

1) Last Updated: December 7th, 2017

2) PERSONAL DATA:

Caleb Ing, M.D., M.S.

Office: Department of Anesthesiology
Division of Pediatric Anesthesiology, Columbia University
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New York, NY 10032
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Email: cj2119@cumc.columbia.edu

Birthplace: Calgary, Canada
Citizenship: U.S.A.

3) ACADEMIC APPOINTMENTS:

2009-present Assistant Professor: Department of Anesthesiology, Division of Pediatric Anesthesiology: Columbia Presbyterian Medical Center, New York NY

2015-present Assistant Professor: Department of Epidemiology: Mailman School of Public Health, New York NY

2016-2019 Herbert Irving Assistant Professor of Anesthesiology (in Epidemiology)

UNIVERSITY AND HOSPITAL COMMITTEES:

Departmental Committees:

2013-present Pediatric Anesthesiology Quality Assurance Committee
2016-present Anesthesiology Residency Application Screening Committee
2017-present Pediatric Anesthesiology Fellowship Recruitment Committee
2017-present Pediatric Anesthesiology Research Committee

4) EDUCATION:

1996-2000 B.A., B.S. (Biology, Business Management), Case Western Reserve University, Cleveland OH.

2000-2004 M.D., University of Texas Southwestern, Dallas, TX.

2011-2013 M.S. (Patient Oriented Research), Mailman School of Public Health, New York, NY.

5) TRAINING:

- 2004-2005 Internship (Internal Medicine), New York Downtown Hospital, New York, NY
- 2005-2008 Residency (Anesthesiology), Columbia Presbyterian Medical Center, New York, NY
- 2008-2009 Fellowship (Pediatric Anesthesiology), Columbia Presbyterian Medical Center, New York, NY

6) GAPS IN WORK/TRAINING/EDUCATION: None**7) LICENSURE:**

- 2006-present Medicine, New York State Office of the Professions

BOARD CERTIFICATION:

- 2009-present Anesthesiology, American Board of Anesthesiology
- 2013-present Pediatric Anesthesiology, American Board of Anesthesiology

8) HONORS AND AWARDS:

- 2011 Junior Faculty Research Award: Association of University Anesthesiologists Annual Meeting. **Ing C**, DiMaggio C, Whitehouse A, Hegarty M, Davidson A, Sun L. *Long-Term Differences in Cognitive and Language Ability After Exposure to Surgery and Anesthesia in Infancy*
- 2011 Best Patient Oriented Research Abstract at the International Anesthesia Research Society Annual Meeting. **Ing C**, DiMaggio C, Whitehouse A, Hegarty M, Davidson A, Sun L. *Long-Term Differences in Cognitive and Language Ability After Exposure to Surgery and Anesthesia in Infancy*
- 2011 Recipient of a two-year full scholarship, Mailman School of Public Health at Columbia University Medical Center. Patient Oriented Research Master's Degree
- 2012 Research Prize for Best Clinical Research Paper: Columbia University Department of Anesthesiology. **Ing C**, DiMaggio C, Whitehouse A, Hegarty MK, Brady J, von Ungern-Sternberg BS, Davidson A, Wood AJJ, Li G, Sun LS. *Long-term Differences in Language and Cognitive Function After Childhood Exposure to Anesthesia*
- 2013 Best Abstracts at the American Society of Anesthesiologists Annual Meeting. **Ing C**, DiMaggio C, Malacova, E, Whitehouse A, Hegarty MK, von Ungern-Sternberg BS, Davidson A, Li G, Sun LS. *Multimodal Assessment of Cognitive Outcomes Associated with*

Exposure to Anesthesia in Early Childhood

- 2015 Associate Member, Association of University Anesthesiologists
- 2017 Junior Faculty Travel Award in Pediatric Anesthesia at Association of University Anesthesiologists Meeting. **Ing C**, Sun M, Olfson M, DiMaggio C, Sun L, Wall M, Li G. *Age at Exposure to Anesthesia in Children and Mental Disorder Diagnosis*
- 2017 Active Member, Association of University Anesthesiologists

9) ACADEMIC SERVICE:***SmartTots:***

2012-present SmartTots Research Investigators Committee

International Anesthesia Research Society:

- 2013 Poster moderator for Annual Meeting in San Diego, CA
- 2014 Poster moderator for Annual Meeting in Montreal, Canada
- 2015 Poster moderator for Annual Meeting in Honolulu, HI
- 2016 Abstract reviewer for Annual Meeting in San Francisco, CA
- 2016 Poster moderator for Annual Meeting in San Francisco, CA
- 2017 Abstract reviewer for Annual Meeting in Washington, DC

Society for Pediatric Anesthesia:

2017 Abstract reviewer for Annual Meeting in Austin, TX

Association of University Anesthesiologists:

2017 Abstract reviewer for Annual Meeting in Washington, DC

10) PROFESSIONAL ORGANIZATIONS AND SOCIETIES:***Professional Societies:***

- 2005-present Member, American Society of Anesthesiologists
- 2008-present Member, Society for Pediatric Anesthesiology
- 2009-present Member, International Anesthesia Research Society
- 2011-2016 Member, American Society of Regional Anesthesia and Pain Medicine
- 2015-2017 Associate Member, Association of University Anesthesiologists
- 2017-present Active Member, Association of University Anesthesiologists

Journal Reviewer:

F1000 review
 Pediatric Anesthesia
 Pediatrics
 The Cleft Palate-Craniofacial Journal
 Anesthesia and Analgesia
 Journal of Clinical Anesthesia

BMC Anesthesiology
Neurobiology of Learning and Memory

11) GRANT SUPPORT:

Present Support:

- 2014-2019 Agency for Healthcare Research and Quality (AHRQ) K08 Award: K08HS022941:
(PI: C Ing) *Anesthesia Exposure and Risk of Behavioral or Developmental Disorder:*
Amount \$765,665
- 2016-2019 Herbert Irving Assistant Professorship (PI: C Ing) *Factors Contributing to Neurodevelopmental Deficit After Surgery and Anesthesia in Children:*
Amount \$180,000

Past Support:

- 2012-2013 SmartTots Research Grant: (PI: C Ing) *Anesthetic Exposure Duration and Effects on Cognitive and Language Ability:*
Amount \$100,000
- 2012-2014 American Society of Regional Anesthesia and Pain Medicine (ASRA) Carl Koller Memorial Research Grant: (PI: C Ing) *Comparative Peri-operative Safety Outcomes Between Regional and General Anesthesia in Critically Ill Infants:*
Amount \$75,000

12) EDUCATIONAL CONTRIBUTIONS:

Direct Teaching/Precepting/Supervising:

- 2009-present Direct teaching of residents and fellows in clinical environments
2009-present Lecturer for anesthesia residents and pediatric anesthesia fellows lecture series
2010-present Annual: Medical student recitation for Neurosciences section

Advising and Mentorship:

- 2011-2012 Raymond Park
Number of abstracts: 1
- 2012-2013 Shivani Mukkamala
Number of abstracts: 1
- 2013-present Lisa Eisler
Number of abstracts: 3
Currently T32 scholar at Columbia University Medical Center
- 2015-2016 Jennifer Lee
Number of abstracts: 1
Peer reviewed publications: 1
- 2016-2017 Anna Klausner

2017 Sara Sun
Number of abstracts: 1
Number of abstracts: 1

Educational Administration and Leadership:

2015-present Biannual: Co-Instructor for Clinical Epidemiology Course P8450 at the Mailman School of Public Health

Instructional/Educational Materials used in Print or other Media:

2007 Co-author of the Columbia Resident Syllabus for Neurosurgical Anesthesia

13) REPORT OF CLINICAL AND PUBLIC HEALTH ACTIVITIES AND INNOVATIONS: N/A

14) PATENTS AND INVENTIONS: N/A

15) PUBLICATIONS

* Senior author

** Co-first author

Peer Reviewed Research Publications in Print or Other Media:

1. Sun S, Ma X, Li G, **Ing C***: *Epidemiologic Patterns of In-Hospital Anaphylaxis in Pediatric Surgical Patients. J Allergy Clin Immun (in press)*
2. **Ing C**, Sun M, Olfson M, DiMaggio CJ, Sun L, Wall MW, Li G: *Age at Exposure to Surgery and Anesthesia in Children and Association with Mental Disorder Diagnosis. Anesth Analg. ePub 2017 Aug*
3. **Ing C****, Hegarty MK, Perkins JW, Whitehouse AJO, DiMaggio CJ, Sun M, Andrews H, Li G, Sun LS, von Ungern-Sternberg BS: *Duration of Anaesthetic Exposure in Early Childhood and Long-term Language and Cognitive Ability. Br J Anaesth. 119(3): 532-540, 2017 Sept.*
4. **Ing C**, Sun LS, Friend AF, Kim M, Berman MF, Paganelli W, Li G, Williams R: *Differences in Intraoperative Hemodynamics Between Spinal and General Anesthesia in Infants Undergoing Pyloromyotomy. Paediatr Anaesth. 27(7): 733-741, 2017 Jul.*
5. **Ing C**, Wall MM, DiMaggio CJ, Whitehouse AJ, Hegarty MK, Sun M, von Ungern-Sternberg BS, Li G, Sun LS: *Latent Class Analysis of Neurodevelopmental Deficit after Exposure to Anesthesia in Early Childhood J Neurosurg Anesthesiol. 29(3) 264-273 2017 Jul.*
6. Huang YY, **Ing C**, Li G, Sun LS: *Analysis of MRI Utilization in Pediatric Patients. J Neurosurg Anesthesiol. 28(4) 413-418: 2016 Oct.*
7. **Ing C**, Sun LS, Friend AF, Roh A, Lei S, Andrews H, Li G, Williams R: *Adverse Events and Resource Utilization in Spinal and General Anesthesia in Infants Undergoing Pyloromyotomy. Reg Anesth Pain Med. 41(4): 2016 Jul-Aug.*

8. Sun LS, Li G, Miller TLK, Salorio C, Byrne MW, Bellinger DC, **Ing C**, Park R, Radcliffe J, Hays SR, DiMaggio CJ, Cooper TJ, Rauh V, Maxwell LG, Youn A, McGowan FX: *Association Between a Single General Anesthesia Exposure Before Age 36 Months and Neurocognitive Outcomes in Later Childhood*. JAMA 315(21): 2312-2320, 2016 Jun.
9. Yazar S, Hewitt AW, Forward H, Jacques A, **Ing C**, von Ungern-Sternberg BS, Mackey DA: *Early Anesthesia Exposure and the Effect on Visual Acuity, Refractive Error, and Retinal Nerve Fiber Layer Thickness of Young Adults*. J Pediatr. 169:256-9, 2016 Feb.
10. **Ing C**, DiMaggio CJ, Whitehouse AJO, Hegarty M, Sun M, von Ungern-Sternberg BS, Davidson AJ, Wall MM, Li G, Sun LS. *Neurodevelopmental Outcomes After Initial Childhood Anesthetic Exposure Between Ages 3 and 10 Years*. J Neurosurg Anesthesiol. 26(4): 377-86, 2014 Oct.
11. Whitehouse A.J.O., Shelton W.M.R., **Ing C.**, Newnham J.P. *Prenatal, perinatal and neonatal risk factors for Specific Language Impairment: A prospective pregnancy cohort study*. Journal of Speech, Language and Hearing Research. 57(4): 1418-27, 2014 Aug.
12. **Ing CH**, DiMaggio CJ, Malacova E, Whitehouse AJO, Hegarty M, Feng T, Brady J, von Ungern-Sternberg BS, Davidson AJ, Wall MM, Wood AJJ, Li G, Sun LS. *Comparative Analysis of Outcome Measures Used in Examining Neurodevelopmental Effects of Early Childhood Anesthesia Exposure*. Anesthesiology. 120(6): 1319-32, 2014 Jun.
13. **Ing C**, Chui I, Ohkawa S, Kakavouli A, Sun LS. *Incidence and causes of perioperative endotracheal reintubation in children: a review of 28,208 anesthetics*. Paediatr Anaesth. 23(7): 621-6, 2013 Jul.
14. Sun LS, Li G, DiMaggio CJ, Byrne MW, **Ing C**, Miller TLK, Bellinger DC, Han S, McGowan FX. *Feasibility and Pilot Study of the Pediatric Anesthesia NeuroDevelopment Assessment (PANDA) Project*. J Neurosurg Anesthesiol. 24(4): 382-388, 2012 Oct.
15. DiMaggio CJ, Sun LS, **Ing C**, Li G. *Pediatric Anesthesia and Neurodevelopmental Impairments: A Bayesian Meta-analysis*. J Neurosurg Anesthesiol. 24(4): 376-381, 2012 Oct.
16. Tzong KYS, Han S, Roh A, **Ing C***. *Epidemiology of Pediatric Surgical Admissions in US Children: Data From the HCUP Kids Inpatient Database*. J Neurosurg Anesthesiol. 24(4): 391-396, 2012 Oct.
17. **Ing C**, DiMaggio C, Whitehouse A, Hegarty MK, Brady J, von Ungern-Sternberg BS, Davidson A, Wood AJJ, Li G, Sun LS. *Long-term Differences in Language and Cognitive Function After Childhood Exposure to Anesthesia*. Pediatrics 130: e476-e485, 2012 Sept.
18. White PF, Rawal S, Latham P, Markowitz S, Issioui T, Chi L, Dellaria S, Shi C, Morse L, **Ing C**. *Use of a continuous local anesthetic infusion for pain management after median sternotomy*. Anesthesiology. 99(4): 918-23, 2003 Oct.

19. White PF, Issioui T, Hu J, Jones SB, Coleman JE, Waddle JP, Markowitz SD, Coloma M, Macaluso AR, **Ing CH**. *Comparative efficacy of acustimulation (ReliefBand) versus ondansetron (Zofran) in combination with droperidol for preventing nausea and vomiting.* Anesthesiology. 97(5): 1075-81, 2002 Nov.
20. Issioui T, Klein KW, White PF, Watcha MF, Skrivanek GD, Jones SB, Hu J, Marple BF, **Ing C**. *Cost-efficacy of rofecoxib versus acetaminophen for preventing pain after ambulatory surgery.* Anesthesiology. 97(4): 931-7 2002 Oct.
21. Kadar AG, **Ing CH**, White PF, Wakefield CA, Kramer BA, Clark K. *Anesthesia for electroconvulsive therapy in obese patients.* Anesthesia & Analgesia. 94(2): 360-1, 2002 Feb.

Other Peer Reviewed Publications in Print or Other Media:

22. **Ing C**, Rauh VA, Warner DO, Sun LS: *What Next After GAS and PANDA?* J Neurosurg Anesthesiol. 28(4) 381-383: 2016 Oct.
23. Pinyavat T, Warner DO, Flick RP, McCann ME, Andropoulos DB, Hu D, Sall JW, Spann MN, **Ing C***: *Summary of the Update Session of Clinical Studies.* J Neurosurg Anesthesiol. 28(4) 356-360: 2016 Oct.
24. 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 25: 447-52, 2015 May.
25. Lei S, Davis N, Lee M, **Ing C***. *Engaging Stakeholders in Research Related to Anesthesia and Neurodevelopment in Children.* J Neurosurg Anesthesiol. 26(4): 387-90, 2014 Oct.

Case Reports:

26. Lee J, **Ing C***: *Prothrombin Complex Concentrate and Methylene Blue for Treatment of Coagulopathy and Vasoplegia in a Pediatric Heart Transplant Patient.* A&A Case Reports 5: 127–129, 2016 Mar.
27. **Ing C**, Spellman J, Nishanian E. *Cerebrospinal fluid drainage with bivalirudin and rFactor VIIa for thoracic aortic aneurysm surgery using left atrial-femoral artery bypass.* Cardiothorac Vasc Anesth. 24(5): 828-30, 2010 Feb.

Letters to the Editor:

28. **Ing CH**, DiMaggio CJ, Malacova E, Whitehouse AJ, Hegarty MK, Feng T, Brady JE, von Ungern-Sternberg BS, Davidson AJ, Wall MM, Wood AJ, Li G, Sun LS: *In reply.* Anesthesiology 122: 217-8, 2015 Jan.

Reviews, Chapters, Monographs, Editorials:

29. **Ing CH**, Flick RP: *Anesthetic Related Neurotoxicity, Current State of the Art.* ASA Newsletter 2016 Nov.
30. Flick RP, **Ing CH**: *Anesthetic-Related Neurotoxicity in Children – ASA Works in Close Cooperation with FDA and Others to Advance Research.* ASA Newsletter 79(3) 2015 Mar.
31. **Ing C** (2014). Heparin Induced Thrombocytopenia. In P.J. Houck & M. Hache & L.S. Sun (Eds.). *Handbook of Pediatric Anesthesia* (pp. 177-179). USA: McGraw-Hill Education.
32. **Ing C** (2014). Sickle Cell Disease. In P.J. Houck & M. Hache & L.S. Sun (Eds.). *Handbook of Pediatric Anesthesia* (pp. 169-171). USA: McGraw-Hill Education.
33. **Ing C** (2012). Sickle Cell Disease, Hemoglobinopathies, and Polycythemia Vera. In L.F. Chu & A.J. Fuller (Eds.). *Manual of Clinical Anesthesiology* (pp. 637-642). Philadelphia: Lippincott Williams & Wilkins.

Other Media:

34. Levy RJ, **Ing C**: *Neurotoxic effects of anesthetics on the developing brain.* Uptodate.com 2017 Jul.
35. **Ing CH**, Flack S, Flick RP: *Anesthetic neurotoxicity in infants and children: Current state-of-the-art.* KevinMD.com 2016 Dec.

Meetings/Invited Oral and Poster Presentations:

1. Abstract at the American Society of Anesthesiologists 2017 Meeting. Sun S., Ma X., Li G., **Ing C***. *Anaphylaxis in pediatric surgical inpatients in the United States, 2003-2012.*
2. Oral presentation and Award for best Clinical Abstract at the Columbia University Department of Anesthesiology Academic Evening 2017. Eisler L, Sun L, Busse JA, Lin A, Sun M, **Ing C***. *Frequency and Predictors of Perioperative Pulmonary Aspiration in Children*
3. Abstract at the International Anesthesia Research Society 2017 Meeting. Klausner A. J., Ma X., Li G., **Ing C***. *Predictors of Anesthetic Duration in Common Pediatric General Surgical Procedures.*
4. Oral presentation at the American Society of Anesthesiologists 2016 Meeting. **Ing C**, Hegarty MK, Perkins JW, Whitehouse AJO, DiMaggio CJ, Sun M, Andrews H, Li G, Sun LS, von Ungern-Sternberg BS: *Duration of Anaesthetic Exposure in Early Childhood and Long-term Language and Cognitive Ability.*
5. Abstract at the International Anesthesia Research Society 2016 Meeting. Eisler L, Sun L, Busse JA, Lin A, Sun M, **Ing C***. *Frequency and Predictors of Perioperative Pulmonary Aspiration in Children*
6. Abstract at the American Society of Anesthesiologists 2015 Meeting. **Ing C**, Wall MM, DiMaggio CJ, Whitehouse A, Hegarty M, Sun M, von Ungern-Sternberg B, Li G, Sun LS.

Latent Class Analysis of Neuropsychological Deficit after Exposure to Anesthesia in Early Childhood

7. Oral Presentation at the Association of University Anesthesiologists 2015 Meeting. **Ing C**, Wall MM, DiMaggio CJ, Whitehouse A, Li G, Sun LS. *Latent Class Analysis of Neuropsychological Deficit after Exposure to Anesthesia in Early Childhood*
8. Abstract at the International Anesthesia Research Society 2015 Meeting. Eisler L, Sun M, **Ing C***. *Incidence and Associated Morbidity and Mortality of Perioperative Aspiration in Pediatric Inpatients*
9. Oral Presentation at the American Society of Anesthesiologists 2013 Meeting. **Ing C**, DiMaggio C, Malacova, E, Whitehouse A, Hegarty MK, von Ungern-Sternberg BS, Davidson A, Li G, Sun LS. *Multimodal Assessment of Cognitive Outcomes Associated with Exposure to Anesthesia in Early Childhood*
10. Columbia University Department of Anesthesiology Research Seminar 2/27/13: Cognitive Function After Childhood Exposure to Anesthesia- Risks and Alternatives
11. Abstract at the American Society of Anesthesiologists 2012 Meeting. Mukkamala S, Pinyavat T, **Ing C***. *Anesthetic Management of Two Children Undergoing Cardiac Surgery With Suspected Mitochondrial Disease*
12. Abstract at the International Anesthesia Research Society 2011 Meeting. **Ing, C**, Loepke AW, Miller TLK, Jooste E, Han S, Sun L. *Long-Term Quantification of Anesthetic Exposure by a Data Abstraction Approach in the Pediatric Anesthesia NeuroDevelopmental Assessment (PANDA) study*
13. Oral Presentation at the International Anesthesia Research Society 2011 Meeting. **Ing C**, DiMaggio C, Whitehouse A, Hegarty M, Davidson A, Sun L. *Long-Term Differences in Cognitive and Language Ability After Exposure to Surgery and Anesthesia in Infancy*
14. Oral Presentation at the Association of University Anesthesiologists 2011 Meeting. **Ing C**, DiMaggio C, Whitehouse A, Hegarty M, Davidson A, Sun L. *Long-Term Differences in Cognitive and Language Ability After Exposure to Surgery and Anesthesia in Infancy*
15. Abstract at The Society for Pediatric Anesthesia 2011 Meeting. Pinyavat T, **Ing C**, Sha N, Sun L. *Population-based Study of American Pediatric Surgical Patients*
16. Abstract at The Society for Pediatric Anesthesia 2011 Meeting. Park R, **Ing C**, Berman M, Sun L. *New York Statewide Planning and Research Cooperative System for Investigation of Anesthesia*
17. Poster Presentation and Abstract at American Society of Anesthesiologists 2010 Meeting. **Ing C**, Forde A, Brady J, Sun L. *An Analysis of Down Syndrome Mortality with Surgical Admissions*
18. Abstract at the International Anesthesia Research Society 2010 Meeting. Chui I, **Ing C**,

Kakavouli A, Sun L, Ohkawa S. *Incidence and Causes of Post-operative Reintubation in Children: A Review of 28,208 Anesthetics*

19. Poster Presentation and Abstract at the International Anesthesia Research Society 2010 Meeting. **Ing C**, Pinyavat T, Forde A, Brady J, Sun L. *Mortality in Primary Pulmonary Hypertension in the Pediatric Population*
20. Oral Presentation at the American Society of Anesthesiologists 2009 Meeting. **Ing C**, Saroyan J, Haddad J, Gereau-Haddon S, Grunstein E, Kakavouli, A, Sun L. *Sex Differences in PACU Opioid Requirements in Children Following ENT Surgery*
21. Abstract at The American Federation for Medical Research 2009 Meeting. **Ing C**, Saroyan J, Haddad J, Gereau-Haddon S, Grunstein E, Kakavouli, A, Sun L. *Sex Differences in PACU Opioid Requirements in Children Following ENT Surgery*
22. Poster Presentation and Abstract at The Society for Pediatric Anesthesia 2009 Meeting. **Ing C**, Saroyan J, Haddad J, Gereau-Haddon S, Grunstein E, Kakavouli, A, Sun L. *Sex Differences in PACU Opioid Requirements in Children Following ENT Surgery*
23. Poster Presentation and Abstract at The Society for Pediatric Anesthesia 2008 Meeting. Boublick J, **Ing C**, Kakavouli A, Lin C, Sun L. *Neonatal Hyperglycemia Following Cardiac Surgery Has No Impact on Morbidity or Mortality.*

16) INVITED PRESENTATIONS:

Internal:

1. *Anesthetic Neurotoxicity: What Do the Clinical Studies Tell Us?*
Columbia University Medical Center Department of Urology Grand Rounds. New York, NY: 2017 Sept.
2. *Age at Exposure to Surgery and Anesthesia in Children and Association with Mental Disorder Diagnosis.*
Columbia University Medical Center Department of Anesthesiology Grand Rounds – Celebration of Research. New York, NY: 2017 Jun.
3. *Childhood Anesthesia Exposure and Long-term Cognitive Function.*
Columbia University Medical Center Department of Urology Grand Rounds. New York, NY: 2016 Feb
4. *Long-term Differences in Language and Cognitive Function After Childhood Exposure to Anesthesia.*
Columbia University Medical Center Department of Anesthesiology Grand Rounds. New York, NY: 2012 Dec.

Regional:

5. *Anesthetic Neurotoxicity: What Do the Clinical Studies Tell Us?*
Mt. Sinai Medical Center Department of Anesthesiology Grand Rounds. New York, NY:
2017 Nov.
6. *Childhood Anesthesia Exposure and Long-term Cognitive Function.*
Westchester Medical Center Department of Anesthesiology Grand Rounds: 2016 Jan.

National:

7. *Neurotoxicity Round Table – European Excellence or U.S. Paranoia*
Society for Pediatric Anesthesia 2017 Annual Meeting. Austin, TX: 2017 Mar.
8. *Anesthetic Neurotoxicity and the Journey to Clinician-Scientist: Lessons Learned.*
Research Workshop at the Society for Pediatric Anesthesia 2015 Meeting. Phoenix, AZ:
2015 Mar.
9. *Anesthetic Exposure Duration and Effects on Cognitive and Language Ability*
IARS-FDA SmartTots Workshop. Arlington, VA: 2014 Jun.

International:

10. *Studying Neurotoxicity in Birth Cohorts.*
British Journal of Anesthesia 2016 London Seminar on Anaesthetic Neurotoxicity and
Neuroplasticity. London, United Kingdom: 2016 May.
11. *Studying Neurotoxicity Using Birth Cohorts: The Western Australian Pregnancy Cohort
Study (Raine).*
EuroSTAR – SmartTots Scientific Network 2014 Meeting: Pediatric Anesthesia and
Neurotoxicity. From the GAS Study to future collaborative trials. Genoa, Italy: 2014 May.