology, hematology, and neurology. The research and clinical role of physicians means that any new discovery in the field of immune dysregulation will translate quickly to more treatment options for children.
<u>Center for Amplified Musculoskeletal Pain Syndrome</u>	<u>Sabrina Gmuca, MD, MSCE</u> Director, Center for Amplified Musculoskeletal Pain Syndrome <u>Jennifer Sherker, PSyD</u> Psychosocial Program Manager, Center for Amplified Musculoskeletal Pain Syndrome	The interdisciplinary team of clinicians has vast experience and knowledge in the evaluation and treatment of amplified musculoskeletal pain syndrome (AMPS) in children. The AMPS team includes an attending rheumatologist, nurse practitioner, psychologists, social worker, physical therapist, occupational therapist, and others. The team also treats children with disabling amplified abdominal, head or chest pain that is not related to musculoskeletal pain

Rheumatology Program	Key Physicians	Description
<u>Juvenile idiopathic arthritis (JIA)</u>	<u>Edward Behrens, MD</u> Rheumatology <u>Jon (Sandy) Burnham, MD, MSCE</u> Clinical Director, Rheumatology	Children's Hospital of Philadelphia (CHOP) treats approximately 500 children with juvenile idiopathic arthritis (JIA) a year. The team has expertise in providing treatment for disease flares or maintenance medication, counseling for long-term care, and the transition to adult care.

Urology

Established in 1970 as the first program dedicated to the urologic needs of children, our multidisciplinary team of experts specializes in diagnosing and treating a wide range of urologic disorders in children and adolescents. Our team is comprised of world leaders in pediatric urology, with experts in minimally invasive surgery, genito-urinary reconstruction, comprehensive management of disorders of sex development, management of the neurogenic bladder, and the treatment of kidney stones and dysfunctional voiding.

Our division is consistently ranked as one of the top programs in the nation by *U.S. News & World Report's* Best Children's Hospitals survey for treatment of complex pediatric urologic issues. Each year we perform more than 4,000 surgeries and treat more than 20,000 children.

[Thomas F. Kolon, MD](#), Chief of the Division of Urology

[Aseem R. Shukla, MD](#), Director of Minimally Invasive Surgery in the Division of Urology

Urology Program	Key Physicians	Description
Voiding and Bladder Function Center (DOVE)	Christopher J. Long, MD Attending Pediatric Urologist	The DOVE team includes urologists, nurse practitioners, nurses and psychologists who will work with your child to diagnose and manage bladder or urinary tract conditions including: Bedwetting (Nocturnal Enuresis) Constipation Daytime Wetting (Urinary Incontinence) Urinary Frequency Urinary Tract Infection (UTI)

Urology Program	Key Physicians	Description
Bladder Exstrophy	<p>Douglas A. Canning, MD Chief, Division of Urology</p> <p>Aseem R. Shukla, MD Attending Urologist and Director of Minimally Invasive Surgery, Division of Urology</p>	<p>From prenatal diagnosis in conjunction with the Center for Fetal Diagnosis and Treatment, to prenatal care and possible delivery at the Special Delivery Unit, to surgical repair of bladder exstrophy, and psychosocial support, the team has years of experience working together to ensure the best surgical and social outcomes for children with bladder exstrophy. CHOP urologic surgeons repair bladder exstrophy using the complete primary repair of exstrophy (CPRE), a procedure conducted at CHOP since 1996.</p>
Pediatric Kidney Stone Center	<p>Gregory Tasian, MD, MSc, MSCE Attending Urologist</p> <p>Arjun Srinivasan, MD, MRCS Attending Urologist</p> <p>Lawrence Copelovitch, MD Attending Nephrologist</p>	<p>The Stone Center team brings together a variety of specialists to medical and nutritional needs are being met for children with kidney stones. This includes pediatric urologists, nephrologists, emergency medicine physicians, dieticians and metabolism experts to treat the underlying metabolic disorder that may predispose your child to stone disease. The center treats hundreds of children and adolescents with kidney stones from across the United States and world each year. Since 2010, more than 1,300 have been evaluated at the CHOP Kidney Stone Center, conducting more than 685 surgical procedures to remove kidney stones.</p>
Neurogenic Bladder Program	<p>Christopher J Long, MD Attending Urologist</p> <p>Dana A. Weiss, MD Attending Urologist</p>	<p>The care of children with neurogenic bladder is one of the longstanding specialties in the Division of Urology. The program provides care for more than 600 different children who have neurogenic bladder. The team works closely with the Spina Bifida Program and our gastroenterology and orthopaedic services to ensure your child has access to the full continuum of care.</p>

Contact Global Patient Services at any time to speak about a case:



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Our office is open from Monday – Friday 8.00 AM – 5:30 PM ET. Outside normal business hours, on-call staff will receive your call.

For emergency transports outside normal business hours, please contact CHOP's Transport Team at 001 215 590 2160

Learn more about CHOP's specialty programs and special services for international patients at GPS.CHOP.EDU