



ABMF revised 9/16/20

CURRICULUM VITAE
The Johns Hopkins University School of Medicine

Marie N. Hanna MD, MEHP

March , 2024

DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointments

University

2012-present Associate Professor, Dept. of Anesthesiology and Critical Care Medicine, Johns Hopkins University School of Medicine

Hospital

2004-present Active Staff, Anesthesiologist, The Johns Hopkins Hospital

2013-present Chief Division, Regional Anesthesia and Acute Pain Medicine

2017-present Medical Director of Personalized Perioperative Pain Program (PPP)

Personal Data

Johns Hopkins University
1800 Orleans, Nelson 2130
Baltimore, MD 21287



Education and Training

Undergraduate

1979 BSc, Biology /Biochemistry, College de Sacret Coeur , Cairo, Egypt

Doctoral/graduate

1985 MBBCh. (MD), University of Ain Shams Medical School , Cairo, Egypt

2003 Level one and level two training of the version 6 Human Patient Simulator

2009–2010 Faculty development longitudinal programs (CDP), Johns Hopkins University

2011-2012 Women leadership programs, Johns Hopkins University

2014-2015 Master Mentorship program, Johns Hopkins University

2014-2015 Serving Leader Development Program (Cohort#1), Johns Hopkins University

2016 Economics of Clinical Operations Course (ECO) , Johns Hopkins University

2011-2016 Master’s degree of Education in the Health Profession (MEHP) , Johns Hopkins University

Postdoctoral

1986-1987 Internship, Ain Shams University Hospitals, Cairo, Egypt

1987-1988 Primary Care Physician (Social Service), Department of Public Health, Cairo, Egypt

1988-1989 Anesthesia Resident, Coptic Hospital, Cairo, Egypt

1990-1992 Research Assistant, Massachusetts General Hospital, Boston, MA

1992-1993 Clinical Research Assistant, New England Medical Center, Boston, MA
 1993-1994 PGY-I Internal Medicine internship, Department of Medicine, Metro West Medical Center, Framingham, MA
 1994-1997 Anesthesia Resident, Department of Anesthesia, Loyola University Medical Center, Chicago, IL

Professional Experience

1997-1998 Instructor, Ambulatory and Regional Anesthesia, Department of Anesthesia, Loyola University, Chicago, IL
 1998-1999 Instructor, Department of Anesthesia, University of Kentucky, Lexington, KY
 1999-2004 Assistant Professor of Anesthesiology, University of Kentucky, Lexington, KY
 2002-2004 Director of Regional anesthesia at University of Kentucky, Lexington, KY
 2004-2005 Clinical Associate, Department of Anesthesia, Johns Hopkins University, Baltimore, MD
 2005-2012 Assistant Professor, Department of Anesthesia (ACCM) Johns Hopkins University, Baltimore, MD
 2009-2012 Assistant Residency Program Director (ACCM) Johns Hopkins University, Baltimore, MD
 2012-2016 Associate Residency Program Director (ACCM) Johns Hopkins University, Baltimore, MD
 2005-2021 Director of Acute Pain Service, Johns Hopkins University, Baltimore, MD
 2012-Present Associate Professor, Dept. of Anesthesiology and Critical Care Medicine, Johns Hopkins University, Baltimore, MD
 2013-Present Chief Division, Regional Anesthesia and Acute Pain Medicine, Johns Hopkins University, Baltimore, MD
 2017-Present Founder and Medical Director, Perioperative Pain Program (PPP) Johns Hopkins university, Baltimore, MD

PUBLICATIONS

Original Research [OR]

- 1- **Hanna MN**, Donnelly MB, Montgomery CL, Sloan PA. Perioperative pain management education: A short structured regional anesthesia course compared with traditional teaching among medical students (with accompanying editorial). *Reg Anesth Pain Med.* 2005; 30 (6):523-528
- 2- Richman JM, Carter HB, **Hanna MN**, Murphy JA, Rowlingson AJ, Andrews RA, Wu CL. Efficacy of periprostatic local anesthetic for prostate biopsy analgesia: A meta-analysis. *Urology.* 2006;67(6):1224-1228.
- 3- **Hanna MN**, Elhassan A, Veloso PM, Lesley M, Lissauer J, Richman JM, Wu CL. Efficacy of bicarbonate in decreasing pain on intradermal injection of local anesthetics: A meta-analysis. *Reg Anesth Pain Med.* 2009;34(2):122-125.
- 4- **Hanna MN**, Jeffries MA, Hamzehzadeh S, Richman JM, Veloso PM, Cox L, Wu CL. Survey of the utilization of regional and general anesthesia in a tertiary teaching hospital. *Reg Anesth Pain Med.* 2009;34(3):224-228.
- 5- Sumida S, Lesley MR, **Hanna MN**, Murphy JD, Kumar K, Wu CL. Meta-analysis of the effect of extended-release epidural morphine versus intravenous patient-controlled analgesia on respiratory depression. *J Opioid Manag.* 2009;5(5):301-305.
- 6- George JA, Lin EE, **Hanna MN**, Murphy JD, Kumar K, Ko PS, Wu CL. The effect of intravenous opioid patient-controlled analgesia with and without background infusion on respiratory depression: A meta-analysis. *J Opioid Manag.* 2010;6(1):47-54.
- 7- Liu SS, Togioka BM, Hurley RW, Vu C, **Hanna MN**, Wu CL. Methodological quality of randomized controlled trials of postoperative epidural analgesia: Validation of the Epidural Analgesia Trial Checklist as a specific instrument to evaluate methodology. *Reg Anesth Pain Med.* 2010; 35(6):549-555.
- 8- Murphy JD, Yan D, **Hanna MN**, Bravos ED, Isaac GR, Eng CA, Wu CL. Comparison of the postoperative analgesic efficacy of intravenous patient-controlled analgesia with tramadol to intravenous patient-controlled analgesia with opioids. *J Opioid Manag.* 2010; 6(2):141-147.
- 9- **Hanna MN**, Sloan PA. A randomized, double-blind, prospective clinical trial comparison of levobupivacaine 0.5% versus ropivacaine 0.5% for single dose interscalene nerve block for shoulder arthroscopy and for single dose femoral nerve block analgesia for anterior cruciate ligament reconstruction. *J Anesth Clin Res* 2:135. doi:10.4172/2155-6148.1000135.

- 10- **Hanna MN**, González-Fernández M, Barrett AD, Williams KA, Pronovost P. Does patient perception of pain control affect patient satisfaction across surgical units in a tertiary teaching hospital? *American Journal of Medical Quality* February 16, 2012 1062860611427769
- 11- **Hanna MN**, Jeffries MA, Kapoor SG, Murphy JD, Stevens RD, Bilbow A, Mathur V, Wu CL. Analysis of the methodologic quality of reporting of meta-analyses in anesthesiology and pain medicine. *J Anesth Clin Res* S1: 003. doi:10.4172/2155-6148.S1-003
- 12- Murphy JD, Ouanes JP, Togioka BM, Sumida SM, Isaac GR, Gelfand HJ, **Hanna MN**. Comparison of air and liquid for use in loss-of-resistance technique during labor epidurals: A meta-analysis. *J Anesth Clin Res* 2:175. doi :10.4172/2155
- 13- Ouanes JP, Schwengel D, Mathur V, Ahmed OI, **Hanna MN**. Curriculum Development for an Advanced Regional Anesthesia Education Program: One Institution 's Experience from Apprenticeship to Comprehensive Teaching. *Middle East Journal of anesthesiology*; Feb 2014
- 14- Tomas VG, Schwengel D, Ouanes JP, Hall S, **Hanna MN**. Improved Residents' Knowledge After an Advanced Regional Anesthesia Education Program. *Middle East Journal of anesthesiology*; Feb 2014
- 15- Gonzalez-Fernandez M, Aboumatar H, Conti D, Patel AM, Purvin MA, **Hanna M**. Educational gaps among healthcare providers: An institution needs assessment to improve pain management for postsurgical patients. *J Opioid Manag* 2014; 10:345-51.
- 16- Cason M, Naik A, Grimm JC, Hanna D, Faraone L, Brookman JC, Shah A, **Hanna MN**. The efficacy and safety of epidural-based analgesia in a case series of patients undergoing lung transplantation. *J Cardiothorac Vasc Anesth* 2015; 29:126-32.
- 17- Fan CJ, Hirose K, Walsh CM, Quartuccio M, Desai NM, Singh VK, Kalyani RR, Warren DS, Sun Z, **Hanna MN**, Makary MA. Laparoscopic Total Pancreatectomy with Islet Autotransplantation and Intraoperative Islet Separation as a Treatment for Patients with Chronic Pancreatitis. *JAMA Surg.* 2017 Jun 1; 152(6):550-556.
- 18- Anderson R, Armour E, Beeckler C, Briner V, Choflet A, Cox A, Fader AN, **Hanna MN**, Hobbs R, Huang E, Kiely M, Morcos M, McMillan P, Miller D, Ng SK, Prasad R, Souranis A, Thomson R, De Weese T, Viswanathan A. Interventional Radiation Oncology: Transition of a magnetic resonance simulator to a brachytherapy suite. *Brachytherapy* volume17;2018 .
- 19- Naqib D, Purvin M, Prasad R, Hanna IM, Dimitri S, Llufrío A, **Hanna MN** "Quality Improvement Initiative to Improve Postoperative Pain with a Clinical Pathway and Nursing Education Program" *Pain Management Nursing*; June 2018.
- 20- **Hanna MN**, Speed TJ, Shechter R, Grant MC, Sheinberg R, Goldberg E, Campbell CM, Theodore N, Koch CG, Williams KA. An innovative perioperative pain program for chronic opioid users: An academic medical center's response to the opioid crisis. *Am J Med Quality.* 2018; in press. PMID: 29790369.
- 21- **Hanna MN**, Overton HN, Bruhn W, Hutfless S, Bicket MC, Makary MA, and the Opioids After Surgery Workgroup. Opioid Prescribing Guidelines for Common Surgical Procedures: An Expert Panel consensus. <https://doi.org/10.1016/j.jamcollsurg.2018.07.659>
- 22- Shechter R, Speed TJ, Blume E, Singh S, Williams K, Koch CG, **Hanna MN**. Addressing the Opioid Crisis One Surgical Patient at a Time: Outcomes of a Novel Perioperative Pain Program. *Am J Med Quality* 2020 Jan/Feb;35(1):5-15.
- 23- **Hanna MN**, Chambers C, Punyala A, Iqbal A, Singh B, Oruc C, Prakash P, MS; Prajapati Y, Wang Y, Amery Z; Shechter R; Speed TJ, Koch CG, Williams K. A model for an institutional response to the opioid crisis. *Journal of Opioid Management* 2020 DOI:10.5055/jom.2020.0553
- 24- Young R, Cottrill E, Pennington Z, Ehresman J, Ahmed AK, Russo A, **Hanna MN**, Theodore N: "Experience with an Enhanced Recovery After Spine Surgery (ERASS) Protocol at an Academic Community Hospital. *Journal Neurosurgery: Spine* accepted July 2020.
- 25- Rahman S, Speed TJ, Xie A, Shechter R, **Hanna MN**. Perioperative pain management during the COVID-19 pandemic: a telemedicine approach. *Pain Medicine.* 2021, 22(1):3-6.
- 26- Xie A, Hsu YJ, Speed T, Villanueva M, Hanna I, Slupek D, Shechter R, **Hanna MN**. Patient Engagement and Prescription Opioid Use in Perioperative Pain Management. *Journal of Opioid Management.* 2022; 18(5):421-433.
- 27- Xie A, Hsu Y-J, Speed TJ, Saunders J, Nguyen J, Khasawneh A, Kim S, Marsteller J, McDonald E, Shechter R, **Hanna MN**. The use of telemedicine for perioperative pain management during the COVID-19 pandemic. *Journal of Telemedicine and Telecare.* 2023; Mar 27: 1357633X231162399.

- 28- Flynn HK, Manoharan D, Hsu Y-J, Xie A, Shechter R, Hanna M, Speed TJ. A multidisciplinary transitional pain service to improve pain outcomes following trauma surgery: a preliminary report. *Scandinavian Journal of Pain*. 2023; 23(3):613-619.
- 29- Speed T, Hanna MN, Xie A "A New Care Delivery Model to Improve Surgical Recovery and Address the Opioid Crisis: Transitional Perioperative Pain Care" accepted 10/2023 *Quality Management in Health Care*
- 30- Olivia Liu ; David Leon ; Ethan Gough ; Marie Hanna ; Kellie Jaremko "A Retrospective Analysis of Perioperative Medications for Opioid Use Disorder and Tapering Additional Postsurgical Opioids via a Transitional Pain Service" *British Journal Of Clinical Pharmacology* . MPT-00043-24.R1)

Review Articles [RA]

1. **Hanna MN**, Murphy JD, Kumar K, Wu CL. Postoperative pain management in the elderly undergoing thoracic surgery. *Thoracic Surg Clin*. 2009; 19(3):353-361.
2. **Hanna MN**, Murphy JD, Kumar K, Wu CL. Regional techniques and outcome: what is the evidence? *Current Opinion Anaesthesiology*.2009; 22(5):672-677.

Case Reports [CR] None

Book Chapters [BC]

1. **Hanna MN**, Liu SS, Wu CL. Effect of epidural analgesia on postoperative outcomes. In: *Acute Pain Management*. Sinatra RS, de Leon-Casasola OA, Ginsberg B, Viscusi ER, eds. New York, Cambridge University, 2009.
2. Patel JH, Rea A. **Hanna MN**. Acute pain. In: *Johns Hopkins Anesthesiology Handbook*. Heitmiller ES, Schwengel DA, eds. Mosby, Philadelphia, PA. 2009.
3. Hung JC, **Hanna MN**. Peripheral nerve catheters – comfortably numb. In: *Anesthesia Unplugged*, 2nd edition. Gallagher C, Schwengel D, Park C, Lewis M, Ginsberg S, eds. McGraw-Hill, 2011
4. **Hanna MN**, Ouanes JP, Garcia V. Postoperative pain management. In: *Raj’s Practical Management of Pain*, 5th edition. Benzon; HT, Rathmell JP, Wu CL, Turk DC, Argoff CE, eds. New York, Elsevier-Mosby, 2012.
5. Aboumatar HJ, Chang B, **Hanna MN**, Siddiqui Z (Eds). *Best Practices in Patient-Centered Care Conference Proceedings*. Best Practices in Patient-Centered Care Conference; 2013 Sept 26-27; Baltimore. Baltimore: Johns Hopkins University; 2014. Available from http://armstronginstitute.cvent.com/patient_centered_care
6. **Hanna MN**; Sarah Hall; Omar Mohamed.” *Intravenous controlled analgesia “In Regional Anesthesia Practice* 2nd edition, Hadzic March 2017
7. **Hanna MN**, Ouanes JP, Garcia V. *Regional Anesthesia in Management of Acute Pain: Bonica’s Management of Pain*, Fifth edition. Rathmell JP, eds. Wolters Kluwer/Lippincott Williams & Wilkins, 2017

Books, Textbooks [BK]

1. Hanna MN, Co- editor: *Beside Analgesia Book* (in preparation). Oxford University Press.

Letters, Correspondence [LT]

1. Letters, correspondence: Wu CL, **Hanna MN**. Reply to Dr Andreae. *Reg Anesth Pain Med*. 2010; 35 (1):116.
2. **Hanna MN**, Javed M, Speed T, Shechter R, Williams K. Perioperative Pain Program, *ASRA News*, Feb /2021.

- Letter to the editor: **Hanna MN**, Speed T “The Pharming of Cannabis: Have we not learned the lesson from the overuse of opioids?” journal of Pain Medicine (accepted 10.22)

Other Publications: Suggested Additional Subcategory Titles:

Other media [OM]

- February 2022: Interviewed by Jan Hoffman of The New York Times for an article “CDC Proposes New Guidelines for Treating pain, Including Opioid Use”. Published in the New York Times Feb 12, 2022.
- April 2022: Interviewed by Dr Shravani Durbhakula “HSS needs to step up so CDC’s new guidelines won’t be a bridge to nowhere” for most American living with chronic pain. Regarding the New CDC New Guidelines. Published at STAT news April 29th, 2022
- June 2022. Interview by ReachMD “Measuring the Rise of Drug Misuse & Mental Health Challenges Amid the COVID-19 Pandemic . <https://reachmd.com/programs/clinicians-roundtable/measuring-the-rise-of-drug-misuse-mental-health-challenges-amid-the-covid-19-pandemic/13614/>
- July 2022 Interview by AAPM Podcast Pain Matters Episode 12 ‘Launching and Scaling the first Personalized Perioperative Pain Clinic for Opioid Reduction After Surgery in the US’
- <https://painmed.org/ep-12-launching-and-scaling-the-first-personalized-perioperative-pain-clinic-for-opioid-reduction-after-surgery-in-the-us/>

FUNDING

EXTRAMURAL Funding

Current Funding : 9/2019 -9/2023

Title: Strategies for Improving Prescription Opioid in Perioperative Pain Management
 Sponsor: NIH/CDC R01
 Grant number: 5R01CE003150
 Total direct cost: \$1,871,344
 Principal Investigators: CO-PIs: Marie Hanna MD, MEHP, Anping Xie Ph.D.
 Role: Evaluate and improve the innovative Perioperative Pain Program (PPP) for chronic opioid users undergoing surgical procedures. Developing, implementing, and evaluating CDS tools to improve prescription opioid use and patient engagement in perioperative pain management.

Current Funding: 9/2023-9/2026
 Title: MDDT Proposal for Qualifying a Clinical Outcome Assessment of Standardized Opioid Intake by Patient Report for use in Medical Device Development – Dose-Opioid-Source Evaluation (DOSE tool)

Grant number : 1R44DA058952-01

Principal Investigators: CO-PIs: Marie Hanna MD, MEHP, Amy Baxter MD FAAP FACEP
 Role: This project will develop a Clinical Outcome Assessment (COA) of patient-reported opioid use standardizing output into milligrams of morphine equivalents (MME) during clinical trials of medical devices. We will use the Clinic patients to help validating the DOSE tool

Pending Funding:

1. Title: Improving racial disparities in postoperative pain management during and beyond the COVID-19 pandemic: A human factor and system engineering approach to develop a multi-level intervention.
 Sponsor: National Institute on Minority Health and Health Disparities 2022-2027
 Total direct cost: \$3,882,410
 Principal Investigators: CO-PIs: Traci Speed, MD, Anping Xie, Ph.D.,

CO-I: Marie Hanna, MD: 20% Effort

2. Title: Improving prescription opioid use and racial disparities in postoperative pain management

Sponsor: Donaghue Foundation Greater Value Portfolio Award 2023-2025

Total cost: \$429,579

Principal Investigators: CO-PIs: Traci Speed, MD, Anping Xie, Ph.D.,
CO-I: Marie Hanna, MD: 10% Effort

Previous Funding: None

INTRAMURAL Funding None

Previous Funding:

Title: Strategy to Improve Postoperative Pain Management in the Postsurgical Units

Sponsor: Blaustein seeds Grant 7/1/11 – 6/30/12

Total direct cost: 25 K

Principal Investigator: Marie Hanna, MD.

Role: Strategy to Improve Postoperative Pain Management in the Postsurgical Units: The main goal of this proposal was to develop a strategy to improve pain management in postsurgical units and consequently improve the quality of patient recovery. Proposed pain management interventions in one postsurgical unit by adopting pain management pathway and an e- learning module for acute postoperative pain management . We compared the knowledge of healthcare providers in one unit to those of a unit where no intervention was implemented.

Title: Outcomes in Perioperative Pain Program

Sponsor: JHUSOM Core Coins Funding 7/1/18- 6/30/19

Total direct cost: \$850

Principal Investigator: Traci Speed MD, PHD (0% effort)

Co-Investigator: Marie Hanna (0% effort)

Role: To evaluate whether the perioperative pain management clinic will reduce excessive dose and duration of opioid prescriptions for chronic opioid users in the perioperative period

Title: Prevalence and Outcomes of THC/Cannabinoids in Perioperative Pain Program (POT in PPP)

Sponsor: JHUSOM EPIC Scholars Faculty Program 9/01/18- 8/31/20

Total direct cost: \$10,000

Principal Investigator: Traci Speed MD, PHD (0% effort)

Co-Investigator: Marie Hanna (0% effort)

Role: To study the prevalence of cannabinoid use in surgical patients and to compare postoperative opioid consumption and pain severity for those who use cannabinoids with non-cannabinoid users

Title: Reducing Disparities in Access to Postoperative Pain Management following Trauma

Sponsor: JHU ACCM Medical Operations Microgrant 7/1/20- 6/30/21

Total direct cost: \$5000

Principal Investigator: Marie Hanna and Traci Speed (MPI), 0% effort

Role: To assess disparities in access to pain management and the factors that contribute to disparity of postoperative pain management following trauma surgery

Title: Pain and Opioid Trajectories in Surgical Orthopedic Patients Using Marijuana/Cannabis Expediently: POT in SOME

Sponsor: JHU SOM Blaustein Pain Research Grant 7/01/20- 6/30/21

Total direct cost: \$21,000

Principal Investigator: Traci Speed MD, PHD (0% effort)

Co-Investigator: Marie Hanna MD, MEHP (0% effort)

Role: To characterize cannabis use and its association with opioid tapering among perioperative patients on chronic opioid therapy

Title: Perioperative Opioid Tapering and Pain Management in Patients on Medication-Assisted Treatment for Opioid Use Disorder 1/ 2022 – 6/ 2023

Sponsor: Stimulating and Advancing ACCM Research (StAAR) Investigator Award.

Total direct cost: \$15,746

Principal Investigator: Kellie Jaremko MD, PHD (0% effort)

Co- Investigator: Marie Hanna MD, MEHP (0% effort)

Role: Evaluate Opioid Tapering strategy and quality of pain management in Patients who are on Methadone or Suboxone (Medication assisted treatment) for the treatment of opioid use disorder.

CLINICAL ACTIVITIES

Clinical Focus

My clinical focus is on improving the quality and safety of pain management in surgical and trauma patients: As a regional anesthesiologist, I provide regional anesthesia for patients in the operating room, preop and recovery rooms. I am a consultant physician in acute pain management during the perioperative period, providing care to a wide variety of surgical and trauma patients. As an attending and medical director of the Personalized Pain Program (PPP) I treat complex patients on high dose opioid therapy and taper down their opioid requirements and enhance their recovery and improve their quality of life. During the period 2004- 2014 I worked as a regional anesthesiologist in the obstetric anesthesia suite and in the general operating rooms.

Certification

Medical, other state/government licensure

2004-Present: Physician, Maryland License No. D0062320

Boards, other specialty certification

1999-Present: Board-certified Anesthesiologist, American Board of Anesthesiology (# 32494)

Clinical (Service) Responsibilities

2004-2017 Attending Anesthesiologist and Acute Pain Service consultant at the Johns Hopkins Hospital with clinical time split between providing general anesthesia, regional anesthesia, obstetric anesthesia in the operating rooms and conducting acute pain service rounds in the surgical wards and ICU.

2017-Present Attending Anesthesiologist covering the Acute Pain Service and attending Anesthesiologist covering the PPP outpatient clinic

Calls responsibilities

2004-2014: Attending Anesthesiologist taking night call split between OB anesthesia calls, general OR calls and acute pain service calls. (overnight week days and weekend calls)

2014-Present: Attending Anesthesiologist taking calls in the Acute Pain service. (week days and weekend calls)

Clinical Productivity

The Regional and Acute Pain Medicine (RAPM) Division performs approximately five thousand blocks/year, and approximately five thousand acute pain inpatient visits/year. The PPP conduct approximately 1500 outpatient postoperative visits/year (according to the Division dashboard). Four providers cover the Acute Pain Service, and two providers covers the PPP. My activity accounts for approximately 40 % of the acute pain service billing, and 55 % of the PPP outpatient billing. I provided inpatient and outpatient care to 2950 patients in 2021 academic year.

Clinical Draw from outside/ regional area

Referrals to the Perioperative Pain Program PPP come from:

- 1- Various Surgical Service Lines: Orthopedic and Neurosurgical spine services , Trauma, Orthopedic, General Surgery and Surgical Oncology services.
- 2- CPO (Center of Perioperative Optimization)
- 3- Acute and Chronic Pain Services

The reputation of the PPP extends beyond Johns Hopkins Hospital. Acceptance of patients from outside the hospital was limited due to limited resources and the extensive referral flow from Johns Hopkins surgeons .

Membership in or examiner for specialty board None

Clinical Program Building/ Leadership within Johns Hopkins Hospital

2005-2021: **Director of The Johns Hopkins Pain Service**

Role: I have been the Director of the Johns Hopkins Pain Service for 16 years.

Impact:

- Under my leadership the JH pain service (APS) provided clinical coverage for 24 hrs./7 days/week, providing pain management care to surgical and trauma patients including patients with epidurals, peripheral nerve blocks, indwelling nerve catheters and patients with complex pain diagnosis
- Under my leadership ,our team implemented more than six ERAS (Enhanced Recovery After Surgery) protocols for colorectal, gynecologic oncology, urologic, spine fusion, hepatectomy surgery and cytoreduction operations. OR#24
- Our team implemented multiple pain management protocols for patients after shoulder arthroplasty, gynecological interstitial brachytherapy, liver donation and total pancreatectomy with islet Autotransplantation procedures. OR#17-18
- Under my leadership, the growth in the number of new cases, consults and referrals continue to rise from an average of 1100 APS visits /year in 2004 to an average of 5500 APS visits (in 2021(500% increase).
- As APS director and with my degree in Health Care Education, I assumed a role in educating anesthesia teams, intensive care unit teams (residents, fellows, and advanced practitioners), general surgery residents (PRECEDE Course) and other disciplines in Pain Management.
- I have been invited to speak at grand rounds to several surgical subspecialties including Orthopedic, Cardiovascular, Trauma and ENT surgery

2008-2011: **The Center for Global Health and Johns Hopkins International.**

Role: I led an international training program to expand the practice of regional anesthesia in Egypt and UAE. I moderated multiple regional anesthesia live model workshops for 3 years.

Impact: Collaboration with leaders in these countries, specifically, Tawam hospital in Abu Dhabi (Dr Rasha Jabri) and The Research Institution/Alexandria university in Egypt (Dr Magda Apollo) resulted in the growth of these international programs which are now meeting national practice guidelines and maintaining best practice standards in regional anesthesia and pain medicine. The results of this collaboration has been presented at national meetings.

2009–2017: **Assistant followed by Associate Residency Program Director**

Role: I assisted in the creation of a new educational curriculum for the ACCM Residency Program *COLLEGE DAY*, one day every two weeks when all anesthesia residents received didactic and interactive teaching outside the operating rooms. In this role, I helped evaluate the educational needs of residents according to ABA and ACGME requirements ensuring compliance with Residency Review Committee requirements.

Impact: Enhanced residents' education including education in regional anesthesia and pain medicine. OR#13-14

2013-Present: **Division Chief, Regional Anesthesia and Acute Pain Medicine (RAPM):**

Role: As Division Chief, I am responsible for the delivery of safe, efficient acute pain management care for JH Hospital, Bayview Medical Center and the ambulatory centers including Johns Hopkins Outpatient Center and Green Spring Ambulatory Surgery.

Impact:

- Growing the division capacity from 6 faculty members and one fellow to currently 17 faculty, 2 nurse practitioners and 5 RAPM fellows/ year.
- Our group expanded the clinical practice of regional anesthesia and acute pain management within our surgical bays in three location, JHH, Bayview and ambulatory surgery centers.
- I provided professional oversight for the RAPM (Regional Anesthesia and Acute Pain Medicine) fellowship program and provided leadership to the program directors. In 2017, the fellowship program was credentialled by the ACGME and expanded in size from one fellow/ year to 5 fellows/ year.
- I assisted the division to grow and empower every faculty member to move forward with their career and assume leadership roles.
 - a) Two faculty members became leaders in other institutions; Dr Jean Pierre Ouanes (Currently Clinical Associate Professor and Weill Cornell Medical center / Director of Outpatient center Tampa/ Florida, and Dr Vicente Garcia Tomas (University of Arizona)
 - b) One faculty member became director of ambulatory services at JHH, Dr Rashmi Prasad
 - c) Four faculty members now hold leadership roles within JHH and Bayview, Dr Kara Segna, Dr Hassan Rayaz directors of regional programs at JH and Bayview, Dr Ronen Shechter and Dr Richard Barnhart directors of APS at JH and Bayview.
 - d) Two junior faculty members became co-directors of regional anesthesia at JH and ambulatory centers, Dr Laura Chin and Dr Gabriel Orner.
 - e) Two faculty are leading the RAPM fellowship program Dr. Kara Segna and Dr. Hassan Rayaz.
- During my tenure, our division achieved outstanding scores (multiple deviations above average) on the 2019-2020 ACGME Resident/Fellow survey. The resident and fellows awarded the regional rotation a 4.8 out of 5 for the "residents' overall evaluation of the program as compared to the national average of 1.9. They also scored a 4.6 out of 5 on "residents' overall opinion of the program" compared to the national average of 1.9. These scores on the ACGME site survey are truly remarkable.
- Many of the faculty have earned awards for clinical and educational excellence.
- A faculty member, Dr Kara Segna, now holds a core faculty position as a College Advisor for Johns Hopkins School of Medicine.
- Several other faculty members hold leadership roles in nationally recognized pain societies, Dr. Hassan Rayaz in AAPM, Dr. Kellie Jaremko in ASRA and AAPM and Dr. Kara Segna in AAPM.

2017-2020: **Co-chair the Opioid Guidelines Committee**

Role: Co-chair a committee of sixty-nine members representing all JH hospitals, including clinicians from many subspecialties.

Impact: The committee developed hospitals-wide opioid prescription guidelines and policies to improve opioid prescribing practice. The committee executed and refined the outcomes of the 2016 CDC Opioid prescription guideline at JH health care system resulted in publication. OR# 21-23

2017-Present: **Founder and Medical Director, Personalized Perioperative Pain Program (PPP)**

Role: In response to the opioid epidemic and recognizing that the perioperative period is a unique opportunity to develop well-coordinated care in pain management, I founded an innovative clinical model, the PPP, the first in the US, to address aspects of pain management and opioid utilization for chronic opioid surgical patients. The PPP help reduces opioid use during the perioperative period and up to 6 months after surgery without negatively influencing patient-reported outcomes, such as physical pain score and health-related quality of life. Currently in its 5th year, the PPP operates for 2 days/week, taking care of 1000-1500 outpatient visits/year. This Program has borne witness to glimmers of hope amidst the opioid epidemic, Patients with amputated limbs recovers and successfully manage their phantom pain while tapering off opioids. Patients with opioid use disorder (OUD) connect to MAT (maintenance treatment program) and follow an opioid taper protocol and manage their pain safely. Trauma and Gunshot wounds patients are followed in the PPP and successfully recovered with minimal opioids.

Impact:

- Collaboration with faculty and students from the Johns Hopkins Carey Business School to develop the business plan for the program. OR# 23.
- The PPP involved the establishing of multidisciplinary teams including other specialties such as psychiatry and addiction medicine with a novel pain management infrastructure for a truly unique pain management experience. OR#20
- The PPP helped reduce opioid use among chronic opioid users during the perioperative period and for up to 6 months after surgery. This program is well supported by surgeons and hospital leadership. OR#22
- Dissemination of the PPP clinic model to Bayview hospital in 2019. Several other institutions from around the USA are working to adopt the same concept of the PPP (UVA/VA, UCSD/CA, Parkview Health System/IN)
- Hopkins PPP outcomes were presented as a research presentation at several national and international scientific meetings .
- Interviewed by RearchMD “Measuring the Rise of Drug Misuse & Mental Health Challenges Amid the COVID-19 Pandemic (details in other media)
- Interviewed by AAPM (American Academy of Pain Medicine) Podcast Pain Matters Episode 12 ‘Launching and Scaling the first Personalized Perioperative Pain Clinic for Opioid Reduction After Surgery in the US” (details in other media)
- The success of the PPP is supported by Surgeon General and the Maryland’s Opioid Operation Command Center
- The PPP clinic received an NIH, CDC R01 grant (CO-PIs: Marie Hanna MD, Anping Xie Ph.D., \$1.8 million) to enhance the work in the clinic, implementing and evaluating tools to improve prescription opioid use and patient engagement in perioperative pain management.
- The PPP Clinic team submitted multiple grants with 2 pending grants on improving postoperative pain management in Racial Disparity (mentioned above)
- Clinical investigation in the PPP resulted in multiple publications. OR# 20, 22, 25-28
- In 2020 and during the COVID Pandemic, the PPP clinic continued with full service through Telehealth and expanding its service to many surgical patients within and outside the state of MD. OR# 25-27

Program Building and Leadership before joining Johns Hopkins:

2000-2004: Director of Regional Anesthesia; University of Kentucky

Role: Developed the Regional Anesthesia Program.

Impact:

- Initiated regional anesthesia rotation for the residents at UK
- Initiated Biannual Cadaver Lab workshop for residents and medical students, that resulted in my recognition with the Abraham Flexner Master Educator Award (2003) in Educational Innovation & Development, a peer-reviewed award recognizing outstanding faculty who have made significant contributions in educational innovation and development in the College of Medicine at UK.

- Conducted clinical trials of several local anesthetics used in regional anesthesia. OR# 9
Impact: Teaching regional anesthesia and Postsurgical pain to UK medical students. OR# 1

2003 : Moderator of First workshop / OSCE in regional anesthesia to medical students at University of Kentucky.

Clinical Demonstration Activities to external audience, on or off campus

1.Course Director and workshop Moderator, “Ultrasound- guided Upper and Lower Extremity Blocks,”
Attendees noted below.

2007/2008	Egyptian society of pain and Cairo university, Cairo, Egypt.
2008/2009	University of Alexandria, Alexandria, Egypt.
10/2009	Tawam Hospital (Hopkins affiliate), Al Ain, UAE.
9/2011	Abu Dhabi, UAE.

2.Founder and Medical director of PPP offered to assist medical centers starting PPP programs
(Transitional Pain Program) in their institutions. Attendees noted below.

2020	Univ of Virginia , Charlestown, VA.
2021	Univ of California, San Diego, Cal.
2022	Univ of Kentucky , Lexington, KY.

Development of nationally/internationally recognized clinical standard of care. None

EDUCATIONAL ACTIVITIES

Educational Focus

My educational focus is on hands-on teaching of regional anesthesia and acute pain management techniques for anesthesia residents, acute pain fellows and advanced practitioners. I also provide teaching to pharmacy residents rotating through the acute pain service, as well as to medical students, and nursing students. Much of this teaching is case-based, patient-based bedside teaching and through didactic educational programs

Teaching

Classroom instruction :

JHMI/Regional

2004 till present : Lecturer. For the past 18 years, I have regularly delivered formal lectures at didactic teaching conferences to residents, fellows, medical students, and nurse practitioners in both the departments of Anesthesiology and Surgery on a wide range of topics in regional anesthesia and acute pain medicine and in opioid tapering strategies . I have delivered 8-10 such lectures each year during my tenure as an attending physician on topics that include varying aspects of substance use disorder, ultrasound use in regional anesthesia, the opioid epidemic, ERAS protocols in surgical patients, marijuana use and its effect. In addition, when on Pain Service, I have given one lecture each day to APS residents, fellows and NPs.

2004-2014: Regional anesthesia and acute pain management education for anesthesia residents and fellows including the following

- Course director of advanced cadaver workshop sessions.
- Course director of live model ultrasound workshop sessions.
- 2009-2013 Lecturer, first -year medical student pain management course
- 2008-2013 Lecturer, surgical resident’s orientation lectures, once/year pain management in surgical patients (PRECEDE)
- 2009-2013 Lecturer intensive care physicians/fellows lectures, twice/year “Pain Management in the ICU “
- 2017-Present Lectures on PPP and tools to taper opioids. Lectures on the use of cannabis and its effects on patients’ pain and mental health.

National Instruction, Workshops and PBLD

- 5/2009 Workshop lecture, American Society of Regional Anesthesia ASRA “Regional Anesthesia for the Lower Extremity.” Phoenix/AZ
- 10/2010 Workshop lecture, American Society of Anesthesiology ASA “Regional Anesthesia for the lower extremity.” San Diego/ CA
- 3/2012 Workshop lecture, American Society of Regional Anesthesia ASRA “Suprascapular Block” San Diego/ CA
- 6/2012 Guest Speaker and workshop moderator; University of Louisville; “Regional Anesthesia of the sciatic nerve”. Louisville/Kentucky
- 5/2013 Panel discussion, ASRA 2013 “Balancing Pain Management and Prevention of Withdrawal in Patients with a History of Opioid Abuse”. Boston /MA
- 2/2019 Speaker, a case based discussion, JH Perioperative Annual Meeting Marco Island/Florida - Pain Management in the Opioid Tolerant Patient.
- 9/2021 ASRA symposium on Preventing Addiction and Solving Pain Puzzle (Virtual)
- 10/2021 ASA REMS presentation: Post-operative Pain Management and Transitional Pain Services (Virtual)
- 3/2023 ASRA symposium on Transitional Pain Programs (Virtual)

International Instruction, Workshops and PBLD

- 11/2007 Course Director and workshop Moderator ESMP, Egypt. “Upper & Lower Extremity Peripheral Nerve Blocks,”
- 4/2008 Course Director and workshop Moderator, “Ultrasound- guided Upper & Lower Extremity Blocks,” Cairo International Anesthesia Conference.
- 11/2008 Course Director and workshop moderator of regional anesthesia, Sharm El Sheik, Cairo
- 11/2008 Course Director and workshop moderator, “Ultrasound-guided Upper & Lower Extremity Blocks,” Alexandria International Anesthesia Conference.

Conference Organizer

JHMI/Regional

- 2005-2016 Organizer and moderator of Annual hands-on cadaver anatomy workshops on regional anesthesia of the upper and lower extremities for anesthesia residents and pain fellows, The Johns Hopkins Hospital, Baltimore, MD
- 2006-2016 Organizer and moderator Annual nerve stimulator/ultrasound workshop for upper and lower extremity blocks for the residents and fellows, The Johns Hopkins Hospital, Baltimore, MD

National

- 3/2022 Session Chair, AAPM; transition from Acute to chronic Pain AZ/USA
- 3/2022 Session Chair, AAPM; Persistent pain /transitional pain programs AZ/USA
- 2021 Co-Chair AAPM annual meeting for 3/2022, AZ/USA
- 2022 Co-Chair AAPM annual meeting for 3/2023, FL-USA

International

- 11/2007 Course Director and workshop Moderator ESMP, Egypt. “Upper & Lower Extremity Peripheral Nerve Blocks,”
- 4/2008 Course Director and workshop Moderator, “Ultrasound- guided Upper & Lower Extremity Blocks,” Cairo International Anesthesia Conference.
- 11/2008 Course Director and workshop moderator of regional anesthesia, Sharm El Sheik, Cairo

- 11/2008 Course Director and workshop moderator, “Ultrasound-guided Upper & Lower Extremity Blocks,” Alexandria International Anesthesia Conference.
- 10/2009 Regional Anesthesia and Acute Pain Management Program Director, First Comprehensive Pain Management Conference, Al Ain, UAE.
- 11/2009 Organizer and moderator of regional anesthesia workshop, Alexandria, Egypt.
- 9/2011 Scientific Program organizer of second international pain conference, Abu Dhabi, UAE.
- 4/2012 Scientific Program organizer of second AFSRA (African Society of Regional anesthesia) meeting.

Session Chair
JHMI/Regional

- 2005-2014 Chair of anatomy workshop and US workshop JHH

National

- 3/2022 Session Chair, AAPM; Transition from Acute to Chronic Pain AZ/USA
- 3/2022 Session Chair, AAPM; Persistent Pain /Transitional Pain Programs AZ/USA
- 2021 Co-Chair AAPM annual meeting for 3/2022, AZ/USA
- 2022 Co-Chair AAPM annual meeting for 3/2023, FL-USA

International

- 10/2017 Co-Chair scientific program, Pain Research & Management, London, UK.
- 4/2018 Chair session on Pain management in Cancer Patient (Egyptian SSO) Cairo-Egypt
- 6/2018 Chair Scientific program, 2nd World Congress Surgery and Anesthesia 2018, Rome- Italy

CME Instruction

- JHMI/Regional See invited talks
- National See invited National talks
- International See invited international talks

Mentoring

Predoctoral Mentees

- 2006-2011 Sayeh Hamzehzadeh, a Johns Hopkins third-year medical student, mentored throughout medical school towards anesthesia training. Currently an anesthesiologist in private practice, Virginia. Co-authored articles OR#4
- 2015-2017 Lea Faraone, a nursing student at JH and David Hanna, a medical student at University of Maryland. worked on a quality improvement project for 2 years. Co- authored OR#16. Currently, Lea is an established nurse and David is a surgery resident at Vanderbilt University TN.
- 2015-2018 Sandra Dimitri, an international medical student and Irini Hanna, a college student, worked on a quality improvement project for 2.5 years. Co-authored OR# 19. Currently, Sandra is pursuing a master’s degree in public health in Michigan after completing a GYN residency in Egypt and Irini is a dental student at University of Maryland.
- 2018-2021 Mariel Villanueva (nursing student), Irini Hanna (dental student), and David Slupek (medical student) worked on a quality improvement project and the PPP for 2 summers. Co-authored OR# 26. Currently, Mariel is a graduate nurse, Irini is a dental student at UM and David is an ENT resident in Erie/PA

International Postdoctoral Mentees:

- 2008- 2018 Sherif Abdel Hamid, assistant professor and Magda Abollo, Associate Professor of Anesthesia at the research institute/Alexandria University/Egypt. Dr Abdel Hamid presented abstracts at ASRA, Toronto, Canada, April 2010 and ASRA, Las Vegas, May 2011.
- 2015-2018 Sandra Dimitri, an international medical student worked on a quality improvement project and shadowed me during anesthesia pain rounds and gyn anesthesia during the summer of 2015. Co-authored OR# 19. Currently, Sandra is pursuing a master’s degree in public health in Michigan after completing a GYN residency in Egypt.

2009-Present Rasha S. Jabri, MD, CPHQ, CMQ; mentored from 2009-2011 to enhance the acute pain service at Tawam Hospital, to organize three international Pain conferences in UAE and to obtain an appointment in ACCM as adjunct clinical assistant professor. Currently Dr Jabri completed her training at Hospice and Palliative Medicine and recently seeking an academic career at RUSH University in Chicago in the department of Hospice and Palliative Care.

Postdoctoral Mentees

2002-2005 Annette Rebel, an anesthesia resident in the UK. Now an Associate Professor of Anesthesia in the UK. During my mentorship of her as a resident and junior faculty, we worked on a quality improvement projects in the UK resulting in 4 presentations at 3 meetings:
“Improving perioperative pain management education for anesthesia residents for ACL reconstruction with femoral nerve block”
“Improving perioperative pain management education for anesthesia residents for arthroscopic shoulder surgery with single shot interscalene nerve block” and “Improving perioperative pain management education for anesthesia residents for ankle surgery with sciatic nerve block” all approved for oral presentation at IARS 79th Congress, Honolulu Hawaii, March 2005
“Implementation of an anesthesia perioperative pain management education program for peripheral nerve blockade in elective orthopedic surgical procedures” ASRA, Toronto, Canada, 2005.

2010-2020 Jen-Pierre Ouanes, MD. Director of regional anesthesia at Bayview Medical Center, Johns Hopkins till 2018, Currently Clinical Associate Professor and Weill Cornell Medical center / Director of Outpatient Center Tampa/ Florida. We worked on a quality improvement project to improve residents learning during a rotation in regional anesthesia co-authored OR #13 and 14
Mentored Jen Pierre Ouanes. Co-authored two book chapters BC #4 and #7

2011-2019 Vicente Garcia Tomas, MD. Director of Acute Pain Service at Bayview Medical Center, Johns Hopkins until 2018, when he moved to be the Chief Division of Regional Anesthesia and Pain Medicine at Univ. of AZ. Currently, a faculty member at Northwestern in Chicago. We worked on a quality improvement project to improve Residents Learning of regional anesthesia . OR# 14 Co-authored two book chapters BC #4 and #7

2012-2015 Michael Purvin MD, currently, a regional anesthesiologist at Kansas University.
Quality improvement project in pain management for postsurgical patients. Co-author #15

2012-2015 Molly Cason MD, currently an anesthesiologist at Kansas University. Project on regional anesthesia for lung transplant Co-author OR#16

2014-Present Rashmi Prasad, assistant professor anesthesia and critical care, division RAPM. Currently director of Green spring outpatient surgery center, Dept of Anesthesiology/Critical Care Medicine, Johns Hopkins University, Baltimore, MD. Mentored her on a quality improvement project “Quality Improvement Initiative to Improve Postoperative Pain. Co-authored OR#19. and together created a pain pathway for Interventional Radiation Oncology Gyn cases. Co-authored OR#18

2017-Present Kara Segna, assistant professor anesthesia and critical care, division RAPM. I mentored her as a regional anesthesia fellow and while she is now the regional anesthesia fellowship program director/ She was recently chosen to serve in the College Advisory Program (CAP) at Johns Hopkins

2017-Present Hassan Rayaz, assistant professor anesthesia and critical care, division RAPM. I began to mentor him as a junior faculty. He is currently Program Director of the RAPM ACGME fellowship program.

2016-Present Ronen Shechter MD, a chronic pain faculty member in the RAPM division, Is currently an assistant professor, Dept of Anesthesiology/Critical Care Medicine, Johns Hopkins University, Baltimore, MD. He is now the director of acute pain service at JH and medical director of the PPP. Co- author OR# 20-22-23-25-26

2018-Present Richard Barnhart MD, assistant professor, Anesthesiology/Critical Care Medicine, Johns Hopkins University, Baltimore, MD. Director of APS at Bayview Medical Center

2018-Present Gabriel Orner MD, assistant professor , Director of regional anesthesia at JHH Dept of Anesthesiology/Critical Care Medicine, Johns Hopkins University, Baltimore, MD.

2019-2020 Sara Rahman, regional anesthesia fellow at Johns Hopkins. Currently regional anesthesiologist at Hartford Health Care . OR# 25

Thesis committees: None

Educational Program Building/ leadership:

Director of annual hands- on anatomy workshop / ultrasound workshop at Johns Hopkins and international pain meetings in UAE and Egypt

Educational Demonstration Activities to external audiences:

- 2012 Invited to join (AFSRA) academic advisory board of the African Society of Regional Anesthesia.
- 2012-2016 The first **regional anesthesia resident's international rotation to UAE** (Tawam Hospital).
- 2021-Present PPP website with patients and providers - education in pain management and tapering opioids. <http://www.hopkinsmedicine.org/ppp>
- 2022 June 2022. **Interview by ReachMD** "Measuring the Rise of Drug Misuse & Mental Health Challenges Amid the COVID-19 Pandemic. <https://reachmd.com/programs/clinicians-roundtable/measuring-the-rise-of-drug-misuse-mental-health-challenges-amid-the-covid-19-pandemic/13614/>
- 2022 July 2022 **Interview by AAPM Podcast** Pain Matters Episode 12 'Launching and Scaling the first Personalized Perioperative Pain Clinic for Opioid Reduction After Surgery in the US. <https://painmed.org/ep-12-launching-and-scaling-the-first-personalized-perioperative-pain-clinic-for-opioid-reduction-after-surgery-in-the-us/>

RESEARCH ACTIVITIES

Research Focus

My research is focused on quality improvement and safety of pain management in surgical patients.

Clinical research in regional anesthesia and pain management: Early in my career, I conducted clinical research comparing different kinds of local anesthetics(Levobupivacaine and Ropivacaine) in regional anesthesia OR #9. I compared different techniques of local anesthetic use, epidural use and intravenous narcotic use. OR#2, 3, 5-8, 10,12,13

Pain management education: I developed the first interactive course in pain management for medical students. This program was published in the journal Regional Anesthesia and Pain Medicine in 2005 with an accompanying editorial OR# 1. My research in regional anesthesia education to residents and fellows both national and international resulted in publication. OR# 4, 13, 14

Multidisciplinary pain management program: I have participated in many multidisciplinary programs to improve quality and safety of pain management, improve patient satisfaction while using less opioid. At Johns Hopkins, we have built protocols and pain pathways to enhance recovery after surgery. OR#15,16,17,18,19,24

Innovation in pain management to fight opioid epidemic: I founded a multidisciplinary program, the first in the US tailored to treat opioid-dependent patients in the perioperative period and wean their opioids. In collaboration with a team of fine clinicians, we were able to initiate the program and publish multiple papers sharing this innovation, followed by the outcome of the PPP OR# 20-21-22-23. We received a CDC R01 grant to refine and disseminate the work of the clinic in 2019 and developed a website and many tools to keep patients engaged in perioperative pain management. OR#26

Transitioning to telemedicine in pain management: With the ongoing COVID-19 pandemic, we transitioned care for our patients through telehealth and published a newsletter in Pain Medicine 2020 OR#25 and prepared a detailed manuscript to describe the outcome of the transition. OR# 27

Racial disparities in pain management for surgical patients: My current research endeavors include exploring ways to improve pain management disparities in surgical patients. The ongoing COVID-19 pandemic has detrimental impacts on health determinants which may widen racial disparities in access to delivery and outcomes of pain management. Innovative and sustainable care models supporting equitable pain management are urgently needed.

My future research will continue to address the misuse of opioids for pain management, which causes more than 115 Americans dying each day and costs the US \$78.5 billion a year. It will also pave the way for improving health equity in other settings and patient populations. I anticipate that my excellence in patient care and my success in program building and innovation in PPP will facilitate my further research.

Research Program Building/Leadership:

2019-2023: PPP (Co-PI / CDC RO1 grant) leading a large group of researchers including human factor researcher and Armstrong institute clinical researchers to improve the innovative Perioperative Pain Program (PPP) for

chronic opioid users undergoing surgical procedures. Developing, implementing, and evaluating CDS tools to improve prescription opioid use and patient engagement in perioperative pain management.
2023- 2026: MDDT Proposal for Qualifying a Clinical Outcome Assessment of Standardized Opioid Intake by Patient Report for use in Medical Device Development – Dose-Opioid-Source Evaluation (DOSE tool)

Research Demonstration Activities:

2021-Present PPP website with patients and providers education in pain management and tapering opioids not clear.
<http://www.hopkinsmedicine.org/ppp>

Inventions, Patents, Copyrights:

2021 PPP: Personalized Perioperative Pain Program website, for patients and providers education in pain management and tapering opioids. <http://www.hopkinsmedicine.org/ppp>

Technology Transfer Activities: None

SYSTEM INNOVATION AND QUALITY IMPROVEMENT ACTIVITIES

System Innovation Focus

Improving quality of care is an ethical imperative. My obligation to improve quality of pain management pressed me to lead and participate in many quality improvement projects within JH and beyond. For many years, I directed QI within the pain service and over the years collaborated with many surgical colleagues and with the Armstrong Institute for Patient Safety and Quality on initiatives in pain management to improve patient satisfaction and improve HCAHPS (the Hospital Consumer Assessment of Healthcare Providers and Systems) scores. In 2008 I joined the Johns Hopkins Pain Task Force and Sedation Committee. In 2016, I Co- chair the Opioid Guidelines Committee and in 2021 I co-led the pain management for the Patient-Aligned Care Teams (PACT) for spine fusion procedures. Nationally I lead knowledge transfer in the field of acute pain and regional anesthesia to many institutions e.g. UVA and University of Rochester. Internationally, I lead knowledge transfer to UAE (Tawam Hospital) in regional anesthesia and in ERAS to University de Berlin, Germany. I remained as a consultant for their quality improvement initiatives for many years after completing knowledge transfer.

System Innovation and Quality Improvement efforts within JHMI

2005-2021 Role: Director Johns Hopkins Pain Service.
Results: See above under program building

2008-2018 Role: Member of Johns Hopkins Pain Task Force: The Pain Task Force focus on identifying gaps, inconsistencies, and updates and make recommendations for best practices for managing pain. They ensure best practice and safety in assessing pain and in pain management delivery system. revising pain policy and discuss Hero events and work with different teams in route cause analysis.

2017-2021 Role: Co-chair the opioid guidelines committee. executing and refining the outcomes of the 2016 CDC Opioid prescription guidelines (mentioned above)

2012-2015 Role: Created an E-Learning program at Johns Hopkins for treating pain in surgical patients. This became the standard of care for pain management of all surgical units. OR#19

2014-2015 Role: Created a clinical pain pathway for opioid naïve and opioid dependent patients; a pathway that has been implemented for all surgical patients at Johns Hopkins and adopted by other institutions. It was distributed at the annual Hopkins perioperative course. OR#19

2015-2018 Role: Team member, Interventional Radiation Oncology: Transition of a magnetic resonance simulator to a brachytherapy suite protocol. Site: JH Brachytherapy and brachytherapy suites. OR#18

2015-2017 Role: Team member, Total Pancreatectomy with Islet Autotransplantation and Intraoperative Islet Separation protocol. Site: JH surgery and postsurgical suites. OR# 17

2017-Present Role: Founder and Medical Director, Perioperative Pain Program (PPP), an innovative clinic model, the first such program in the US to address aspects of pain management and opioid utilization. OR# 20-22-23-25-26 (mentioned above under program building)

2017-2020 Role: Team member, Enhanced Recovery After Spine Surgery (ERASS) Protocol at an Academic Community Hospital JH. Site: JH Neurosurgery and neurosurgical suites. OR# 24

2021-2022 Role: Co-leading pain management in Patient-Aligned Care Teams (PACT) for spine Fusion Procedures

System Innovation and Quality Improvements efforts outside of JHMI

- 2008-2011 Role: As a member of the Center for Global Health and the Johns Hopkins International Office, I led an international training program to expand the practice of regional anesthesia in Egypt and UAE. (see more details above)
- 2012-2015 Invited to join (AFSRA) academic advisory board of the African Society of Regional Anesthesia
- 2012-2016: the first regional anesthesia resident's international rotation to UAE (Tawam Hospital).where Hopkins residents spend a month in UAE under the mentorship of an American graduate faculty and treat pain in different environment and different patient population.

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments

University of Kentucky:

- 1999-2004 Member, Clinical Competence Committee for Anesthesia Residents, Department of Anesthesia UK
- 2003-2004 Member, Simulator Education Committee

Johns Hopkins University:

- 2006-2016 Member, ACCM Clinical Competency Committee
- 2009-2016 Member, ACCM Residents Education Committee
- 2007-2010 Member, POE Pain Management Committee
- 2009-2019 Member of Sedation Committee, JHH
- 2008-2010 Member, Pain Pump Committee, JHH
- 2008-2010 Member, Orthopedic Surgical Site Infection Committee
- 2008-2018 Member, Pain Task Force committee, JHH
- 2010-2015 Chair, Hopkins Pain Education Committee, (E-Learning program in treating pain in surgical patient) JHH
- 2010-Present Member of OWIS (office of Women in Science and Medicine)
- 2011-2016 Member Patient Center Care Research and Planning Committee
- 2014-Present Member of ACCM Quality and Safety Committee, JHH
- 2014-Present Member in Mentoring and Promotion Committee, ACCM
- 2016-Present Member Opioid Stewardship Committee, JHH
- 2016-2021 Co-Chair Opioid Guideline Committee, JHH
- 2021-Present Co-Chair Pain management of Providers Aligned in Care Transformation (PACT) Spinal Fusion Procedures, JHH
- 2022- Present ACCM representative at The Advisory Council to Advance Gender Equity, Johns Hopkins university

National Committees:

- 2019-Present AAPM Abstract committee
- 2019- Present Co-Chair AAPM, Acute Pain Sig Group
- 2021-2022 Co-Chair AAPM annual meeting for 2022
- 2022-2023 Co-Chair AAPM annual meeting for 2022
- 2023-Present Co-Chair Executive of the Council of SIGS at AAPM
- 2023- present Director- at-Large, American Academy of Pain Medicine
- 2024- present Treasurer at the AAPM

Editorial Board Appointments

- 2020-Present Editorial Board Pain Medicine Journal, Acute Pain Management Section

Journal peer review activities

- 2005–2015 Regional Anesthesia & Pain Medicine
- 2016-Present Journal of Pain Medicine
- 2016-Present Journal of Opioid Management

Other peer review activities: None

Advisory Committees, Review Groups/ Study Sections:

2022 Advisory Board Member, Perioperative Pain Program at Univ of Virginia
2021-2022 Co- Chair AAPM 2022 AZ
2022-2023 Co-Chair AAPM 2023 FL

Professional Societies

2007-Present Member, American Society of Anesthesiologist
2007-Present Member, American Society of Regional Anesthesia
2013-2019 Member of Association of University Anesthesiologists (AUA)
2013-2017 Society of Education in Anesthesia (SEA)
2018-Present Society of American Academy of Pain Medicine (AAPM)

RECOGNITION

Awards, Honors

2003 Recipient of Abraham Flexner Master Educator award in Educational Innovation & Development, Center for Excellence in Medical Education. A peer- reviewed award recognizing outstanding faculty who have made significant contributions in educational innovation & development in the College of Medicine at the University of Kentucky.

2003 Invited to join the Circles of Power Leadership program for Woman Faculty at University of Kentucky.

2008-2009 Speaker Awards from the Egyptian Pain Society

2009 Speaker Awards Guest Speaker at International Arab Health Dubai, UAE .

2011-2014 Speaker Awards at First, Second and Third International Pain Conference, Al Ain, UAE.

2011 Invited to join Leadership program for Woman Faculty at Johns Hopkins University

2011 Best research award in innovation at JHH research day

2012 Invited to join as an Academic advisor to the African Society of Regional Anesthesia

2013 Invited to join the Association of University Anesthesiologists (AUA)

2013 College leader teaching award for anesthesia residency

2013 Nominated to the Master Mentorship Program at JH

2016 Appointed to C0-Chair Opioid Guideline committee part of Opioid stewardship committee

2017 Top Egyptian Successful Women Award, an award given by the ministry of immigration and the Egyptian president based on both a career success outside Egypt and a teaching role within Egypt.

2021-2022 appointed to Co-Chair AAPM 38th annual meeting in AZ and 39th annual meeting in FL

2022 **Presidential Commendation Award by the American Academy of Pain Medicine (AAPM)**, in recognition and appreciation of my leadership role in the academy and as Co-chair of the AAPM 38th Annual Meeting.

2023 **Presidential Commendation Award by the American Academy of Pain Medicine (AAPM)**, in recognition and appreciation of my leadership role in the academy and as Co-chair of the AAPM 39th Annual Meeting.

2023 Position of Director- at- large / *AAPM*

2023 the Resident Research Mentor Award at the Johns Hopkins Anesthesiology Residency Program Graduation June 2023

Invited Talks

JHMI/Regional

- 12/2007 Guest speaker, Bayview Hospital Annual Regional Educational Program. "Overview of continuous peripheral nerve catheter,"
- 3/2012 Guest Speaker, JH Nursing School Chesapeake Bay Society for Perianesthesia Nurses (CBSPAN). "What Is New in Postoperative Pain Management,"
- 5/2012 Speaker at the National Rehabilitation Hospital, Washington DC, "Acute Pain Management in the 21st Century,"
- 9/2013 Speaker at the Patient-Centered Care Best Practice meeting; Baltimore, MD. "Pain management for surgical patient "
- 7/2017 Grand Round Speaker JH "Acute Pain Management Away from Opioids /Facts or Fiction?" management in Hospital setting"
- 5/2019 Grand Round speaker ENT Department JH; The Opioid Crises.
- 8/2020 Grand Round Speaker ENT Department at JH; Opioid Crisis during COVID Pandemic. (virtual)
- 9/2021 ACCM Grand Round / System integration Program Building (Virtual)
- 1/2024 Guest Speaker at the dental program JH: " Pain Management in Dentistry"

National Talks

Instruction, Workshops and PBLD

- 4/2003 Guest speaker, University of Kentucky, Alumni Reunion "Regional Anesthesia in Ambulatory Surgery," Lexington/ KY
- 5/2009 Workshop lecture, American Society of Regional Anesthesia ASRA "Regional Anesthesia for the Lower Extremity." Phoenix/AZ
- 10/2010 Workshop lecture, American Society of Anesthesiology ASA "Regional Anesthesia for the lower extremity." San Diego/ CA
- 5/2011 Guest speaker, American Society of Regional Anesthesia ASRA "Pain Management for the Elderly," Las Vegas/ Nevada
- 3/2012 Workshop lecture, American Society of Regional Anesthesia ASRA "Suprascapular Block" San Diego/ CA
- 4/2012 Guest speaker, 16th annual symposium, Hospital for Special Surgery. "Pro- Con of intra-articular injections" Manhattan/NY
- 6/2012 Guest Speaker and workshop moderator; University of Louisville; "Regional Anesthesia of the sciatic nerve". Louisville/Kentucky
- 6/2012 Guest Speaker, University of Louisville; Regional Anesthesia for morbidly obese patient. Louisville/Kentucky
- 6/2012 Guest Speaker, University of Louisville; Ultrasound guided Neuraxial Blocks; is it worth it? Louisville/Kentucky
- 5/2013 Panel discussion, ASRA 2013 "Balancing Pain Management and Prevention of Withdrawal in Patients with a History of Opioid Abuse". Boston /MA
- 3/2015 Speaker, JH perioperative annual meeting. Pain Management in the dependent patient. Marco Island/Florida
- 3/2015 Speaker, JH perioperative annual meeting Marco Island, Florida. Pain Management beyond narcotics; Marco Island/Florida
- 3/2016 Speaker, JH perioperative annual meeting. Best Practice in Pain Management in the dependent patient; Marco Island/Florida.
- 3/2016 Speaker, JH perioperative annual meeting. Best Practice in pain Management beyond narcotics; Marco Island/Florida.
- 5/2016 Visiting professor "Pain management, a non-narcotics approach" Westchester medical Center NY.
- 3/2018 Speaker, JH perioperative annual meeting "Opioid Crisis: The Role of Perioperative Clinician". Marco Island/Florida.
- 2/2019 Speaker, JH perioperative annual meeting, "Role of Clinician in the Opioid Crisis"; Marco Island/Florida.
- 2/2019 Speaker, JH perioperative annual meeting "the case for Multimodal Therapy"; Marco Island/Florida
- 2/2019 Speaker, a Case based discussion, JH perioperative annual meeting Marco Island/Florida. Pain Management in the opioid tolerant patient.
- 6/2019 Guest Speaker at International Conference on Opioids. Perioperative Pain Management and the Opioid Crisis. Boston/MA

2/2020 Panel speaker AAPM Annual Meeting in National harbor 2020. ‘Building a Pain Program in Academic Center’. Washington/DC

3/2020 Visiting Professor “Addressing the Opioid Crisis One Surgical Patient at a Time” University of Virginia Medical center Virginia

7/2020 Virtual Grand Round Speaker Westchester medical Center NY. ‘Pain management in chronic opioid users ‘(virtual)

9/2021 ASRA symposium on Preventing Addiction and Solving Pain Puzzle (Virtual)

9/2021 Midwest pain society talk on personalized pain program (Virtual)

10/2021 ASA REMS presentation: Post-operative Pain Management and Transitional Pain Services (Virtual)

10/5/2022 Grand round Guest Speaker , The Swedish 26th Annual Pain Conference: A message of Hope during The Opioid Crisis (Virtual)

7/30/2023 Grand round Guest speaker , NYU : The Perioperative Pain Program

3/7/2024 AAPM annual meeting , AZ 2024; Marijuana use PRO and CON session

3/7/2024 AAPM annual meeting , AZ 2024; The Role of Perioperative Pain Program in Successful Acute Pain Services

International talks

11/2007 Guest Speaker Egyptian Society of Pain. “Regional Anesthesia of the Lower Extremity,” Sharm el-Sheikh/Egypt

11/2007 Guest Speaker Egyptian Society of Pain “Overview of Acute Pain Management,” Sharm el-Sheikh/Egypt

4/2008 Guest Speaker Cairo International Anesthesia Conference. “Regional Anesthesia in the Anticoagulated Patient,” Cairo/Egypt

4/2008 Guest Speaker Cairo International Anesthesia Conference. “Overview of Complications of Regional Anesthesia, “Cairo/Egypt

11/2008 Guest Speaker, Alexandria International Anesthesia Conference. “Regional Anesthesia in the ICU patient “Alexandria/ Egypt

11/2008 Guest Speaker, Alexandria International Anesthesia Conference. “Ultrasound-guided Peripheral Nerve Blocks,” Alexandria / Egypt

1/2009 Guest Speaker, International Arab Health, “Best in Perioperative Pain Management,” Dubai, UAE

1/2009 Guest Speaker, International Arab Health, Acute Pain Service in a Modern Hospital,” Dubai/UAE

10/2009 Visiting professor Tawam Hospital, “Best in Lower Extremity Analgesia,” Al Ain/UAE

10/2009 Guest Speaker, Tawam Hospital, “How to Build and Maintain an Acute Pain Service,” AL Ain/UAE

9/2011 Guest Speaker, “Outcomes of Regional Anesthesia and Analgesia”, Abu Dhabi/UAE.

9/2011 Guest Speaker, “Peripheral Nerve Catheter Outcomes” Abu Dhabi/UAE.

4/2012 Visiting Professor, Alexandria Research Institute, “Regional Anesthesia; is it compatible with anticoagulation” Alexandria / Egypt

4/2012 Guest Speaker , Alexandria Research Institute, “What is new in Regional Analgesia” Alexandria/ Egypt

4/2012 Visiting Professor, Cairo University, “Benefits of Regional Anesthesia,” Cairo/Egypt

4/2012 Guest Speaker, Cairo university, Egypt “Acute Pain Management in the 21st Century,” Cairo/Egypt.

5/2014 Visiting Professor 3rd international pain conference. “Balancing Pain Management and Withdrawal” Al Ain/UAE

5/2014 Guest Speaker, 3rd international pain conference. Acute Pain Management in Special Population. Al Ain/UAE

5/2014 Guest Speaker, 3rd international pain conference. Enhanced Recovery after Colorectal Surgery. Al Ain/ UAE

10/2017 Guest Speaker at the international Surgery Conference, “Perioperative Pain Program”. London/ U

4/2018 Guest Speaker International GI Cancer society; “Pain Management throughout cancer procedures. Cairo/Egypt

4/2018 Guest Speaker, International GI Cancer society; “Palliative pain management for cancer survivors” Cairo /Egypt

6/2018 Guest Speaker, 2nd World Congress on Surgery and anesthesia Conference, “Pain management without opioids” Rome/Italy.

- 6/2018 Guest Speaker, 2nd World Congress on Surgery and anesthesia Conference. “Pain management in opioid Crisis” Rome/Italy
- 12/2018 Guest Speaker and visiting professor, university of Berlin, Charite de Berlin; “The Journey of Pain Management in Cancer Patient”. Berlin/ Germany
- 12/2018 Visiting Professor university of Berlin, Charite de Berlin; Enhanced Recovery after Surgery, ERAS, How to Develop? Berlin/ Germany
- 12/2018 Guest Speaker, university of Berlin, Charite de Berlin; “ERAS for CRS and HIPEC”. Berlin/ Germany
- 4/2019 Visiting Professor, University of Alexandria. “ERAS Protocol for Colorectal Procedures, Alexandria/Egypt
- 4/2019 Guest Speaker, University of Alexandria, “Pain Management for the Opioid Dependent Patient”. Alexandria/Egypt
- 4/2022 Invited speaker at Royal College of Anaesthetists Manchester ‘The Peri-operative Pain Program and the Opioid Epidemic - Johns Hopkins Experience’ Manchester /UK (Virtual)

Consultantships:

- March 2020-present Univ of Virginia to start PPP program
- July 2023-Present NYU to start PPP program
- Feb 2024-Present Univ of Tennessee to start PPP program

OTHER PROFESSIONAL ACCOMPLISHMENTS

Community Service

- 2007-Present Member, Coptic Medical Association of North America (CMANA); Field Service, mentorship to health care providers
- 2021-Present Founder of CMANA Student Chapter in MD
- 2005-Present During the past 18 years, I have invited many undergrad students and medical students to “shadow” me in the operating rooms and pain rounds.

- April 2023 Invited speaker at Howard County Public School : “Fentanyl addiction and its impact on Teens”