

**Title: Pediatric Anesthesiology at Children's Hospital of Philadelphia**

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**ABSTRACT BODY:**

**a. Hospital name and University/Medical School affiliation**

**Children's Hospital of Philadelphia (CHOP)  
University of Pennsylvania School of Medicine**

**b. Location (City, State)**

**Philadelphia, Pennsylvania  
USA**

**c. Brief history of CHOP and its Department of Anesthesiology and Critical Care Medicine (CCM)**

**CHOP opened its doors in 1855 as the USA's first hospital devoted exclusively to the care of children. CHOP has been the birthplace for many firsts in pediatric medicine\*:**

- **First formal medical training for pediatric doctors**
- **First pediatric day surgery unit in the USA**
- **First neonatal surgical and pediatric intensive care unit in the USA**
- **First designated Level I Pediatric Regional resource Trauma Center in eastern Pennsylvania**
- **First to develop (in 1938) the closed incubator (Isolette®), the first incubator for newborns**
- **First to develop (in 1965) the balloon catheter (Rashkind catheter) for the treatment of certain heart defects**
- **First to offer subspecialty training in Pediatric Emergency Medicine**

**In 1967, under the leadership of the Department of Anesthesiology and CCM, the first pediatric intensive care unit in the USA was developed at CHOP**

**In 1972, CHOP opened the Center for Pediatric Craniofacial Surgery as one of the first such treatment facilities in the USA**

**In 1975, under the leadership of the Department of Anesthesiology and CCM, CHOP started the first intensive respiratory rehabilitation care unit in the USA for ventilator dependent children. This was followed in 1979 by the establishment of the first statewide home care program for ventilator-assisted children in the USA established by the Department of Anesthesiology and CCM and the Pennsylvania Department of Health**

**In 1989, the first liver transplant was performed at CHOP, in 1990, the first heart transplant was performed at CHOP and in 1994, the first lung transplant was performed at CHOP**

**In 1995, CHOP established its Center for Fetal Diagnosis and Treatment. Since its inception, the Center has received more than 7,000 referrals from 50 states (USA) and 46**

countries. In 2008, CHOP will open the world's first birth facility exclusively for mothers carrying babies with known birth defects

In 1998, CHOP's Cardiac Center was established to bring together collaborative care for children with cardiothoracic disease by Pediatric Departments of Cardiology, Cardiac Surgery, Cardiac Anesthesiology and Cardiac Nursing.

In 2001, CHOP began its current and ongoing \$1.2 billion facilities expansion and renovation. This project will nearly double the size of the CHOP's main campus and includes the opening of 8 new operating rooms in June 2007.

\* [http://www.chop.edu/about\\_chop/index.shtml](http://www.chop.edu/about_chop/index.shtml)

- d. Demographics describing the number and types of pediatric cases treated at CHOP, especially the operating rooms and other areas covered by anesthesiologists.

Inpatient admissions	24,660
Outpatient visits	1,070,156
Emergency Center visits	~78,000
Hospital beds	
Inpatient	391
PICU	45
CICU	54
Chronic Ventilator Unit	16
NICU	55
Emergency Center	72
Service locations	
CHOP Main ORs (Current)	16
CHOP Main ORs (Projected)	20
Ambulatory Surgical Facility ORs	6
Cardiac Catheterization Laboratories	2
"Traveling" teams per day for the following locations: Interventional Radiology; MRI; CT scan; NICU; Sedation Unit; Oncology; GI; Nuclear Medicine; Radiation Therapy; Lithotripsy; ERCP; PET scan	2-3
Case volume (abridged)	
General Anesthesia Service	23,781
Fetal surgery	73
Cardiothoracic Anesthesia Service	2,400
Open heart	600
Closed heart	410
Cardiology (diagnostic and interventional)	990

<b>Pain Service (Patient Encounters)</b>	<b>~3,700</b>
<b>CCM Patient Days</b>	
<b>PICU</b>	<b>~12,500</b>
<b>CICU</b>	<b>~7,500</b>
<b>Progressive Care</b>	<b>~3,800</b>

e. Names and titles of CHOP Staff Anesthesiologists

<b>NAME</b>	<b>DIVISION+</b>
<b>William J Greeley, MD</b>	<b>CHAIRMAN/CARDIAC</b>
<b>Rhonda A Alexis, MD</b>	<b>GA</b>
<b>Philip Bailey, DO</b>	<b>GA</b>
<b>Darryl Berkowitz, MD</b>	<b>CARDIAC</b>
<b>A Michael Broennle, MD</b>	<b>GA</b>
<b>Amanda Brown, MD</b>	<b>GA</b>
<b>Patricia M Browne, MD</b>	<b>GA</b>
<b>David E Cohen, MD</b>	<b>GA</b>
<b>Scott Cook-Sather, MD</b>	<b>GA</b>
<b>Ana Corcino, MD</b>	<b>GA</b>
<b>Giovanni Cucchiaro, MD</b>	<b>PAIN/GA</b>
<b>Romulo M Cuy, MD</b>	<b>PAIN/GA</b>
<b>E Joseph Denham, DO</b>	<b>GA</b>
<b>John J Downes, MD</b>	<b>EMERITUS CHAIRMAN</b>
<b>Jeffrey M Feldman, MD</b>	<b>GA (DIVISION CHIEF)</b>
<b>John Fiadjoe, MD</b>	<b>GA</b>
<b>Arjunan Ganesh, MD</b>	<b>PAIN/GA</b>
<b>Rodolfo I Godinez, MD</b>	<b>CARDIAC</b>
<b>Harshad Gurnaney, MD</b>	<b>GA</b>
<b>Mark S Heiser, MD</b>	<b>GA</b>
<b>Mark A Helfaer, MD</b>	<b>CCM (DIVISION CHIEF)/GA</b>
<b>Ellen C Jantzen, MD</b>	<b>GA</b>
<b>David R Jobes, MD</b>	<b>CARDIAC</b>
<b>Francis (Wick) Kraemer, MD</b>	<b>PAIN/GA</b>
<b>Ron Litman, DO</b>	<b>GA</b>
<b>Scott D Markowitz, MD</b>	<b>CARDIAC</b>
<b>Lynne G Maxwell, MD</b>	<b>PAIN/GA</b>
<b>John J McCloskey, MD</b>	<b>GA</b>
<b>Lisa M Montenegro, MD</b>	<b>CARDIAC</b>
<b>Susan C Nicolson, MD</b>	<b>CARDIAC (DIVISION CHIEF)</b>
<b>Caroline A Pasquariello, MD</b>	<b>GA</b>
<b>Mohamed Rehman, MD</b>	<b>GA</b>
<b>John B Rose, MD</b>	<b>PAIN (SERVICE CHIEF)/GA</b>
<b>Alan Jay Schwartz, MD</b>	<b>FELLOWSHIP DIRECTOR/GA</b>
<b>James M Steven, MD</b>	<b>CARDIAC</b>
<b>Paul Stricker, MD</b>	<b>GA</b>
<b>Kha Tran, MD</b>	<b>GA</b>
<b>Donald C Tyler, MD</b>	<b>GA</b>

+GA-General Anesthesia Division; CARDIAC-Cardiac Anesthesia Division; PAIN-Pain Service; CCM-Critical Care Medicine

**Division of General Anesthesia: Jeffrey M Feldman, MD, Director**

Anesthesiology Faculty (includes Pain Service)	29
Pediatric Anesthesiology Fellows	12
Rotating Core Anesthesiology Residents	9
CRNAs (average 4 -6 clinically active/day)	13
CRNPs (conduct preanesthesia patient preparation and postanesthesia follow-up)	14
OR technicians/anesthesia aides	25

**Division of Cardiothoracic Anesthesia: Susan C. Nicolson, MD, Director**

Anesthesiology faculty	8
Pediatric Anesthesiology Fellows (up to 5 per year in a six month Cardiothoracic Anesthesia track)	3
CRNAs	2
OR technicians/anesthesia aides	3

**Pain Service: John B. Rose, MD, Director**

Anesthesiology Faculty	6
PhD	1
CRNPs	4

- f. **CHOP's Department of Anesthesiology and CCM offers a one year (on occasion a two year) Fellowship educational Program in Pediatric Anesthesiology (<http://www.chop.edu/consumer/jsp/division/generic.jsp?id=74101>). This one year program is fully accredited by the Accreditation Council for Graduate Medical Education (ACGME). The program accepts 12 fellows each year. The required education includes 7-8 months experience on the General Anesthesiology Service, 2 months experience in Cardiac Anesthesiology, 1 month in Critical (Intensive) Care and 1 month on the Pain management Service. Fellows may elect to increase their Cardiac Anesthesiology experience to a maximum of 6 months. Fellows provide direct patient care as well as supervise/teach Core Anesthesiology Residents. Fellows attend weekly (2 hours) didactic conferences (lectures, interactive case-based discussions, simulation activities and hands-on teaching/learning activities) providing guaranteed non-clinical teaching experiences geared to their level of graduate education. In addition, Fellows attend the weekly Departmental Grand Rounds and monthly Quality Assurance conferences. Fellows actively participate in the Quality Assurance case review process of the Department. Fellows present lectures to core anesthesiology residents on basic concepts of pediatric anesthesiology.**

**CHOP Graduate Medical Education and Department of Anesthesiology and CCM  
Graduate Medical Education and Didactic Programs**

**CHOP Pediatric Specialty Fellows (27 Fellowship Programs) 211**

**Pediatric Anesthesiology Fellows ( 1 or 2 year program) 12**  
**Alan Jay Schwartz, MD, MEd, Program Director**

**Fellows "Literature Club" and Didactic Conference**  
**Tuesday 06:30-08:30**  
**9**

**Rotating Core Anesthesiology Residents (6 University of Pennsylvania, 2 Temple University, 1 Cooper Hospital, University of Medicine and Dentistry of New Jersey)**

**Resident Teaching Conference**  
**Monday, Tuesday, Wednesday, Friday**  
**06:45-07:15**

**Grand Rounds, Research Conference and Departmental Teaching Conferences**  
**Thursday 06:30-08:00**

**Pediatric CCM Fellows 14**

- g. Additional information about the Department of Anesthesiology and CCM at CHOP that may be of interest to pediatric anesthesiologists around the world:**

**Division of CCM: Mark A. Helfaer, MD, Director**

**PICU admissions 3,251**  
**CICU admissions 850**  
**CCM faculty 21**

**PICU daily coverage - 3 teams consisting of: faculty; fellows (pediatric anesthesiology and pediatric critical care medicine) ; residents; pediatric nurse practitioners; an interdisciplinary team including RNs, respiratory therapists, social workers, child life specialists, case managers and pediatric pharmacists**

**CCM also covers a 16 bed ventilator unit at the Children's Seashore House**

**CHOP's Department of Anesthesiology and CCM offers a three year Fellowship educational program in Pediatric CCM (<http://www.chop.edu/consumer/jsp/division/generic.jsp?id=74206#ccmf> ). This program is fully accredited by the ACGME**

## **CCM Fellowship Curriculum:**

### **Year One**

- 2 months Anesthesia
- 3 months CICU
- 1 month Pain Service
- 5 months PICU
- 1 month research

### **Year Two**

- 2 months CICU
- 2 months PICU
- 8 months research

### **Year Three**

- 3 months PICU
- 9 months research

## **Clinical Research Programs**

**Sponsored Research: David R. Jobes, MD, Mark A Helfaer, MD, Ron Litman, DO Directors. 34 clinical research projects in progress (16 in pediatric anesthesiology and 18 in CCM): >\$750,000 per year**

**COR (Center for Outcomes Research): Jeffrey H. Silber, MD, PhD, Director. Three NIH grants, \$750,000 per year**

**CRI (Center for Research Integrity): Robert M. Nelson, MD, PhD, Director. Two NIH grants, \$500,000 per year**

**PPRU (Pediatric Pharmacology Research Unit): One NIH grant, \$250,000 per year**

**CVNCRC (Cardiovascular Neurocognitive Research Center): Five trials in progress, \$500,000 per year**

## **Basic Science Research Programs**

**>20 active basic science lab projects in progress**

**Central Nervous System and Cardiopulmonary Bypass Core: William J. Greeley, MD, MBA, Director. Two NIH grants, \$1,000,000 per year**  
**Pharmacology Core: One NIH grant, \$500,000 per year**

**Pain and Stress Neurobiology Core: Rita Valentino, PhD, Director. Ten NIH grants, \$1,700,000 per year**

- h. The final poster will include photographs of CHOP that will help make the presentation a “virtual tour”. In addition, CHOP’s location will be indicated on a map of the USA**