

CURRICULUM VITAE
The Johns Hopkins University School of Medicine

April 2021

Michael Conrad Grant, M.D., M.S.E.

DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointments

University

- 2020 – Present Associate Professor, Department of Anesthesiology and Critical Care Medicine
Divisions of Cardiac Anesthesia, Surgical Intensive Care and Informatics, Integration & Innovation
- 2020 – Present Associate Professor, Department of Surgery
Divisions of Cardiac Surgery and Acute Care Surgery/Adult Trauma Surgery
Johns Hopkins University School of Medicine
- 2018 – Present Core Faculty, The Armstrong Institute for Patient Safety and Quality
Johns Hopkins University School of Medicine

Hospital

- 2016 – Present Attending Physician, Johns Hopkins Hospital
- 2016 – Present Attending Physician, Johns Hopkins Bayview Hospital

Personal Data

Business Address	1800 Orleans Street
Division of	Cardiac Anesthesia and Surgical Intensive Care
Department of	Anesthesiology and Critical Care Medicine
Building and room	Zayed 6208-P; Baltimore, MD 21287
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Education and Training

Undergraduate

- 2006 B.S., University of Maryland, College Park, MD; graduated cum laude

Doctoral/Graduate

- 2010 M.D., University of Maryland, Baltimore, MD; graduated cum laude
- 2019 M.S.E., Masters of Systems Engineering, Whiting School of Engineering, Baltimore, MD,
Johns Hopkins Applied Physics Laboratories, Laurel, MD

Postdoctoral

- 2010-2011 Intern, Internal Medicine, Mercy Medical Center, Baltimore, MD; preliminary year
- 2011-2014 Resident, Anesthesiology, Johns Hopkins Hospital, Baltimore, MD
- 2014-2015 Fellowship, Multidisciplinary Surgical Critical Care, Johns Hopkins Hospital, Baltimore, MD
- 2015-2016 Fellowship, Cardiothoracic Anesthesiology, Johns Hopkins Hospital, Baltimore, MD

Professional Experience

- 2016 – 2020 Assistant Professor, The Johns Hopkins University School of Medicine (JHU SOM), Baltimore, MD
- 2020 – Present Associate Professor, The Johns Hopkins University School of Medicine (JHU SOM), Baltimore, MD
- 2018 – Present Director of Anesthesiology for Enhanced Recovery After Surgery (ERAS), JHU SOM, Baltimore
- 2019 – Present Director of Clinical Operations – Division of Cardiothoracic Anesthesiology, JHU SOM, Baltimore
- 2019 – Present Deputy Vice Chair of ICU Operations – Department of Anesthesiology & Critical Care Medicine (ACCM), JHU SOM, Baltimore
- 2020 – Present Medical Director, Cardiovascular Surgical Intensive Care Unit (CVSICU)

PUBLICATIONS

Original Research [OR]

1. Regier J, **Grant MC**, Mitter C, Cook CP, Peigler RS, Rougerie R. Phylogenetic relationships of wild silkmoths (Lepidoptera: Saturniidae) inferred from four protein-coding nuclear genes. *Systematic Entomology*. 2008; 33:219 – 228. *Role: study conception, data acquisition, laboratory assistance, data analysis, manuscript preparation and revision.*
2. Kon ZN, Brown EN, Tran R, Joshi A, Reicher B, **Grant MC**, Kallam S, Burris N, Connerney I, Zimrin D, Poston RS. Simultaneous hybrid coronary revascularization reduces postoperative morbidity. *J Thorac Cardiovasc Surg*. 2008; 135:367-75. *Role: Study design, data acquisition, preparation of manuscript.*
3. Kon ZN, Brown EN, **Grant MC**, Ozeki T, Burris NS, Collins MJ, Kwon MH, Poston RS. Warm ischemia provokes inflammation and regional hypercoagulability within the heart during off-pump coronary artery bypass: a possible target for serine protease inhibition. *Eur J Cardiothorac Surg*. 2008; 33:215-21. *Role: data acquisition, laboratory assistance, data analysis, manuscript preparation and revision.*
4. Burris NS, Brown EN, **Grant MC**, Kon ZN, Gibber M, Gu J, Schwartz K, Kallam S, Joshi A, Vitali R, Poston RS. Optical coherence tomography imaging as a quality assurance tool for evaluating endoscopic harvest of the radial artery. *Ann Thorac Surg*. 2008; 85:1271-7. *Role: Study conception, data acquisition, preparation of manuscript.*
5. **Grant MC**, Kon Z, Joshi A, Christenson E, Kallam S, Burris NS, Gu J, Poston RS. Is Aprotinin safe to use in a cohort at increased risk for thrombotic events: Results from a randomized, prospective trial in off pump coronary artery bypass. *Ann Thorac Surg*. 2008; 86:815-22. *Accompanying discussion 815-22.*
6. Brown EN, Burris NS, Kon ZN, **Grant MC**, Xu C, Laird P, Gu J, Kallam S, Desai P, Poston RS. Intraoperative detection of intimal lipid in the radial artery predicts degree of postoperative spasm. *Atherosclerosis*. 2009; 205:466-71. *Role: Study design, data acquisition, manuscript preparation.*
7. Desai PH, Kurian D, Thirumavalavan N, Desai SP, Ziu P, **Grant MC**, White C, Landis RC, Poston RS. A randomized clinical trial investigating the relationship between aprotinin and hypercoagulability in off-pump coronary surgery. *Anesth Analg*. 2009; 109:1387-94.
8. **Grant MC**, Whitman GJ, Savage WJ, Ness PM, Frank SM. Clinical predictors of postoperative hemoglobin drift (with accompanying editorial). *Transfusion*. 2014; 54:1460-68.
9. Page AJ, Ejaz A, Spolverato G, Zavadsky T, **Grant MC**, Galante DJ, Wick EC, Weiss M, Makary MA, Wu CL, Pawlik TM. Enhanced Recovery After Surgery Protocols for Open Hepatectomy - Physiology, Immunomodulation, and Implementation. *J Gastrointestinal Surgery*. 2015; 19:387-99. *Role: Conception of study, data acquisition and analysis, manuscript writing.*
10. **Grant MC**, Kim J, Page AJ, Hobson D, Wick EC, Wu CL. The effect of intravenous midazolam on postoperative nausea and vomiting: a meta-analysis. *Anesth Analg*. 2016; 122:656-63. *Manuscript was accompanied by editorial.*
11. **Grant MC**, Yang DJ, Stone A, Wu CL, Wick EC. A meta-analysis of intraoperative ventilation strategies to prevent pulmonary complications: Is low tidal volume alone sufficient to protect healthy lungs? *Ann Surg*. 2016; 263:881-7. *Joint first authorship.*
12. **Grant MC**, Lee HW, Page AJ, Hobson D, Wick EC, Wu CL. The effect of preoperative gabapentin on postoperative nausea and vomiting: a meta-analysis. *Anesth Analg*. 2016; 144:976-85.
13. Page AJ, Gani F, Crowley KT, Lee KH, **Grant MC**, Zavadsky TL, Hobson D, Wu CL, Wick EC, Pawlik TM. Patient outcomes and provider perceptions following implementation of a standardized perioperative care pathway for open liver resection. *Brit J Surg*. 2016; 103:564-571. *Role : Study design, data acquisition and analysis, manuscript writing. [SI/QI]*
14. Stone AB, **Grant MC**, Pio Roda C, Hobson D, Wu CL, Wick EC. Implementation costs of an Enhanced Recovery After Surgery (ERAS) program in the United States: A financial model and sensitivity analysis based on experiences at a quaternary academic medical center. *J Amer Coll Surg*. 2016; 222:219-25.
15. **Grant MC**, Betz M, Hulse M, Zorrilla-Vaca A, Hobson D, Wick E, Wu CL. The effect of preoperative pregabalin on postoperative nausea and vomiting: A meta-analysis. *Anesth Analg*. 2016 ; 123:1100-1107.
16. Zorrilla-Vaca A, **Grant MC**, Mathur V, Wu CL. The impact of neuraxial versus general anesthesia on the incidence of postoperative surgical site infections following knee or hip arthroplasty: A meta-analysis. *Reg Anesth Pain Med*. 2016; 41:555-63.
17. **Grant MC**, Yang DJ, Wu CL, Wick EC. Impact of Enhanced Recovery After Surgery and Fast Track Surgery pathways on healthcare acquired infections: Results from a systematic review and meta-analysis. *Ann Surg*. 2017; 265: 68-79.

18. **Grant MC, Stone AB**, Lau BD, Hobson DB, Streiff MB, Haut ER, Wu CL, Wick EC. Thoracic epidural anesthesia and prophylactic three times daily unfractionated heparin within an Enhanced Recovery After Surgery pathway for colorectal surgery. *Reg Anesth Pain Med.* 2017; 42:197-203. *Joint first authorship. [SI/QI]*
19. **Zorrilla-Vaca A**, Healy RJ, Wu CL, **Grant MC**. Depth of anesthesia as measured by bispectral index and postoperative mortality: A meta-analysis of observational studies (with accompanying editorial). *Can J Anesth.* 2017; 64:597-607.
20. **Grant MC, Sommer P, He C, Li S**, Page AJ, **Stone A**, Hobson D, Wick EC, Wu CL. Preserved analgesia with reduction in opioids through the use of an acute pain protocol in Enhanced Recovery After Surgery (ERAS) for open hepatectomy. *Reg Anesth Pain Med.* 2017; 42:451-457. *[SI/QI]*
21. **Grant MC**, Galante D, Hobson D, Lavezza A, Friedman M, Wu CL, Wick EC. Optimizing an Enhanced Recovery Program: Development of a post implementation audit tool and strategy. *Jt Comm J Qual Saf.* 2017; 43:542-533. *[SI/QI]*
22. Fabrizio AC, **Grant MC**, Siddiqui Z, Alimi Y, Gearhart SL, Wu CL, Efron JE, Wick EC. Is Enhanced Recovery enough for reducing 30-day readmissions after surgery? *J Surg Res.* 2017; 217:45-53. *Role: Data analysis, manuscript writing. [SI/QI]*
23. **Zorrilla-Vaca A**, Healy R, Rivera-Lara L, **Grant MC**, Maragakis L, Escandon-Vargas K, Mirski M. Epidemiology of septic meningitis associated with neuraxial anesthesia: A historical review and meta-analysis. *Minerva Anesthesiol.* 2018; 84:363-377. *Role: Study conception, data abstraction, manuscript writing.*
24. **Grant MC**, Hanna A, Benson A, Hobson D, Wu CL, Yuan CT, Rosen M, Wick EC. Dedicated operating room teams and clinical outcomes in an Enhanced Recovery after Surgery pathway for colorectal surgery. *J Am Coll Surg.* 2018; 226:267-276. *[SI/QI]*
25. **Stone AB**, Yuan C, Rosen M, **Grant MC**, Benishek L, Hanahan E, Lubomski L, Wu CL, Wick EC. Barriers to and facilitators of implementing Enhanced Recovery Pathways using an implementation framework: A systematic review. *JAMA Surg.* 2018; 153:270-279. *Role: Manuscript drafting and editing, literature search.*
26. **Zorrilla-Vaca A**, Healy R, **Grant MC**, **Joshi B**, Rivera-Lara L, Brown C, Mirski MA. Intraoperative cerebral oximetry-based management for optimizing perioperative outcomes: A meta-analysis of randomized controlled trials. *Can J Anesth.* 2018; 65:529-542. *Role: Study conception, data abstraction, manuscript writing.*
27. **Zorrilla-Vaca A**, Mathur V, Wu CL, **Grant MC**. The impact of spinal needle selection on post-dural puncture headache: A meta-analysis and meta-regression of randomized studies. *Reg Anesth Pain Med.* 2018; 43:502-508.
28. Galiatsatos P, Brigham EP, Pietri J, Littleton K, Hwang S, **Grant MC**, Hansel NH, Chen ES. The effect of community socioeconomic status on sepsis-attributable mortality. *J Crit Care.* 2018. 65:529-542. *Role: Study conception, design, manuscript writing.*
29. **Grant MC**, PioRoda C, Canner J, Galante DJ, **Sommer P**, Hobson D, Gearhart S, Wu CL, Wick EC. The impact of anesthesia influenced process measure compliance on length of stay: Results from an Enhanced Recovery After Surgery (ERAS) for colorectal surgery cohort. *Anesth Analg.* 2019; 128:68-74. *[SI/QI]*
30. Hanna MN, Speed TJ, Shechter R, **Grant MC**, Sheinberg R, Goldberg E, Campbell CM, Theodore N, Koch CG, Williams K. An innovative perioperative pain program for chronic opioid users: An academic medical center's response to the opioid crisis. *Am J Med Qual.* 2019; 34:5-13. *Role: Study and program conception, manuscript writing and revision. [SI/QI]*
31. **Cho BC**, DeMario VM, **Grant MC**, Hensley NB, Brown CH, Hebbar S, Mandal K, Whitman GL, Frank SM. Impact of discharge hemoglobin level on 30-day readmission rates after coronary artery bypass surgery. *Anesth Analg.* 2019; 128:342-8. *Role: Study conception, manuscript writing and revision.*
32. Murphy JD, **Grant MC**, Wu CL, Szymanski LM. A multimodal analgesic pathway improves postpartum pain management score as reflected by HCAHPS scores. *J Surg Anesth.* 2018; 2:2. *Role: Study conception, manuscript writing & revision. [SI/QI]*
33. Ravitz A, **Grant MC**, Grant C. The future of healthcare through a systems approach. *System of Systems Engineering, SOSE.* 2018; 8428781:527-34. *Role: Conception, manuscript writing and revision.*
34. **Zorrilla-Vaca A**, Marmolejo-Posso D, **Stone A**, Li J, **Grant MC**. Perioperative dextrose infusion and postoperative nausea and vomiting: A meta-analysis of randomized trials. *Anesth Analg.* 2019; 129:943-950.
35. Calotta NA, Coon D, Bos TJ, Ostrander BT, **Scott AV**, **Grant MC**, Efron JE, Sacks JM. Early ambulation after colorectal oncologic resection with perineal reconstruction is safe and effective. *Am J Surg.* 2019; 218:125-130. *Role: Study conception, data acquisition and analysis, manuscript writing and revision.*
36. **Cho BC**, **Serini J**, **Zorrilla-Vaca A**, Scott MJ, Gehrie EA, Frank SM, **Grant MC**. Impact of preoperative erythropoietin on allogeneic blood transfusions in surgical patients: Results from a systematic review and meta-analysis. *Anesth Analg.* 2019; 128:981-992. *Manuscript was featured as the cover article with associated info-graphic.*

37. **Cho BC, Jung YH, DeMario VM, Lau E, Podlasek SJ, Grant MC, Gehrie EA, Frank SM.** On-label compared to off-label four-factor prothrombin concentrate use: A retrospective, observational study. *Transfusion.* 2019; 59:2687-84. *Role: Study conception, data acquisition and analysis, manuscript writing and revision.*
38. **Grant MC, Isada T, Ruzankin P, Whitman G, Lawton JS, Dodd-o J, Barodka S and the JH-ERP for Cardiac Surgery Working Group.** Results from an Enhanced Recovery Program for Cardiac Surgery. *J Thorac Cardiovasc Surg.* 2019; 159:1393-1402. *Manuscript was accompanied by two separate commentaries.*
39. **Zorrilla-Vaca A, Caballero F, Stone A, Paredes E, Grant MC.** Perioperative duloxetine for acute postoperative analgesia: A meta-analysis of randomized trials. *Reg Anesth Pain Med.* 2019; 44:959-65.
40. **Owodunni OP, Zaman MH, Ighani M, Grant MC, Bettick D, Sateri S, Magnuson T, Gearhart S.** Opioid tolerance impacts compliance with Enhanced Recovery Pathway following major abdominal surgery. *Surgery.* 2019; 166:1055-1060. *Role: data analysis, manuscript writing and revision.*
41. **Clement KC, Canner JK, Lawton JS, Whitman GJR, Grant MC, Sussman MS.** Predictors of new persistent opioid use after coronary artery bypass grafting. *J Thorac Cardiovasc Surg.* 2019. [Online ahead of print] *Role: study conception, data analysis, manuscript writing and revision.*
42. **Clement KC, Canner JK, Whitman GJR, Lawton JS, Grant MC, Sussman MS.** New persistent opioid use after aortic and mitral valve surgery in commercially insured patients. *Annals Thorac Surg.* 2019; 119:829-835. *Role: study conception, data analysis, manuscript writing and revision.*
43. **Salenger R, Morton-Baily V, Grant MC, Gregory A, Williams JB, Engelman DT.** Cardiac ERAS: A guide to team building and successful implementation. *Semin Thorac Cardiovasc Surg.* 2020; 32:187-196. *Role: study conception, manuscript writing and revision.*
44. **Qin CX, Merkel KR, Yesanthara LV, Lau EK, Phelps MA, Kajstura TJ, Grant MC, Frank SM, Cho BC.** Poor cost awareness among anesthesia providers for medications, supplies and blood products. *Jt Comm J Qual Saf.* 2020; 46:524-530. *Role: study conception, manuscript writing and revision.*
45. **Grant MC, Isada T, Ruzankin P, Gottschalk A, Whitman G, Lawton JS, Dodd-o J, Barodka V.** Opioid-sparing cardiac anesthesia: Secondary analysis of an Enhanced Recovery Program for Cardiac Surgery. *Anesth Analg.* 2020; 131:1852-1861.
46. **Bova SE, Kruer RM, Nesbit SA, Grant MC, Jarrell AS.** Perioperative methadone prescribing and association with respiratory depression. *J Opioid Manag.* 2020; 16:443-449. *Role: study conception, manuscript writing and revision.*
47. **Hensley N, Gyi R, Zorrilla-Vaca A, Choi CW, Lawton JS, Brown CH, Frank SM, Grant MC, Cho BC.** Retrograde autologous priming in cardiac surgery: Results from a systematic review and meta-analysis. *Anesth Analg.* 2021; 132:100-107. *Role: study conception, analysis, manuscript writing and revision.*
48. **Hunt MF, Clark KT, Grant MC, Choi WC, Whitman G, Cho S-M, Farrokh S.** Therapeutic drug monitoring of valproic acid in extracorporeal membrane oxygenation. *Perfusion.* 2020. [Online ahead of print] *Role: study conception, manuscript writing and revision.*
49. **Zorrilla-Vaca A, Mena GE, Ripolles-Melchor J, Lorente JV, Ramirez-Rodriguez JJM, Grant MC.** Risk factors for acute kidney injury in an enhanced recovery pathway for colorectal surgery. *Surg Today.* 2020. [Online ahead of print]
50. **Zorrilla-Vaca A, Mena GE, Ripolles-Melchor J, Abad-Motos A, Aldecoa C, Lorente JV, Ramirez-Rodriguez JM, Grant MC.** Goal-directed fluid therapy and postoperative outcomes in an Enhanced Recovery Program for Colorectal Surgery: A propensity score-matched multicenter study. *Am Surg.* 2021. [Online ahead of print]
51. **Zorrilla-Vaca A, Mena GE, Cata J, Healy R, Grant MC.** Enhanced Recovery Programs for colorectal surgery and postoperative acute kidney injury: Results from a systematic review and meta-analysis of observational studies. *Am Surg.* 2021. [Online ahead of print]
52. **Hirgi SA, Salenger R, Boyle EM, Williams J, Reddy VS, Grant MC, Chatterjee S, Gregory AJ, Arora R, Engelman DT.** Expert consensus of data elements for collection for Enhanced Recovery After Cardiac Surgery. *World J Surg.* 2021. [Online ahead of print] *Role: study conception and design, manuscript writing and revision.*
53. **Stone A, Grant MC, Dasani SS, Nascimben L.** The monthly operating cost of an institutional COVID-19 airway response team: A financial model and sensitivity analysis based on experience at an academic medical center. *Perioper Care Oper Room Manag.* 2021. [In Press] *Role: study conception and design, manuscript writing and revision.*
54. **Hensley N, Grant MC, Cho BC, Suffredini G, Abernathy JA.** How do we use dashboards to enhance quality in cardiac anesthesia? *J Cardiothorac Vasc Anesth.* 2021. [In Press] *Role: study conception, manuscript writing and revision.*
55. **Metkus TS, Thibault DP, Grant MC, Badhwar V, Jacobs JP, Lawton JS, O'Brien S, Thourani VH, Wegermann ZK, Zwishenberger BA, Higgins R.** Utilization and outcomes of transesophageal echocardiography in 1.3 million CABG procedures. *J Am Coll Cardiol.* 2021. [In Press] *Role: study conception and design, manuscript writing and revision.*

Review Articles [RA]

1. Wick EC, **Grant MC**, Wu CL. Postoperative multimodal analgesia pain management with nonopioid analgesics and techniques: A review. *JAMA Surg.* 2017; 152:691-697. *Role: Manuscript drafting and editing, literature search.*
2. Suarez-Pierre A, Terasaki Y, Magruder JT, Kapoor A, **Grant MC**, Lawton JS. Complications of CO₂ insufflation during endoscopic vein harvesting. *J Card Surg.* 2017; 32:783-789. *Role: Manuscript drafting and editing, literature search.*
3. **Stone AB**, Urman RD, Kaye AD, **Grant MC**. Labeling morphine milligram equivalents on packaging: a potential patient safety intervention. *Curr Pain Headache Rep.* 2018; 22:46.
4. **Stone AB**, **Grant MC**, Wu CL, Wick EC. Enhanced Recovery After Surgery for Colorectal Surgery: A Review of the Economic Implications. *Clin Colon Rectal Surg.* 2019; 32:129-133. *Role: Manuscript drafting and editing, literature search.*
5. Ban KA, Gibbons MM, Ko CY, Wick EC, Cannesson M, Scott MJ, **Grant MC**, Wu CL. Evidence review conducted for the AHRQ Safety Program for Improving Surgery Care and Recovery: Focus on anesthesiology for colorectal surgery. *Anesth Analg.* 2019; 128:879-889. *Role: Manuscript drafting and editing, literature search and guideline derivation.*
6. Soffin EM, Gibbons MM, Wick EC, Kates SL, Cannesson M, Scott MJ, **Grant MC**, Ko SS, Wu CL. Evidence review conducted for the AHRQ Safety Program for Improving Surgery Care and Recovery: Focus on anesthesiology for hip fracture surgery. *Anesth Analg.* 2019; 128:1109-17. *Role: Manuscript draft and editing, literature search and guideline derivation.*
7. **Grant MC**, Gibbons MM, Ko CY, Wick EC, Cannesson M, Scott MJ, McEvoy MD, King AB, Wu CL. Evidence review conducted for the AHRQ Safety Program for Improving Surgical Care and Recovery: Focus on anesthesiology for bariatric surgery. *Anesth Analg.* 2019; 129:51-60.
8. **Grant MC**, Gibbons MM, Ko CY, Wick EC, Cannesson M, Scott MJ, Wu CL. Evidence review conducted for the AHRQ Safety Program for Improving Surgical Care and Recovery: Focus on anesthesiology for gynecological surgery. *Reg Anesth Pain Med.* 2019; 44:437-446.
9. Gregory A, **Grant MC**, Boyle E, Arora RC, Williams JB, Salenger S, Chatterjee S, Lobdell KW, Jahangiri M, Engelman DT. Cardiac surgery Enhanced Recovery Programs modified for COVID-19: Key steps to preserve resources, manage caseload backlog, and improve patient outcomes. *J Cardiothorac Vasc Anesth.* 2020; 34:3218-3224. *Role: Manuscript draft and editing, literature search.*
10. Gregory AJ, **Grant MC**, Manning MW, Cheung AT, Ender J, Sander M, Zarbock A, Stoppe C, Meineri M, Grocott MP, Ghadimi K, Gutsche JT, Patel PA, Denault A, Shaw A, Fletcher N, Levy JH. Enhanced Recovery After Cardiac Surgery (ERACS) Recommendations: An important first step – but there is much work to be done. *J Cardiothorac Vasc Anesth.* 2020; 34:39-47. *Role: Editorial conception, drafting, key revision of manuscript.*
11. Hu QL, **Grant MC**, Hornor MA, Merchant NN, Liu JY, Fischer CP, Peden CJ, Ko CY, Maggard-Gibbons M, Wu CL, Wick EC. Technical evidence review for emergency major abdominal operation conducted for the Agency for Healthcare Research and Quality Safety Program for Improving Surgical Care and Recovery. *J Am Coll Surg.* 2020; 231:743-764. *Role: Manuscript draft and editing, literature search.*
12. Gutsche J, **Grant MC**, Kiefer J, Ghadimi K, Lane-Fall M, Mazzeffi M. The year in cardiothoracic critical care: Selected highlights from 2019. *J Cardiothorac Vasc Anesth.* 2020. [Online ahead of print]. *Role: Manuscript draft and editing, literature search.*

Case Reports [CR]

1. Schalla G, **Grant MC**. Predicting complications and anticipating the management of streptococcus agalactiae infective endocarditis. *JAAPA.* 2020; 33:1-4.

Book Chapters, Monographs [BC]

1. Bicket M, Cho E, **Grant MC**, Kulkarni S. Pulmonary Anesthesia. *Johns Hopkins Preoperative Evaluation and Anesthesia Course.* The Johns Hopkins Department of Anesthesiology and Critical Care Medicine. 2012.
2. **Grant MC**, Frank SM. Transfusion Therapy. *Resident's Guide to Learning in the Intensive Care Unit.* The Society of Critical Care Anesthesiologists. San Francisco, 2014. pg 166-172.
3. Latif A, **Grant MC**, Pronovost P. Quality Assurance, Safety, Outcomes and External Compliance. *Civetta, Taylor & Kirby's Critical Care.* 5th Edition. Wolters Kluwer Health, November 2017.
4. Conlin N, **Grant MC**, Wu CL. Intrathecal Opioid Injections for Postoperative Pain. *Essentials of Pain Medicine.* 4th Edition. Elsevier Health Sciences. 2018.
5. Hernandez G, **Grant MC**, Wu CL. Epidural Opioids for Postoperative Pain. *Essentials of Pain Medicine.* 4th Edition. Elsevier Health Sciences. 2018.

6. [Zorrilla-Vaca A](#), **Grant MC**, Mirski MA. Anesthesia for Spine Surgery. Textbook of Neuroanesthesia and Neurocritical Care. Springer Nature Singapore. 2019.
7. Perry TE, **Grant MC**. (2020). Anesthetic management for enhanced recovery after cardiac surgery (ERACS). In: Post, Mark JB, & Nussmeier NA (Eds.), *UpToDate*. Available from: <https://www.uptodate.com/contents/anesthetic-management-for-enhanced-recovery-after-cardiac-surgery-eracs>
8. **Grant MC**, Grant B, Grant C. Systems Thinking in the Operating Room. Handbook of Perioperative and Procedural Patient Safety. Elsevier health Sciences. [Publication pending]

Books, Textbooks [BK]

None

Consensus Statements [CS]

1. Kent ML, Hurley RW, Oderda G, Gordon DB, Sun E, Mythen M, Miller TE, Shaw AD, Gan TJ, Thacker JKM, McEvoy MD (Argoff C, Edwards DA, Geiger TM, **Grant MC**, Grocott M, Gulur P, Gupta R, Hah JM, Hedrick TL, Holubar SD, Jayaram J, Wu CL; Perioperative Quality Initiative – 4 [POQI-4] Working Group). American Society of Enhanced Recovery and Perioperative Quality Initiative-4 joint consensus on persistent postoperative opioid use: Definition, incidence, risk factors, and health care system initiatives. *Anesth Analg*. 2019; 129:543-552.
2. Edwards DA, Hedrick TL, Jayaram J, Argoff C, Gulur P, Holubar SD, Gan TJ, Mythen MG, Miller TE, Shaw AD, Thacker JKM, McEvoy MD (Kent ML, Hurley RW, Oderda G, Gordon DB, Sun E, Geiger TM, **Grant MC**, Grocott M, Hah JM, Wu CL; Perioperative Quality Initiative [POQI] – 4 Working Group). American Society of Enhanced Recovery and Perioperative Quality Initiative joint consensus on perioperative management of patients on preoperative opioid therapy. *Anesth Analg*. 2019; 129:553-566.
3. Wu CL, King AB, Geiger TM, **Grant MC**, Grocott MPW, Gupta R, Hah JM, Miller TE, Shaw AD, Gan TJ, Thacker JKM, Mythen MG, McEvoy MD. American Society of Enhanced Recovery and Perioperative Quality Initiative joint consensus statement on perioperative opioid minimization and perioperative analgesia in opioid naïve patients. *Anesth Analg*. 2019; 129:567-577. *Role: Manuscript draft and editing, literature search and guideline derivation.*
4. Bicket MC, **Grant MC**, Scott MJ, Terman GW, Wick EC, Wu CL. AAAPT diagnostic criteria for acute abdominal and peritoneal pain after surgery. *J Pain*. 2020; 21:1125-1137. *Role: Literature review and analysis, manuscript writing and revision.*
5. Haft JW, Atluri P, Ailawadi G, Engelman D, **Grant MC**, Hassan A, Legare J, Whitman G, Arora RC. Adult cardiac surgery during the COVID-19 pandemic: A tiered patient triage guidance statement. Society of Thoracic Surgeons COVID-19 Taskforce and the Workforce for Adult Cardiac and Vascular surgery. *Joint Publication - J Thorac Cardiovasc Surg*. 2020; 160:452-5. *Annals Thorac Surg*. 2020; 110:697-700. *Role: Literature review and analysis, manuscript writing and revision.*
6. Engelman DT, Lother S, George I, Ailawadi G, Atluri P, **Grant MC**, Haft JW, Hassan A, Legare J, Whitman G, Arora RC. Adult cardiac surgery and the COVID-19 pandemic: Aggressive infection mitigation strategies are necessary in the operating room and surgical recovery. Society of Thoracic Surgeons COVID-19 Taskforce and the Workforce for Adult Cardiac and Vascular surgery. *Joint Publication - J Thorac Cardiovasc Surg*. 2020; 160:447-51. *Annals Thorac Surg*. 2020; 110:707-11. *Role: Literature review and analysis, manuscript writing and revision.*
7. Engelman D, Lother S, George I, Ailawadi G, Atluri G, **Grant MC**, Haft JW, Hassan A, Legare J, Whitman G, Arora RC. Ramping up delivery of cardiac surgery during the COVID-19 pandemic: A guidance statement from the Society of Thoracic Surgery COVID-19 Taskforce. Society of Thoracic Surgeons COVID-19 Taskforce and the Workforce for Adult Cardiac and Vascular surgery. *Joint Publication - J Thorac Cardiovasc Surg*. 2020. *Annals Thorac Surg*. 2020; 110:712-717. *Role: Literature review and analysis, manuscript writing and revision.*
8. Peden CJ, Aggarwal G, Aitken RJ, Anderson I, Bang Foss N, Cooper Z, Dhese J, French WB, **Grant MC**, Hammarqvist F, Hare SP, Havens JM, Holena D, Hubner M, Kim JS, Lees NP, Lungqvist O, Lobo DN, Mohseni S, Ordonez CA, Quiney N, Urman RD, Wick E, Wu CL, Young-Fadok T, Scott M. Guidelines for perioperative care for emergency laparotomy Enhanced Recovery After Surgery (ERAS) Society Recommendations: Part 1 – Preoperative: Diagnosis, rapid assessment and optimization. *World J Surg*. 2021. [Online ahead of print] *Role: Literature review and analysis, manuscript writing and revision.*

Editorials [ED]

1. **Grant MC**, Resar LS, Frank SM. Efficiency and utility of acute normovolemic hemodilution. *Anesth Analg*. 2015; 121:1412-4.
2. **Stone AB**, Wick EC, Wu CL, **Grant MC**. The United States opioid crisis: A role for Enhanced Recovery After Surgery. *Anesth Analg*. 2017; 125:1803-1805.
3. **Joshi BL**, Lester LC, **Grant MC**. Placement of the double-lumen endotracheal tube: One size doesn't fit all. *J Cardiothor Vasc Anes*. 2018; 32:287-289.
4. **Stone AB**, Wu CL, **Grant MC**. Should hospitals market opioid-sparing analgesia to patients? *Reg Anesth Pain Med*. 2018; 43:2-4.
5. **Grant MC**, Ouanes JP, **Joshi BL**. Perioperative esmolol and opioids: Is more really less? *Reg Anesth Pain Med*. 2018; 43:813-814.
6. **Grant MC**. Commentary: Splitting over lumping in mechanical support for ARDS. *J Thorac Cardiovasc Surg*. 2021; 161:e214-e215.
7. **Grant MC**, Dunn LK. Perioperative precedex: Whole new ball game or whole new ball of wax? *Anesth Analg*. 2021; 132:317-319.
8. **Grant MC**, Suffredini G, Cho BC. Is it time to eliminate the use of opioids in cardiac surgery? *J Thorac Cardiovasc Surg*. 2021. [In Press]
9. **Grant MC**. Commentary: A missing link between good theory and suspect prescription practice. *JTCVS Open*. 2021. [In Press]

Letters, Correspondence [LT]

1. **Stone AB**, Wu C, Wick C, Hobson D, **Grant MC**. Enhanced Recovery Programs increase thoracic epidural opportunities for trainees. *Reg Anesth Pain Med*. 2016; 41:793-794.
2. **Stone AB**, Wu C, **Grant MC**. In Response. Opioid-free and opioid-sparing analgesia in conjunction with a durable systems infrastructure: A response to "Do Not Opiate!". *Anesth Analg*. 2018; 127:319-320.
3. **Stone AB**, Wu C, **Grant MC**. Reply to "The Work". *Reg Anesth Pain Med*. 2018; 43:450-451.
4. **Grant MC**, Lester L, **Cho BC**. Preoperative erythropoietin: Evolving standard of care AND aggregation of marginal gains. *Anesth Analg*. 2019; 129:e111.
5. Arora RC, Hassan A, Haft JW, Ailawadi G, Atluri P, Engelman DT, **Grant MC**, George I, Legare J.F., Lother S, Whitman G. Society of Thoracic Surgeons COVID-19 Taskforce. Reply: Have we done the best that we could have done? *J Thorac Cardiovasc Surg*. 2020; 160:e149-e151.
6. **Grant MC**. Studying Enhanced Recovery: A pragmatic response. *Anesth Analg*. 2021; 132:e79-e80.

Other Media [OM]

1. **Grant MC**, Wolpaw J. *ERAS for Cardiac Surgery*. Anesthesia and Critical Care Reviews and Commentary (ACCRAC) Podcast, July 2018.
2. Engelman DT, Arora RC, **Grant M**, Lobdell KW, Perrault LP. *Enhanced Recovery After Surgery Cardiac Panel Part II: Intraoperative and Postoperative*. June 2019. [doi:10.25373/ctsnet.8224547](https://doi.org/10.25373/ctsnet.8224547). The Cardiothoracic Surgery Network (CTSNet). Taped at the Society of Thoracic Surgeons (STS) annual meeting in San Diego, CA. January 28, 2019.
3. Ley J, **Grant M**, Parmet J, Kim MP. *ERAS: The Multidisciplinary Team*. August 2019. [doi:10.25373/ctsnet.9700358](https://doi.org/10.25373/ctsnet.9700358). The Cardiothoracic Surgery Network (CTSNet). Taped at the Society of Thoracic Surgeons (STS) annual meeting in San Diego, CA. January 28, 2019.
4. **Grant MC**, Bicket M, Wolpaw J. *Non-opioid adjuncts: Part 1*. Anesthesia and Critical Care Reviews and Commentary (ACCRAC) Podcast, February 2019.
5. **Grant MC**, Bicket M, Wolpaw J. *Non-opioid adjuncts: Part 2*. Anesthesia and Critical Care Reviews and Commentary (ACCRAC) Podcast, February 2019.
6. **Grant MC**. *Cardiac ERAS. Trainees with an interest in Perioperative Medicine (TRIPOM)*. Evidence Based Perioperative Medicine (EBPOM) USA 2019. TopMedTalk Podcast, April 2019.
7. Engelman D, Perrault L, Gerdisch M, **Grant M**, Williams J. *ERAS Guidelines for Perioperative Care in Cardiac Surgery*. July 2019. [doi:10.25373/ctsnet.8321060](https://doi.org/10.25373/ctsnet.8321060). The Cardiothoracic Surgery Network (CTSNet). Taped at the American Association of Thoracic Surgeons (AATS) annual meeting in Toronto, ON. May 5, 2019.
8. *Enhanced Recovery and Cardiac Surgery*. The Cardiothoracic Surgery Network (CTSNet). Taped at the European Association of Cardiothoracic Surgeons (EACTS) annual meeting in Lisbon, Portugal. October 4, 2019.
9. Ley J, Engelman DT, Crisafi C, **Grant M**. *Managing Pain With Minimal or No Opiates: Strategies That Work*. November 2019. [doi:10.25373/ctsnet.10127684](https://doi.org/10.25373/ctsnet.10127684). The Cardiothoracic Surgery Network (CTSNet). Taped at the European Association of Cardiothoracic Surgeons (EACTS) annual meeting in Lisbon, Portugal. October 4, 2019.

10. **Grant MC**, Frayha N. *Cardiac Surgery Pre-op Part 1&2. Primary Care Reviews and Perspective (RAP)*. Episode 64, Chapters 6 & 9. Hippo Education, November 2019.
11. **Grant MC**. *Opioid Reduction Strategies in Cardiac Surgery*. 8-in-8 Lecture Series. The Society of Thoracic Surgeons (STS). Taped on July 10, 2020. Available online at <https://www.sts.org/learning-center/8-8-series>.

FUNDING

EXTRAMURAL FUNDING

- 6/2018 – 6/2020 Title: Design & Implementation of an Enhanced Recovery After Cardiac Surgery Program
 Sponsor: Kaplan Leadership Development Award, Society of Cardiovascular Anesthesiologists (SCA) & International Anesthesia Research Society (IARS)
 Total Direct Cost: \$10,000
 Principle Investigator
- 1/2018 – 1/23 Title: Safety Program for Improving Surgical Care and Recovery (ISCR)
 HHSP2332015000201; Agency for Healthcare Research and Quality
 Principal Investigator: Elizabeth Wick
 Co-Investigator, Anesthesiology Lead: 15% salary support

INTRAMURAL FUNDING

- 1/2017 – 1/2020 Title: Implementing a Surgical Unit-Based Safety Program (SUSP) and Enhanced Recovery After Surgery (ERAS) for Colorectal Surgery Program at the Johns Hopkins Aramco Hospital (JHAH) Johns Hopkins Armstrong Institute for Patient Safety and Quality/Johns Hopkins International/ Johns Hopkins Aramco Hospital in Dammam, Saudi Arabia.
 Principle Investigator: Asad Latif
 Co-Investigator: 10% salary support
- 1/2017 – 1/2018 Title: Conception, Development and Validation of the CRITically Ill Quality Evaluation (CRITIQUE) Database
 ID Number: StAAR-ter Clinical Research Core Award; I/O: 80042263.
 Sponsor: Johns Hopkins Anesthesiology and Critical Care Medicine (ACCM)
 Total Direct Cost: \$20,000
 Principle Investigator
- 1/2020 – 1/2021 Title: A Pilot Feasibility Study Using a Pragmatic Trial Design for Retrograde Autologous Priming in Cardiac Surgery
 ID Number: StAAR Mentored Training Award
 Sponsor: Johns Hopkins Anesthesiology and Critical Care Medicine (ACCM)
 Total Direct Cost: \$30,000
 Principle Investigator: Nadia Hensley
 Co-Investigator
- 5/2021 – Present Title: Database Development & Quality Assessment
 Johns Hopkins International/Moinhos de Vento Hospital – Department of Anesthesia in Porto Alegre, Brazil
 Principle Investigator: Paulo Correa da Silva Neto
 Consultant; 2.5% salary support

CLINICAL ACTIVITIES

Clinical Focus

Perioperative Medicine, Enhanced Recovery After Surgery (ERAS), Multidisciplinary Critical Care, Cardiac/Thoracic/Vascular Anesthesiology, Electrophysiology, Perioperative Transesophageal Echocardiography (TEE)

Certification

Medical, other state/government licensure

2014 – Present	Maryland State Physician's License
2015 – Present	Controlled Substances Registration (DEA)
2015 – Present	Maryland State Controlled Dangerous Substances (CDS) Registration

Boards, other specialty certification

7/2014 – Present	American Board of Anesthesiology (ABA) Primary Certification: Written
4/2015 – Present	American Board of Anesthesiology (ABA) Primary Certification: Oral
7/2016 – Present	National Board of Echocardiography (NBE) Advanced PTEeXAM Certification
8/2016 – Present	American Board of Anesthesiology (ABA) Critical Care Medicine (CCM) Certification

Clinical (Service) Responsibilities

2016 – Present	Attending Physician, Cardiothoracic Operating Rooms, Electrophysiology, Thoracic, Vascular, High-Risk Non-cardiac Surgery, Endoscopy and Enhanced Recovery After Surgery procedures
2016 – Present	Surgical/Weinberg Intensive Care Unit (SICU/WICU) – Johns Hopkins East [2-4 weeks/annual]
2016 – 2019	Surgical Intensive Care Unit (SICU) – Johns Hopkins Bayview [2-4 weeks/annual]
2016 – 2019	Comprehensive Burn Intensive Care Unit (BICU) – Johns Hopkins Bayview [2-4 weeks/annual]
2017 – Present	Cardiovascular Surgical Intensive Care Unit (CVSICU) – Johns Hopkins East [10-12 weeks/annual] <i>In total: 3.0 clinical days/week (~139 clinical days annual); 35-unit call commitment</i>

Clinical Program Building / Leadership

2016 – 2017	Director of Intensive Care for Enhanced Recovery After Surgery (ERAS); 10%
2017 – Present	Director of Anesthesiology for Enhanced Recovery After Surgery (ERAS); 20% salary support

Clinical Demonstration Activities

January 2018 – Present	Monthly expert webinar series for AHRQ Improving Surgical Care and Recovery hospital programs; national audience of >400 hospitals
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EDUCATIONAL ACTIVITIES

Educational Focus

Resident Oral and Written Board Preparation, Anesthesiology and Physician Assistant Resident Journal Club, Transesophageal Echocardiography (TEE), Physician Assistant Critical Care and Surgical Care, Healthcare Systems Engineering

Teaching

Classroom instruction

JHMI/Regional

	Anesthesiology Residents
2016 – Present	Lecturer, Mock Examiner, Bimonthly <i>Oral Board</i> Preparation Lecturer, Monthly <i>Journal Club</i>
2017 – Present	Lecturer, Annual <i>Physics of Ultrasound</i> Series (2 Part)
2018 – Present	Co-director, Curriculum Development, Lecturer, Monthly <i>Journal Club</i>
8/2016	Lecturer, <i>Regional Anesthesia in the Pulmonary Hypertensive</i>
4/2017	Lecturer, <i>Anesthesia for High-Risk Non-cardiac Surgery</i>
5/2017	Lecturer, Case Conference, <i>Acute Effusive Constrictive Pericarditis</i>
7/2017	Lecturer, <i>Cardiovascular Considerations for Non-Cardiac Surgery</i>
1/2019	Lecturer, <i>Academic Anesthesia Attending 101</i>
	Cardiothoracic Anesthesiology Fellows
2016 – Present	Lecturer, Annual <i>Physics of Ultrasound</i> Series (3 Part) Lecturer, Quarterly <i>Transesophageal Echocardiography Case Conference</i>
2018 – Present	Lecturer, Annual <i>Enhanced Recovery After Cardiac Surgery</i> lectures (2 Part)

Physician Assistance ICU Residency
 2017 – Present Lecturer, Curriculum Developer, Longitudinal *Journal Club* Series (4 parts)
 2018 – Present Curriculum Developer, Lecturer, Annual Orientation (2 weeks, ~12 lectures)

Clinical instruction

Workshops / Seminars

JHMI/Regional

5/23-5/24/2017 Workshop, “Development and Implementation of an Enhanced Recovery After Surgery (ERAS) Program,” Saudi Aramco Hospital. Dammam, Saudi Arabia

National

9/22/2018 Moderator, Workshop, “Enhanced Recovery After Surgery (ERAS) Pathways,” Architecture of High Value Health Care 2018 National Conference. Baltimore, MD
 3/22/2019 Moderator, Workshop, “ERAS Nuts and Bolts,” Evidence Based Perioperative Medicine (EBPOM) – USA: A Perioperative Care Practicum. Dallas, TX
 3/24/2019 Moderator, Workshop, “Cardiac ERAS,” Evidence Based Perioperative Medicine (EBPOM) – USA: A Perioperative Care Practicum. Dallas, TX
 5/19/2019 Moderator, Workshop, “Enhanced Recovery After Cardiac Surgery (ERACS): Design the System, Tailor the Anesthesia, and Enhance Patient Recovery,” Society of Cardiovascular Anesthesiologists Annual Meeting. Chicago, IL
 10/20/2019 Workshop, “Everything you wanted to know about starting an Enhanced Recovery After Cardiac Surgery (ERACS) program,” American Society of Anesthesiologists annual meeting in Orlando, FL
 11/17/2019 Moderator, Workshop, “Perioperative Pathways,” Architecture of High Value Health Care 2019 National Conference. Baltimore, MD
 4/18/2019 Invited Moderator, Workshop, “Enhanced Recovery After Cardiac Surgery (ERACS): Design the System, Tailor the Anesthesia, and Enhance Patient Recovery,” Society of Cardiovascular Anesthesiologists Annual Meeting. West Palm Beach, FL (*cancelled due to COVID-19*)
 4/24/2021 Moderator, Workshop, “Enhanced Recovery After Cardiac Surgery (ERACS),” Society of Cardiovascular Anesthesiologists Annual Meeting. Montreal, Quebec, CA (*virtual conference*)

Educational Program Building / Leadership

2016 – Present Content Expert and Advisory Board Member, Health care Systems Engineering (HSE) Master’s Program, The Johns Hopkins Whiting School of Engineering & Applied Physics Laboratory
 2017 – Present Faculty Lead for Cardiac Anesthesiology Resident Rotation
 2017 – 2021 Medical Director, 5%, Physician Assistant (PA) ICU Residency Program

Educational Demonstration Activities to external audience on or off campus

None

RESEARCH ACTIVITIES

Research Focus

Perioperative Medicine, Enhanced Recovery After Surgery (ERAS) and Systems Engineering in Health care, including systematic review and meta-analysis to determine best practice, perioperative program implementation and validation.

Research Program Building / Leadership

2016 – Present Enhanced Recovery After Surgery (ERAS) *Outcomes Research*
 December 2017 Session Moderator – Johns Hopkins ACCM Research Day
 December 2018 Faculty Lead – Johns Hopkins ACCM Research Day

SYSTEM INNOVATION AND QUALITY IMPROVEMENT ACTIVITIES

System Innovation Focus

Perioperative Programs & Enhanced Recovery After Surgery (ERAS), Implementation Science, Systems Engineering, and Complex Health Care Program Development.

System Innovation and Quality Improvement efforts within JHMI:

- 2016 – Present See Clinical Program Building / Leadership section.
ERAS programs adopted during my tenure in leadership: Colorectal (Bayview, Johns Hopkins Aramco Healthcare/JHAH), hepatobiliary, hepatectomy, deep inferior epigastric perforators flap surgery, donor nephrectomy, kidney transplantation, hyperthermic intraperitoneal chemotherapy (HIPEC), thoracic
- 2017 – Present Physician Lead, Enhanced Recovery After Cardiac Surgery (ERACS) Program

System Innovation and Quality Improvement efforts outside of JHMI:

- 2018 – Present Anesthesia Lead, Co-investigator, ISCR Program, sponsored by the AHRQ

System Innovation and Quality Improvement Program Building/Leadership:

- 2016 – 2017 Director of Intensive Care for Enhanced Recovery After Surgery (ERAS), 10%
2017 – Present Director of Anesthesiology for ERAS, 20%

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments

- 2014 – 2018 Fellow Representative; Faculty Representative
Surgical Intensive Care Unit (SICU) Comprehensive Unit Based Safety Program (CUSP)
- 2016 – Present Faculty Representative, The Johns Hopkins Hospital Pain Management Committee
- 2016 – Present Faculty Representative; ACCM Lead
The Johns Hopkins Hospital Enhanced Recovery After Surgery (ERAS) Steering Committee
- 2017 – Present Faculty Representative; Cardiovascular Thoracic Intensive Care Comprehensive Unit Based Safety Program (CVT-CUSP)
- 2017 – Present Faculty Representative; Cardiac Surgery Clinical Pathways Committee
- 2017 – Present Physician Lead for High Value Care; Johns Hopkins Health System High Value Care Committee
- 2018 – 2021 Medical Director of the Physician Assistant (PA) Residency Program
- 2019 – Present Director of Clinical Operations, Division of Cardiothoracic Anesthesia
- 2019 – Present Deputy Vice Chair of ICU Operations – Department of ACCM
- 2020 – Present Medical Director, Cardiovascular Surgical Intensive Care Unit (CVSICU)

Editorial Activities

Editorial Board appointments

- 2021 – Present Assistant Editor, *Anesthesia & Analgesia*
Acute Pain Medicine, Perioperative Medicine

Journal Peer Review Activities

- 2015 – Present *Regional Anesthesia and Pain Medicine*
- 2016 – Present *Anesthesia & Analgesia*
- 2016 – Present *Anesthesiology*
- 2016 – Present *Annals of Surgery*
- 2016 – Present *British Journal of Surgery*
- 2016 – Present *The Joint Commission Journal on Quality and Patient Safety*
- 2018 – Present *A&A Practice*
- 2019 – Present *Perioperative Medicine*
- 2020 – Present *Journal of Thoracic and Cardiovascular Surgery*
- 2020 – Present *Annals of Thoracic Surgery*

Other peer review activities [non medico-legal]

- 2016 – Present Peer reviewer for Anesthesiology and Critical Care Medicine
Departmental Stimulating and Advancing ACCM Research (StAAR) Grants (10 funding cycles)
- 2017 Peer reviewer; abstract submission to the *American Academy of Blood Banks* annual meeting
San Diego, CA; October 7-10, 2017
- 2018 Peer reviewer; abstract submission to the *American Academy of Blood Banks* annual meeting
Boston, MA; October 13-16, 2018
- 2019 Peer reviewer; abstract submission to the *American Association of Thoracic Surgery* annual meeting
Toronto, ON; May 4-7, 2019
- 2019 Peer reviewer; abstract submission to the *American Society of Anesthesiologists* annual meeting
Orlando, FL; October 19-23, 2019
- 2020 Peer reviewer; abstract submission to the *American Association of Thoracic Surgery* annual meeting
New York, NY; April 25-28, 2020

Advisory Committees, Review Groups/Study Sections

- 2017 Analgesic, Anesthetic, and Addiction Clinical Trial Translations, Innovations, Opportunities, and Networks (ACTTION), American Pain Society (APS), and American Academy of Pain Medicine (AAPM)
AAAPT Pain Taxonomy Advisory Committee: Washington, D.C., November 2-4, 2017
- 2018 Perioperative Quality Initiative (POQI) Advisory Committee
POQI 4: Opioids and Perioperative Medicine
Opioid-Free Anesthesia: Benefits, Components & Strategies
POQI Advisory Meeting: Nashville, TN, January 4-7, 2018
- 2018 – 2021 International Enhanced Recovery After Surgery (ERAS®) Society; Advisory Committee
Guidelines for Perioperative Care in Emergency General Laparotomy Surgery (EGS)
- 2019 – Present Member, Scientific Advisory Board
Evidence Based Perioperative Medicine (EBPOM) – USA
- 2019 – Present Member, Writing Committee; Taskforce on Clinical Practice Guidelines
American College of Cardiology & American Heart Association (ACC/AHA)
2021 ACC/AHA Guideline for Coronary Revascularization
- 2020 Multicenter Perioperative Outcomes Group (MPOG)
Cardiac Anesthesia Quality Improvement Subcommittee
- 2020 – Present International CardioVascular and Thoracic Surgery Meta-Analysis Group (ICVTS-MAG)
- 2021 – Present Drug & Safety Monitoring Board (DSMB), Pragmatic randomized controlled trial evaluating The Effect and Contribution of a Perioperative Ketamine Infusion in an Enhance Recovery Pathway
Vanderbilt University Medical Center, Nashville, TN
- 2021 Perioperative Quality Initiative (POQI) Organizing Chair/Advisory Committee
POQI 8: Cardiac Surgery
Acute Kidney Injury, Transfusion Reduction and Opioid-Sparing Strategies
POQI Advisory Meeting: Sacramento, CA, October 20-22, 2020

Professional Societies

- 2012 – Present Member; American Society of Anesthesiology (ASA)
2019 – 2020 Member, Subcommittee on Perioperative Medicine
2019 – Present Member, Committee on Standards and Practice Parameters
- 2015 – 2018 Member; American Society of Regional Anesthesia (ASRA)
- 2015 – Present Member; Society of Cardiovascular Anesthesiologist (SCA)
2018 – Present Member, Quality and Safety Leadership (QSL) Committee

	2018 – 2020	Member, Enhanced Recovery After Thoracic Surgery Task Force
	2019 – Present	Inaugural Chair, Enhanced Recovery After Cardiac Surgery Task Force
	2021 – Present	Member, Clinical Practice Improvement (CPI) Committee
2016 – Present		Member; American Society of Enhanced Recovery (ASER)
2017 – 2020		Member, Society of Critical Care Medicine (SCCM)
2018 – Present		Member, Enhanced Recovery After Surgery (ERAS®) – Cardiac Society
	2018 – Present	Executive Board Member
	2019 – 2020	Treasurer
	2020 – Present	Vice President
2019 – Present		Member, Society of Thoracic Surgeons (STS)
	2019 – Present	Member, Workforce on Critical Care
	2020 – Present	Member, Special Presidential Task Force on COVID-19
2019 – Present		Active Member, Association of University Anesthesiologists (AUA) – Elected Position

Conference Organizer

JHMI/Regional

12/2018 Conference Organizer/Faculty Lead – Johns Hopkins ACCM Departmental Research Day

National

2019 Member, Enhanced Recovery After Surgery (ERAS)/Perioperative Committee on Cardiac Surgery
American Association of Thoracic Surgery (AATS) 99th Annual Meeting: Toronto, ON. May 4-7, 2019.

2019 Member, Technical Program Committee. System of Systems Engineering Conference (SoSE 2019):
Anchorage, AK, May 19-22, 2019.

2020 Member, Perioperative Care and Team Based Care Committee on Cardiothoracic Surgery. American
Association of Thoracic Surgery (AATS) 100th Annual Meeting: New York, NY. April 25-28, 2020.

2021 Member, 18th Society of Thoracic Surgeons Annual Perioperative and Critical Care Conference. Virtual.
September 10-11th, 2021.

International

2020 Member, Technical Program Committee. The Fifteenth International Conference on Systems (ICONS
2020): Lisbon, Portugal. February 23-27, 2020.

2020 Member, Program Planning Committee
Enhanced Recovery After Surgery (ERAS®) International/USA Joint Annual Meeting: New Orleans,
LA. August 26-28, 2020.

2020 Member, Technical Program Committee. The 16th Annual Conference on Systems of Systems
Engineering (SoSE2021): Vasteras, Sweden. June 14-28, 2021.

2021 Organizing Member, Program Committee. Enhanced Recovery After Surgery - Cardiac Society
International Virtual Conference. March 4-5, 2021.

Session Chair/Moderator

JHMI/Regional

12/2017 Moderator; Johns Hopkins ACCM Research Day

National

9/2019 Moderator; Annual Multidisciplinary Society of Thoracic Surgery Cardiovascular and Thoracic (STS-
CVI) Critical Care Conference
Enhanced Recovery After Cardiac Surgery

5/2020 Moderator; American Association of Thoracic Surgeons (AATS) Annual Meeting
Respiratory Failure

- 1/2021 Moderator; Society of Thoracic Surgeons (STS) Annual Meeting
Enhanced Recovery After Surgery Controversies
- 3/2021 Moderator; ERAS Cardiac Society Virtual Conference
Hemoconcentration
- 3/2021 Moderator; ERAS Cardiac Society Virtual Conference
Perfusion Strategies to Optimize Outcomes
- 3/2021 Moderator; ERAS Cardiac Society Virtual Conference
Rapid Extubation: Tips in the OR and ICU
- 3/2021 Moderator; ERAS Cardiac Society Virtual Conference
Novel Opioid Reduction Strategies

RECOGNITION

Awards, Honors

- 10/2009 ALPHA OMEGA ALPHA (AOA) HONOR SOCIETY
National Medicine Honor Society, Maryland State Chapter
- 2006-2010 CLASS PRESIDENT (*elected all 4 academic years*)
University of Maryland School of Medicine, Baltimore
- 6/2010 EXCELLENCE IN PUBLIC AND COMMUNITY SERVICE AWARD
University of Maryland School of Medicine, Baltimore
- 10/2012 RESIDENT REPRESENTATIVE & TRAVEL AWARD
Foundation for Anesthesia Education and Research (FAER) Society for Education in Anesthesia (SEA)
Annual Meeting of the American Society of Anesthesiology (ASA), Washington, D.C.
- 5/2014 THE FRANK L. COULSON, JR. AWARD FOR CLINICAL EXCELLENCE
Clinical House staff; Anesthesiology and Critical Care Medicine Representative
The Johns Hopkins Hospital, Baltimore, MD
- 6/2014 RESIDENT EXCELLENT CLINICIAN AWARD
Anesthesiology and Critical Care Medicine Residency
The Johns Hopkins Hospital, Baltimore, MD
- 6/2015 TEACHER OF THE YEAR AWARD
The Johns Hopkins Multidisciplinary Critical Care Fellowship
The Johns Hopkins Hospital, Baltimore, MD
- 4/2016 BEST OF MEETING AWARD (OVERALL)
The American Society of Regional Anesthesia and Pain Medicine (ASRA)
- 4/2016 BEST OF MEETING AWARD (FELLOW SECTION)
The American Society of Regional Anesthesia and Pain Medicine (ASRA)
- 4/2017 BEST OF MEETING AWARD
The American Society of Enhanced Recovery (ASER)
- 5/2017 RISING FACULTY TEACHING AWARD
Anesthesiology and Critical Care Medicine
The Johns Hopkins Hospital, Baltimore, MD
- 10/2017 ATTENDING FACULTY OF THE YEAR AWARD
The Johns Hopkins Physician Assistant (PA) Intensive Care Unit Residency Program
The Johns Hopkins Hospital, Baltimore, MD

- 2/2018 Finalist for the GEORGE J STUART AWARD FOR OUTSTANDING CLINICAL TEACHING
The Johns Hopkins University School of Medicine, Baltimore, MD
- 2/2018 Finalist for the ADMINISTRATOR OF THE HIPPOCRATIC OATH
The Johns Hopkins University School of Medicine, Baltimore, MD
- 4/2018 Inducted into the DISTINGUISHED TEACHING SOCIETY
The Johns Hopkins University School of Medicine, Baltimore, MD
- 5/2018 CHARLES BEATTIE, MD TEACHING AWARD
Anesthesiology and Critical Care Medicine
The Johns Hopkins Hospital, Baltimore, MD
- 10/2018 LECTURER OF THE YEAR AWARD
The Johns Hopkins Physician Assistant (PA) Intensive Care Unit Residency Program
The Johns Hopkins Hospital, Baltimore, MD
- 12/2019 Inducted into the ASSOCIATION OF UNIVERSITY ANESTHESIOLOGISTS (AUA)
Association of University Anesthesiologists – San Francisco, CA

Invited Talks

JHMI/Regional

- 2/23/2018 Speaker, Panel Discussant, The Greater Baltimore Medical Center Enhanced Recovery After Surgery Symposium, “Systems Engineering Enhanced Recovery,” Baltimore, MD
- 7/18/2018 Keynote Speaker, Maryland Cardiac Surgery Quality Initiative (MCSQI) meeting, “Enhanced Recovery After Cardiac Surgery (ERACS): A Systems Approach”, Baltimore, MD
- 11/9/2018 Keynote Speaker, International Council on Systems Engineering (INCOSE) Chesapeake Chapter quarterly meeting, “Health Systems Engineering,” Annapolis, MD
- 10/15/2019 Keynote Speaker, Annual Johns Hopkins Applied Physics Laboratory Engineering for Professionals meeting, “Healthcare Systems Engineering,” Laurel, MD
- 10/30/2019 Keynote Speaker, Maryland Cardiac Surgery Quality Initiative (MCSQI) meeting, “How does Enhanced Recovery After Cardiac Surgery actually enhance recovery?” Baltimore, MD

National

- 6/10/2016 Speaker, National Patient Safety Movement Midyear Meeting, co-convened with the Inova Heart and Vascular Institute, “Systems Engineering in Medicine,” Fairfax, VA
- 11/30/2017 Vanderbilt University Hospital Anesthesiology Visiting Professor Seminar – Nashville, TN, “Postoperative Nausea and Vomiting (PONV): Problem Solved or Underserved?”
- 5/17/2018 Speaker, Panel Discussant, Annual Congress of Enhanced Recovery and Perioperative Medicine, “Agency for Healthcare Research and Quality (AHRQ) Enhanced Recovery Grant Update,” Fort Lauderdale, FL.
- 3/20/2018 Keynote Speaker, Duke University Cardiothoracic Anesthesiology Conference, “Enhanced Recovery After Cardiac Surgery (ERACS),” Durham, NC
- 6/20/2018 Keynote Speaker, High Value Practice Academic Alliance (HVPAA), “Engineering Enhanced Recovery into High Value Perioperative Care,” Washington, DC
- 7/11/2018 Keynote Speaker, Improving Surgical Care and Recovery (ISCR) Webinar, “Fluid Management in Major Abdominal Surgery”
- 9/22/2018 Speaker, Architecture of High Value Healthcare National Conference, “Enhanced Recovery After Surgery as a Vehicle for High Value Health Care,” Baltimore, MD
- 11/16/2018 Keynote Speaker, International Council on Systems Engineering (INCOSE) Liberty Chapter quarterly meeting, “Healthcare Systems Engineering,” New York, NY
- 1/27/2019 Speaker, Society of Thoracic Surgeons (STS) annual meeting, “Enhanced Recovery After Surgery (ERAS): Cardiac Model,” San Diego, CA
- 3/24/2019 Speaker, Evidence Based Perioperative Medicine (EBPOM) – USA: A Perioperative Care Practicum, “ERAS for Cardiac Surgery,” Dallas, TX

- 4/26/2019 Speaker, Annual Congress of Enhanced Recovery and Perioperative Medicine, “General principles in More Complicated Populations: ERAS in Cardiac Surgery,” Washington, DC
- 4/26/2019 Speaker, Annual Congress of Enhanced Recovery and Perioperative Medicine, “Enabling Change: How a Systems Engineering Approach Can Improve Care Across Multiple Units,” Washington, DC
- 5/18/2019 Speaker, Society of Cardiovascular Anesthesiologists annual meeting, “The Anesthesiologist’s Role in ERACS,” Chicago, IL
- 7/18/2019 Speaker, American College of Surgeons Quality and Safety Conference, “What is the Evidence Behind Improving Surgical Care & Recovery (ISCR)/Enhanced Recovery?” Washington, DC
- 9/26/2019 Speaker, Annual Multidisciplinary Cardiovascular and Thoracic Critical Care Conference, “What is ERAS and why should I change my practice?” Baltimore, MD
- 9/26/2019 Speaker, Annual Multidisciplinary Cardiovascular and Thoracic Critical Care Conference, “Preoperative & Intraoperative Opioid Reduction Strategies,” Baltimore, MD
- 9/26/2019 Speaker, Annual Multidisciplinary Cardiovascular and Thoracic Critical Care Conference, “First International Presentation of Peer-Reviewed Guidelines for Perioperative Care in Cardiac Surgery,” Baltimore, MD
- 10/20/2019 Speaker, American Society of Anesthesiologists annual meeting, “Intraoperative Management: Enhanced Recovery After Cardiac Surgery,” Orlando, FL
- 10/20/2019 Speaker, American Society of Anesthesiologists annual meeting, “An Argument for Enhanced Recovery and Value Based Care,” Orlando, FL
- 10/22/2019 Speaker, American Society of Anesthesiologists annual meeting, “Point – Counterpoint. No opioids & extubate in the OR? Better outcomes guaranteed,” Orlando, FL
- 11/2/2019 Speaker, Iowa Society of Anesthesiology (ISA) annual meeting, hosted by the University of Iowa Department of Anesthesia, “The anesthesiologist’s influence on Enhanced Recovery After Surgery,” Iowa City, IA
- 1/26/2020 Speaker, Society of Thoracic Surgeons (STS) annual meeting, “Goal directed cardiac anesthesia: What every surgeon needs to know,” New Orleans, LA
- 4/18/2020 Invited Speaker, Society of Cardiovascular Anesthesiologists (SCA) annual meeting, “Opioid free cardiac anesthesia: Is it for everyone?” West Palm Beach, FL (*cancelled due to COVID-19*)
- 4/18/2020 Invited Speaker, Society of Cardiovascular Anesthesiologists (SCA) annual meeting, “The Anesthesiologist’s Role in ERACS,” West Palm Beach, FL (*cancelled due to COVID-19*)
- 4/19/2020 Invited Speaker, Society of Cardiovascular Anesthesiologists (SCA) annual meeting, “ERACS: Cost in the perioperative period,” West Palm Beach, FL (*cancelled due to COVID-19*)
- 4/25/2020 Invited Speaker, American Association of Thoracic Surgeons (AATS) annual meeting, “Novel approaches for prevention of persistent postoperative opioid use,” New York, NY (*cancelled due to COVID-19*)
- 4/27/2020 Invited Speaker, American Association of Thoracic Surgeons (AATS) annual meeting, “Pro/Con: Opioids should be avoided entirely in cardiac surgery,” New York, NY (*cancelled due to COVID-19*)
- 8/26/2020 Invited Speaker, combined ERAS® International/ERAS® USA conference, “Persistent Postoperative Opioid Use in Cardiac Surgery: The Who, What & How to Prevent It”, New Orleans, LA (*cancelled due to COVID-19*)
- 8/26/2020 Invited Speaker, combined ERAS® International/ERAS® USA conference, “Systems Engineering Enhanced Recovery”, New Orleans, LA (*cancelled due to COVID-19*)
- 8/27/2020 Speaker, Society of Thoracic Surgeons webinar *Addressing the Cardiac Surgical Opioid Crisis*, “Now What do I do? – Multimodal anesthesia & analgesia in cardiac surgery”
- 9/2/2020 Invited Speaker, 39th Cardiothoracic Surgery Symposium (CREF 2020) annual meeting, “Goal directed therapy: fluids, transfusion and perfusion in cardiac surgery,” San Diego, CA (*cancelled due to COVID-19*)
- 9/3/2020 Invited Speaker, 39th Cardiothoracic Surgery Symposium (CREF 2020) annual meeting, “Pain management reimaged: Strategies to reduce opioids in cardiac surgery,” San Diego, CA (*cancelled due to COVID-19*)
- 4/7/2021 Speaker, Annual Congress of Enhanced Recovery and Perioperative Medicine, “Getting started: Assessment of local culture for change and making it happen.” (*presented virtually due to COVID-19*)
- 4/30/2021 Speaker, American Association of Thoracic Surgeons (AATS) annual meeting, “Novel multimodal opioid-sparing approaches to postoperative pain relief.” (*presented virtually due to COVID-19*)
- 4/30/2021 Speaker, Discussant, American Association of Thoracic Surgeons (AATS) annual meeting, “Enhanced Recovery After Cardiac Surgery protocol significantly reduces postoperative opioid use” (*presented virtually due to COVID-19*)

- 5/6/2021 Speaker, Society of Thoracic Surgeons webinar *Sedate or Cannulate? ECMO Strategies During COVID*
- 5/31/2021 Invited Speaker, Medical University of South Carolina Department of Anesthesia and Perioperative Medicine – Charleston, SC, “Intraoperative Ventilation Strategies to Prevention Postoperative Complications” *(to be presented virtually due to COVID-19)*
- 7/13/2021 Invited Speaker, American College of Surgeons 2021 Quality and Safety Conference, “Enhanced Recovery After Surgery (ERAS): What’s New Evidence for Perioperative Pathways,” *(to be presented virtually due to COVID-19)*
- 9/23/2021 Invited Speaker, 40th Cardiothoracic Surgery Symposium (CREF 2020) annual meeting, “Cardiac Intensivists and COVID-19,” San Diego, CA
- 9/23/2021 Invited Speaker, 40th Cardiothoracic Surgery Symposium (CREF 2020) annual meeting, “Goal directed therapy: fluids, transfusion and perfusion in cardiac surgery,” San Diego, CA
- 9/24/2021 Invited Speaker, Cardiothoracic Surgery Symposium (CREF 2020) annual meeting, “Pain management reimaged: Strategies to reduce opioids in cardiac surgery,” San Diego, CA
- 10/9/2021 Invited Speaker, American Society of Anesthesiologists annual meeting, “The role of the anesthesiologist in Enhanced Recovery for Cardiac Surgery,” San Diego, CA

International

- 5/23/2017 Speaker, Saudi Aramco Comprehensive Unit-Based Safety Program, “Enhanced Recovery After Surgery: Concepts and Considerations,” Dammam, Saudi Arabia
- 5/24/2017 Speaker, Saudi Aramco Comprehensive Unit-Based Safety Program, “Enhanced Recovery After Surgery: The Institutional Experience,” Dammam, Saudi Arabia
- 5/24/2017 Speaker, Saudi Aramco Comprehensive Unit-Based Safety Program, “Engineering a Patient-Process Pathway: Using Systems Engineering to Develop ERAS,” Dammam, Saudi Arabia
- 5/24/2017 Keynote Speaker, Saudi Aramco Surgery Grand Rounds, “Engineering Enhanced Recovery: Conception Through Post Production,” Dammam, Saudi Arabia
- 10/26/2018 Speaker, Cairo University Department of Anesthesia and Pain Relief, “Enhancing Enhanced Recovery: What’s Next in ERAS?” Hurgada, Egypt
- 10/27/2018 Speaker, Cairo University Department of Anesthesia and Pain Relief, “Engineering Health Care: How can Systems Engineering Inform Perioperative Medicine?” Hurgada, Egypt
- 1/20/2019 Speaker, Saudi Aramco Healthcare Patient Safety Symposium, “Culture of Patient Safety,” Dhahran, Saudi Arabia
- 5/4/2019 Speaker, American Association of Thoracic Surgeons (AATS) annual meeting, “Goal Directed Cardiac Anesthesia: What Every Surgeon Needs to Know,” Toronto, ON
- 5/4/2019 Speaker, Invited Discussant, American Association of Thoracic Surgeons (AATS) annual meeting, “Development of Opioid Dependence After Cardiac Surgery: Are We to Blame?” Toronto, ON
- 5/5/2019 Speaker, Invited Discussant, American Association of Thoracic Surgeons (AATS) annual meeting, “The Year In Review: The Very Best of the CT Perioperative Publications - One-Year Results from the First US-Based Enhanced Recovery After Cardiac Surgery (ERAS Cardiac) Program,” Toronto, ON
- 7/9/2019 Speaker, Brazilian Enhanced Recovery After Surgery Symposium, “Enhanced Recovery Program for Cardiac Surgery,” Sao Paulo, Brazil
- 7/11/2019 Speaker, International Symposium on Intensive Care and Emergency Medicine (ISICEM) for Latin America, “Designing Systems for Perioperative Care,” Sao Paulo, Brazil
- 10/5/2019 Speaker, European Association of Cardiothoracic Surgery (EACTS) annual meeting, “ERP for Cardiac Surgery: Goal directed anesthesia and perfusion,” Lisbon, Portugal
- 6/8/2019 Invited Speaker, Xi’an Jiaotong University Hospital, “Systems Solutions for Perioperative Problems”, Shaanxi, Xi’an, China *(canceled due to COVID-19)*
- 6/10/2019 Invited Speaker, First Affiliated Hospital of Xinjiang Medical University, “Enhanced Recovery Programs for Cardiac Surgery”, Urumqi, Xinjiang, China *(canceled due to COVID-19)*
- 6/25/2020 Invited Speaker, Canadian Society of Cardiac Surgeons (CSCS)/Canadian Society of Clinical Perfusionists (CSCP)/Minimal Invasive Extracorporeal Technologies International Society (MiECTiS) combined annual meeting, “The Maryland Cardiac Surgery Quality Initiative (MCSQI),” Niagara-on-the-Lake, Ontario, Canada *(canceled due to COVID-19)*
- 10/9/2020 Invited Speaker, European Association of Cardiothoracic Surgery (EACTS) annual meeting, “Novel opioid-reduction strategies in cardiac surgery,” Barcelona, Spain *(canceled due to COVID-19)*
- 3/4/2021 Speaker, ERAS Cardiac Society International Virtual Conference, “Why is ERAS Cardiac important?” *(presented virtually due to COVID-19)*

- 4/24/2021 Speaker, Society of Cardiovascular Anesthesiologists (SCA) annual meeting, “Overview of Enhanced Recovery Programs for Cardiac Surgery,” Montreal, Quebec, CA *(presented virtually due to COVID-19)*
- 4/24/2021 Speaker, Society of Cardiovascular Anesthesiologists (SCA) annual meeting, “Opioid-Free Cardiac Anesthesia: Is This For Real?,” Montreal, Quebec, CA *(presented virtually due to COVID-19)*
- 4/24/2021 Speaker, Society of Cardiovascular Anesthesiologists (SCA) annual meeting, “Remember the Rest of ERACS – Key Components”, Montreal, Quebec, CA *(presented virtually due to COVID-19)*
- 4/27/2021 Speaker, Society of Cardiovascular Anesthesiologists (SCA) annual meeting, “Multimodal Pain Control – Moving Beyond the Opioids,” Montreal, Quebec, CA *(presented virtually due to COVID-19)*
- 5/22/2021 Speaker, Brazilian Society of Anesthesiology & Swiss Society of Perioperative Medicine joint webinar ERAS Cardiac, “Goal-directed anesthesia,” Sao Paulo, Brazil *(presented virtually due to COVID-19)*
- 6/11/2021 Speaker, ERAS International Turkish Society 2nd Annual ERAS Congress, “Anesthesia and analgesia in the era of ERAS Cardiac,” Istanbul, Turkey *(presented virtually due to COVID-19)*

Visiting Professorships

- 12/7/2017 Sentara Martha Jefferson Hospital Department of Anesthesia Grand Rounds– Charlottesville, VA, “Implementation of Enhanced Recovery: The Johns Hopkins Experience”
- 1/11/2018 Mercy Medical Center Department of Anesthesiology Grand Rounds – Baltimore, MD, “Systems Engineering Perioperative Care: Enhanced Recovery Programs”
- 10/12/2019 Hospital for Special Surgery Anesthesiology Grand Rounds – New York, NY, “Systems Engineering Enhanced Recovery”
- 12/1/2017 Vanderbilt University Hospital Anesthesiology Grand Rounds – Nashville, TN, “Intraoperative Ventilation Strategies to Prevention Postoperative Complications”
- 3/21/2018 Duke University Department of Anesthesiology Grand Rounds – Durham, NC, “Engineering Perioperative Healthcare: The Systems Engineering Perspective”
- 5/16/2019 University of Alabama Department of Anesthesiology and Perioperative Medicine Grand Rounds – Birmingham, AL, “Engineering Health Care: Applying Systems Engineering Principles to Perioperative Practice”
- 11/1/2019 University of Iowa Department of Anesthesia - Iowa City, IA, “Guidelines development and how it aids (& abets) in Enhanced Recovery After Surgery protocols”
- 6/23/2020 University of Minnesota Department of Anesthesiology, “Enhanced Recovery for Cardiac Surgery” *(converted to virtual presentation due to COVID-19)*
- 7/8/2020 University of Pittsburgh Department of Anesthesiology & Perioperative Medicine, Division of Cardiothoracic Anesthesiology, “Development and Implementation of an Enhanced Recovery Program for Cardiac Surgery” *(converted to virtual presentation due to COVID-19)*
- 1/5/2021 Northshore University Hospital Cardiovascular & Thoracic Surgery Grand Rounds, Donald & Barbara Zucker School of Medicine at Hofstra/Northwell, “How do Enhanced Recovery Programs for Cardiac Surgery actually enhance recovery” *(virtual presentation due to COVID-19)*
- 6/1/2021 Medical University of South Carolina Department of Anesthesia and Perioperative Medicine Grand Rounds – Charleston, SC, “Guidelines development: How it aids (& abets) in Enhanced Recovery After Surgery” *(virtual presentation due to COVID-19)*
- 7/22/2021 Maine Medical Center Department of Surgery Grand Rounds – Portland, ME, “Enhanced Recovery for Cardiac Surgery: The Systems Perspective”
- 9/8/2021 The Brigham & Women’s Hospital Department of Anesthesiology and Pain Medicine Grand Rounds – Boston, MA, “Systems Engineering the Perioperative Encounter” *(virtual presentation due to COVID-19)*

OTHER PROFESSIONAL ACCOMPLISHMENTS

Posters

1. **Grant, MC**, Tran R, Burris N, Gu J, Kallam S, Landis RC, Poston RS. Randomized Clinical Trial Investigating the Relationship Between Aprotinin and Hypercoagulability in Off-Pump Coronary Surgery. Abstract presented in poster format at the Annual Meeting of the Society of Thoracic Surgeons in Ft. Lauderdale, FL. January 2008.
2. **Grant MC**, Laird P, Gray J, Kallam S, Burris NS, Christenson R, Poston RS. Postoperative sST2: A Predictor of Mortality in Coronary Artery Bypass Patients? Poster presented to the American College of Physicians Fifth Annual Medical Student Steps for Success Meeting. May 2008.
3. **Grant, MC**, Christenson R, Christenson E, Kallam S, Gray J, Burris N, Griffith B, Poston RS. Aprotinin Reduces sST2 and Other Indicators of Inflammation After Coronary Artery Bypass Grafting: Results From a Randomized

- Controlled Trial. Poster presented at the Annual International Society for Minimally Invasive Cardiothoracic Surgery (ISMICS) Meeting in Boston, MA. June 2008.
4. Desai PH, Kurian D, Thirumavalavan N, Desai SP, Ziu P, **Grant MC**, White C, Landis RC, Poston RS. Randomized clinical trial investigating the relationship between aprotinin and hypercoagulability in off-pump coronary surgery. Presented at the American Society of Cardiovascular Anesthesiologists annual meeting in San Antonio, TX. April 2009.
 5. **Grant MC**, Freck E. Infraclavicular Nerve Block in a Patient with Inclusion Body Myositis. Medically Challenging Case presented at the Annual Regional Anesthesiology and Acute Pain Medicine Meeting in Boston, MA. May 2013.
 6. Sathiyakumar A and **Grant MC**, Page AJ, Samaha G, Hobson D, Wick EC, Pawlik TM, Wu CL. Epidural Use In Open Hepatectomy: Results from an Enhanced Recovery After Surgery Cohort. Poster presented at the Annual Regional Anesthesia and Acute Pain Medicine Meeting in Las Vegas, NV. May 2015.
 7. Stone AB, **Grant MC**, Page AJ, Garcia Tomas V, Wu CL. Postoperative analgesia in pancreaticoduodenectomy: Is epidural alone sufficient? Poster presented at the Annual Regional Anesthesia and Acute Pain Medicine Meeting in New Orleans, LA. April 2016.
 8. **Grant MC**, Hulse M, Betz M, Hobson D, Wick E, Wu CL. The effect of preoperative pregabalin on postoperative nausea and vomiting: A meta-analysis. Poster presented at the Annual Regional Anesthesia and Acute Pain Medicine Meeting in New Orleans, LA. April 2016.
 9. Zorrilla-Vaca A, Stone AB, **Grant MC**, Mathur V, Li J, Wu CL. The impact of regional versus general anesthesia on the incidence of postoperative surgical site infections following knee and hip arthroplasty: A meta-analysis. Poster presented at the Annual Regional Anesthesia and Acute Pain Medicine Meeting in New Orleans, LA. April 2016.
 10. Kapoor A, **Grant MC**, LacKamp AN. Anesthetic management for a patient with underlying hypercoagulability undergoing resection of renal cell carcinoma with supradiaphragmatic tumor thrombus extension. Poster presented at the Annual International Research Society in San Francisco, CAD. May 2016.
 11. Hanna A, **Grant MC**, Hobson DB, Benson A, Gearhart SL, Efron JE, Stonmetz J, Wu CL, Wick E. Does your team matter? A social network analysis of Enhanced Recovery After Surgery (ERAS). Poster presented at the American College of Surgeons 2016 Clinical Congress in Washington, DC. October 2016.
 12. He C, Li S, Sathiyakumar A, Hobson D, Wick E, Wu C, **Grant MC**. Thoracic Epidural Analgesia Reduces Opioid Administration in the Setting of Enhanced Recovery: Results from a Prospective Trial in Liver Resection Surgery. Poster presented at Annual Regional Anesthesia and Acute Pain Medicine Meeting in San Diego, CA. December 2016.
 13. Li S, He C, Stone A, Hobson D, Wick E, Wu C, **Grant MC**. Thoracic Epidural Analgesia and Venous Thromboembolism Prophylaxis within an Enhanced Recovery After Surgery Pathway for Colorectal Surgery. Poster presented at Annual Regional Anesthesia and Acute Pain Medicine Meeting in San Diego, CA. December 2016.
 14. He C, Stone AB, Li S, Scott AV, Hobson DB, Frank SM, Wick EC, Wu CL, **Grant MC**. Race and perioperative thoracic epidural analgesia use within an Enhanced Recovery After Surgery pathway for colorectal surgery. Poster presented at Annual Regional Anesthesia and Acute Pain Medicine Meeting in San Francisco, CA. April 2017.
 15. Li S, He C, Zorrilla-Vaca A, Wu CL, **Grant MC**. The impact of spinal needle selection on post-dural puncture headache: A meta-analysis and meta-regression of randomized studies. Poster presented at Annual Regional Anesthesia and Acute Pain Medicine Meeting in San Francisco, CA. April 2017.
 16. Ouanes JP, Stone A, Prasad R, Karkar A, Wu CL, **Grant MC**. The effect of gabapentin on postoperative pain and opioid consumption in the context of regional anesthesia: A meta-analysis. Poster presented at Annual Regional Anesthesia and Acute Pain Medicine Meeting in San Francisco, CA. April 2017.
 17. **Grant MC**, Pio Roda, C, Galante D, Sommer P, Hobson D, Wu CL, Wick EC. Anesthesia process measure compliance correlates with reduced length of stay: Results from an Enhanced Recovery After Surgery for colorectal surgery cohort. Poster presented at Annual American Society of Enhanced Recovery (ASER) Meeting in Washington DC. April 2017.
 18. Stone AB, Yuan CT, Rosen M, **Grant MC**, Benishek LE, Hobson D, Hanahan E, Lubomski LH, Wick EC. Enhanced Recovery After Surgery Implementation Strategy: a Systematic Review of Barriers and Facilitators Poster presented at American Society for Enhanced Recovery Annual Meeting in Washington, D.C. April 2017.
 19. Stone AB, Paul M, Sateri S, Wesson H, Rose J, Wu CL, Wick EC, **Grant MC**. Enhanced Recovery After Surgery Implementation Across a Health System; A Principles Based Approach. Poster presented at the Annual International Research Society in Washington, D.C. May 2017.

20. Galiatsatos P, Littleton K, Pietri J, **Grant MC**, Brigham E, Chen ES. The effect of neighborhood socioeconomic status on sepsis-attributable mortality. Abstract presented at the American Thoracic Society 2017 International Conference in Washington, D.C. May 2017.
21. Serini J, Kapoor A, **Grant MC**. A case of significant hypercapnia and pneumoperitoneum during coronary artery bypass grafting. Poster presented at the American Society of Cardiovascular Anesthesiologists annual meeting in Phoenix, AZ. April 2018.
22. He C, Li S, Stone A, Ouanes JP, Wu CL, **Grant MC**. The Impact of Enhanced Recovery and Fast Track Surgery on Postoperative Analgesia and Opioid Use: A Systematic Review. Poster presented at the Annual Regional Anesthesia and Acute Pain Medicine Meeting in New York, NY. April 2018.
23. Galiatsatos P, Farooq N, Aulakh J, Haapanen K, **Grant MC**, Martinez A. The effect of socioeconomic variables on massive transfusion outcomes in non-trauma patients. Abstract presented at the American Association of Thoracic Surgeons annual meeting in San Diego, CA. May 2018.
24. Frank S, Cho BC, DeMario V, **Grant MC**, Hensley N, Brown C, Hebbar S, Mandal K, Whitman G. Anemia upon discharge and 30-day readmission rates following CABG. Abstract presented at the International Conference on Acute Cardiac Care in Tel Aviv, Israel. June 2018.
25. Cho BC, DeMario VM, **Grant MC**, Hensley NB, Brown CH, Hebbar S, Mandal K, Whitman GL, Frank SM. Discharge Hemoglobin < 8 g/dL is Associated with Increased 30-day Readmission Rates after CABG. Abstract presented at the annual meeting for the Society for the Advancement of Blood Management in New York, NY. September 2018.
26. Bova S, Kruer RM, Nesbit SA, **Grant MC**, Jarrell AS. Characterization of perioperative methadone prescribing and respiratory depression. Abstract presented at the American College of Clinical Pharmacy (ACCP) annual meeting in New York, NY. October 27, 2019.

Oral/Podium Presentations

1. **Grant, MC**, Tran R, Kallam S, Gu J, Burris N, Christensen E, Kon Z, Poston RS. Aprotinin's Role as an Inhibitor of Prothombotic Agents in Off-Pump Coronary Artery Bypass. Abstract presented orally at the Annual American Heart Association National Meeting in Orlando, FL. November 2007.
2. **Grant MC**, Kon Z, Christenson E, Kallam S, Burris N, Gu J, Pierson R, Poston RS. The Safety of Aprotinin Use During OPCAB: Results From a Randomized, Prospective Trial. Abstract presented orally at the Annual Meeting of the Society of Thoracic Surgeons in Ft. Lauderdale, FL. January 2008.
3. **Grant, MC**, Christenson R, Gray J, Kallam S, Burris N, Laird P, Joshi A, Griffith B, Poston RS. Postoperative ST2 Blood Concentrations Predict One Year Mortality in Coronary Artery Bypass Patients. Presented orally at the Eastern-Atlantic Student Research Forum (Sponsored by the American Medical Association) in Miami, FL. February 2008.
4. **Grant, MC**, Christenson R, Burris N, Kon Z, Pollack J, Brown E, Joshi A, Poston RS. Postoperative ST2 Blood Concentrations Predict One Year Mortality in Coronary Artery Bypass Patients. Abstract presented orally at the Annual American Heart Association National Meeting in New Orleans, LA. November 2008.
5. **Grant MC**, Rothschild JA, Frank SM. Clinical Predictors of Postoperative Hemoglobin Drift. Abstract presented orally at the Annual American Society of Anesthesiology Meeting in Washington, DC. October 2012.
6. **Grant MC**, Frank SM. Establishment of an Autologous Blood Donation Pathway in Cardiothoracic Surgery. Abstract presented orally at the Maryland Patient Safety Conference in Baltimore, MD. April 2014.
7. Scott A, **Grant MC**. Higher-risk patients benefit most from increased compliance with Enhanced Recovery After Surgery protocols. Abstract presented orally at the American Society of Anesthesiologists annual meeting in Boston, MA. October 2017.
8. Cho BC, DeMario VM, **Grant MC**, Hensley NB, Brown CH, Hebbar S, Mandal K, Whitman GJ, Frank SM. Impact of discharge hemoglobin level on 30-day readmission rates after coronary artery bypass grafting. Abstract presented orally at the American Society of Cardiovascular Anesthesiologists annual meeting in Phoenix, AZ. April 2018.
9. Bing V, Lee SW, Ang SS, Hobson D, Wu CL, Wick EC, **Grant MC**. The impact of preoperative opioid exposure or opioid tolerance on length of stay in an Enhanced Recovery After Surgery for colorectal surgery cohort. Abstract presented orally at the American Society of Anesthesiologists annual meeting in San Francisco, CA. October 2018.
10. Clement KC, Canner KJ, Lawton JS, Whitman GJR, **Grant MC**, Sussman MS. Predictors of new persistent opioid use after coronary artery bypass grafting. Abstract presented orally at the American Association of Thoracic Surgeons annual meeting in Toronto, ON. May 5, 2019.

11. **Clement KC**, Canner KJ, Whitman GR, Lawton JS, **Grant MC**, Sussman MS. Predictors of new persistent opioid use after aortic and mitral valve surgery. Abstract presented orally at the Southern Thoracic Surgical Association (STSA) 66th Annual Meeting in Marco Island, FL. November 6, 2019.
12. **Zorrilla-Vaca A**, Mena GA, Cata J, **Grant MC**. Enhanced recovery after colorectal surgery and postoperative acute kidney injury: A systematic review and meta-analysis. Presented orally at the American Society of Anesthesiologists (ASA) annual meeting in Orlando, FL. October 21, 2019.
13. **Zorrilla-Vaca A**, Mena GA, Ripolles-Melchor J, **Grant MC**. Goal-directed fluid therapy and postoperative outcomes in an enhanced recovery program for colorectal surgery: A propensity matched multicenter study. To be presented orally at the American Society of Anesthesiologists (ASA) annual meeting. October 3, 2020. (*e-Abstracts presented virtually*)
14. **Zorrilla-Vaca A**, Mena GA, Ripolles-Melchor J, **Grant MC**. Studying acute kidney injury after colorectal surgery with enhanced recovery pathways. To be presented orally at the American Society of Anesthesiologists (ASA) annual meeting. October 3, 2020. (*e-Abstracts presented virtually*)
15. Qin C, **Cho B**, Yesantharoa L, Merkel K, Lau E, Phelps M, Kajstura T, **Grant MC**, Frank S. Cost awareness for medications, supplies, and blood product among anesthesia providers. To be presented orally at the American Society of Anesthesiologists (ASA) annual meeting. October 3, 2020. (*e-Abstracts presented virtually*)
16. Metkus TS, Thibault D, **Grant MC**, Badhwar V, Jacobs J, Lawton J, O'Brien S, Thourani V, Wegermann Z, Zwishenberger B, Higgins R. Utilization and outcomes associated with intraoperative transesophageal echocardiography in 1.3 million patients undergoing CABG: An analysis of the Society of Thoracic Surgeons Adult Heart Surgery Database. To be presented at the American College of Cardiology (ACC) annual meeting. May 15, 2021.

Other

9/2013	Lean Sigma Green Belt Certificate Program The Johns Hopkins Institute for Patient Safety and Quality, Baltimore, MD
2013 – 2014	Armstrong Institute Resident Scholars (AIRS) Program; Residency House Staff Longitudinal Fellowship The Johns Hopkins Institute for Patient Safety and Quality, Baltimore, MD
7/2014	Patient Safety Certificate Program Armstrong Institute for Patient Safety and Quality, Baltimore, MD
6/2016	Institute for Healthcare Improvement (IHI) Open School Curriculum Improvement Capability, Patient Safety, Person/Family Centered Care, Leadership, Quality Care & Value
6/2018	Serving Leader Longitudinal Leadership Program Department of Anesthesiology and Critical Care Medicine, Johns Hopkins University