

**Harvard Medical School/Harvard School of Dental Medicine  
Format for the Curriculum Vitae**

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**Name:** Mary Ellen McCann MD, MPH

**Office Address:** Department of Anesthesiology, Perioperative and Pain Medicine  
Boston Children's Hospital  
300 Longwood Avenue  
Boston, MA 02115

**Home Address:**

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**Work Phone:** 617-355-7737

**Work Email:** [mary.mccann@childrens.harvard.edu](mailto:mary.mccann@childrens.harvard.edu)

**Work FAX:** 617-730-0894

**Place of Birth:**

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**Education**

1981	BA magna cum laude		Boston University
1981	MD Alpha Omega Alpha		Boston University
2004	Clinical Effectiveness Program		Harvard School of Public Health
2004	Leadership Program for Physicians and Scientists		Harvard Medical School
2005	MPH	Clinical Effectiveness	Harvard School of Public Health

**Postdoctoral Training**

06/81-06/82	Intern	Pediatrics	Massachusetts General Hospital
07/82-06/84	Resident	Pediatrics	Massachusetts General Hospital
01/86-12/88	Resident	Anesthesia	Massachusetts General Hospital
02/88-9/88	Clinical Fellow	Pediatrics	Massachusetts General Hospital

### Faculty Academic Appointments

1981-1984	Clinical Fellow	Pediatrics	Massachusetts General Hospital, Harvard Medical School
1984-1985	Instructor	Pediatrics	University of Oklahoma Children's Hospital, University of Oklahoma
1986-1988	Clinical Fellow	Anesthesia	Massachusetts General Hospital, Harvard Medical School
1988-1989	Instructor	Anaesthesia	Boston Children's Hospital, Harvard Medical School
1989-1995	Instructor	Anaesthesia (Pediatrics)	Boston Children's Hospital, Harvard Medical School
1995-2001	Clinical Instructor	Anaesthesia (Pediatrics)	Boston Children's Hospital, Harvard Medical School
2001-2011	Assistant Professor	Anaesthesia	Boston Children's Hospital, Harvard Medical School, MA
2011-	Associate Professor	Anaesthesia	Boston Children's Hospital, Harvard Medical School, MA

### Appointments at Hospitals/Affiliated Institutions

01/84-12/86	Attending Pediatrician	Brigham and Women's Hospital
01/84-12/86	Attending Pediatrician	Beth Israel Hospital
01/84-12/86	Attending Pediatrician	Milton Hospital
01/84-12/86	Attending Pediatrician	Massachusetts General Hospital
08/84-07/85	Instructor in Pediatrics	University of Oklahoma's Children's Hospital, OKC, Oklahoma
12/88-12/98	Associate in Anesthesia	Boston Children's Hospital
01/99-	Senior Associate in Anesthesia	Boston Children's Hospital
01/08-	Neonatal Intensive Care Privileges	Brigham and Women's Hospital, Boston

### Other Professional Positions

07/84-09/84	Private Practice Pediatrician	Milton Pediatrics, Milton, MA
08/85-12/85	Private Practice Pediatrician	Milton Pediatrics, Milton, MA

### Major Administrative Leadership Positions

#### **Local**

08/84-07/85	Acting Chief of Outpatient Pediatric Clinic	University of Oklahoma Children's Hospital, OKC, Oklahoma
08/84-07/85	Course Director: Pediatrics for Physician Assistants	University of Oklahoma Children's Hospital, OKC,

1988-	Infection Control Liaison from Department of Anesthesia to Hospital Infection Control Department	Oklahoma Boston Children's Hospital
2006- 2006-12	Chief of Spinal Surgery Anesthesia Member of the "Hot Topics in Anesthesia",	Boston Children's Hospital Boston Children's Hospital
2006-12	Assistant to Director for Mentoring Junior Faculty	Boston Children's Hospital
2009-11	Supervisor of the Clinical Nurse Researchers for the Department of Anesthesia	Boston Children's Hospital
2011-	Director of Anesthesia for Scoliosis Surgery	Boston Children's Hospital

#### **National and International**

2008	Vice Chair for the Society of Pediatric Anesthesia Meeting 2009	Winter Meeting in Jacksonville, Florida
2008-	Health Technology Assessment (appointment to the Trial Steering Committee for GAS project)	United Kingdom
2009	Vice Chair for the Society of Pediatric Anesthesia Meeting 2010	Winter Meeting in San Antonio, TX
2010	Chair for the Society of Pediatric Anesthesia Meeting 2011	Winter Meeting in San Diego, Ca
2012	Chair for Practical Aspects of Pediatric Anesthesiology, Critical Care and Pain Medicine review course	May Meeting in Boston
2012-	Board Member Society for Pediatric Anesthesia	Richmond Virginia
2014	Chair for Practical Aspects of Pediatric Anesthesiology, Critical Care and Pain Medicine review course	May Meeting in Boston
2015	CoChair for Practical Aspects of Pediatric Anesthesiology, Critical Care and Pain Medicine review course	May Meeting in Boston
2016	CoChair for Practical Aspects of Pediatric Anesthesiology, Critical Care and Pain Medicine review course	May Meeting in Boston

#### **Committee Service**

##### **Local**

1988-1992	Needlestick Committee	Boston Children's Hospital, Member
2003-	Joint Committee on the Status of Women	Harvard Medical School and Harvard School of Dental Medicine

2003-	Subcommittee for Flexible Career Options and Maternity Leave	Member JCSW, HMS and HSDM Co-chairperson
2007-	Subcommittee on Dean's Award	JCSW, HMS and HSDM Member
2004-	Physician Leadership Council	Member
2005-2006	Center of Excellence in Women's Health; Subcommittee on Flexible Work Options	Harvard Medical School, Member
2005-2007	Operating Room Infection Control and Safety Committee	Boston Children's Hospital, Member
2007-	Program in Patient Safety and Quality-Surgery	Boston Children's Hospital, Member
2007-	Program in Patient Safety and Quality-Anesthesia	Boston Children's Hospital, Member
2007-2008	Anesthesia Hand Hygiene Committee	Boston Children's Hospital, Chairperson
2009-	Anesthesia Research Unit Committee	Physician Member
2010	Anesthesia Scientific Research Review Committee	Member
2010	Focus group on career flexibility at HMS	Harvard Medical School, Invited Member
2011-2012	Catalyst focus group on ADHD	Harvard Medical School, Invited Member
2013-2015	SCAMPS	Boston Children's Hospital, Member
2013-	Physician's Organization Benefits Committee	Boston Children's Hospital, Member
2015-	Physician's Organization Congress Subgroup	Boston Children's Hospital, Member

**National and International**

2006-2007	Surgical Infection Prevention Collaborative	Boston Children's Hospital and Child Health Corporation of America Member
2007-	Task Force on Epidemiologic Studies of Neurotoxicity	Federal Drug Administration, Member
2008-	Health Technology Assessment appointment to the Trial Steering Committee for GAS project	United Kingdom, Member
2010	First Symposium on Anesthesia and Neurodevelopment in Children	Columbia Medical School, NYC, Speaker
2011	Second Symposium on Anesthesia and Neurodevelopment in Children	Columbia Medical School, NYC, Member
2012	Third Symposium on Anesthesia and Neurodevelopment in Children	Columbia Medical School, NYC, Member
2012	SmartTots Workshop	FDA White Oak Campus. Washington DC,
2013	SmartTots/IARS meeting	San Diego, CA, Participant
2014	SmartTots/IARS meeting	Montreal, Canada, Participant
2014	Fourth Symposium on Anesthesia and Neurodevelopment in Children	Columbia Medical School, NYC, Speaker
2015	SmartTots/IARS meeting	Honolulu, HI, Participant

2016	SmartTots/IARS meeting	San Francisco
2016	Fourth Symposium on Anesthesia and Neurodevelopment in Children	Columbia Medical School, NYC, Speaker
2016-	FDA Anesthetic and Analgesic Drug Products Advisory Committee (AADPAC)	Member/Special Government Employee

### Professional Societies

1998-	Society for Pediatric Anesthesia	Member
	2003-present	Member, Education Committee
	2008	Vice Chair, Winter Meeting
	2009	Vice Chair, Winter Meeting
	2010	Chair, Winter Meeting
	2012-	Board Member
1998-	Fellow in the American Academy of Pediatrics	Member
2003-	American Society for Anesthesiology	Member and Committee Assignments
	2003-2005	Member, Subcommittee for Pediatrics
	2003-	Member, Infection Control Task Force
	2006-2008	Member, Subcommittee for Pediatrics
	2008-2010	Member, Occupational Health Committee
	2008-2009	Member, Pediatric Anesthesia Committee
	2011-	Member, Educational Track Subcommittee on Pediatric Anesthesia
	2011-	Member, ASA Abstract Review Subcommittee on Pediatric Anesthesia
	2014-	Vice Chair, Educational Track Subcommittee on Pediatric Anesthesia

### Editorial Activities

#### **Other Editorial Roles**

#### **Ad hoc Reviewer**

2003-	Anesthesiology
2003-	Anesthesia and Analgesia
2004-	Journal of Neurosurgical Anesthesiology
2005-	Journal of Pediatrics
2006-	Acta Anaesthesiologica Scandinavica
2006-	Pediatrics
2006-	Journal of Clinical Anesthesia
2008-	Paediatric Anesthesia
2014-	British Journal of Anesthesia

### Honors and Prizes

1980	Alpha Omega Alpha	Boston University School of Medicine, Boston
2006	Smith Award	Department of Anesthesiology,

## **Report of Funded and Unfunded Projects**

### **Funding Information**

#### **Past**

2003-2006 Does Acupressure Reduce Bispectral Index Values and Stress in Adolescents?  
Society for Education in Anesthesia, Protocol 03-05-077  
PI  
The objective of this study is to determine effect of pressure application on the acupuncture point "extra 1" on the bispectral index values and on stress in adolescents undergoing acupuncture for chronic pain syndromes.

2005

(b) (4)



2007

2007

#### **Current**

2008-2011 Assessment of the Long-term Neurodevelopmental Outcomes in Pediatric Administered Regional and General Anesthesia as Neonates or Infants  
Federal Drug Administration, FDA-SOL-08-SAFEKIDS-Clin 002-Project 2  
PI (\$657,000)

This is the title of the American arm of the GAS trial, a multinational RCT enrolling 660 infants undergoing either a regional or general anesthesia and evaluating the enrollees at age 2 and 5 for neurodevelopmental outcomes. The secondary outcome measure of this trial is apnea. This grant is for trial infrastructure.

2010-2015 Effects of general vs regional anesthesia on infant neurodevelopment and apnea

Co-Principal investigators: David Bellinger, PI, Mary Ellen McCann, Co-PI.  
1-R01 HD06 1136-01A1 Grant Award \$2,421,699 for 2010-2015

This is the title of the American arm of the GAS trial, a multinational RCT enrolling 660 infants undergoing either a regional or general anesthesia and evaluating the enrollees at age 2 and 5 for neurodevelopmental outcomes. The secondary outcome measure of this trial is apnea.

2013 *Efficacy, safety and population pharmacokinetic profile of Tranexamic acid in reducing blood loss in pediatric idiopathic scoliosis surgery: A randomized double-blind placebo-controlled trial.* Scoliosis Research Society Stacy Lewis Award Grant for 2 years (b) (4)

PI: Susan Goobie, MD FRCPCie

2014 The GAS Trial, May Day Fund, Grant Award (b) (4)

2015-2018 Neurologic and Neurocognitive Outcomes after Infant Anesthesia Co-Principal investigators: David Bellinger, PI, Mary Ellen McCann, Co-PI.  
1R01HD081303-01 Grant Award \$ 581,000 for 2015-2018

2015 Neurocognitive outcomes 5 years after infant anesthesia: The GAS Trial. Thrasher Foundation Grant award (b) (4)

### Current Unfunded Projects

2005 (b) (4)

2012 (b) (4)

2012 (b) (4)

2013 (b) (4)

2015 (b) (4)

2015 (b) (4)

## **Report of Local Teaching and Training**

### **Teaching of Students in Courses**

Pediatrics for Physician Assistants  
Physician Assistant Students

University of Oklahoma  
12 one hour lectures on general pediatrics

### **Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)**

- 1991-2000 Postoperative Nausea and Vomiting core lecture given every 3 months to clinical fellows, rotating pediatric anesthesia residents to Boston Children's Hospital
- 2000- Premedication core lecture given every 3 months to clinical fellows, rotating pediatric anesthesia residents to Boston Children's Hospital

**Clinical Supervisory and Training Responsibilities**

- 1988-2003 Advisor to 3-4 Pediatric Anesthesia Residents/year  
Responsible for meeting with them at least twice/rotation about their evaluations.
- 1988 Clinically work 3 days/week and directly supervise 1-4 anesthesia residents, nurse anesthetists, nurse anesthetist students, pediatric ICU fellows, anesthesia fellows, and/or transport nurses in the conduct of pediatric anesthesia for approximately 8-10 hours/day.

**Formally Supervised Trainees**

2001-2002	(b) (6)
2004-2005	
2005	
2008-2009	
2008-2009	
2010	
2014	

**Formal Teaching of Peers (e.g., CME and other continuing education courses)**



1990	Fluids and Electrolytes	Single presentation and panel discussion Boston
	CHB/MGH Biannual Pediatric Anesthesiology and Critical Care Medicine Conference (Harvard Medical School)	
1992	Premedication	Single presentation and panel discussion Boston
	CHB/MGH Biannual Pediatric Anesthesiology and Critical Care Medicine Conference (Harvard Medical School)	
1994	Premedication	Single presentation and panel discussion Boston
	CHB/MGH Biannual Pediatric Anesthesiology and Critical Care Medicine Conference (Harvard Medical School)	
1996	Postoperative Nausea and Vomiting	Single presentation and panel discussion Boston
	CHB/MGH Biannual Pediatric Anesthesiology and Critical Care Medicine Conference (Harvard Medical School)	
1998	Postoperative Nausea and Vomiting	Single presentation and panel discussion Boston
	CHB/MGH Biannual Pediatric Anesthesiology and Critical Care Medicine Conference (Harvard Medical School)	
2000	Premedication in Children	Single presentation and panel discussion
	CHB/MGH Biannual Pediatric Anesthesiology and Critical Care Medicine Conference (Harvard Medical School)	
2002	The Anxious Child and Anesthesia	Single presentation and panel discussion Boston
	CHB/MGH Biannual Pediatric Anesthesiology and Critical Care Medicine Conference (Harvard Medical School)	
2004	The Approach to the Anxious Child and Parents	Single presentation and panel discussion
	CHB/MGH Biannual Pediatric Anesthesiology and Critical Care Medicine Conference (Harvard Medical School)	
2006	Awareness Under Anesthesia	Single presentation and panel discussion Boston
	CHB/MGH Biannual Pediatric Anesthesiology and Critical Care Medicine Conference (Harvard Medical School)	
2008	Neurotoxicity of General Anesthesia in Infants	Single presentation and panel discussion Boston
	CHB/CHOP 2 <sup>nd</sup> Annual Pediatric Anesthesiology and Critical Care Medicine Conference (Children's	

2010	Hospital Boston and Children's Hospital of Philadelphia) SAFEKIDS Update: Anesthetic-Induced Neurotoxicity	Single Presentation
	CHB/CHOP 4th Annual Pediatric Anesthesiology and Critical Care Medicine Conference (Children's Hospital Boston and Children's Hospital of Philadelphia)	Boston
2011	Does Anesthesia Affect the Developing Brain? A Hard Look at the Data Harvard Anesthesia Update: Innovation and Transformation in Anesthesiology	Single presentation and panel discussion Boston
2012	Chairperson Practical Aspects of Pediatric Anesthesiology, Critical Care and Pain Medicine Conference (Boston Children's Hospital)	Chairperson Boston
2012	Update on: Anesthetic induced Neurotoxicity Practical Aspects of Pediatric Anesthesiology, Critical Care and Pain Medicine Conference (Boston Children's Hospital)	Single presentation and panel discussion Boston
2014	Chairperson Practical Aspects of Pediatric Anesthesia and Critical Care Conference (Boston Children's Hospital)	Chairperson Boston
2014	Infantile Cerebral Encephalopathy Practical Aspects of Pediatric Anesthesiology, Critical Care and Pain Medicine Conference (Boston Children's Hospital)	Single presentation and panel discussion Boston
2015	Anesthetic Effects on Neurocognition, Practical Aspects of Pediatric Anesthesiology, Critical Care and Pain Medicine Conference (Boston Children's Hospital)	Single presentation and panel discussion Boston
2016	Optimizing Neonatal Physiology Practical Aspects of Pediatric Anesthesiology, Critical Care and Pain Medicine Conference (Boston Children's Hospital)	Single presentation and panel discussion Boston

### [Local Invited Presentations](#)

- 2007 Does General Anesthesia Harm Young Infants? / Combined Surgical and Anesthesia Grand Rounds, Boston Children's Hospital
- 2008 GAS Study and Neurotoxicity / Combined Pediatric Surgical and Anesthesia Grand Rounds, Massachusetts General Hospital, Boston
- 2008 GAS study and Neurotoxicity / NICU nurses, Brigham and Women's Hospital, Boston
- 2009 The GAS study-Are we poisoning babies / NICU Grand Rounds, BIDMC, Boston
- 2009 Does General Anesthesia Harm Young Infants? Clinical Correlates / Combined Surgical and Anesthesia Grand Rounds, Boston Children's Hospital
- 2009 Anesthetic Neurotoxicity / Combined Surgical and Anesthesia Grand Rounds, MEEI, Boston
- 2010 The GAS study-Neurotoxicity in Infants / NICU Grand Rounds, BIDMC, Boston
- 2011 Does Anesthesia Affect the Developing Brain? A Hard Look at the Data/ Anesthesia Grand Rounds, Boston Children's Hospital
- 2012 Update on:Anesthesia Induced Neurotoxicity/Anesthesia Grand Rounds, NWH, Newton, MA
- 2013 Anesthesia Neurotoxicity in Young Children: Interpreting Evolving Science, Exploring Preventative Strategies, Safe Practices Now and Talking with Parents/ Grand Rounds, Tufts New England Medical Center, Boston
- 2014 Anesthesia Toxicity in Young Children. Combined Surgical and Anesthesia Grand Rounds, Boston Children's Hospital
- 2014 Anesthesia Toxicity in Young Children. Urology Grand Rounds, Boston
- 2015 Anesthesia Toxicity in Young Children. Combined Surgical and Anesthesia Grand Rounds, Boston Children's Hospital
- 2016 Anesthesia Toxicity in Young Children. Combined Neonatal Research Grand Rounds, Beth Israel Deaconess Medical Center
- 2016 Anesthesia Toxicity in Infants. Gastroenterologic Grand Rounds, Boston Children's Hospital

## **Report of Regional, National and International Invited Teaching and Presentations**

### **Invited Presentations and Courses**

#### **National**

- 1998 Pharmacokinetics of Lumbar Epidural Ropivacaine in Children and Adolescents American Society of Anesthesia, Orlando, Florida [*Oral Poster and Slide Presentation, abstract*]
- 2004 Moderator for Oral Poster and Slide Discussion, Neurotoxicity, American Society of Anesthesiologists, San Francisco, California
- 2005 Moderator for Oral Poster and Slide Discussion, Pediatrics, American Society of Anesthesiologists, Atlanta, Georgia
- 2006 Surgical Infection Prevention Collaborative, Kansas City, Kansas, Child Health Corporation of America [*Poster and Slide Presentation*]
- 2006 Moderator for Oral Poster and Slide Discussion, Pediatrics, American Society of Anesthesiologists, Chicago, Illinois
- 2007 Symposium on Pediatric Anesthesia Toxicity, Washington DC, Federal Drug Administration [*Plenary Presentation*]
- 2007 Moderator for Oral Poster and Slide Discussion, Neurotoxicity, American Society of Anesthesiologists, San Francisco, California
- 2008 Pediatric Anesthesia-Induced Neurotoxicity (PAINS) Project, Columbia University, NY,

- FDA/Columbia University [*Invited Lecture*]
- 2008 Moderator for Oral Poster and Slide Discussion, Pediatric Anesthetic Techniques and the Developing Brain, American Society of Anesthesiologists, Orlando, Florida
- 2009 Moderator for Pulmonary Core Lecture series, Society for Pediatric Anesthesia 2009 winter meeting, Jacksonville, FL
- 2009 Lecturer for Pediatric Panel, “Pediatric Awareness under Anesthesia”, American Society of Anesthesiologists, New Orleans, LA
- 2009 Lecture and Presentation, The GAS Project Update, SAFEKIDS Initiative, FDA, International Anesthesia Research Society, Silver Springs, MD
- 2010 Lecturer for Practical Pediatric Ambulatory Anesthesia, “Are we poisoning our patient’s brains?”, American Society of Anesthesiologists, San Diego
- 2011 Lecture to Surgeons, Neonatologists and Anesthesiologists, “Neurotoxicity and Anesthesia from Research to Clinical Practice”, Dallas Children’s Hospital, Dallas, Texas [*Visiting Professorship*]
- 2011 Lecture and Presentation, The GAS Project Update, SmartTots Initiative, FDA, International Anesthesia Research Society, Silver Springs, MD Webinar
- 2011 Lecturer for Infection Control Panel, “Educational Strategies for the Implementing Infection Control Practices”, American Society of Anesthesiologists, Chicago [*Panel Discussion*]
- 2011 Lecture “Pediatric Awareness” VIII Annual Anesthesiology Convention Sociedad de Anestesiologos de Puerto Rico, San Juan, Puerto Rico
- 2011 Neonatal Anesthesia, Techniques, Perils and Pitfalls, Department of Anesthesia, Albany Medical Center [*Visiting Professorship*]
- 2011 General Anesthesia and Neonatal Neurotoxicity, New York State Society of Anesthesiologists, Desmond Hotel, Albany, New York.
- 2011 Lecture “Late Effects of Anesthesia in Infants” Hot Topics in Neonatology, Conference, Washington DC
- 2012 Update on: Anesthesia Induced Neurotoxicity, Department of Anesthesia, Seattle Children’s Hospital [*Visiting Professorship*]
- 2012 Lecture “Anesthetic Neurotoxicity in Babies, Pediatric Ophthalmology Day at the American Academy of Ophthalmology Meeting, Chicago, Ill.
- 2013 David M Little MD Memorial Lecture: Anesthesia Neurotoxicity in Young Children: Interpreting Evolving Science, Exploring Preventative Strategies, Safe Practices Now and Talking with Parents; New England Society of Anesthesiologists Fall Meeting, Lenox, MA. (*Keynote Speaker*)
- 2014 Lecture “Neurotoxicity in Young Children”, Department of Anesthesia, Maine Medical Center, Portland Maine
- 2014 Lecture “Neuroprotection and Anesthetic Techniques for Scoliosis Surgery”, Society for Pediatric Anesthesia Winter Meeting, Fort Lauderdale, Florida.
- 2014 Lecture “Update on the Neurocognitive Effects of Anesthesia in Children”, Keynote speaker for Pediatric Surgeon Study Group meeting, Boston, MA
- 2014 Lecture “Preliminary Results of the GAS study”, Anesthesia and Neurodevelopment in Children Symposium, Columbia University, New York City, NY
- 2014 Lecture “Confounding Factors in Human Studies”, ASA 2014 meeting, New Orleans, LA
- 2015 Refresher Course lecture “Common Neonatal Emergencies: You can never be better prepared. ASA 2015 meeting, San Diego, CA
- 2016 Lecture “Apnea and the Neonate” IARS 2016 meeting San Francisco, CA

## **International**

- 2006 Presentation on multinational neurotoxicity project to Association of Paediatric Anaesthetists / Seminar  
Cardiff, Wales (Association of Paediatric Anaesthetists)
- 2010 Presentation to international GAS collaborators on US involvement in GAS study, Glasgow, Scotland (Association of Paediatric Anaesthetists)
- 2010 Lecture, Experts for SARNePI, “Neurotoxicity and Anesthesia: from Research to Clinical”, 14<sup>th</sup> Congresso Nazionale, SARNePI, Genoa, Italy
- 2010 Lecture, Hot Topics in Anesthesia Pediatrica II, “Awareness in Pediatric Anesthesia”, 14<sup>th</sup> Congresso Nazionale, SARNePI, Genoa, Italy
- 2010 Lecture, “Neonatal Anesthesia”, NEONATAL UPDATE 2010, “*The science of newborn care*”, Imperial College, London, England
- 2012 Lecture, “Review from the Literature; Cerebral Damage after Surgery and Anesthesia in the Neonate”, Zomercongres Sectie Kinderanesthesiologie, Bergen, Netherlands
- 2012 Lecture, “Pediatric Anesthetic Induced Neurotoxicity and the GAS Study”, Utrecht Children’s Hospital, Utrecht, Netherlands [*Visiting Professorship*]
- 2014 Lecture, “The Importance of Hemodynamics and CO<sub>2</sub>” Pediatric Anesthesia and Neurotoxicity, EuroSTAR-SmartTots Scientific Network Meeting, Genoa, Italy
- 2015 Scientific Abstract judge 42<sup>nd</sup> APA annual scientific meeting Aberdeen, Scotland
- 2016 Lecture, “Role of Intraoperative Blood Pressure and Neurocognitive Outcomes in Children” British Journal Anesthesia Neurotoxicity Seminar, London, England
- 2016 Neonatal Anesthesia Impacts on Neurodevelopment Keynote Lecture Canadian Pediatric Society meeting Charlottetown Prince Edward Island

## **Report of Clinical Activities and Innovations**

### **Current Licensure and Certification**

- 1982 National Board of Medical Examiners
- 1984 Massachusetts Registered Physician
- 1984 Oklahoma Registered Physician
- 1988 American Board of Pediatrics
- 1989 American Board of Anesthesiology
- 2005 Recertification American Board of Anesthesiology
- 2014 American Board of Pediatric Anesthesiology

### **Practice Activities**

Preoperative Clinic at Boston Children's Hospital

Clinical Activity Description: As one of the few members of my department who completed a pediatric residency and practiced both academic and private practice pediatrics, I enjoy attending in the Preoperative Clinic 1-2 days per week evaluating complex patients for surgery and teaching the anesthesia fellows about perioperative pediatric medicine. Patient Load: 30 patients/day

Chief of Pediatric Anesthesia for Scoliosis Surgery

Clinical Activity Description: I primarily manage anesthetics for pediatric patients undergoing complex scoliosis procedures or neonates requiring spinal anesthesia. Patient Load: 6/week; critical

### Clinical Innovations

I help develop clinical protocols for the perioperative management of complex scoliosis disease and procedures including patients with meningocele and hydrocephalus. I also developed the Back Data Base with (b) (6) used by our department to track our anesthetic results for back surgery. I have developed strategies within our department to minimize the complications associated with motor evoked potential monitoring, and blood salvage during scoliosis surgery. I also developed the teaching module for infection control within our department. This includes a video as well as a net learning. My co-producer of the video (b) (6) is negotiating with national hospital groups to market the video.

## Report of Education of Patients and Service to the Community

### Educational Material for Patients and the Lay Community

1. Could Anesthesia cause developmental disorders? Interview with Claudia Kalb Oct 21, 2008 Newsweek Interview
2. Calming children who are anxious about anesthesia  
Q. Does it ease a child's anxiety to have a parent around before receiving general anesthesia?  
Interview with Judy Foremann October 24, 2009, Healthsense, Boston Globe

## Report of Scholarship

### Publications

#### Peer reviewed publications in print or other media

1. Davidson AJ, **McCann ME**, Devavaram P, Auble SA, Sullivan LJ, Gillis JM, Laussen PC. The differences in the bispectral index between infants and children during emergence from anesthesia after circumcision surgery. *Anesth Analg.* 2001;93(2):326-30
2. **McCann ME**, Sethna NF, Mazoit JX, Sakamoto M, Rifai N, Hope T, Sullivan L, Auble SG, Berde CB. The pharmacokinetics of epidural ropivacaine in infants and young children. *Anesth Analg.* 2001;93(4):893-7.
3. **McCann ME**, Brustowicz RM, Bacsik J, Sullivan L, Auble SG, Laussen PC. The bispectral index and explicit recall during the intraoperative wake-up test for scoliosis surgery. *Anesth Analg.* 2002;94(6):1474-8, table of contents.
4. **McCann ME**, Bacsik J, Davidson A, Auble S, Sullivan L, Laussen P. The correlation of bispectral index

- with endtidal sevoflurane concentration and haemodynamic parameters in preschoolers. *Paediatr Anaesth*. 2002;12(6):519-25.
5. **McCann ME**, Waters P, Goumnerova LC, Berde C. Self-mutilation in young children following brachial plexus birth injury. *Pain*. 2004;110(1-2):123-9.
  6. Groeper K, **McCann ME**. Topiramate and metabolic acidosis: a case series and review of the literature. *Paediatr Anaesth*. 2005;15(2):167-70.
  7. **McCann ME**, Hill D, Thomas KC, Zurakowski D, Laussen PC. A comparison of radial artery blood pressure determination between the Vasotrac device and invasive arterial blood pressure monitoring in adolescents undergoing scoliosis surgery. *Anesth Analg*. 2005;101(4):978-85.
  8. Berde CB, Yaster M, Meretoja O, **McCann ME**, Huledal G, Gustafsson U, Larsson LE. Stable plasma concentrations of unbound ropivacaine during postoperative epidural infusion for 24-72 hours in children. *Eur J Anaesthesiol*. 2008: pp. 1-8.
  9. Davidson AJ, McCann ME, Morton NS and GAS consortium: Protocol 09PRT/9087: A multi-site randomised controlled trial to compare regional and general anaesthesia for the effects on neurodevelopmental outcome and apnoea in infants: The GAS study (ACTRN12606000441516, NCT00756600)
  10. **McCann ME**, Bellinger DC, Davidson AJ, Soriano SG. Clinical Research Approaches to studying Pediatric Anesthetic Neurotoxicity. *Neurotoxicology*. 2009 Sep;30(5):766-71.
  11. Kuisle AM, Gauguet S, Karlin L, Dauber A, **McCann ME**. Postoperative Adrenal Crisis in an Adolescent with Loeys-Dietz Syndrome and Undiagnosed Adrenoleukodystrophy *Can J of Anesth*. 2011.
  12. **McCann ME**, Soriano SG. General anesthetics in pediatric anesthesia: influences on the developing brain. *Curr Drug Targets*. 2012 Jun;13(7):944-51. Review.
  13. Allee JI, Goins KM, Berde CB, **McCann ME**. A case of cerebrospinal fluid leak in an infant after spinal anesthesia. *J Clin Anesth*. 2013 May;25(3):217-9.
  14. **McCann ME**, Schouten AN. Beyond survival; influences of blood pressure, cerebral perfusion and anesthesia on neurodevelopment. *Paediatr Anaesth*. 2014 Jan;24(1):68-73.
  15. **McCann ME**, Schouten AN, Dobija N, Munoz C, Stephenson L, Poussaint TY, Kalkman CJ, Hickey PR, de Vries LS, Tasker RC. Infantile postoperative encephalopathy: perioperative factors as a cause for concern. *Pediatrics*. 2014 Mar;133(3):e751-7.
  16. Lobo K, Donado C, Cornelissen L, Kim J, Ortiz R, Peake RWA, Kellog M, Alexander ME, Zurakowski D, Kurgansky KE, Peyton J, Bilge A, Boretsky K, **McCann ME**, Berde C, Cravero JA. Phase 1 Dose Escalation, Double-Blind, Block Randomized Controlled Trial of Safety and Efficacy of Neosaxitoxin Alone and in Combination with 0.2% Bupivacaine, with and without Epinephrine, for Cutaneous Anesthesia *Anesthesiology* 2015; 123(4):873-885.
  17. Davidson AJ, Morton NS, Arnup SJ, de Graaf JC, Disma N, Withington DE, Frawley G, Hunt RW,

- Hardy P, Khotcholava M, von Ungern Sternberg BS, Wilton N, Tuo P, Salvo I, Ormond G, Stargatt R, Locatelli BG, **McCann ME**. The General Anesthesia compared to Spinal Anesthesia (GAS) Consortium. Apnea in awake-regional and general anesthesia in infants General anesthesia compared to spinal anesthesia study-comparing apnea and neurodevelopmental outcomes, a randomized controlled trial. *Anesthesiology* 2015; 123(1):38-54.
18. Frawley G, Bell G, Disma N, Withington DE, de Graaf JC, Morton NS, **McCann ME**, Arnup SJ, Bagshaw O, Wolfler A, Bellinger D, Davidson AJ. The General Anesthesia compared to Spinal Anesthesia (GAS) Consortium. Predictors of failure of awake regional anesthesia for neonatal hernia repair: data from the general anesthesia compared to spinal anesthesia study. *Anesthesiology*. 2015; 123(1):55-65.
19. **Davidson** AJ, Becke K, de Graaff J, Giribaldi G, Habre W, Hansen T, Hunt RW, Ing C, Loepke A, **McCann** ME, Ormond GD, Pini Prato A, Salvo I, Sun L, Vutskits L, Walker S, Disma N. Anesthesia and the developing brain: a way forward for clinical research. *Paediatr Anaesth*. 2015 May;25(5):447-52.
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### Narrative Report

My role as chief of pediatric anesthesia for spinal surgery has developed over the last 5 years. Spinal surgery is associated with a high incidence of morbidity and mortality compared with other types of pediatric surgery because of the nature of the procedures themselves and the high co-morbidities associated with childhood scoliosis. In order to improve patient care, I have developed with my orthopedic colleagues, clinical practice guidelines for patients with ventriculo-peritoneal shunts undergoing prolonged procedures and “Clinical Pearls” for our departmental website and written several review articles, original research, case reports and book chapters about neuromonitoring and scoliosis. I also serve on the PPSQ (Patient Program in Safety and Quality) at CHB to work with the orthopedic surgeons to improve outcomes of scoliosis surgery and finally have collaborated with my surgical colleagues to develop a “back database”.

My background as a pediatrician has helped me in my role as the primary infection control administrator for my department. My scoliosis and infection control interests were combined in my membership of the Surgical Infection Prevention Collaborative, a national effort to reduce surgical infections after spinal procedures. In addition, I am the pediatric anesthesia representative to the American Society of Anesthesiologists Infection Control Task Force and Occupational Safety Committee and have written the pediatric section of the 3<sup>rd</sup> Edition of the ASA Recommendations for Infection Control for the practice of Anesthesia. My role as infection control administrator has expanded to a huge teaching commitment for our department. Educational materials that I have authored include a NETlearning, a 15 minute video, our departmental guidelines on infection control, and auditing tools.

My interests in epidemiology and outcome research in patient safety lead me with colleagues in the UK and Australia to develop the GAS project, a multinational RCT which compares the neurodevelopmental outcomes of 660 infants exposed to either a general or regional anesthetic for inguinal herniorrhaphies. There is compelling preclinical data that commonly used general anesthetics cause increased neuro-apoptosis in juvenile animals and some retrospective studies demonstrating that young children who have had several exposures to anesthesia have more school difficulties compared with non-exposed children. The GAS project is an NIH and FDA project that nationally involves 8 other academic centers. There is great national and international interest in this topic and thus far I have been interviewed by Newsweek (2008) and Anesthesia News (2009) about this study and written several review articles on the topic of the potential neurotoxicity of general anesthesia and give several lectures. Locally, as a result of this study, we have increased the percentage of spinal anesthetics done within our department.

I am also working with my department to set up a [REDACTED] (b) (4). Currently I supervise [REDACTED] (b) (4)

(b) (4) and am working closely with our

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Finally I have endeavored through my career to be role model especially for young female physicians trying to balance career and family. Through my work at the JCSW, I have learned to be an effective counselor and mentor to young physicians starting their careers.