

## CURRICULUM VITAE

**Date Prepared:** February 5, 2022  
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**Place of Birth:** Kuching, Sarawak; Malaysia

### Education

1998-2002	BA	Biology	University of Texas, Austin, TX
2002-2007	MD		Baylor College of Medicine, Houston, TX
2004-2006	MBA	Business Administration	Rice University, Jones Graduate School of Management, Houston, TX

### Postdoctoral Training

2007-2008	Intern	General Surgery	Beth Israel Deaconess Medical Center, Boston, MA
2008-2011	Resident	Anesthesiology	Brigham and Women's Hospital, Boston, MA
2010-2011	Chief Resident	Department of Anesthesia	Brigham and Women's Hospital, Boston, MA
2011-2012	Fellow	Pain Management	Brigham and Women's Hospital, Boston, MA

### Faculty Academic Appointments

2012-2013	Assistant Professor	Anesthesia	Johns Hopkins Medical School, Baltimore, MD
2013-	Instructor	Anesthesia	Harvard Medical School, Boston, MA
2019-	Assistant Professor	Anesthesia	Harvard Medical School, Boston, MA

### Appointments at Hospitals/Affiliated Institutions

2012-2013	Attending Anesthesiologist	Anesthesia	Johns Hopkins Hospital Baltimore, MD
2013-	Attending Anesthesiologist	Anesthesia	Brigham & Women's Hospital, Boston, MA

### Other Professional Positions

2016-2020	Scientific Advisory Board	axialHealthcare	12 days per year
2016-	Consultant	Medtronic	2 days per year
2017-	Consultant	Nevro	2 days per year
2019-	Consultant	Endo Pharmaceuticals	12 days per year
2019-	Consultant	Abbott	2 days per year

### Major Administrative Leadership Positions

#### **Local**

2013-2017	Founding Medical Director of Pain Management Center	Brigham and Women's Faulkner Hospital, Boston, MA
2013-	Founding Co-Director, Spine Center	Brigham and Women's Hospital, Boston, MA
2014-	Associate Program Director of Pain Management Fellowship	Brigham and Women's Hospital Boston, MA
2014-	Co-founder and Facilitator: Fellow Lecture Series	Brigham and Women's Faulkner Hospital, Boston, MA
2017-	Medical Director of Pain Management Center	Brigham and Women's Hospital, Boston, MA
2020-2021	Associate Chief of Pain Medicine Division	Brigham and Women's Hospital
2021-	Chief of Pain Medicine Division	Brigham and Women's Hospital

### Committee Service

#### **Local**

2010-2011	Residency Admissions Interview Committee, Department of Anesthesiology	Brigham and Women's Hospital Boston, MA
2012-2013	Residency Admissions Interview Committee, Department of Anesthesiology	Johns Hopkins Hospital Baltimore, MD
2013-2015	Medical Executive Committee, Elected Representative	Brigham and Women's Faulkner Hospital, Boston, MA
2013-	Fellowship Admissions Interview Committee,	Brigham and Women's Hospital

2014-	Pain Medicine Fellowship Ambulatory Advisory Council	Boston, MA Brigham and Women's Faulkner Hospital, Boston, MA
2014-	Clinical Competency Committee, Pain Medicine Fellowship	Brigham and Women's Hospital Boston, MA
2014-	Program Evaluation Committee Pain Medicine Fellowship	Brigham and Women's Hospital Boston, MA
2015-2019	Opiate Ad Hoc Committee	Harvard Medical School
2015-2018	Opioid Management Subcommittee	Brigham and Women's Faulkner Hospital, Boston, MA
2016-2020	Office for Multicultural Careers Advisory Committee	Brigham and Women's Hospital, Boston, MA
2016-	B CORE Standards Committee	Brigham and Women's Faulkner Hospital, Boston, MA
2017 -	Residency Admissions Committee Department of Anesthesiology	Brigham and Women's Hospital Boston, MA
2017-	Clinical Competency Committee, Anesthesiology Residency	Brigham and Women's Hospital Boston, MA
2019-	Faculty Board, Department of Anesthesiology	Brigham and Women's Hospital Boston, MA
<b>National</b>		
2014-	Program Director Committee, Representing BWH Pain Medicine Fellowship	American Board of Anesthesiology
2016-	MOCA Minute: Pain Medicine Subcommittee	American Board of Anesthesiology

### Professional Societies

2007-	American Society of Anesthesiologists
2007-2012	American Medical Association
2007-	Massachusetts Medical Association
2007-	Massachusetts Society of Anesthesiologists
2011-	American Pain Society
2014-	American Society of Interventional Pain Physicians
2014-	International Spine Intervention Society
2014-	American Academy of Pain Medicine

### Editorial Activities

#### **Ad hoc Reviewer**

- Headache Journal
- The Journal of Delivery Science and Innovation
- Pain Practice
- Spine Journal

### Other Editorial Roles

- 2017 Editor in Chief Pain Medicine: An Essential Review, 1<sup>st</sup> Ed. Springer International Publishing  
Note: Substantial effort spent writing, compiling, and editing over 150 chapters for the first edition of a clinical review book targeted at fellows and junior attending physicians.
- 2020 Editor Interventional Management of Chronic Visceral Pain Syndromes, 1<sup>st</sup> Ed. Elsevier, 2020.

### Honors and Prizes

- 1998 Texas Valedictorian Scholarship, Texas
- 2002 Baylor College of Medicine Community Service Scholarship, Houston, Texas
- 2005 Rice University's Jones Graduate School of Management Academic Scholarship, Houston, TX
- 2011 Foundation for Anesthesia Education and Research (FAER) Practice Management Resident Scholar Program, Pittsburgh, Pennsylvania
- 2011 Harvard School of Engineering & Applied Science "Young Innovator" Award, Boston, MA
- 2011 National Collegiate Inventors and Innovators Alliance Award for participation in the Ventures Lab, Cambridge, MA
- 2011 Center for Integration of Medicine and Innovative Technology (CIMIT) Research Grant Finalist, Boston, MA
- 2011 Distinguished Resident of the Year, Anesthesia Department, Brigham & Women's Hospital, Boston, MA
- 2013 Outstanding Teacher of the Year, Department of Anesthesiology, Johns Hopkins Hospital, Baltimore, MD
- 2013 Distinguished Intraoperative Teaching and Clinical Mentorship, Department of Anesthesiology, Johns Hopkins Hospital, Baltimore, MD
- 2014 Partners in Excellence Award for Leadership and Innovation, Brigham and Women's Hospital, Boston, MA
- 2014 Pain Attending of the Year Award, Department of Anesthesiology, Brigham and Women's Hospital, Boston, MA
- 2015 Pain Attending of the Year Award, Department of Anesthesiology, Brigham and Women's Hospital, Boston, MA
- 2016 Pain Attending of the Year Award, Department of Anesthesiology, Brigham and Women's Hospital, Boston, MA
- 2018 Partners in Excellence Award for Leadership and Innovation, Brigham and Women's Hospital, Boston, MA
- 2018 Pain Attending of the Year Award, Department of Anesthesiology, Brigham and Women's Hospital, Boston, MA
- 2018 Outstanding Mentoring Award, Department of Anesthesiology, Brigham and Women's Hospital, Boston, MA
- 2020 Pain Attending of the Year Award, Department of Anesthesiology, Brigham and Women's Hospital, Boston, MA
- 2021 Pain Attending of the Year Award, Department of Anesthesiology, Brigham and Women's Hospital, Boston, MA

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

### **Funding Information**

#### **Current**

- 2015-2019 Prediction of Persistent Post-Mastectomy Pain  
NIH (NIGMS)/ K23 GM110540 (PI: Schreiber)  
Co-Investigator,  
This project investigates the ability of preoperatively assessed variables including psychosocial evaluation and QST to predict risk of chronic pain after surgery, and allow development of a study enrichment tool to investigate existing and novel perioperative preventive therapies.
- 2016-2018 ReActiv8-B trial.  
Sponsor: Mainstay Medical Limited  
Co-Investigator, An international, multi-center, prospective randomized sham-controlled IDE trial at up to 40 clinical trial sites and for 128 randomized subjects to be implanted with an innovative implantable neurostimulation system (Reactiv8). Device is intended to reduce the pain and disability of Chronic Lower Back Pain (CLBP) by helping to restore control to the muscles that dynamically stabilize the lumbar spine.
- 2016-2019 Exparel for Shoulder Surgery  
Sponsor: Pacira Pharmaceuticals, Inc.  
Co-Investigator – Direct Costs \$18,000  
A multicenter, randomized, double-blind, placebo-controlled study evaluating the efficacy, safety, and pharmacokinetics of brachial plexus nerve blocks with Exparel for post-surgical analgesia in subjects undergoing total shoulder arthroplasty or rotator cuff repair.
- 2017-2020 Prevention of Post-Mastectomy Pain with perioperative ketamine administration:  
A randomized, controlled trial.  
NIH (NIGMS) / K23 GM110540 (PI: Schreiber)  
Site Principal Investigator  
This project investigates the role of ketamine in the prevention or modulation of post mastectomy pain syndrome following mastectomy.
- 2018 – 2019 Algovita Post-Market Clinical Study: Spinal Cord Stimulation to Treat Chronic Pain.  
Sponsor: Nuvectra Medical (\$1800 per patient with 10 estimated patients)  
Principal Investigator, multi-center, prospective post market study following patients implanted with Nuvectra’s Algovita spinal cord stimulator.
- 2018 – 2019 Pilot Study to Examine the Feasibility of the DISCSS (Dynamic Interferential Spinal Cord Stimulation System)  
Sponsor: Meagan Medical Inc. (\$4490 per patient with 10 estimated patients)

	Principal Investigator, multi-center, prospective pilot study following patients using a spinal cord stimulator trial with a novel dynamic interferential system and measuring outcomes compared to traditional stimulation.
2018 – 2019	Algovita Ultra High Pulse Width Clinical Study: Spinal Cord Stimulation to Treat Chronic Pain. Sponsor: Nuvectra Medical (\$1800 per patient with 10 estimated patients)
2019-2020	Principal Investigator, multi-center, prospective study following patients implanted with Nuvectra’s Algovita spinal cord stimulator utilizing ultra high pulse width settings Clonidine Micropellet Clinical Study for Radiculopathy Sponsor: Sollis Therapeutics, Inc. (\$9,633 per patient with 20 estimated patients)
2020-2021	Principal Investigator, prospective, multi-center, randomized, double-blinded, sham-controlled study to evaluate the efficacy and safety of clonidine micropellets for the treatment of pain associated with lumbosacral radiculopathy in adults. PROLONG Neuromodulation Study for Post Laminectomy Syndrome Sponsor: Abbott (\$ per patient with 10 estimated patients)
2020- full enrollment	Principal Investigator, prospective, multi-center, open-label, post-market study following patients who have failed stimulation previously and are now using BurstDR waveforms or Dorsal Root Ganglion stimulation with restored efficacy A Phase 3, Randomized, Double Blinded, Active Controlled, Multicenter Study to Evaluate the Efficacy, Safety and Pharmacokinetics of EXPAREL admixed with Bupivacaine vs Bupivacaine only administered as Combined Sciatic (in popliteal fossa) and Adductor Canal Nerve Block for Postsurgical Analgesia in Subjects Undergoing Lower Extremity Surgeries Co-investigator (\$340,860) This study will evaluate the efficacy of liposomal bupivacaine when given as a Sciatic (in popliteal fossa) and Adductor Canal nerve block following foot and ankle surgery compared to plain bupivacaine.
2020 – full enrollment	SCOPE Superion Study for Neurogenic Claudication Sponsor: Boston Scientific Principal Investigator, multi-center, prospective, observational, single-arm, post-approval study to evaluate the Superion interspinous process spacer outcomes in patients with lumbar spinal stenosis resulting in neurogenic claudication.
2020 – full enrollment	SKOAP Sequenced strategy for improving outcomes in people with knee osteoarthritis pain. Co-investigator
2021 – full enrollment	RELIEF

### Unfunded Current Projects

2017-2019	IRB Approved Case Series Evaluating the Efficacy of Minimally Invasive Lumbar Decompression Principal Investigator, single center, prospective cohort evaluating objective and subjective functional improvement following MILD decompression of the ligamentum flavum.
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- 2019-present IRB pending Case Series Evaluating the Compliance and Efficacy of Smart Pill-bottles  
Principal Investigator, single-center, prospective cohort evaluating patient compliance of Bluetooth enabled smart pill dispensers for opioid medication and efficacy of reducing opioid misuse and abuse.
- 2020- IRB pending Utilizing a Cadaver-Training Simulator to Teach Interventional Spine Procedures.  
Principal Investigator, single-center, analyzing an innovative approach to educating fellows and residents on interventional spine procedures measuring accuracy, comfort, radiation exposure, and time.

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

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

2011	Introduction to Anesthesia: What does a career in anesthesia look like? Career Luncheon	Harvard Medical School  1-hour lecture
2011	BUS 2107 Commercializing Science Class, Clinical Advisor	Harvard Business School, Cambridge, MA
2011	ES227 Medical Device Design Class	Harvard Graduate School of Engineering, Cambridge, MA

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

2010	Malignant Hyperthermia. Sunrise Lecture Series	BWH Dept. Anesthesia, Perioperative and Pain Medicine
2010	Interpretation of an Arterial Blood Gas, SICU Lecture Series	BWH Dept. Anesthesia, Perioperative and Pain Medicine
2011-2012	High Yield Board Topics, Department CA1/2/3 Sunrise Lecture Series	BWH Dept. Anesthesia, Perioperative and Pain Medicine 30 minute lecture annually
2011	Hypertension in Pregnancy, OB Lecture Series	BWH Dept. Anesthesia, Perioperative and Pain Medicine
2012	Methadone, Sunrise Lecture Series	BWH Dept. Anesthesia, Perioperative and Pain Medicine
2012	Complications of Back Surgery, Fellow's Curriculum Series	BWH Dept. Anesthesia, Perioperative and Pain Medicine
2012	Complex Regional Pain Syndrome, Sunrise Lecture Series	BWH Dept. Anesthesia, Perioperative and Pain Medicine
2012-2013	Acute Pain Management, College Day Lecture Series	Johns Hopkins Hospital, Dept of Anesthesia and Perioperative Medicine
2012-2013	Cancer Pain, College Day Lecture Series	Johns Hopkins Hospital, Dept of Anesthesia and Perioperative Medicine
2013	Minimally Invasive Lumbar Decompression, Pain Management Lecture Series	BWH Dept. Anesthesia, Perioperative and Pain Medicine

2013- Present	Basics of Pain Medicine, Department CA-1 Residents Residency Didactic Lecture Series	BWH Dept. Anesthesia, Perioperative and Pain Medicine 3-hour lecture annually
2013- Present	Advanced Pain Medicine, Department CA-2/3 Residents	BWH Dept. Anesthesia, Perioperative and Pain Medicine 3-hour lecture annually
2013- Present	Cancer Pain Medicine, Department CA-2/3 Residents (Yearly 3-hour lecture) Residency Didactic Lecture Series	BWH Dept. Anesthesia, Perioperative and Pain Medicine 3-hour lecture annually
2015- Present	Interventional Pain Management Coding and Billing, Faulkner Pain Management Center Lecture Series	Brigham and Women's Faulkner Hospital, Department of Anesthesia 1-hour lecture annually

### Clinical Supervisory and Training Responsibilities

2012-2013	Supervision of Residents and CRNA's, Johns Hopkins Hospital, Department of Anesthesiology	8 sessions per week
2013-	Supervision of Residents, Fellows, Nurse Practitioners, and Physician Assistants, BWH APPM, Division of Pain Medicine	6 sessions per week
2013-	Supervision of Residents and CRNA's, BWH APPM, Department of Anesthesiology	2 sessions per week

### Formally Supervised Trainees

2012-2013	Liang Shen, MD – Instructor, Weill Cornell Medical College Career stage: Resident. Mentoring role: Clinical guidance and performance evaluation. Accomplishments: multiple first authored scholarship; Fellowship in Critical Care
2013-2014	Ehren Nelson, MD, Instructor, Brigham and Women's Hospital Career stage: Resident and Fellow. Mentoring role: Clinical guidance, performance evaluation, and academic mentoring. Accomplishments: Multiple national and international invited lectures; Fellowship in Pain Medicine
2014-2017	Jessica Hellums, MD – Pain Medicine Fellow, Brigham and Women's Hospital Career stage: Resident. Mentoring role: Faculty mentor during CA-1/2/3 year with guidance and performance evaluation
2014-2015	Isaac Tong, MD – Pain Medicine Attending, San Antonio Career stage: Resident and fellow, Brigham and Women's Hospital. Mentoring role: Faculty mentor during Residency and Pain Fellowship with guidance and performance evaluation.
2015-2016	Mona Patel, MD – Pain Medicine Attending, Irvine, California

2015-2018	Career stage: Fellow, Brigham and Women's Hospital. Mentoring role: Faculty mentor during Pain Fellowship with guidance and performance evaluation Brandon Napstad, MD – Anesthesiology Resident, Brigham and Women's Hospital Career stage: Resident. Mentoring role: Faculty mentor during CA-1-3 year with guidance and performance evaluation
2015-2016	Jeffrey McLaren, MD – Pain Medicine Fellow, Virginia Mason Career stage: Resident, Brigham and Women's Hospital. Mentoring Role: Faculty mentor during CA-3 year with guidance and performance evaluation
2016-2019	David Buric, MD – Anesthesiology Resident, Brigham and Women's Hospital Career stage: Resident. Mentoring role: Faculty mentor during CA-1-3 year with guidance and performance evaluation
2016-2019	Andrew Pisansky, MD – Anesthesiology Resident, Brigham and Women's Hospital Career stage: Resident. Mentoring role: Faculty mentor during CA-1-3 year with guidance and performance evaluation
2016-2017	Victor Wang, MD – Instructor, Brigham and Women's Hospital Career stage: Fellow. Mentoring role: Faculty mentor during Pain Fellowship with guidance and performance evaluation. Accomplishments: Multiple first authored scholarship
2017-2018	Fang Fang Xing, MD – Pain Management Fellow, Brigham and Women's Hospital Career stage: Fellow. Mentoring role: Faculty mentor during Pain Fellowship with guidance and evaluation. Accomplishments: multiple first authored scholarship.
2017-2020	Shafiq Boyaji, MD – Anesthesiology Resident, Brigham and Women's Hospital Career stage: Resident. Mentoring role: Faculty mentor during CA-1-3 year with guidance and performance evaluation
2018-2019	Michael Lubrano, MD – Pain Management Fellow, Brigham and Women's Hospital. Career Stage: Fellow. Mentoring role: Faculty mentor during Pain Fellowship with guidance and evaluation. Accomplishments: multiple first authored scholarship.
2019-2020	Bilal Dar, MD – Pain Management Fellow, Brigham and Women's Hospital. Career Stage: Fellow. Mentoring role: Faculty mentor during Pain Fellowship with guidance and evaluation. Accomplishments: case reports.
2019-2022	Kunal Mandavawala, MD – Anesthesiology Resident, Brigham and Women's Hospital. Career Stage: Resident. Mentoring role: Faculty mentor during CA 1-3 year with guidance and performance evaluation
2020-2023	Michael Fiore, MD, pharmD – Anesthesiology Resident, Brigham and Women's Hospital. Career Stage: Resident. Mentoring role: Faculty mentor during CA 1-3 year with guidance and performance evaluation

## **Report of Local Invited Teaching and Presentations**

2014	Spine Views for Interventional Pain Procedures, Massachusetts Society of Radiologic Technologists, Brigham and Women's Hospital
2014	Pain Treatment Modalities and Palliative Care for Cognitively Impaired and Terminally Ill Patients, 2 <sup>nd</sup> Annual Pain Management Lecture, Brigham and Women's Hospital
2018	Post-operative Pain and the Chronic Pain Patient. PACU Lecture Series. Brigham and Women's Faulkner Hospital.

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

### **Invited Presentations and Courses**

*Those presentations sponsored by 3<sup>rd</sup> parties/outside entities are so noted and the sponsors are identified*

#### **Regional**

2015 Advances in Chronic Pain Management, Grand Rounds, Tufts University, Anesthesiology, Boston, MA

#### **National**

2013 Perioperative Pain Management, Optimal Anesthesia Management, Johns Hopkins Anesthesia Continuing Education, Baltimore, MD

2013 Preoperative Patient Assessment, Johns Hopkins Regional Live Meeting Series, Boston

2013 Pharmacology of Anesthetics, Johns Hopkins Regional Live Meeting Series, Boston

2015 Cutting Edge Chronic Pain, Grand Rounds, George Washington University, Anesthesiology, Washington, DC

2015 Chronic Venous Insufficiency, Comprehensive Review of Pain Medicine, Directed by Dr. Edgar Ross. Recorded CME video lecture sponsored by Oakstone.

2016 Innovation: Treatment and Prescribing Panel, Moderator, Tennessee Pain Opioids Problems Solutions Forum, Nashville, TN

2017 Novel Therapies in Pain Medicine, Grand Rounds, Medical University of South Carolina, Department of Anesthesiology, Charleston, SC

2017 Current Topics in Pain Medicine, Grand Rounds, Kaiser Permanente, Department of Anesthesiology, San Diego, CA

2018 On and Off Label Applications for Pain Control, Moderator, NYC Neuromodulation Conference and NANS Summer Series, New York City, NY

2019 Interpretation of Spinal Diagnostic Imaging Studies: Learning a Structured Approach, Invited Speaker, American Society of Anesthesiology, Orlando, FL

2020 Waveform Innovation in Spinal Cord Stimulation, Invited Speaker, Multi-institution COVID-19 Lecture Series, Sponsored by University of Washington

2020 Lumbar Spinal Stenosis Novel Therapies, Invited Speaker, Multi-institution COVID-19 Lecture Series, Sponsored by University of Washington

2020 Peripheral Nerve Stimulation, Invited Speaker, American Society of Neuro Radiologists, Las Vegas, NV

2021 Opioid Management, Invited Speaker, New Hampshire Medical Society, Conway, NH

#### **International**

2017 Difficult Airway Management, Anesthesiology Grand Rounds, Kanombe Military Hospital, Kigali, Rwanda

2017 Nerve Blocks for Facial Surgery, Anesthesiology Grand Rounds, Santa Casa Hospital, Sao Paulo, Brazil

2019 State of the Art in Interventional Pain Procedures, Invited Speaker, Korean American Spine Society Annual Meeting, Vancouver, CA

2019 Perioperative Pain Management and Alternatives to Opioids, Invited Speaker, Korean American Spine Society Annual Meeting, Vancouver, CA

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

### **Current Licensure and Certification**

2005- American Heart Association, Basic and Advanced Cardiac Life Support  
2008- Permanent Licensee, State of Massachusetts  
2012-2014 Permanent Licensee, State of Maryland  
2012- Diplomate, American Board of Anesthesiology  
2012- Diplomate, American Board of Anesthesiology Pain Medicine

### **Practice Activities**

2012-	General and Regional	Johns Hopkins Hospital,	40 hours a week
2013	Anesthesiologist	Baltimore, MD	
2013-	General and Regional	Brigham and Women's	10 hours a week
	Anesthesiologist	Hospital, Boston, MA	
2013-	Pain Medicine Physician	Brigham and Women's	30 hours a week
		Hospital, Boston, MA	

### **Report of Clinical Innovations**

#### **Cofounder of multidisciplinary spine center**

As founding medical director of Brigham and Women's Faulkner Hospital's Pain Management Center, a high priority was increased collaboration with the other services in the hospital. After our initial collaboration with the Graham Headache Center proved to be successful, we decided to build a spine center with operative and non-operative services focused on comprehensive spine care. We used a wing of the newly built Orthopedic center at Faulkner to carve out 6 exam rooms and a multi-use work area to build a center where Orthopedics or Neurosurgery was collocated with Physiatry or Pain Medicine. Serving on the governance committee since the inception, I have actively been involved with the creation of workflows, marketing, and management of the spine center. Over the previous 4 years, we have grown the spine center tremendously while solidifying collaboration between all services.

#### **Introduction of Radiofrequency Identification to measure time driven activity based costing**

In collaboration with MIT and Harvard Business School I am coordinating the implementation of radiofrequency identification (RFID) tags and readers to more accurately and robustly calculate costs of a given activity using time driven activity based costing (TDABC). The current models utilizing TDABC in healthcare rely on manual recordings of each step in an activity. Utilizing RFID would minimize the measurement bias and allow for a larger sample size.

#### **Implemented changes for practice efficiency**

Because of the significant clinical and financial growth of the Brigham and Women's Faulkner Hospitals Pain Management Center, I was selected to be the Medical Director of Brigham and Women's main Pain

Management Center. In this position, I created several processes and work flow changes to improve efficiency. First, I changed the schedule to split out procedures and evaluations into separate sessions. Doing this provided each attending physician dedicated geography and resources to see more patients in less time while reducing wasted footsteps. Next, I worked with Epic to create several shortcuts and orders so providers could quickly enter an order for a procedure which would then automatically enter the work queue for managed care services to obtain prior authorization. The new orders have helped to minimize denials while ensuring the proper time and location are allocated for the desired procedure. I also helped create the new order system providers use to refer patients to our multiple locations of Pain Medicine.

### **Creator of new reporting for Pain Management Center**

Also in my role as Medical Director of Brigham and Women's Pain Management Center, I created two new reports the administration and staff use monthly. The first report is a gaps analysis to determine sessions where we have inadequate provider coverage. The second report is a productivity report that marries our billing database with the scheduling system to provide the physicians aggregate productivity data that can then be drilled down into individual days. The report is now used by attending physicians to track their productivity and by the finance division to cross verify their reporting measures.

### **[Report of Teaching and Education Innovations](#)**

#### **Introduction of pain simulation**

Simulation in anesthesiology is now a standard for resident education, however, within Pain Medicine simulation has not gained traction. I worked with a company called Biotras to bring a spine simulator with cadaveric bone and ballistic gel to the Pain Management Center at Brigham and Women's Hospital. We organized two sessions for the 2018-2019 fellow class to practice obtaining the correct views and directing the needle for four of our most common procedures. The feedback was so overwhelmingly positive from the fellows that we are adding teaching modules on the spine simulator to the 2019-2020 Pain Medicine fellowship curriculum.

#### **Co-founder for the Faulkner Lecture Series**

I co-created a lecture series for the Pain Medicine fellows. In the lecture series, we invite lecturers from other specialties including orthopedics, radiology, psychiatry, and law to discuss practical concepts in Pain Management to prepare them for their early careers. The feedback from the fellows is superb and an integral part of their education.

#### **Creator and manager of Faulkner Hospital Pain rotation**

Since founding the Brigham and Women's Faulkner Hospital's Pain Management Center in 2013, we have been asked to host rotation for interns, residents, and fellows. Each year we have a growing number of residents requesting the rotation for the CA-3's pain medicine elective – even for residents not specializing in Pain Medicine. Additionally, we now host Neurology Headache fellows, Regional

Anesthesia fellows, and categorical anesthesia interns. I coordinate and evaluate all rotating trainees through the Pain Center.

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

### **Educational Material for Patients and the Lay Community**

2015	Managing with Low Back Community Lecture Series	Brigham and Women’s Faulkner Hospital
2016	Novel Techniques for Treating Low Back Pain Community Lecture Series	Brigham and Women’s Faulkner Hospital

### **Community Service**

1999	Medical mission to Guatemala with Sending Out Servants
2000-2002	Big Brothers Big Sisters – Over 500 hours spent as a mentor in Austin, TX.
2000-2002	Habitat for Humanity via Texas Blazers
2010	Medical Mission to Cote D’Ivoire, Global Smile Foundation (Anesthesiologist)
2011	Medical Mission, Ecuador with the Global Smile Foundation (Anesthesiologist)
2012	Medical Mission, Guatemala with the Global Smile Foundation (Anesthesiologist)
2015	Medical Mission, Guatemala with the Global Smile Foundation (Anesthesiologist)
2017	Medical Mission, Rwanda with Face the Future (Anesthesiologist)
2017	Medical Mission, Brazil with Global Smile Foundation (Anesthesiologist)
2018	Medical Mission, Rwanda with Face the Future Foundation (Anesthesiologist)
2019	Medical Mission, Rwanda with Face the Future Foundation (Anesthesiologist)

### **Recognition**

#### **Press Releases**

2010	R. Jason Yong, MD, MBA – Featured in Brigham and Women’s Hospital Bulletin (December 13, 2010) “Driving Clinical Innovations at BWH”.
2011	R. Jason Yong, MD, MBA – Featured in the Harvard Gazette (September 20, 2011) Surgical Precision at SEAS “Innovation and Medical Device Design”.
2016	R. Jason Yong, MD, MBA – Featured in Tennessean (April 5, 2016) “Health care leaders urge action on opioid abuse”.
2016	R. Jason Yong, MD, MBA – Highlighted in educational marketing video for Brigham and Women’s Hospital (May 6, 2016). “Managing Back Pain”.
2016	R. Jason Yong, MD, MBA – Highlighted in marketing video for Faulkner Hospital Pain Management Center (May 12, 2016). “Pain Management Center at BWFH”.

## **Report of Scholarship**

### **Publications**

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

### Research Investigations

- 1 Imran TF, Malapero R, Qavi AH, Hasan Z, de la Torre B, Patel YR, Yong RJ, Djousse L, Gaziano JM, Gerhard-Herman MD. Efficacy of spinal cord stimulation as an adjunct therapy for chronic refractory angina pectoris. *International Journal of Cardiology*. 2016 Nov 2. pii: S0167-5273(16)33323-X. doi: 10.1016/j.ijcard.2016.10.105.
- 2 Wang V, Preston M, Kibel A, Xu X, Gosnell J, Yong RJ, Urman RD. A Prospective, Randomized, Double-Blind, Placebo-Controlled Trial to Evaluate Intravenous Acetaminophen Versus Placebo in Patients Undergoing Robotic-Assisted Laparoscopic Prostatectomy. *Journal of Pain & Palliative Care Pharmacotherapy*, 2019. DOI: 10.7080/15360288.2018.1513436.

### Other peer-reviewed scholarship

- 1 Brattain L, Floryan C, Hauser O, Nguyen M, Yong RJ, Kesner S, Corn S, Walsh C. “Simple and Effective Ultrasound Needle Guidance System.” *IEEE Engineering in Medicine and Biology Society*, 2011.
- 2 Yong RJ, Nelson ER, Urman RD, Kaye AD. A primer for billing in interventional pain management. *J Med Pract Manage*. 2015 Mar-Apr; 30 (6 Spec No):51-4.
- 3 Simopoulos T, Yong J, Gill JS. Treatment of chronic refractory neuropathic pelvic pain with high frequency 10 kilohertz spinal cord stimulation. *Pain Pract*. 2017 Nov 6. Doi: 10.1111/papr.12656.
- 4 Kim AJ, Yong RJ, Urman RD. The role of transversus abdominis plane blocks in enhanced recovery after surgery pathways for open and laparoscopic colorectal surgery. *J Laparoendosc Adv Surg Tech A*. 2017 Sep; 27 (9): 909-914. Doi: 10.1089/lap.2017.0337. PMID 28742435
- 5 Xing F, Yong RJ, Kaye AD, Urman RD. Intrathecal drug delivery and spinal cord stimulation for the treatment of cancer pain. *Curr Pain Headache Rep*. 2018 Feb 5; 22 (2):11. Doi: 10.1007/s11916-018-0662-z.
- 6 Pak DJ, Yong RJ, Kaye AD, Urman RD. Chronification of pain: mechanisms, current understanding, and clinical implications. *Curr Pain Headache Rep*. 2018 Feb 5; 22 (2):11. Doi: 10.1007/s11916-018-0666-8.
- 7 Aman MM, Yong RJ, Kaye AD, Urman RD. Evidence-based non-pharmacological therapies for fibromyalgia. *Curr Pain Headache Rep*. 2018 Apr 4; 22:33. Doi: 10.1007/s11916-018-0688-2.
- 8 Atkinson T, Pisansky A, Yong RJ. Common Elements in Opioid Use Disorder Guidelines for Buprenorphine Prescribing. *American Journal of Managed Care*. March 2019
- 9 Novak, C.J., Khimani, N., Kaye, A.D., Yong RJ, Urman, RD. *Curr Pain Headache Rep* (2019) 23: 16. <https://doi.org/10.1007/s11916-019-0759-z>. 30830460
- 10 Valimahomed A, Haffey PR, Urman RD, Kaye A, Yong RJ. Regenerative Techniques for Neuraxial Back Pain: A Systematic Review. *Curr Pain Headache Rep*. (2019) 23:20. <https://doi.org/10.1007/s11916-019-0758-0>
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Note: This material also qualifies for 1.5 AMA PRA Category 1 CME Credits™ and is jointly sponsored with the Massachusetts Medical Society.

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## **Narrative Report**

As an academic anesthesiologist specializing in pain medicine at Brigham and Women's Hospital, my efforts are focused on developing clinical expertise, innovating pain medicine through novel implantable devices and opioid management strategies, and educating fellows and residents. My major supporting activity involves administrative and institutional service with leadership roles and committee service.

Approximately half of my time is devoted to direct patient care within pain medicine including time spent evaluating patients in clinic, performing office-based procedures, and surgically implanting devices to help manage pain. I spend twenty percent of my time as an anesthesiologist supervising residents and nurse anesthetists with a focus on regional anesthesia and acute post-operative pain management. The remainder of my time is divided among administrative duties including institutional committee service and serving as Chief of Pain Medicine, Medical Director of the Pain Management Center, and Associate Program Director for the Pain Medicine Fellowship.

Clinically, I have developed expertise in surgically implantable technologies for the treatment of chronic pain and opioid management strategies. Since fellowship, I have been fascinated by neuromodulation using spinal cord and peripheral stimulators to modulate pain signals. Using this passion, I have taught fellows and residents extensively on the technology, and introduced the Nevro high frequency stimulator to Brigham and Women's Hospital becoming the first implanting physician in New England. I am now receiving direct referral from across the Northeast for evaluation of neuromodulation and targeted drug delivery using intrathecal pumps. I am currently the Principal Investigator in 3 prospective case-series examining the efficacy of novel neuromodulation technologies. With my focus on neuromodulation, I have been fortunate enough to become the top planter of spinal cord stimulators in the Northeast.

Given the recent impact of the national opioid epidemic, I have devoted significant time and effort to shaping opioid management strategies. I have been involved in the Harvard Medical School Opiate Ad Hoc committee, the Opioid Management subcommittee, and BCore Standards committee.

I am continuing to develop my career in research and have joined on as a co-investigator on three clinical research studies. In addition to the neuromodulation studies, I am working on IRB approval for other studies involving Platelet Rich Plasma and its application to Pain Medicine, tracking outcomes of implantable devices at our center, and using RFID technology to perform Time Driven Activity Based Costing at our Pain Management Center. In response to my personal struggles and those of fellows starting their careers, I conceptualized and was first editor for *Pain Medicine: An Essential Review* which focuses on relevant clinical pearls.

On a national level, I have been invited to give 4 grand rounds and was invited to serve on the American Board of Anesthesiology MOCA Minute for Pain Medicine question writing committee. Internationally, I participate in 1-2 medical missions per year providing anesthesia and have been invited to give multiple international presentations.

As the founding medical director of the Pain Management Center at Brigham and Women's Faulkner Hospital, I helped grow the pain medicine services at the hospital focusing on the integration of high quality pain management to all areas of the hospital. Our volume tripled to over 400 pain patients per month in the span of 3 years. Due in part to that success, in 2017, I was selected as the Medical Director of the Pain Management Center at Brigham and Women's Hospital. In this role, I am focused on

operational efficiency and financial viability. With the early changes I helped manage and develop, our productivity has increased with an improvement in patient satisfaction. The rapid turnaround then led to the appointment as Associate Chief and now interim Chief of the Division of Pain Medicine. I was also elected to serve on the Faculty Board in the Department of Anesthesiology.

As the Associate Program Director for the Pain Management Center at Brigham and Women's Hospital, I am involved with recruitment, curriculum development, and overall management of the 10 fellows per year. My involvement in this role extends to committee service on a hospital and national level with the American Board of Anesthesiology. As a product of our own residency and fellowship, I am appreciative of the extensive curriculum and mentorship by the world renowned experts at our institution. I have strived to reciprocate using innovative teaching methods such as the introduction of medical simulation with pain procedures, and I am honored to have my passion in mentorship and teaching reflected in the Pain Fellow's Pain Attending of the Year award for excellence in teaching for 5 of the previous 7 years.

In addition to my clinical work, I have been an active member in our department and the hospital. I was elected to serve on the Medical Staff Executive Committee for Brigham and Women's Faulkner Hospital and currently serve on the Ambulatory Advisory Council at Brigham and Women's Faulkner Hospital and the Office for Multicultural Careers Advisory Committee at the Brigham and Women's Hospital.