Texas Children's

Texas Children's Hospital Department of Anesthesiology, Perioperative and Pain Medicine

ACADEMIC PROGRAMS 5-YEAR REPORT





7.1.2014-6.30.2019



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ANESTHESIOLOGIST-IN-CHIEF PERSPECTIVE



Dean B. Andropoulos, M.D., M.H.C.M.

Professor of Pediatrics-Anesthesiology, Baylor College of Medicine

Anesthesiologist-in-Chief, Texas Children's Hospital

Vice Chair of Clinical Affairs Anesthesiology, Baylor College of Medicine

Over my 22 years at Texas Children's Hospital and past 5 years as Anesthesiologist-in-Chief, we have seen tremendous growth in all areas central to our mission: clinical, education, and research. Each and every day our team strives to create a healthier future and the best possible care for our patients. Our academic affiliation with Baylor College of Medicine allows us to improve the health of the children in our care through science, scholarship, and innovation. The 7-Year Baylor College of Medicine Strategic Road Map set forth in 2014 established an institutional goal to discover the fundamentals of human disease and health by fostering innovation and integration of clinical research into key strategic clinical areas across the College and its affiliates. Thus, in our endeavor to excel in every aspect of our mission, we created a Division of Research in 2014 within the Department of Anesthesiology, Perioperative, and Pain Medicine at Texas Children's Hospital to complement our existing Clinical and Education efforts.

In the 5 years since the establishment of a distinct Research Division, we have seen remarkable growth, recruitment, opportunities, and accomplishments in clinical, basic, and translational research in our quest to develop novel medical treatments to improve patient care. The field of anesthesiology has traditionally been clinically focused; however, we are beginning to see a new generation of faculty interested in research, questioning long accepted clinical practices, and forming their own research questions. To attract these bright and motivated early stage investigators, we need a structure that can support them from their training, hiring as faculty, and then through long term retention and successful academic promotion as a result of their research productivity.

The initial appointment of a Research Division Chief in 2014 was the first of many concentrated efforts to establish and grow a division of research excellence. Dr. Kenneth Brady oversaw the initial activities and expansion of the Division's efforts and led the tremendous increase in productivity of the Program, as you will see in this report. In 2018, the Pediatric Anesthesiology Research Core (ARC) was created in order to support both the hospital and the College's missions of conducting innovative research to ultimately improve patient care. The mission of the ARC is to conduct quality, ethical research that improves the outcomes of our patients. The ARC provides a research infrastructure for our clinical investigators and physician-scientists to conduct scientifically rigorous and ethically sound research. Our research division leadership is diligently creating and implementing strategies to establish an internal mentorship program. Although we have accomplished much in the first 5 years, we expect that with additional institutional support and resources we will be at the forefront of the elite academic pediatric anesthesiology programs just as we are at the forefront of leading clinical programs.

In our pursuit of funded research, from institutional, governmental, philanthropic, and industry-funded sources, it is recognized that all of these have the potential to influence practice and presentation at national meetings elevating the prominence of our department and aiding in both faculty and trainee recruitment goals. We have determined an important goal for all research is that the funding will not only support the existing research, but will also establish a strong track record that will enhance the success of receiving larger extramural grants.

As a department and an institution, we are committed to supporting the needs and interests of both young and established professionals in their academic careers in anesthesiology. We are accomplishing this through enhancement of peer networking and collaborative opportunities, both internally and externally, and the development and implementation of strategies that support the retention of academic clinicians in anesthesiology, thereby reducing the attrition of motivated scholars at all career stages.

As one of the largest centers of clinical excellence and education for pediatric anesthesiology in the world, it is our responsibility to conduct research that improves the outcomes of our patients. By supporting impactful research, we seek to propel our department and institution to earn a place in history by changing the practice of medicine and improving the lives of millions.

Sincerely,

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Dean B. Andropoulos, M.D., M.H.C.M. Burdett S. Dunbar, M.D. Chair in Pediatric Anesthesiology



Associate Anesthesiologist-in-Chief for Academic Affairs



Professor of Pediatrics-Anesthesiology, Baylor College of Medicine Associate Anesthesiologist-in-Chief, Academic Affairs, Texas Children's Hospital Division Chief, Anesthesia Critical Care Medicine, Texas Children's Hospital Pediatric Cardiovascular Anesthesiologist/Intensivist, Texas Children's Hospital Interim. Chief of Research

Division of Research



Marcie Rei Garcia Meador, Ph.D., R.N. Associate Research Director Assistant Professor of Pediatrics-Anesthesiology, Baylor College of Medicine

Quality Improvement Committee

R. Blaine Easley, M.D.



Imelda Tjia, M.D. Associate Professor of Pediatrics-Anesthesiology, Baylor College of Medicine, Chair

Education Committee



William Waldrop, M.D. Assistant Professor of Pediatrics-Anesthesiology, Baylor College of Medicine, Chair

ACADEMIC AFFAIRS LEADERSHIP

LEGACY TOWER

OUR NEW HOME FOR HEART. INTENSIVE CARE AND SURGERY



ACADEMIC AFFAIRS LEADERSHIP

COMMITTEES

Executive Committee

VOTING MEMBERS

Dean Andropoulos, M.D., M.H.C.M. Anesthesiologist-in-Chief Vice Chair for Clinical Affairs

Dheeraj Ahuja, M.D. Director - Woodlands Campus

Rahul Baijal, M.D. *Committee Chair – Perioperative* Surgical Home

Katrin Campbell, M.D. Division Chief - Non-Operating Room Anesthesia

Carlos Campos-Lopez, M.D. Elected M.D. - Emeritus or Tenure Member

Arvind Chandrakantan, M.D. Elected M.D. - General Anesthesia

Kathleen Chen, M.D., M.S. Director - Wallace Tower

R. Blaine Easley, M.D. Associate Anesthesiologist-in-Chief, Academic Affairs Appointment Division Chief - Anesthesia Critical Care

Chris Glover, M.D. Medical Director - Perioperative Services Division Chief - Community Facilities Committee Chair - Practice Management

Paul Hopkins, M.D. Director - Legacy Tower

Tamra Kelly, C.R.N.A. Elected CRNA

Sarah Lagua, Chief - C.R.N.A. CRNA member

Benjamin Lee, M.D. Division Chief – Pain Medicine

Emad Mossad, M.D. Associate Anesthesiologist-in-Chief, Clinical Affairs Division Chief - Cardiovascular Anesthesia

Pablo Motta, M.D. Committee Chair - Wellness

NON-VOTING MEMBERS

Matt Girotto Senior Vice President, Anesthesiology

Allen Milewicz, M.D.

Clinical Affairs

Surgery Associate Chief of

Kelly Crumley Practice Administrator, Anesthesiology

Amanda Ward Director - Perioperative Services

COMMITTEES

Kim-Phuong Nguyen, M.D. Committee Chair – Informatics

Olutoyin Olutoye, M.D., M.Sc. Division Chief - General Anesthesia *Committee Chair – Workplace* Professionalism

Catherine Seipel, M.D. Elected M.D. – Junior Faculty

Imelda Tjia, M.D. *Committee Chair – Quality &* Outcomes

David Vener, M.D. Elected M.D. - Cardiovascular Anesthesia

William Waldrop, M.D. Committee Chair - Education

David Young, M.D., M.B.A., M.Ed. Committee Chair – Simulation

Blaine Zelisko, M.D. Director – West Campus

David Wesson, M.D. Surgery Associate-in-Chief

Quality Improvement Committee

Imelda Tjia, M.D., Chair	Kalyani Govindan, M.D.
Rahul Baijal, M.D.	Lisa Heyden, M.D.
Katrin Campbell, M.D.	Matthew James, M.D.
Julia Chen, M.D.	Megha Kanjia, M.D.
Michelle Dalton, M.D.	Yang Liu, M.D.
Mary Felberg, M.D.	Lauren Lobaugh, M.D.
Priscilla Garcia, M.D.	Jamel Lowery, M.D.

Education Committee

William Waldrop, M.D. Chair Director of Fellowship Program	Lisa Caplan, M.D.	Carlos Rodriguez, M.D.
Premal Trivedi, M.D. Associate Director of Fellowship Program	R. Blaine Easley, M.D.	Thomas Shaw, M.D.
Brian Tinch, M.D. Assistant Director of Fellowship Program	Priscilla Garcia, M.D.	Imelda Tjia, M.D.
Titilopemi Aina, M.D., M.P.H.,	Chris Glover, M.D., M.B.A.	David Vener, M.D.
Rahul Baijal, M.D.	Stuart Hall, M.D.	Kenneth Wayman, M.D.
Carlos Campos-Lopez, M.D.	Lisa Heyden, M.D.	David Young, M.D., M.B.A., M.Ed.
Nicholas Carling, M.D.	Clint Fuller, M.D.	Ann Ng, M.D.
Caitlin Sutton. M.D.		

Ann Ng, M.D.

Mary Pina, C.R.N.A.

Amber Rogers, M.D.

Kim Taylor, R.N.

Laura Torres, M.D.

David Vener, M.D.

Julie Schackman, M.D.

Miguel Prada Rico, M.D.

Research Review and Mentorship Committee

The mission of the Research Review and Mentorship Committee (RRMC) is to assist our faculty in developing high quality research projects through mentorship, scientific review, and clinical expertise. Founded in May 2018, the inaugural committee comprised of 12 members, of which 6 are permanent members from departmental leadership and 6 are term-limited members. In its initial year, the RRMC reviewed 3 prospective research study proposals and 5 retrospective research study proposals.

Additionally, two faculty RRMC members (Olutoyin Olutoye, M.D., M.Sc. and Marcie R. Meador, Ph.D., RN) participated in the BCM National Research Mentoring Network (NRMN) training workshop held in May 2018. The workshop provided mentorship training for clinical and translational research and provides additional support and resources for participants and future trainees.

Adam Adler, M.D., M.S.	Marcie Mea
Dean Andropoulos, M.D., M.H.C.M.	Emad Moss
Arvind Chandrakantan, M.D., M.B.A., FAAP	Olutoyin Ol
R. Blaine Easley, M.D Co-Chair	Mario Patin
Chris Glover, M.D., M.B.A.	Jamie Sinto
Stuart Hall, M.D.	Vacancy - G

Data Safety and Monitoring Board (Planned)

The mission of the proposed Data Safety and Monitoring Board (DSMB) is to: 1) periodically review and evaluate accrued study data to ensure participant safety and minimization of risks; and, 2) promote scientifically sound and ethical study conduct; and when appropriate, end the study if the aims of the study have been met early. Development of a DSMB is a goal for FY2020 and faculty interest in participating in a DSMB was surveyed in April 2019. Twelve faculty and staff expressed interest in participating in a future department DSMB, including Drs. Aina, Baijal, Chandrakantan, Felberg, Hall, Glover, Kanjia, Mossad, Olutoye, and Patel, as well as Associate Director of Research Dr. Meador and Biostatistician Teniola Shittu.

COMMITTEES

dor, Ph.D., R.N. - Co-Chair

ad, M.D., MBBCh

lutoye, M.D., M.Sc.

o Velez, M.D.

on, M.D.

QI Representative



Melissa Challman, M.P.H., C.C.R.P. Sponsored Programs Manager



Hediye Fakhar, B.S.N. Research Coordinator

RESEARCH STAFF



Andrew Lee, M.P.H. Research Coordinator



Martine Malivers, R.N. Research Nurse



Eduardo Medellin, B.S. Research Coordinator

RESEARCH STAFF



Elizabeth Menard, B.S. Research Coordinator



Margaret Owens-Stuberfield, R.N., B.S.N. Research Nurse



Teniola Shittu, M.P.H, M.S. Biostatistician



Brandon Tran, M.D. Research Coordinator



Kathleen Kibler, B.S., CCP Laboratory Manager

ACADEMIC SUBSPECIALTIES AND DISCIPLINES

Clinical Divisions

Sedation

Krista Preisberga Amber Rogers

Anesthesia Critical Care

R. Blaine Easley Ashraf Resheidat Brian Tinch William Waldrop

Pain/Regional

Kevin Chu **Clinton Fuller** Priscilla Garcia Chris Glover Ali Hassanpour Grace Kao Souhail Karram Benjamin Lee Chyongy Liu Nihar Patel **Robert Power** Jamie Sinton Caitlin Sutton Laura Torres Karla Wyatt

Cardiovascular

Adam Adler Dean Andropoulos Rahul Baijal Lisa Caplan R. Blaine Easlev Stuart Hall Helena Karlberg Hippard Nagendra Kodali Wanda Miller-Hance Emad Mossad Pablo Motta Mario Patino Velez Ashraf Resheidat Carlos Rodriguez Jamie Sinton Premal Trivedi David Vener



ACADEMIC SUBSPECIALTIES AND DISCIPLINES

Non-Operating Room Anesthesia

Adam Adler Dheeraj Ahuja Titilopemi Aina Melanie Alo Rahul Baijal Katrin Campbell Carlos Campos-Lopez Kim-Phuong Nicholas Carling Arvind Chandrakantan Julia Chen Kathleen Chen Monica Chen Kevin Chu Camille Colomb Michelle Dalton Mary Felberg Priscilla Garcia Chris Glover Chervl Gore Kalyani Govindan Melanie Handley Ali Hassanpour Lisa Heyden Paul Hopkins Grace Huang Matthew James Aimee Kakascik Megha Kanjia Helena Karlberg Souhail Karram Nagendra Kodali Benjamin Lee Joyce Liu

Yang Liu Lauren Lobaugh Jamel Lowery David Mann Shazia Mohammad Ann Ng Nguyen Barbara Nzegwu Olutoyin Olutoye Nihar Patel **Robert Power** Miguel Prada Krista Preisberga Carlos Rodriguez Amber Rogers Laura Ryan Julie Schackman Brent Schakett Catherine Seipel Thomas Shaw Jamie Sinton Stephen Stayer Caitlin Sutton Brian Tinch Imelda Tija Laura Torres William Waldrop Kenneth Wayman Erin Williams Karla Wyatt Ammar Yamani David Young Blaine Zelisko

ACADEMIC SUBSPECIALTIES AND DISCIPLINES

Clinical Sub-Divisions

Maternal/Fetal

Titilopemi Aina Ali Hassanpour David Mann Olutoyin Olutoye Mario Patino Velez Caitlin Sutton

Liver

Adam Adler Rahul Baijal Carlos Campos-Lopez Nicholas Carling Paul Hopkins Yang Liu Nihar Patel Miguel Prada Rico Julie Schackman Jamie Sinton Stephen Stayer William Waldrop Kenneth Wayman

Bariatrics/Obesity

Carlos Campos-Lopez Nicholas Carling Priscilla Garcia Kim-Phuong Nguyen Stephen Staver

Spine

Adam Adler **Clinton Fuller** Souhail Karram Nihar Patel Julie Schackman Brent Schakett Brian Tinch

Neuroanesthesia

Nicholas Carling Chris Glover Helena Karlberg-Hippard Erin Williams Karla Wyatt

Lip/Palate/Craniofacial

Rahul Baijal Nicholas Carling Kathleen Chen Camille Colomb Chris Glover Ali Hassanpour Megha Kanjia Helena Karlberg Hippard Shazia Mohammad Ann Ng Barbara Nzugwu Olutoyin Olutoye **Catherine Seipel** Jamie Sinton Stephen Stayer **Brian Tinch** Karla Wyatt



Research or Academic Sub-Divisions

Anesthesia Education

Titilopemi Aina Carlos Campos-Lopez Mary Felberg Stuart Hall Shazia Mohammad Catherine Seipel Thomas Shaw Brian Tinch Premal Trivedi William Waldrop Karla Wyatt

Medical Professionalism

Olutoyin Olutoye Laura Torres David Young

Autoregulation

R. Blaine Easley Kathleen Kibler

Neurodevelopment

Dean Andropoulos Arvind Chandrakanatan Yang Liu Shazia Mohammad Ann Ng Ashraf Resheidat Jamie Sinton Stephen Stayer Ammar Yamani Epidemiology/

Public Health

Marcie Meador

Simulation

Lisa Caplan Julie Chen Priscilla Garcia Ali Hassanpour Miquel Prada Rico **Thomas Shaw** Premal Trivedi William Waldrop Kenneth Wayman David Young

Basic Science/Translational

Arvind Chandrakantan R. Blaine Easley Kathleen Kibler Olutoyin Olutoye

Research Methods

Stuart Hall Marcie Meador

Innovation/Technology

Rahul Baijal Katrin Campbell Kathleen Chen Clint Fuller Shazia Mohammad Kim-Phuong Nguyen Carlos Rodriguez Craig Rusin*

Bioethics

David Mann

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Quality Improvement (QI)

Rahul Baijal Katrin Campbell Julia Chen Michelle Dalton Mary Felberg Priscilla Garcia Kalyani Govindan Lisa Heyden Matthew James Megha Kanjia Yang Liu Lauren Lobaugh Jamel Lowery Emad Mossad Ann Na Mary Pina Miguel Prada Rico Amber Rogers Julie Schackman Thomas Shaw Imelda Tija Laura Torres Premal Trivedi David Vener

Databases/Informatics

Chris Glover (Airway and Craniofacial Databases) Ali Hassanpour Olutovin Olutove (Fetal Anesthesia Database) Kim Phuong-Nguyen Amber Rogers (PSRC) Imelda Tjia (Wake Up Safe) David Vener (STS/CCAS) Karla Wyatt (PRAN)

*Primary appointment in another department

A PERIOD OF GROWTH...

Since July 2014, Texas Children's Hospital's Department of Anesthesiology, Perioperative & Pain Medicine has seen tremendous growth in faculty recruitment and academic support staff. We have the framework in place to support retrospective reviews to complex clinical trials from funding acquisition to data analysis and dissemination of findings. Processes have been developed to ensure our internal studies are of high rigor and scientific merit. Additionally, with the creation of a paperless quality improvement (QI) system for recording and reviewing perioperative events in an efficient manner, what was previously a 62% decline in reported events has increased by over 500%.



- Olutoye assumes Chair of Society for Pediatric Anesthesia Research Committee (June - Present)
- Brady Appointed as First Research Chief (July)
- Meador/Andropoulos win Best of Abstracts at American Society of Anesthesiologists Annual Meeting (October)
- IARS Mentored Grant Vu Awarded (June)
- Electronic QI Reporting System went live (December)
- 7-Year NIH/NHLBI Pediatric Heart Network grant awarded to TCH to serve as a Core Site (January)



- Lobaugh receives Article of the Month from A&A for the Wake Up Safe Collaborative (September)
- Watcha wins Best Poster at the European Society for Pediatric Anesthesia Annual Congress for the BARF Study (September)
- Anesthesiology Research Core Founded (April)
- First RRMC Meeting (June)

- Monthly ARC Newsletter Launches (July)
- Grant and Statistical Support Staff Hired (July)
- Andropoulos win Best Poster at the European Society for Pediatric Anesthesia Annual Congress for the Dex Pilot (September)
- Fundamentals of Clinical Research Series for Fellows Begins (November)

A PERIOD OF GROWTH...

- Development of Faculty Research Mentoring Program
- Biannual Grant and Manuscript Writing Workshops
- Internal DSMB Committee(s)
- Creation of Internal Seed Grant Program
- Obtain T32 Post-doctoral Training Grant

Faculty Characteristics



Overall department faculty size has increased by 50% in the 5 years since the establishment of a Division of Research.

ALL FACULTY DEGREES



*Other includes MHCM, MBA, MHA, MEd, or DBe

C ACTURE IN CAL VOLUME AND ACCOMPLISHMENTS



- MD/DO MD/DO + Other MD,MS MD,MPH PhD MD,PhD BS



Almost three guarters of our faculty are at the rank of assistant professor at any given time and according to our April 2019 survey results depicted below, almost half of our current assistant professors are interested or already active in research.



ACTIVE/INTERESTED IN RESEARCH - BY RANK (CURRENT FACULTY)

Early career professionals begin their faculty appointments as primarily clinical with very little non-clinical time guaranteed. As they gain clinical expertise, they may turn their efforts to other tenets of academic medicine, such as education or research. Identification of those interested in research is necessary to provide appropriate mentorship and resource support to create accomplished future physicianscientists.



The majority of those interested in serving as mentors are ready to mentor without further mentorship training, thus could be matched to newer junior faculty during the onboarding process.

RESEARCH STAFF: PERSONNEL COMPOSITION



With the addition of research core resources such as grant and regulatory management, statistical support, and dedicated database support personnel in the first year of the ARC, our research staff have doubled in size since the inaugural year of the Research Division and possess numerous graduate and specialized degrees.

Faculty Promotions





19 faculty have been promoted since January 2015

Academic Productivity

Many departments and divisions at Texas Children's Hospital have developed the Clinical Relative Value Unit (cRVU) to provide evidence of productivity outside of the clinical arena. The Department of Pediatric Anesthesiology has adapted the cRVU system into Academic Units (AUs). This enables quantification of non-clinical efforts and further allows academic time to be matched with subsequent productivity.

The program is divided into three academic areas: Administration, Research, and Teaching

- Administrative time reflects a leadership position and/or encompasses activities related to a
 physician's work which falls outside of the scope of clinical duties. Administrative activities can
 range from managing a major department or service line to participation on committees to
 achieve key business initiatives.
- Research time reflects academic/research work funded by research grants or Hospital/ Departmental support and/or high levels of clinical work effort that supplement the organization's/department's research efforts.
- Teaching time reflects time providing lectures and workshops to various learners, including medical students, residents, and fellows.

The purpose of the system is first to allow faculty to capture and value time outside of the clinical setting and allows Department and Hospital leadership to see and report on all productivity, both clinical and academic.

Note: AU data is only available for the last two fiscal years.

Examples of AU Value by Academic Area

Administration	Value Metric
Local Committee Member	4/Hour
National Organization – Committee Member	250/Year
National Organization - Chair	500/Year
Director of a Service	250-500/Year
Research	
Manuscript Reviewer (per manuscript)	25/Journal
Poster Moderator	75/Meeting
Editorial Board Member	375/Year
Grants Submitted (Annual direct costs \$100,000-249,999)	250/Grant
Grants Funded (Annual direct costs \$100,000-249,999)	500/Grant
Clinical Trial (Annual direct revenue \$20,000-49,999)	175/Trial
Patent Submitted	500/Patent
IRB Approval (Randomized Controlled Trial Design)	75/Protocol
Abstract Author	30/Abstract
Peer-Reviewed Article (Impact Factor 2-4)	375/Article
Teaching	
National Presentation	100/Presentation
National Workshop	100/Hour
Textbook Editor	1000/Book
Non-Clinical Mentorship of a Student/Fellow/Faculty	50/Mentee



Clinical Volume



AVERAGE AU PER NON-CLINICAL DAYS PER FACULTY BY RANK 18 16.4 16 14 12.7 11.6 12 9.9 10 8 5.7 6 4 2.8 2 0 **Assistant Professor** Associate Professor Professor FY2018 FY2019

WC: West Campus

PW: Pavilion for Women

7000

6000

5000

4000

3000

2000

1000

0

LT: Legacy Tower



TOTAL ANESTHETICS BY TYPE

Faculty Awards for Excellence in Patient Care

Early Career Faculty Award for Excellence in Patient Care 2017 Nihar Patel, M.D. 2019 Melanie McKissack Handley, M.D.

Star Faculty Award for Excellence in Patient Care

2017 Chris Glover, M.D., M.B.A. 2017 David Vener, M.D. 2018 Paul Hopkins, M.D. 2019 Rahul Baijal, M.D. 2019 Kathleen Chen, M.D., M.S. 2019 Helena Karlberg Hippard, M.D. 2019 Blaine Zelisko, M.D.

Master Clinician Award for Excellence in Patient Care

2018 Nancy Glass, M.D., M.B.A 2019 Carlos Campos-Lopez, M.D.



5-YEAR ANESTHETIC TYPE BREAKDOWN

ANESTHESIA **EDUCATION: CLINICAL AND** RESEARCH

The mission for the fellowship program in Pediatric Anesthesiology at Texas Children's Hospital aims to foster the next generation of leaders and consultants in Pediatric Anesthesiology by providing the foundation of outstanding clinical patient care, development of academic educators, and driving innovation with research in Pediatric Anesthesiology.

The program aims to include participation in an excellent variety of patients with unique pathophysiology and challenging pediatric anesthetics, developing the skills of instruction to provide supervision to future trainees in an academic department, and involvement in multiple research projects to push the innovation of pediatric anesthesia care. Fellows who complete our fellowship program have the necessary skills to practice pediatric anesthesia anywhere in the country, and be leaders within their individual departments.

Quick Facts:

- 31 fellows trained over the 5 Years
 - » 30% were hired as faculty after completing their fellowship
- Approximately 60 CA-2 and CA-3 residents train with us each year
- 175 Student Registered Nurse Anesthetists trained over the 5 Years from within BCM, UT Houston, and the Army

Fellowship Components and Requirements

DIDACTIC CURRICULUM

Fellows complete an extensive academic curriculum comprised of large and small group conferences, various lecture series, an 7-part research course, case presentations, grand rounds, classroom board preparation, workshops, simulations, and more. Notably, the PAFFC lecture series on Tuesday mornings contributes to many facets of their clinical education, including fellow presented Problem-Based Learning Discussion cases, journal club, case conference, and project presentation.

ROTATION SCHEDULE

Core Rotations:

General Pediatric Anesthesia:

- Main ORs
- Difficult Airway
- Teaching in OR
- Scheduling/GOAT
- NORA

Pediatric Cardiovascular Anesthesia (Legacy Tower)

Pediatric Pain (Acute and Chronic) Regional Anesthesia

Electives:

(West Campus) Research Wallace Tower) Interventions

ANESTHESIA EDUCATION: CLINICAL AND RESEARCH



Davelyn Smith Education Coordinator

Community-Based Anesthesiology Fetal Interventions **Regional Anesthesia**

Non-operating Room Anesthesia (NORA) Same Day Surgery Anesthesia (Mark Cardiac Catheterization and

CLINICAL COMPONENTS

The subspecialty resident in pediatric anesthesiology should gain expertise in the following areas of clinical care of neonates, infants, children, and adolescents;

- 1. Preoperative assessment of children scheduled for surgery
- 2. Cardiopulmonary resuscitation and advanced life support
- 3. Management of normal and abnormal airways
- 4. Mechanical ventilation
- 5. Temperature regulation
- Placement of venous and arterial catheters 6.
- 7. Pharmacologic support of the circulation
- Management of both normal perioperative fluid therapy and massive fluid and/or blood loss 8.
- 9. Interpretation of laboratory results
- **10.** Management of children requiring general anesthesia for elective and emergent surgery for a wide variety of surgical conditions including neonatal surgical emergencies, cardiopulmonary bypass, and congenital disorders
- **11.** Techniques for administering regional anesthesia for inpatient and ambulatory surgery in children
- **12.** Sedation or anesthesia for children outside the operating rooms, including those undergoing radiologic studies
- **13.** Recognition, prevention, and treatment of pain in medical and surgical patients
- Consultation for medical and surgical patients 14.
- **15.** Recognition and treatment of perioperative vital organ dysfunction, including in the postanesthesia care unit
- **16.** Diagnosis and perioperative management of congenital and acquired disorders
- **17.** Participation in the care of critically ill infants and children in a neonatal and/or pediatric intensive care unit
- **18.** Transport of critically ill patients between hospitals and/or within the hospital
- Psychological support of patients and their families 19.

In preparation for roles as consultants to other specialists, subspecialty residents in pediatric anesthesiology should have the opportunity to provide consultation under the direction of faculty

DIDACTIC COMPONENTS

responsible for teaching in the pediatric anesthesiology program. This should include assessment of the appropriateness of a patient's preparation for surgery and recognition of when an institution's personnel, equipment, and/or facilities are not appropriate for management of the patient. The didactic curriculum, provided through lectures and reading, should include the following areas, with emphasis on developmental and maturational aspects as they pertain to anesthesia and life support for pediatric patients:

- 1. Cardiopulmonary resuscitation
- 2. Pharmacokinetics and pharmacodynamics and mechanisms of drug delivery
- 3. Cardiovascular, respiratory, renal, hepatic, and central nervous system physiology, pathophysiology, and therapy
- **4.** Metabolic and endocrine effects of surgery and critical illness
- 5. Infectious disease pathophysiology and therapy
- 6. Coagulation abnormalities and therapy
- 7. Normal and abnormal physical and psychological development
- 8. Trauma, including burn, management
- 9. Congenital anomalies and developmental delay
- **10.** Medical and surgical problems common in children
- **11.** Use and toxicity of local and general anesthetic agents
- **12.** Airway problems common in children
- **13.** Pain management in pediatric patients of all ages
- 14. Ethical and legal aspects of care
- **15.** Transport of critically ill patients
- **16.** Organ transplantation in children
- **17.** All pediatric anesthesiology residents should be certified as providers of advanced life support for children.

Subspecialty conferences, including morbidity and mortality conferences, journal reviews, and research seminars, should be regularly attended. Active participation of the subspecialty resident in pediatric anesthesiology in the planning and production of these conferences is essential. However, the faculty should be the conference leaders in the majority of the sessions. Attendance by residents at multidisciplinary conferences, especially those relevant to pediatric anesthesiology, is encouraged.

ANESTHESIA EDUCATION: CLINICAL AND RESEARCH

History of Improvements by Fiscal Year



Major Programmatic Highlights

- Yearly ACGME survey consistently at 100% compliance
- 100% of positions filled through new NRMP match as of 2015 through 2019

Fellow's Evaluation



ANESTHESIA EDUCATION: CLINICAL AND RESEARCH

ABA DIPLOMATES



PEDIATRIC ANESTHESIOLOGY SUBSPECIALTY EXAMINATION

(Program vs. National)

FY2015 - Data not available

FY2016 - Core ABA board pass rate: 97% vs 88% national; subspecialty pediatrics board: 91% vs 81% national

FY2017 - Core ABA board pass rate: 94% vs 85% national; subspecialty pediatrics board: 91% vs 81% national

FY2018 - Core ABA board pass rate: 100%

FY2019 - Data not available

Faculty Teaching Awards

DEPARTMENTAL

Outstanding Attending for Fellow Education in Cardiovascular Anesthesia: BCM Chairman of Anesthesiology Awards for Excellence in Education: 2017 Carlos Campos-Lopez, M.D. 2017 R. Blaine Easley, M.D. 2018 Laura Torres, M.D.

Golden Apple Award:

2018 Nihar Patel, M.D. 2018 Carlos Campos-Lopez, M.D. (Hall of Fame) 2019 Souhail Karram, M.D.

Rising Star Award:

2017 - Teaching - Rahul Baijal 2017 - Resident and Fellow Education - Karla Wyatt, M.D., M.S. 2018 - Resident and Fellow Education - Brian Tinch, M.D.

Outstanding Attending for Fellow Education in Cardiovascular Anesthesia:

2015 R. Blaine Easley, M.D. 2016 David Vener, M.D. 2017 Premal Trivedi, M.D. 2018 Ashraf Resheidat, M.D. 2019 Premal Trivedi, M.D.

Outstanding Attending for Resident and Fellow Education in Pediatric Anesthesia:

2015 Nihar Patel, M.D. 2016 Nihar Patel, M.D. 2017 Karla Wyatt, M.D., M.S. 2018 Brian Tinch, M.D. 2019 Julie Schackman, M.D.

Outstanding Attending for Fellow Education in Pediatric Critical Care Medicine:

2018 Brian Tinch, M.D. 2019 Brian Tinch, M.D.

ANESTHESIA EDUCATION: CLINICAL AND RESEARCH

ANESTHESIA EDUCATION: CLINICAL AND RESEARCH

Outstanding Attending for Fellow Education in Pediatric Pain and Regional Medicine:

2017 Nihar Patel, M.D. 2018 Nihar Patel, M.D. 2019 Karla Wyatt, M.D., M.S.

INSTITUTIONAL

Norton-Rose Fulbright Awards (formerly Fulbright and Jaworski Faculty Excellence Awards) **Faculty Excellence in Teaching and Evaluation:**

2016 Rahul Baijal, M.D. 2016 Thomas Shaw, M.D. 2017 Nicholas Carling, M.D. 2017 Priscilla Garcia, M.D. 2017 Nihar Patel, M.D. 2018 Carlos Rodriguez, M.D. 2018 Imelda Tjia, M.D. 2019 Lisa Caplan, M.D. 2019 Catherine Seipel, M.D.

Faculty Excellence Award for Educational Leadership:

2019 David Young, M.D.

Faculty Excellence Award for Development of Enduring Educational Materials: 2018 Chris Glover, M.D., M.B.A.

2019 Nihar Patel, M.D.

Fundamentals of Clinical Research for Pediatric Anesthesiologists Course Series

Launched in 2018, our introductory 7-course series aims at educating and inspiring the department's fellows towards a career in clinical research. Over the course of the year, fellows attend lectures on study design, critical literature appraisals, statistics, grantsmanship, ethics, and dissemination of results. Fellows are encouraged to submit scientific abstracts to national conferences, prepare manuscripts, and support active research studies. In partnership with the CITI modules and BCM's Responsible Conduct of Research course, we ensure our fellows have strong fundamentals in order to seek early career research and grant opportunities within the first 3-5 years of their initial academic appointment.

COURSES INCLUDE THE FOLLOWING:

- I Want to Conduct a Research Study: Overview of hypothesis-based research and study design • I Want to Read a Paper: Critical appraisal of medical literature
- Basic Statistics 1: Introduction to biostatistics for physicians
- I'm Ready to Share What I've Found: Presentation and publication tips
- Basic Statistics 2: Biostatistics for physicians
- I don't want to do anything wrong!: Research ethics and the informed consent process
- I want to pursue academic medicine: Next steps and research funding opportunities
- Other topics may be included in the future

FUTURE DIRECTIONS:

- Add more courses (mock review panels, practice abstract presentations, etc.)
- Host biannual writing boot camps (Jan & May)
- » Fellows are relieved of clinical duties for partial days to write grant proposals, manuscripts, biosketches, and more
- » Led by Assoc. Director, Sponsored Programs Manager and Biostatistician
- » Include lightning lectures, group brainstorming, and one-on-one editing

Faculty Participation in the BCM Clinical Scientist Training Program

- Arvind Chandrakantan (currently enrolled in MS)
- Olutoyin Olutoye (Completed MS 06/2006)
- Eric Vu (Completed MS 04/2019)

RESEARCH

Peer Reviewed Publications

Quick Facts:

- 80% of faculty published at least once
- 23% of faculty published more than 10 times
- 81 journals accepted submissions
- 4% of articles and case reports included a fellow

Impact Factor (IF) is a measure that reflects the yearly average number of citations that recent articles in a given journal received and is a proxy for the relative importance of a journal within its field. A journal's IF is a numeric value indicating the average number of weighted citations received during a selected year per document published in that journal during the two previous years. Higher IF values are meant to indicate greater journal prestige.

Impact Factor (IF)

- Top 15* Journal's Average IF: 3.207
 - » Range: 0.943 6.523
- All Journal's Average IF: 3.774
 - » Range: 0.10 70.67

SCImago Journal Rank (SJR) is a measure of scientific influence of scholarly journals that accounts for both the number of citations received by a journal and the importance or prestige of the journals where such citations come from. A journal's SJR is a numeric value indicating the average number of weighted citations received during a selected year per document published in that journal during the previous three years. Higher SJR values are meant to indicate greater journal prestige.

- Top 15* Journal's Average SJR (2018): 1.076
 - » Range: 0 3.155
- All Journal's Average SJR (2018): 1.334
 - » Range: 0 19.52

Highest IF/SJR: Andropoulos D.B., Greene M.F. (2017). Anesthesia and developing brains -Implications of the FDA warning. New England Journal of Medicine; 376(10): 905-907. PMID 28177852. IF = 79.258 SJR = 19.476 for NEJM in 2017.



DETAILED PUBLICATION DATA							
	FY2015	FY2016	FY2017	FY2018	FY2019	Grand Total	
JOURNAL							
Article	17	23	18	37	48	143	
Case Report		3	3	3	2	11	
Conference Paper	1		6	1	1	9	
Review		2	1	4	2	9	
Editorial/Letter		3	10	10	4	27	
воок							
Book (Chapter)	80	19	8	6	66	179	
Book (Editors)	1	1			1	3	
TEACHING							
Teaching Publications					4	4	
Grand Total	99	51	46	61	128	385	

In years of notable new research support implementation, total publication outputs are markedly increased, such as in FY2015 at the naming of the first Research Division Chief and in FY2019 during the inaugural year of the ARC. In the last year, the number of published journal articles is more than twice the number published in the first year of the Research Division's existence.

140 120 100 80 60 40 20 0

FY2016

31

20

0

51

FY2017

38

8

0

46

Teaching Bookt Journal* ----- Grand Total

FY2015

18

81

0

99

10%

0%

First Author

Senior Author

External Collaborators

FY2015

22%

84%

24%

⁺ Includes book chapters and editorial roles

Journal*

Book†

Teaching

Grand Total

AGGREGATED PEER-REVIEWED PUBLICATION TRENDS BY FISCAL YEAR

FY2018

55

6

0

61



FY2016

35%

55%

80%

FY2017

46%

41%

74%

FY2018

38%

39%

80%



RESEARCH



* Includes articles, case reports, editorials, letters, reviews and conference papers



First authorship as well as external collaboration has increased in the last 5 years, resulting in additional publication outputs amongst our faculty.

JOURNAL PUBLICATION FREQUENCIES							
	FY2015	FY2016	FY2017	FY2018	FY2019	Grand Total	
TOP 15 JOURNALS							
Anesthesia and Analgesia	2	4	5	6	9	26	
Paediatric Anaesthesia	2	4	1	3	7	17	
Journal of Cardiothoracic and Vascular Anesthesia	2		2	6	6	16	
Pediatric Critical Care Medicine		1	2	2	1	6	
A & A Case Reports		2	3	1		6	
Cardiology in the Young	2		1	3		6	
Fetal Diagnosis and Therapy		1	1	1	2	5	
Anesthesiology			1	4		5	
Acta Neurochirurgica, Supplementum		5				5	
British Journal of Anaesthesia				2	2	4	
Journal of Thoracic and Cardiovascular Surgery		1	2	1		4	
Annals of Thoracic Surgery			1	1	2	4	
Pediatric Research		1			3	4	
Ultrasound in Obstetrics and Gynecology		1	1	1	1	4	
Journal of Clinical Anesthesia			1	1	2	4	
REMAINING 66 JOURNALS	10	11	17	23	22	83	
GRAND TOTAL	18	31	38	55	57	199	

The journal our faculty most frequently published in for FY2019 as well as all prior years is Anesthesia & Analgesia, with an Impact Factor of 3.489, ranking 8th of 31 in Anesthesiology-related journals.

Conference Proceedings

Includes Moderated and Non-Moderated Posters, Walkabout Sessions, and Invited Oral Research Presentations

Quick Facts

- **64%** of faculty presented at least once
- **18%** of faculty presented more than 5 times

	FY2015	FY2016	FY2017	FY2018	FY2019	Grand Total
Society for Pediatric Anesthesia/American Association of Pediatrics Section on Pediatric Anesthesiology/Congenital Cardiac Anesthesia Society/Society for Pediatric Pain Medicine	3	5	6	6	9	29
American Society of Anesthesiologists	2	1	2	6	6	17
International Anesthesia Research Society/Association of University Anesthesiologists/Society of Critical Care Anesthesiologists	2	5	1	3	6	17
TCH Surgery Research Day		2	4	1		7
American Society of Regional Anesthesia and Pain Medicine		2	1	4		7
Society for Obstetric Anesthesia and Perinatology		1	2	2	1	6
European Society for Paediatric Anaesthesiology	2		1	3		6
Society for Maternal Fetal Medicine		5				5
Society for Technology in Anesthesia		1	1	1	2	5
American Heart Association	1			2	2	5
American Society of Extracorporeal Technology			1	1	2	4
American Society of Regional Anesthesia and Pain Medicine-Fall		1			3	4
International Symposium on Congenital Heart Disease			1	1	2	4
New York PostGraduate Assembly in Anesthesiology		1	2	1		4
Pediatric Orthopaedic Society of North America		1	1	1	1	4
Pediatric Urology Fall Congress					1	1
Society of Critical Care Medicine/Pediatric Intensive and Critical Care Societies				1		1
Society of Thoracic Surgeons				1		1
Society for Pediatric Anesthesia				1		1
World Airway Management Meeting		1				1
World Congress of Pediatric Cardiology and Cardiac Surgery				1		1
World Congress on Regional Anesthesia and Pain Medicine				1		1
Grand Total	23	24	23	40	27	137

Our faculty most frequently presented research at the SPA/AAP Pediatric Anesthesiology/SPPM annual meeting, with over half of our yearly conference proceedings occurring at that meeting.

RESEARCH

• **Over 22** conferences accepted submissions • **20%** of abstracts included a fellow



AUTHORSHIP AND COLLABORATORS - CONFERENCE ACTIVITIES

Conference items trend higher than publications for first and senior authors, but less for external collaborators.

Protocols

Quick Facts

- 120 protocols open during the 5-Year period
- 92 led by internal faculty
- 26 included funding



The number of active protocols has more than doubled since the establishment of a research division, with noted increases in prospective, retrospective, and basic science designed studies.





EXTERNAL DEPARTMENT COLLABORATORS:			
Peds-Cardiology	5		
Peds-Critical Care Medicine	5		
OBGYN	4		
Peds-Gastroenterology	3		
Peds-General Surgery	3		
Peds-Neonatal	2		
Peds-Neurosurgery	2		
Ophthalmology	1		
Peds-Emergency Medicine	1		
Peds-Neurology	1		
Peds-Urology	1		
Total	28		

FUNDING: FUNDING SOURCE: Most frequent collaborators are Pediatric Cardiology and Pediatric Critical Care Medicine, of which several of our faculty hold dual appointments. Department / Int





Outputs

- Grants: 6 Protocols submitted 15 grant applications
- Publications: 33 protocols produced 98 publications
- Conference-Related: 22 Protocols produced 36 abstracts



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iety	3
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	30*

HASE	5:
	1
	2
	5
	8

Support Resources

Starting July 2018 (the beginning of FY2019), the department invested in additional research staff to support faculty's research growth. Prior to the hiring of a dedicated Statistician and Sponsored Programs Manager, faculty had to either perform analyses or write grant applications themselves or outsource the project to partner departments within the Heart Center or to the Pediatric Research Resource Office.

STATISTICAL SERVICES

Quick Facts:

- In FY2019, 14 studies sought assistance
- Total abstract submission rate of 93% for the first year of in house departmental services
 - » 10 studies (64%) had an abstract accepted by a conference and 3 (21%) are awaiting a submission decision
- Total manuscript submission rate of 50% in first year of statistical services
 - » 1 (7%) study had a manuscript accepted and 6 (43%) have manuscripts prepare for submission

Dual trained in statistics and public health, as well as versed in SPSS, SAS and STATA software platforms, our Statistician is able to provide consultation on study design and data collection best practices and tools, perform sample and power size calculations as well as full analyses, prepare corresponding manuscript, scientific abstract, grant and protocol sections with supporting figures and tables, and respond to editorial review comments.

The Statistician is involved from study planning through dissemination. By being involved from initiation, the Statistician can confirm that all primary and secondary outcomes are being collected as envisioned by the Principal Investigator and confirm that study case report forms and databases enter data in a way that is compatible with later analyses. Faster turnaround times compared to past outsourcing means more research outputs can be submitted and at a higher level of quality as well. In addition, the planned Departmental Data Safety and Monitoring Board means improved subject safety since interim analyses and safety reports by the Statistician of all internal clinical trials will be able to be interpreted by a balanced team of medical and statistical experts and stop measures or changes can be enforced.





*Some studies requested more than one statistical service.

FUNDING



ACTIVE FUNDED ACCOUNTS BY FISCAL YEAR

FY2017 saw the renewal of the Pediatric Heart Network grant of which the Division of Cardiovascular Anesthesiology is awarded a dedicated portion.

SUBAWARDS FY2015 FY2016 Newly Executed 0 0 Active 1 1

Prime Institutions:

- Duke University
- New England Research Institutes, Inc.
- Stanford University

INDUSTRY CONTRACTS								
	FY2015	FY2016	FY2017	FY2018	FY2019			
Newly Executed	0	0	2	1	0			
Active	2	2	2	3	3			

Sponsors:

- Cumberland Pharmaceuticals, Inc.
- Medtronic, Inc.
- VistaPharm, Inc.

COLLABORATIVE AGREEMENTS

Research Resources Office

Via Service Agreements with the Pediatric Research Resource Office (RRO), our department provides sedation services for 11 industry-sponsored drug trials in Pediatric-Urology, -Gastroenterology, and -Neurology. Sedation is performed for a variety of procedures including imaging, biopsies, lumbar punctures, and more. The agreements pay a reduced, negotiated ASA unit price in order to support institutional research objectives and collaboration and help support internal studies, research staff training, and software requests.

FY2017	FY2018	FY2019
0	0	3
1	0	3



EXECUTED RRO AGREEMENTS BY FISCAL YEAR

In the first year of the ARC's expanded internal research resources, our staff facilitated the same number of RRO agreement executions as there were total in the prior four fiscal years, improving our ability to capture what were previously lost internal funds.

Notable Research Highlights

An Open Label Pilot Study of a Dexmedetomidine-Remifentanil-Caudal Anesthetic for Infant Lower Abdominal/ Lower Extremity Surgery: TREX Pilot Study (PI: Dean Andropoulos, M.D., M.H.C.M.)

Study Design: Multicenter, open label, prospective, single arm pilot trial

Sites: Texas Children's Hospital, Houston, TX

Boston Children's Hospital, Boston, MA Cincinnati Children's Hospital Medical, Cincinnati, OH KK Women's and Children's Hospital, Singapore, Singapore Oregon Health and Science University, Portland, OR Royal Children's Hospital, Parkville, Victoria, Australia The Children's Hospital of Philadelphia, Philadelphia, PA University of Texas Southwestern/Children's Health, Dallas, TX

Enrollment: 60 (TCH 15)

Purpose: Determine the feasibility of a remifentanil/ dexmedetomidine/neuraxial block technique in infants scheduled for surgery lasting longer than 2 hours

Patient Population: Infants aged 1-12 months scheduled for lower limb, urologic or lower abdominal surgery

Outputs:

- Grants: Pilot data was used to obtain funding from the Australian National Health and Medical Research Council, the Australian and New Zealand College of Anaesthetists professional organization, and Murdoch Children's Research Institute.
- Manuscripts:
- 1. Szmuk P, Andropoulos D, McGowan F, Brambrink A, Lee C, Lee KJ, McCann ME, Liu Y, Saynhalath R, Bong CL, Anderson BJ, Berde C, De Graaff JC, Disma N, Kurth D, Loepke A, Orser B, Sessler DI, Skowno JJ, von Ungern-Sternberg BS, Vutskits L, Davidson A. (2019). An open label pilot study of a dexmedetomidine-remifentanil-caudal anesthetic for infant lower abdominal/lower extremity surgery: The T REX pilot study. Paediatr Anaesth; 29(1):59-67. PMID: 30428151
- Conference Proceedings:
 - 1. (2017, May). The GAS Study and Future Collaborative Trials. Presented at the Second International Conference on Pediatric Anesthesia and Neurotoxicity, Genoa, Italy.
- Other: Pilot data has spurred an additional randomized controlled trial

A Phase I Study of Dexmedetomidine Bolus and Infusion in Corrective Infant Cardiac Surgery: Safety and Pharmacokinetics ((PI: Dean Andropoulos, M.D., M.H.C.M.)

Study Design: Multicenter, Phase I, non-blinded, dose-escalation safety and pharmacokinetics study of dexmedetomine

Sites: Texas Children's Hospital, Houston, TX Boston Children's Hospital, Boston, MA CS Mott Children's Hospital, Ann Arbor, MI The Children's Hospital of Philadelphia, Philadelphia, PA

Enrollment: 124 (TCH 38)

Purpose: Determine the safety of a dexmedetomidine loading dose/infusion regimen as part of a balanced general anesthetic/sedative strategy for neonates/infants (0-180 days of age) undergoing corrective congenital cardiac surgery using cardiopulmonary bypass

Patient Population: Age 0 to 180 days at the time of surgery with diagnosis of D-transposition of the great arteries (with or without ventricular septal defect), or tetralogy of Fallot, or ventricular septal defect (with or without associated atrial septal defect and/or patent ductus arteriosus) and scheduled for complete corrective two-ventricle surgical repair with cardiopulmonary bypass

Outputs:

• Grants: Data was used to submit three National Institutes of Health and one Department of Defense grants.

Manuscripts:

1. Zuppa AF, Nicolson SC, Wilder NS, Ibla JC, Gottlieb EA, Burns KM, Stylianou M, Trachtenberg F, Ni H, Skeen TH, Andropoulos DB, Pediatric Heart Network Investigators. (2019). Results of a phase 1 multicentre investigation of dexmedetomidine bolus and infusion in corrective infant cardiac surgery. Br J Anaesth [epub ahead of print]. PMID: 31623840

Conference Proceedings:

1. Andropoulos, DB (2018, September). Results of a phase 1 multicenter safety and pharmacokinetic investigation of dexmedetomidine bolus and infusion in corrective infant cardiac surgery requiring cardiopulmonary bypass. Presented at the European Society of Pediatric Anesthesia Annual Meeting, Brussels, Belgium. (Recognized in 10 Best Abstract Category)

Clinical Use of Baxter Animated Retching Faces (BARF) Scale in Children & Use of Baxter Animated Retching Faces (BARF) Scale to Measure Nausea in Children Who Speak Spanish (PI: Mehernoor Watcha, M.D. & Toni Felberg, M.D.)

Study Design: Prospective, cross-sectional, survey validation study

Enrollment: English 327 Spanish 176

Purpose: Determine: 1) The incidence of postoperative nausea as compared to postoperative vomiting in the Post Anesthetic Care Unit (PACU) and on discharge (Post Discharge nausea and Vomiting); 2) The age related differences in the reliability and usefulness of the BARF and Visual Analog Scale (VAS) for measuring nausea; 3) The minimal clinically relevant differences in nausea on the BARF and VAS; 4) The BARF and VAS scores associated with a patient's perception of the need for treatment; and, 5) The test - retest reliability of the VAS and BARF scores when nausea is rated as unchanged.

Patient Population: English: Age 3 to 18 years of age undergoing an elective surgery Spanish: Age 7 to 18 years of age undergoing an elective surgery

Outputs:

Manuscripts:

- 1. Watcha MF, Lee AD, Medellin E, Felberg MT, Bidani SA. (2019). Clinical Use of the Pictorial Baxter Retching Faces Scale for the Measurement of Postoperative Nausea in Children. Anesth Analg; 128(6):1249-1255. PMID: 31094795
- 2. Watcha MF, Medellin E, Lee AD, Felberg MA, Bidani SA. (2018). Validation of the pictorial Baxter Retching Faces scale for the measurement of the severity of postoperative nausea in Spanish-speaking children. Br J Anaesth; 121(6): 1316-1322. PMID: 30442259

Conference Proceedings:

- 1. Watcha MF, Bidani SA, Felberg MT, Guzman JA, Medellin E. (2016, May). Poster presentation at International Anesthesia Research Society, San Francisco, CA.
- 2. Lee AD, Felberg MA, et al. (2017, May). Use of the Baxter Retching Faces (BARF) Scale to measure the Severity of nausea in Spanish-speaking Children. Poster preseted at Texas Children's Hospital Surigcal research Day, Houston, TX. (Won Best Poster Award)
- 3. Watcha MD. (2017, September). Validation of the Baxter Retching Faces (BARF) Scale as a Measure of the Severity of Nausea in Spanish Speaking Children. Presented at European Society of Pediatric Anesthesia Annual Meeting, Glasgow, Scotland. (Recognized in Best Posters Category)
- Other: American Pharmacists Association, (2016, November 16), Pediatric post-op nausea identified with the BARF scale [Press Release]. Retrieved from https://www.pharmacist.com/ article/pediatric-post-op-nausea-identified-barf-scale



SPA SIG Pediatric Craniofacial Collaborative Group (PI: Chris Glover, M.D., M.B.A.)

Background: Formed in 2011, 31 institutions contributed data from June 2012 to September 2015. Data extracted included demographics, perioperative management, length of stay, laboratory results, and blood management techniques employed. Complications and outlier events were described. Outcomes analyzed included total blood donor exposures, intraoperative and perioperative transfusion volumes, and length of stay outcomes.

Study Design: Multicenter registry

Enrollment: 12,000 Planned (TCH 344 to date)

Purpose: Create a multicenter registry which captures data relating to the perioperative course and management of children undergoing craniofacial reconstruction surgery to augment Quality Improvement activities at participating sites. The aggregate multi-institutional data set will be used for benchmarking for both local and national quality improvement efforts.

Patient Population: Children 0-18 years undergoing plastic surgical procedures involving a craniotomy, craniectomy, maxillofacial osteotomy, strip craniectomy, or other plastic surgical procedure involving bones of the head and face

Outputs:

- Manuscripts*:
 - 1. Fernandez AM, Reddy SK, Gordish-Dressman H, Muldowney BL, Martinez JL, Chiao F, Stricker PA, Abruzzese C, Apuya J, Beethe A, Benzon H, Binstock W, Brzenski A, Budac S, Busso V, Chhabada S, Cladis F, Claypool D, Collins M, Dabek R, Dalesio N, Falcon R, Fernandez P, Fiadjoe J, Gangadharan M, Gentry K, Glover C, Goobie SM, Gosman A, Grap S, Gries H, Griffin A, Haberkern C, Hajduk J, Hall R, Hansen J. Hetmaniuk M. Hsieh V. Huang H. Ingelmo P. Ivanova I. Jain R. Kars M. Kowalczvk-Derderian C, Kugler J, Labovsky K, Lakheeram I, Lee A, Masel B, Medellin E, Meier P, Mitzel Levy H, Muhly WT, Nelson J, Nicholson J, Nguyen KP, Nguyen T, Olutuye O, Owens-Stubblefield M, Ramesh Parekh U, Petersen T, Pohl V, Post J, Poteet-Schwartz K, Prozesky J, Reid R, Ricketts K, Rubens D, Ryan L, Skitt R, Soneru C, Spitznagel R, Singh D, Singhal NR, Sorial E, Staudt S, Stubbeman B, Sung W, Syed T, Szmuk P, Taicher BM, Thompson D, Tretault L, Ungar-Kastner G, Watts R, Wieser J, Wong K, Zamora L; Pediatric Craniofacial Collaborative Group. (2019). Perioperative Outcomes and Surgical Case Volume in Pediatric Complex Cranial Vault Reconstruction: A Multicenter Observational Study From the Pediatric Craniofacial Collaborative Group. Anesth Analg; 129(4):1069-1078. PMID: 30222655
 - 2. Glover CD, Fernandez AM, Huang H, Derderian C, Binstock W, Reid R, Dalesio NM, Zhong J, Stricker PA; Pediatric Craniofacial Collaborative Group. (2018). Perioperative outcomes and management in midface advancement surgery: a multicenter observational descriptive study from the Pediatric Craniofacial Collaborative Group. Paediatr Anaesth; 28(8):710-718. PMID: 29920872
 - 3. Thompson DR, Zurakowski D, Haberkern CM, Stricker PA, Meier PM, Bannister C, Benzon H, Binstock W, Bosenberg A, Brzenski A, Budac S, Busso V, Capehart S, Chiao F, Cladis F, Collins M, Cusick J, Dabek R. Dalesio N. Falcon R. Fernandez A. Fernandez P. Fiadioe J. Gangadharan M. Gentry K. Glover C, Goobie S, Gries H, Griffin A, Groenewald CB, Hajduk J, Hall R, Hansen J, Hetmaniuk M, Hsieh V, Huang H, Ingelmo P, Ivanova I, Jain R, Koh J, Kowalczyk-Derderian C, Kugler J, Labovsky K, Martinez JL, Mujallid R, Muldowney B, Nguyen KP, Nguyen T, Olutuye O, Soneru C, Petersen T, Poteet-Schwartz

K. Reddy S. Reid R, Ricketts K, Rubens D, Skitt R, Sohn L, Staudt S, Sung W, Syed T, Szmuk P, Taicher B, Tetreault L, Watts R, Wong K, Young V, Zamora L; Pediatric Craniofacial Collaborative Group. (2018). Endoscopic Versus Open Repair for Craniosynostosis in Infants Using Propensity Score Matching to Compare Outcomes: A Multicenter Study from the Pediatric Craniofacial Collaborative Group. Anesth Analg; 126(3):968-975. PMID: 28922233

- 4. Goobie SM, Cladis FP, Glover CD, Huang H, Reddy SK, Fernandez AM, Zurakowski D, Stricker PA; Pediatric Craniofacial Collaborative Group. (2017). CORRIGENDUM Safety of antifibrinolytics in cranial vault reconstructive surgery: a report from the pediatric craniofacial collaborative group. Paediatr Anaesth; 27(6):670. PMID 28474812
- 5. Stricker PA, Goobie SM, Cladis FP, Haberkern CM, Meier PM, Reddy SK, Nguyen TT, Cai L, Polansky M, Szmuk P, Fiadjoe J, Soneru C, Falcon R, Petersen T, Kowalczyk-Derderian C, Dalesio N, Budac S, Groenewald N, Rubens D, Thompson D, Watts R, Gentry K, Ivanova I, Hetmaniuk M, Hsieh V, Collins M, Wong K, Binstock W, Reid R, Poteet-Schwartz K, Gries H, Hall R, Koh J, Bannister C, Sung W, Jain R, Fernandez A, Tuite GF, Ruas E, Drozhinin O, Tetreault L, Muldowney B, Ricketts K, Fernandez P, Sohn L, Hajduk J, Taicher B, Burkhart J, Wright A, Kugler J, Barajas-DeLoa L, Gangadharan M, Busso V, Stallworth K, Staudt S, Labovsky KL, Glover CD, Huang H, Karlberg-Hippard H, Capehart S, Streckfus C, Nguyen KT, Manyang P, Martinez JL, Hansen JK, Levy HM, Brzenski A, Chiao F, Ingelmo P, Mujallid R, Olutoye OA, Syed T, Benzon H, Bosenberg A; Pediatric Craniofacial Collaborative Group. (2017). Perioperative Outcomes and Management in Pediatric Complex Cranial Vault Reconstruction: A Multicenter Study from the Pediatric Craniofacial Collaborative Group. Anesthesiology; 126(2):276-287. PMID: 27977460

• Abstracts*:

- 1. Huang H, Glover C, Cladis F, Stricker P, Goobie S. (2016). Institutional Utilization of Antifibrinolytics in Craniosynostosis Surgery: A Survey by the Pediatric Craniofacial Collaborative Group. Poster presented at SPA/AAP Pediatric Anesthesiology, Colorado Springs, CO.
- 2. Glover CD. (2018). Perioperative Outcomes and Management in Midface Advancement Surgery: A Multicenter Study from the Pediatric Craniofacial Collaborative Group. Poster presented at Texas Children's Hospital Surgical Research Symposium, Houston, TX.
- Other: Editor's Pick for Best Pediatric Research at 2018 Society for Pediatric Anesthesia Annual Meeting

QUALITY IMPROVEMENT

The Texas Children's Hospital Surgical Quality Committee has established an Anesthesiology, Perioperative and Pain Medicine - Quality Committee ("Committee") in accordance with Article VIII of the Medical Staff Bylaws and the Medical Staff Committee Policy (MS 300-02). The responsibilities and authority of the Committee are set forth in this Charter. As a Committee charged with the authority to evaluate the quality and safety of medical and health care services, the Committee is a medical peer

review committee under Section 151.002(8) of the Texas Occupations Code. It is also a medical committee under Section 161.031 of the Texas Health and Safety Code. This Charter will be reviewed and approved periodically by the Committee.



Purpose of the Anesthesiology, Perioperative and Pain Medicine – Quality Improvement Committee

The Committee is authorized by the Texas Children's Board and the Medical Executive Committee to evaluate the quality and safety of medical and health care services. The purpose of the Committee is to:

- i. Identify, review, and respond to significant clinical or anesthetic complications and events involving death or serious physical injury or the risk thereof;
- ii. Engage in root cause analysis of any complications or events under the Committee's review;
- iii. Develop action plans designed to improve the standard of care and to reduce safety risks;
- iv. Implement and monitor the effectiveness of all such action plans; and
- v. Report directly to the Surgical Quality Committee.

Electronic-QI Reporting System

Prior to the start of 2017, all perioperative events were recorded manually by paper. Administratively burdensome and discordant with the transition to Epic and electronic documentation, events went underreported. Led by Dr. Kim Nguyen in partnership with Information Systems, a hospital-wide team developed an electronic platform (E-QI) that resides within the Anesthesia Encounter to reduce physician burden and increase data collection. Reporting increased from an average of 21 events per month before E-QI to 150 events per months after its launch.

In conjunction with this platform, a custom database was developed to store data on the anesthesia encounter and patient demographics. Thus, greatly facilitating our capacity for data analysis and tracking. Cases which need to be reported to national registries are automatically identified and collated with the requisite data points. The development of a QlikView application set to launch in October 2019 allows for real-time analysis and visualization of departmental quality metrics. This level of access to data has been highly beneficial both within the Department of Anesthesiology, as well as with our perioperative partners, in assessing and identifying means of improving patient care.

QUALITY IMPROVEMENT



Kimberly Taylor, M.B.A., B.S.N., R.N. Quality Improvement Specialist









FIGURE 2. SAMPLE QLIKVIEW ANALYTIC OUTPUT - "Top 10 Most Used Services"



Pediatric Anesthesia Wake Up Safe Collaborative

Wake Up Safe, with the Society for Pediatric Anesthesia as its sponsor, is dedicated to better outcomes for children receiving anesthetic care and to the education of our members in improvement science. Wake Up Safe, through the efforts of its members, collects data on thousands of anesthetic patients each year. Members have access to this data and to monthly conference calls and twice-yearly meetings which promote the dissemination of best practices. Members have used the database to publish numerous papers in peer reviewed journals. Wake Up Safe has been certified by the Agency for Healthcare Research and Quality (AHRQ) as a Patient Safety Organization.

Publications:

- Wake Up Safe and Root Cause Analysis: Quality Improvement in Pediatric Anesthesia. Tjia I, Rampersad S, Varughese A, Heitmiller E, Tyler DC, Lee, AC, Hastings LA, Uejima T. Anesth Analg 2014; 119: 122.36
- Medication Errors in Pediatric Anesthesia: A Report From the Wake Up Safe Quality Improvement Initiative, Lobaugh LMY, Martin LD, Schleelein LE, Tyler DC, Litman RS. Anesth Analg. 2017 Sep; 125(3): 936-942, selected by the A&A Editorial Board as the Article of the Month for September 2017 which included a podcast on openanesthesia.org

QUALITY IMPROVEMENT

CONGENITAL CARDIAC ANESTHESIA SOCIETY CCAS-STS DATABASE

In 2009, under the leadership of Dr. David Vener, the Congenital Cardiac Anesthesia Society (CCAS) developed a multisite registry for congenital cardiac anesthesia data to be incorporated into the STS database. Currently, this registry includes information on the anesthetic care of children with CHD from 50 participating institutions in North America, adding approximately 19,000 patient encounters annually with over 100,000 entries to date. Specific data queries of the entire CCAS-STS database are vetted by the Database Committee and then forwarded to the STS. Institutional access to the database is available to each participating institution. Both offer unique opportunities for quality and outcomes information and research.

Principal Investigator: David Vener, M.D.

COLLABORATIVE

RESEARCH

AND NATIONAL

CONSORTIUMS

 Highlights: The CCAS-STS database has been utilized now for multiple publications and research projects, including the use of dexmedetomidine in cardiac anesthesia, the relative impact of nasal vs. oral intubation, blood transfusion practices and more. Data from the anesthesia section has now been incorporated into many surgical research projects and is also helping drive Quality Improvement surveillance and projects around the U.S. Our first international site, Hospital for Sick Children, Toronto, Ontario, enrolled this past year.

FETAL ANESTHESIA DATABASE

The Fetal Anesthesia Database was conceived in 2014 by Baylor College of Medicine in partnership with University of Leuven, Cincinnati Children's Hospital and University of California, San Francisco. The purpose of creating the multi-institutional database is to allow investigators the opportunity to pool experiences, compile a large number of subject cases, identify best practices with regards to peri-operative short and medium term maternal and fetal outcomes, and to better understand the effect of anesthesia on maternal and fetal long term outcomes, including neurological outcomes. Following extensive regulatory approval in line with the US and European guidelines, patient recruitment commenced in earnest in 2017.

- Principal Investigator: Olutoyin Olutoye, M.D.
- Co-Investigators: Arvind Chandrakantan, M.D., Priscilla Garcia, M.D., Ali Hassanpour, M.D., David Mann, M.D., Kim Nguyen, M.D., Mario Patino, M.D., Thomas Shaw, M.D., Catherine Seipel, M.D., Caitlyn Sutton M.D., Aina Titilopemi, M.D., Erin Williams, M.D.
- Highlights: Dr. Olutoye presented an update on the database at the 2017 International Fetal Medicine & Surgery Society in Jackson Hole, Wyoming in October 2017. Collaborators from institutions in the United Kingdom and Singapore are in the onboarding process. To date, 169 patients have been recruited.

COLLABORATIVE RESEARCH AND NATIONAL CONSORTIUMS

NIH/NHLBI PEDIATRIC HEART NETWORK

The Pediatric Heart Network (PHN) was established in 2001 by the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH). It was created to help doctors and nurses design and carry out clinical research so that children with heart disease can receive high-guality, evidence-based care.

- Principal Investigator: Daniel Penny, M.D., Ph.D.
- Co-Investigators: Dean Andropoulos, M.D., M.H.C.M., Lara Shekerdemian, M.D., Jeffrey Heinle, M.D.
- Highlights: Currently in year 8, in 2nd grant cycle of funding, with 9 active studies and 5 more in development

PEDIATRIC ANESTHESIA LEADERSHIP COUNCIL TASK FORCE ON ADVANCED PEDIATRIC ANESTHESIA FELLOWSHIP TRAINING

The Pediatric Anesthesia Leadership Council (PALC) was established in 2008-2009 in order to identify strategies to further the growth and development of pediatric anesthesiology. In November 2010, PALC joined forces with the Pediatric Anesthesiology Program Directors Association (PAPDA) to form a Pediatric Anesthesia Fellowship Task Force. The purpose was to formally evaluate the strengths and weakness of current fellowship training and identify needs, reasons for change, to make recommendations, and to communicate these recommendations. As a member of the Council since its inception, Dr. Andropoulos served as the President and CEO of the Council from March 2015 to March 2019 and remains a member to this day.

PEDIATRIC CRANIOFACIAL SURGERY PERIOPERATIVE REGISTRY

The Pediatric Craniofacial Collaborative Group (PCCG) established the Pediatric Craniofacial Surgery Perioperative Registry (PCSPR) to elucidate practices and outcomes in children with craniosynostosis undergoing complex cranial vault reconstruction and inform quality improvement efforts. The aim of this study is to determine perioperative management, outcomes, and complications in children undergoing complex cranial vault reconstruction across North America and to delineate salient features of current practices. 30+ institutions, including Texas Children's Hospital, have contributed data to the registry since it was created in 2012.

- Principal Investigator: Chris Glover, M.D.
- Co-Investigators: Kim Nguyen, M.D., Olutoye Olutoyin, M.D., Laura Ryan, M.D., Mehernoor Watcha, M.D.
- Highlights: Dr. Chris Glover was elected to the PCCG Executive Committee in Fall 2017 with an initial term extending through October 2018. In addition, Dr. Glover recently submitted the article, "Perioperative outcomes and management in midface advancement surgery: a multicenter observational study from the PCCG," for publication in 2018.

PEDIATRIC DIFFICULT INTUBATION REGISTRY

The Pediatric Difficult Intubation (PeDI) Registry was created to provide a mechanism to collect and store clinical practice data related to difficult direct laryngoscopy events in order to augment Quality Improvement activities at the participating sites. The repository provides benchmarking data for participating sites to compare difficult airway management practices across the participating sites. Funding for the registry is provided by The Children's Hospital of Philadelphia (CHOP) Department of Anesthesiology and Critical Care Medicine. Texas Children's Hospital has been a member of PediR QI cooperative group since 2012.

- Principal Investigator: Paul Hopkins, M.D.
- Co-Investigator: Chris Glover, M.D., Olutoye Olutoyin, M.D.
- Highlights: The Pediatric Collaboration published an article, Videolaryngoscopy versus Fiberoptic Intubation through a Supraglottic Airway in Children with a Difficult Airway: An Analysis from the Multicenter Pediatric Difficult Intubation Registry, in Anesthesiology in September 2017.

PEDIATRIC REGIONAL ANESTHESIA NETWORK

The Pediatric Regional Anesthesia Network (PRAN) is a collaborative group of institutions and investigators studying the practice, risks and incidence of complications in pediatric regional anesthesia. PRAN was founded in 2007 to study regional anesthetics in infants and children. The group now includes 21 centers and has prospectively accrued data on over 100,000 pediatric regional blocks. PRAN's goal is to utilize the large multi-center network to create a data repository for research, quality improvement, and benchmarking data.

- Principal Investigator: Open
- Co-Investigators: Benjamin Lee, M.D., Kim Nguyen, M.D., Robert Power, M.D.
- Highlights: Under the leadership of Dr. Benjamin Lee and Dr. Nihar Patel, the Department organized a Regional Pain Team in May 2017 to more fully incorporate multi-modal analgesia into our practice, decrease opioid use in the peri-operative period, and work more closely with our surgeons and proceduralists. Currently, the team consists of 24 Anesthesiologists, who are also actively involved in regional anesthesia conferences, workshops and clinical research. In 2017, the Department celebrated the success of the 6th Annual TCH Perioperative Ultrasound Workshop, a CME course, which was attended by over 60 faculty and trainees from BCM, TCH, UT-Hermann, UTMB and private practices around the Greater Houston Area. In addition, multiple members of the team served as invited Instructors at regional anesthesia workshops at the American Society of Anesthesiologists and Society of Pediatric Anesthesia Meetings.

COLLABORATIVE RESEARCH AND NATIONAL CONSORTIUMS

PEDIATRIC SEDATION RESEARCH CONSORTIUM

The Pediatric Sedation Research Consortium (PSRC) was created in 2003 through a grant from the National Patient Safety Foundation as the multi-institutional research arm of the Society for Pediatric Sedation (SPS). The PSRC is a collaborative group of institutions, now up to 50 members, dedicated to improving sedation practice through the sharing of prospective observational outcome data on pediatric procedural sedation encounters. Through ongoing data collection and storage, member institutions of the SPS/PSRC can generate current data reports of their institution's performance as well as contribute to aggregate case data for sedation research. The findings from this data have generated numerous peer reviewed publications and abstracts to challenge dogma, establish enhanced understanding of sedation excellence, and foster optimization of pediatric sedation care.

- Principal Investigator: Amber Rogers, M.D.
- Co-Investigators: Krista Preisberga, M.D., Laura Torres, M.D.
- Highlights: Texas Children's Hospital began submitting data to the PSRC in January 2017. In addition, TCH joined 9 other institutions this year to begin an IRB approved prospective pilot study evaluating the adequacy of sedation, temporal characteristics, and adverse events associated with the use of intranasal dexmedetomidine entitled, "Clinical Characteristics of Intranasal Dexmedetomidine for Sedation in Children Undergoing Non-Painful Procedures."

SOCIETY FOR PEDIATRIC ANESTHESIA IMPROVEMENT NETWORK

Established in 2014 under the leadership of Joseph Cravero from Boston Children's Hospital, Society for Pediatric Anesthesia Improvement Network (SPAIN) is a multi-institutional collaborative developed with the goal of systematically documenting the perioperative care and outcomes in children undergoing surgical procedures where anesthetic or pain management approaches are variable. The group's inaugural project was a two-year investigation of the management strategies and outcomes for patients undergoing minimally invasive repair of pectus excavatum (MIRPE).

- Principal Investigator: Chris Glover, M.D., M.B.A.
- Co-Investigators: Imelda Tjia, M.D.
- Highlights: Fourteen institutions collected data on 348 subjects from June 2014 to August 2015. TCH enrolled 40 subjects. The study produced a high-impact publication in Anesthesia & Analgesia (cited below). The network is currently working to develop the next prospective study.
- » Muhly WT, Beltran RJ, Bielsky A, Bryskin RB, Chinn C, Choudhry DK, Cucchiaro G, Fernandez A, Glover CD, Haile DT, Kost-Byerly S, Schnepper GD, Zurakowski D, Agarwal R, Bhalla T, Eisdorfer S, Huang H, Maxwell LG, Thomas JJ, Tjia I, Wilder RT, Cravero JP. (2019). Perioperative Management and In-Hospital Outcomes After Minimally Invasive Repair of Pectus Excavatum: A Multicenter Registry Report From the Society for Pediatric Anesthesia Improvement Network. Anesth Analg; 128(2):315-327. PMID: 30346358

WAKE UP SAFE

Wake Up Safe, is a component of the Society for Pediatric Anesthesia with the purpose to improve processes of care and outcomes for newborns, infants, and children in the perioperative environment. The goal of the initiative is to define, measure and improve quality in pediatric anesthesia care through the development of a low-frequency, serious safety events registry of data from partner organizations. The reporting group consists of 32 organizations, including all of the top USNWR Children's Hospitals. Texas Children's Hospital has been active with the group since its inception in 2008.

- Principal Investigator: Imelda Tjia, M.D.
- **Co-Investigators:** Michelle Dalton, M.D., Toni Felberg, M.D., Megha Kanjia, M.D., Lauren Lobaugh, M.D., Steve Stayer, M.D., David Vener, M.D.
- Highlights: Lauren Lobaugh, M.D. authored an article, Anesth Analg. 2017 Sep;125(3):936-942. Medication Errors in Pediatric Anesthesia: A Report From the Wake Up Safe Quality Improvement Initiative. The publication was selected as Article of the Month by OpenAnesthesia.org and she was invited to present in August 2017 for the site's podcast.

COLLABORATIVE RESEARCH AND NATIONAL CONSORTIUMS

NATIONAL SCIENTIFIC PARTICIPATION

Advances on Medical Education and Practice	
» Adam Adler, M.D. †	
American Journal of Cardiology	
» Wanda Miller-Hance, M.D. ‡	
Anesthesia & Analgesia	
» Adam Adler, M.D. †	
» Dean Andropoulos, M.D., M.H.C.M. ‡	
» Kenneth Brady, M.D. †	
» Helena Hippard, M.D. †	
» Paul Hopkins, M.D. †	
» Wanda Miller-Hance, M.D. †	
» Emad Mossad, M.D. †	
» Kim-Phuong I. Nguyen, M.D. †	
» Ninar Patel, M.D. †	
» Stanban Staver M.D. t	
» Stephen Stayer, M.D. f	
» Dean Andropoulos, M.D., M.H.C.M. †	
» Vvanda Miller-Hance, M.D. t	
» Mario Patino M D #	
» Fric Vu MD ‡	
version of Otology Phinology and Larvingology	
» Adam Adler M.D. ‡	У
» Addit Adiel, Fi.D. T	
» Erin Gottlich M.D. ±	
» Enn Gottlieb, M.D. T	
MC Anestnesiology	
» Adam Adler, M.D. t	
» Lisa Capiali, M.D. t	
» Freinar Invedi, M.D. T	
» Audm Aaler, M.D. t	
3MJ Open	
» Padio Motta, M.D. T	
Calific Cutton MD	

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NATIONAL SCIENTIFIC PARTICIPATION

Journal	of	Anes	thesia
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» Adam Adler, M.D. ‡

Journal of Cardiothoracic and Vascular Anesthesia

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South African Journal of Anesthesia

- » Olutoyin Olutoye, M.D., M.Sc. #
- Southern Medical Journal
 - » Adam Adler, M.D. ‡

Spanish Journal of Anesthesiology and Resuscitation

» Mario Patino, M.D. +

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- » Stephen Stayer, M.D. +
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‡ Invited Reviewer

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- Radiology-Anesthesiology Committee
- PFW Multi-D Conference

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- Publications and Presentations Committee
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» Kavlani Govindan MD	• B
» Lauren Lobaugh, M.D.	>>
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VISITING PROFESSOR LECTURE SERIES

VISITING PROFESSOR LECTURE SERIES

FY2015



November 5, 2014 - Greg Stratmann, M.D., Ph.D. Associate Adjunct Professor of Critical Anesthesia UCSF Department of Anesthesia and Perioperative Care "What is wrong with children that had anesthesia in infancy – What can You do about it?"



December 10, 2014 - Zeljko Bosnjak, Ph.D. Vice Chairman for Research Medical College of Wisconsin *"Basic Science and its Clinical Application: The Use of Stem Cells for an in vitro Model of Human Diseases"*

FY2017



February 24, 2017 - Saundra Curry, M.D. Professor of Anesthesiology Columbia University Medical Center *"Still Not Being Respected at Work? Professionalism and How It Affects You"*

FY2018



April 17, 2018 - Koichi Yuki, M.D. Associate Professor, Department of Anesthesiology, Perioperative and Pain Medicine, Cardiac Anesthesia Division Boston Children's Hospital *"Anesthetic Management of Non-Cardiac Surgeries for Patients with Congenital Heart Disease"*



April 24, 2018 - Lawrence Borland, M.D. UPMC Children's Hospital of Pittsburgh *"Evaluation of the Pediatric Airway"*

VISITING PROFESSOR LECTURE SERIES



FY2019



October 2, 2018 - Sapna Kudchadkar, M.D., Ph.D. Associate Vice Chair for Research, Anesthesiology and Critical Care Medicine Associate Professor of Anesthesiology and Critical Care Medicine John Hopkins Medicine *"Teaming up to Liberate the Critically III Child through a Culture of Mobility"*



November 21, 2018 - Olubukola Nafiu, M.D. Associate Professor, Department of Anesthesiology Director, Pediatric Anesthesia Research University of Michigan "Childhood Obesity and Post-tonsillectomy Pain: Fools Dare!"



December 4, 2018 - Peter Szmuk, M.D. Professor, Department of Anesthesiology & Pain Management UT Southwestern Medical Center "Dexmedetomidine and Neuroprotection: an update"



December 11, 2018 - Todd Kilbaugh, M.D.

Assistant Professor of Anesthesia, Critical Care and Pediatrics Perelman School of Medicine at the University of Pennsylvania "Mitochondrial Life Switch and Innovative Large Animal Bridge"



March 12, 2019 - Greg Latham, M.D. Associate Professor Seattle Children's Hospital/University of Washington "Elastin arteriopathy aka Supravalvar aortic stenosis aka Williams (Bueren) syndrome"



Chair of Pediatric Anesthesia, Perth Children's Hospital Professor, Faculty of Health and Medical Sciences

University of Western Australia "Small Lungs, Airways, and Anesthesia"

March 12, 2019 - Britta Regli-Von Ungern-Sternberg, M.D., Ph.D.

RESEARCH PATENTS

METHOD AND SYSTEM FOR DETERMINING A CEREBROVASCULAR AUTOREGULATION STATE OF A PATIENT

Patent number: 8556811

Abstract: A method of diagnosing cerebrovascular autoregulation in a patient includes measuring blood pressure of the patient, measuring, non-invasively, venous oxygen content of the patient's brain substantially simultaneously with the measuring blood pressure, correlating the blood pressure and the venous oxygen content measurements in a time domain, and determining a cerebrovascular autoregulation state of the patient based on the correlating the blood pressure and the venous oxygen content measurements.

Type: Grant

Filed: January 4, 2008 Date of Patent: October 15, 2013 Assignee: Johns Hopkins University Inventor: Ken M. Brady

AUTOREGULATION MONITORING **Publication number**: 20130190632

Abstract: A method may include controlling a ventilator to introduce mean airway pressure (MAP) variations in a patient to induce slow waves of substantially fixed amplitude and period to the patient. The method may also include analyzing arterial blood pressure in the patient with respect to the MAP variations and determining, based on the analyzing, whether an autoregulatory mechanism associated with the patient's brain is operating properly. **Type**: Application

Filed: January 24, 2013 Publication date: July 25, 2013 Inventors: Robert A. Baruch, Ken M. Brady, Ronald B. Easley, Craig G. Rusin

METHOD AND SYSTEM FOR DETERMINING A CEREBROVASCULAR AUTOREGULATION STATE OF A PATIENT

Publication number: 20100010322

Abstract: A method of diagnosing cerebrovascular autoregulation in a patient includes measuring blood pressure of the patient, measuring, non-invasively, venous oxygen content of the patient's brain substantially simultaneously with the measuring blood pressure, correlating the blood pressure and the venous oxygen content measurements in a time domain, and determining a cerebrovascular autoregulation state of the patient based on the correlating the blood pressure and the venous oxygen content measurements.

Type: Application

Filed: January 4, 2008 Publication date: January 14, 2010 Applicant: John Hopkins University Inventor: Ken M. Brady

RESEARCH PATENTS

FUTURE DIRECTIONS

- Increase communication and provide research education to the department via monthly newsletters
 - » Distribution of upcoming funding and scientific opportunities
- Funding:
 - » Obtain a NIH K, R, and T32 (Post-doctoral focus)
 - » Increase our industry sponsorship and connections
 - » Develop internal seed grants for new investigators
 - » Expand capture of professional fees for sedation and anesthesia services provided to external research studies
 - » Host biannual writing boot camps for fellows and early stage investigators
- Publications:
- » Increase participation in conferences, particularly amongst trainees
- » Develop internal scientific review process for all external scientific submissions, including abstracts, posters, manuscripts
- » All abstracts should become a publication
- Standardize data management and capture
- Establish departmental DSMB for internal studies
- · Connect faculty and fellows with mentors and mentees
- Refine year-long fellow's research course
- Develop program to recruit and enhance college, graduate level, and medical student volunteers
- Track metrics and productivity of ARC via several mechanisms:
 - » New study ideas and scientific review of proposals; RRMC outcomes
 - » Grant submissions and funding
- » Abstract, poster, and publication submissions and acceptance, stratified by study
- » Workload assessments to maximize availability of existing resources and justify immediate and future expansion needs
- » Biostatistical requests for services, including the type of request, whether the request is funded, and PI productivity/outputs related to statistical requests

FUTURE DIRECTIONS

CLINICAL RESEARCH PROGRAM KEYS TO SUCCESS

Across robust clinical research (CR) programs at premier academic institutions that balance clinical responsibilities, there are shared characteristics deemed essential to success. These characteristics not only help the programs to become financially stable, but they are able to attract talent to foster early stage investigators into career researchers as well as retain seasoned clinician-researchers. This contributes to their departmental and institutional prestige while benefitting the community with rapid scientific improvements and novel treatment modalities. The shared characteristics can be summarized into three tenets: time, resources, and support. No CR program can have notable measurable success if one of these three tenets is missing or undervalued.



The success of a CR program involves complete institutional and departmental buy-in and long-term investment well before measurable returns are seen. This investment in time, money, and resource allocation sets the tone for the remaining levels. Below are crucial needs at each organizational level.^{1,2,3,4,5}

Institution

- Protected research time separate from clinical responsibilities
- 2. An environment that fosters interdepartmental and intradepartmental collaboration
- 3. Internal funding opportunities (particularly important for pilot data)
- 4. An emphasis on research, of which the priority is greater than or equal to the priority of other goals

Department

- 1. Stability in its dedication to supporting research
- 2. Dedicated and involved research program leadership
- 3. An internal advisory committee that includes key faculty as well as external faculty and institutional leaders
- 4. Transition and succession planning
- Support for career development of all levels of investigators as the needs at each level are varying
- 6. Development of Standard Operating Procedures

CLINICAL RESEARCH **PROGRAM KEYS TO SUCCESS**

CLINICAL RESEARCH PROGRAM KEYS TO SUCCESS

Investigator

- 1. Motivation
- 2. Access to formal mentors
- 3. Support for travel to conferences in order to build national recognition and networks

Research Team

- 1. Hiring a diverse team of research nurses, coordinators, regulatory staff, and data analysts with clear delegation of responsibilities and duties for efficiency
- 2. Training (both on-the-job and formal) with mentoring by senior research personnel
- 3. Provide incremental advancements to encourage job satisfaction and reduce turnover
- 4. Plan for student involvement

Resources

- 1. Research pharmacy
- 2. Administrative support
- 3. Dedicated physical space (exam rooms, wet labs, storage, etc.)
- 4. Access to supporting research infrastructure (core labs, writing services, language/interpretation services, etc.)

Finances

- 1. Acceptance that research is rarely a breakeven or profitable endeavor, but instead about community service, scientific advancement, and career growth and fulfillment
- 2. System that allows for physician reimbursements for clinical trial activities
- 3. Balanced portfolio of sponsored and industry trials for fiscal solvency

Areas for Improvement within ARC

- 1. Clear research plans for faculty on a "research track" with goals, timelines, and projected deliverables
- 2. Create and strengthen a program of mentorship
- 3. Emphasis on manuscript publication and not just abstracts/conference proceedings
- 4. Change the mindset of anesthesiology as a service only subspecialty within TCH
- 5. Increase fellowship research participation and presentation at national meetings

The future of anesthesia should include a heavy investment in research; academic institutions that have recognized this need for strong research investment are at the forefront of the field, both clinically and academically

Funding Rankings

In 2018, the NIH provided 436 grants to 301 Principal Investigators in Anesthesiology departments across 59 institutions, independent hospitals, and research centers. The funding totaled \$121,901,393 in direct costs6. The majority of the awards were provided to grants with an adult population or basic science focus (81.2%) with pediatric anesthesiology and research training grants accounting for the remainder (14.7% and 4.1% respectively).

2018 NIH FUNDING BREAKDOWN FOR ANESTHESIOLOGY DEPARTMENTS



When the US News' 2019-20 Best Children's Hospitals Honor Roll is compared, NIH grants to pediatric anesthesiology contributed an average of only 0.8% (0-2.6%) of each institution's total funds awarded. This is markedly lower than other departments such as pediatrics, hematology/ oncology, retrovirology, immunology, etc., which contribute much higher percentages of the overall institution's NIH funding. As a subspecialty, pediatric anesthesiology has research funding grounds to make up.





PERCENT OF 2018 NIH AWARDS GRANTED

In 2018, the USNWR Honor Roll hospitals held 36 grants worth over \$8.4 million in direct costs. Each grant averaged approximately \$235,000 in annual direct costs. Refer to chart below for a breakdown of the most common NIH funding mechanisms awarded to the Honor Roll hospitals in 2018.



- 1. Scoglio D and Fichera A. (2014). Establishing a Successful Clinical research Program. *Clin Colon* Rectal Surg, 27(2): 65-70. PMC4078205.
- 2. Baer A, Bechar N, Cohen G, Devine S. (2010). Basic Steps to Building a Research Program. J Oncol Pract, 6(1): 45-47. PMC2805347.
- 3. Fredian CG. Setting Up a Clinical Research Program in the Community Hospital Setting. Retrieved from www.socra.org/publications/past-socra-source-articles/setting-up-a-clinical-researchprogramin-the-community-hospital-setting/
- 4. Croghan IT, Viker SD, Limper AH, Evans TK, Cornell AR, Ebbert JO, Gertz MA. (2015). Developing a clinical trial unit to advance research in an academic institution. Contemp Clin Trials, 45(Pt B): 270-276. PMID: 26454064
- 5. Hanover Research. (2014, May). Building a Culture of Research: Recommended Practices. Retrieved from www.hanoverresearch.com/media/Building-a-Culture-of-Research-Recommended-Practices.pdf
- 6. Roskoski Jr R. (2019, February 7). Ranking Tables of NIH Funding to US Medical Schools in 2018. Retrieved from http://www.brimr.org/NIH Awards/2018/NIH Awards 2018.htm

REFERENCES

SOM: School of Medicine



ens.org/MO

SPOTLIGHT DEPARTMENT

Texas Children's

Texas Children's

Texas Childre Hospital^{*}

Children

ospital

Hospital

By the Numbers 2014-2019

DEPARTMENT OF ANESTHESIOLOGY, PERIOPERATIVE & PAIN MEDICINE

225,277 anesthetic procedures

65 anesthetic locations

87 full-time, part-time, secondary and voluntary faculty*

35 Instructors, Certified Registered Nurses, and Nurse Practitioners*

9 Research Staff*

19 faculty promotions

31 fellows trained

100% ABA Core Certification Pass Rate

300+ residents trained

175 Student Registered Nurse Anesthetists trained

3 books written or edited

182 chapters written or edited

199 journal articles

137 research-related conference posters

120 research protocols

4 editorial board memberships

9 national committee chair positions

11 visiting professorships

1.78 million in total research funding

To view the entire list of publication references for this report, visit www.texaschildrens.org/ anesthesiologyreportFY15toFY19appendix to view the Supplement.

*At time of printing December 2019

SPOTLIGHT ON THE DEPARTMENT

Leadership

Anesthesiologist-in-Chief Dean Andropoulos, M.D., M.H.C.M., dra@bcm.edu

Senior Vice President Matt Girotto, MTGirott@texaschildrens.org

Practice Administrator Kelly Crumley, kmcrumle@texaschildrens.org

Division Chiefs

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Research

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Fellow and Resident Education Program

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Quality and Outcomes Improvement

Chair: Imelda Tjia, M.D., itjia@bcm.edu Quality Improvement Specialist: Kimberly Taylor, M.B.A., B.S.N., R.N., kdtaylor@texaschildrens.org



