# Creating the Academic Anesthesiology Department of the Future

## Mission

The Mission of Tufts Medical Center’s Department of Anesthesiology and Perioperative Medicine is to provide exceptional clinical care, train the next generation of anesthesiologists, develop anesthesiology clinicians at all levels of learning and seek out research opportunities to further knowledge in our field.

## Vision

The Vision of Tufts Medical Center’s Department of Anesthesiology and Perioperative Medicine is to be recognized for excellence in:

- Patient care throughout the perioperative process
- Education and professional development
- World class research

## Values

- Accountability: Accept responsibility for actions
- Collaboration: Work together to achieve shared goals
- Fairness: Make judgments free of bias
- Reliability: Be dependable and trustworthy in commitments to others
- Transparency: Ease of seeing and understanding actions performed

## Operating Commitments

In conducting our work, we maintain a focus on:

- Patient safety
- Quality
- Financial responsibility
- Personal wellness
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This report summarizes the achievements of the Department of Anesthesiology and Perioperative Medicine at Tufts Medical Center and Tufts University School of Medicine during 2016. At the beginning of the year we unveiled our three year Strategic Plan, which set the footprint for our activities in the clinical, education, research, quality and administrative domains. We elaborated the strategic plan in alignment with the Institution strategic goals and the changes occurring in our specialty. Our ultimate goal is to create the Academic Anesthesiology Department of the Future.

From the Clinical perspective, the Department was fundamental in the increase in volume in both the OR and in the non-OR anesthesia locations (NORA). In the operating room and increase of 5.8% was driven in large by a significant growth in the cardiac surgery volume. The NORA locations had an increase of close to 20%, mostly for increments in the endoscopy and the electrophysiology labs. (IMAGES). We also expanded our services to the Lemuel Shattuck Hospital in Jamaica Plain, bringing high quality care to this susceptible population.

The Department consolidated its presence in both the Cardiothoracic Care Unit (CTU) and the Cardiac Care Unit (CCU) where Critical Care Anesthesiologists have assumed the oversight of the units and play a significant positive impact in the care provided. Our Pain Clinic also increased its volume over 10% and anticipates continuous growth in 2017.

Our residency and fellowship programs, as well as our affiliated SRNA programs, remain vibrant providing our trainees outstanding clinical experience, second to none educational venues and resources and the opportunity to participate in scholarly activity. We are reenergizing our efforts in Simulation, restructuring our lecture series and enhancing our evaluation and feedback mechanisms. The high board passing rates of residents and fellows, their ability to obtain their fellowship or job of choice and their presence presenting posters in regional and national meetings are some of the outcomes reflecting the excellence of our educational programs. This year, we had the first Heinrich Wurm, MD Lecture coinciding with the resident and fellow graduation ceremonies and in recognition of Dr. Wurm’s legacy during his almost 20 years as Chair of our Department.
From the research and quality perspective; we embarked in defying areas of focus for our research enterprise and strengthening our research infrastructure. Our main area of focus in basic science is related to the effects of anesthetics in the susceptible brain. Our lab is collaborating with the Department of Neurology at Tufts MC in this effort and additional collaborations with other groups is enhancing our perspective and opportunities. Clinically, we are looking concentrating our efforts in pain, implications of obesity in surgical patients, cardiac (with emphasis in cardiac imaging) and outcomes. The latter is closely interrelated with our Perioperative Surgical Home PSH initiatives which are in synchrony with the American Society of Anesthesiology, the Institute of Healthcare Improvement Triple Aim and our goal to provide a more comprehensive clinical care to all our patients across the continuum of the perioperative process. It also links to the change in the Department name that occurred this year with the addition of “Perioperative Medicine” to Anesthesiology; reflecting our presence, commitment and activities within and beyond the walls of our operating rooms.

In summary, the Department of Anesthesiology and Perioperative Medicine at Tufts MC continues to provide exceptional clinical care, train the next generations of anesthesiologists and generate and disseminate knowledge. We aim to create the Academic Anesthesiology Department of the Future where all those factors intersect with fiscal responsibility, entrepreneurship and alignment with the challenges and changes in healthcare and our specialty.

Department of Anesthesiology and Perioperative Medicine Strategic Plan

RESEARCH
- Clarity of research focus
- Intradepartmental collaboration
- Infrastructure to support success

OPERATIONAL PERFORMANCE
- Collaboration with Perioperative Services
- Surgical home model
- Building financial awareness of changes impacting department/cost containment initiatives

PATIENT SAFETY & QUALITY
- Surgical home related research/quality initiatives

PATIENT EXPERIENCE
- Patient satisfaction surveys
- Multi-lingual consent forms/patient documentation
- Pediatric experience

ACCESS
- Expansion of pain management services

EMPLOYEE ENGAGEMENT
- Faculty/Trainee development
- Solid infrastructure to support mission and those delivering it
Who We Are

The Department of Anesthesiology and Perioperative Medicine at Tufts Medical Center (Tufts MC) is the principal teaching site for the Tufts University School of Medicine (TUSM) and strives for clinical, educational and research excellence.

Clinically, our more than 30 board-certified Anesthesiologists, 30 Residents, 4 Fellows, 16 Certified Registered Nurse Anesthetists, 10 Student Nurse Anesthetists, 4 Nurse Practitioners and Administrative Staff work throughout Tufts Medical Center and Floating Hospital for Children in downtown Boston to provide high quality, safe and patient centered care. Our Department specializes in providing clinical anesthesia, perioperative medicine, intensive care, and pain management services throughout our institution. These areas include:

- The operating room (OR)
- Post-anesthesia care unit (PACU)
- Center for preoperative assessment (CPA)
- Pain management center
- Intensive care units
- Interventional radiology / special procedures
- Electrophysiology lab
- Cardiac catheterization
- Gastrointestinal endoscopy
- MRI, CT, PET scans
- Labor and delivery
- 24/7 emergency airway management

Many of our staff have subspecialty training and certification in critical care medicine, pediatric anesthesia, cardiac anesthesia, transesophageal echocardiography, obstetric anesthesia, regional anesthesia, and pain management.

Educationally, we have a robust and fully accredited ACGME-approved Anesthesiology residency training program and both cardiac and pediatric anesthesiology fellowships. Medical students from TUSM and other Medical Schools complete rotations in our Department both in clinical and research. In addition, we are a primary training site for Northeastern University’s nurse anesthesia program. Our faculty members take pride in providing outstanding clinical care to patients and an exceptional educational experience to residents, fellows, medical students and student nurse anesthetists.

From a research and scholarly perspective we continue to be tremendously productive in both clinical and basic science research. We have defined our priority areas as follows:

1. Basic Research:
   Focus on anesthetic and sedative neurotoxicity

2. Clinical Research:
   Concentrated – but not limited to:
   a. Cardiac imaging
   b. Geriatrics
   c. Obesity
   d. Pain
   e. Quality outcomes

Our commitment to excellence in clinical care, education and research paired with fiscal responsibility are the bases to achieve our goal to become the Academic Anesthesiology Department of the Future.
Clinical Operations

Operating Room and Non-Operating Room Anesthesia (NORA) Services at Tufts Medical Center

Clinical operations in the OR’s and in non-operating room locations are at the core of our tripartite mission. Tufts Medical Center patients have the highest case mix index in Boston and one of the highest nationwide. Provision of evidence based, safe and high quality care to our patients characterizes our day-to-day activities.

In alignment with the Hospital strategic priorities for 2016, we concentrated our efforts in enhancing access to patients to our OR’s and procedural sites. As results we contribute to the completion of over 14,000 cases in the operating room and close to 7,000 cases in the NORA. This signified an increase of about 6% in our surgical cases and 10% in the NORA.

Additionally, a series of quality improvement efforts were implemented under the umbrella of our perioperative surgical efforts including protocols for prevention of blood transfusion in total joint and major spinal cases, interventions for prevention of perioperative pneumonia, minimal opioid use for bariatric cases, optimization of fluid delivery, guidelines for management of LVAD patients presenting for non-cardiac interventions and others. We also started a morning huddle where the floor leader for the day reviews with the team the cases and assignments, provides forecasts potential challenges and establishes a plan for the day.

In conjunction with surgical services, we also worked in safety for the operating room enterprise. An example was the institution of a pre-induction briefing (in addition to the surgical time out) were the surgical, nursing and anesthesia team reviews key elements of the case prior to the induction of anesthesia. For 2017, we have started looking in collaboration with surgical service to continue improving efficiency, throughput metrics, safety and quality.

Penny Liu
MD
Clinical Director,
Neurosurgical Anesthesia Division
Assistant Professor,
Tufts University School of Medicine
OR, NORA, and Total Cases: FY 15 vs. FY 16

Surgical Minutes

Surgical Volume in the OR
Lemuel Shattuck Hospital (LSH)

In July of 2016, we expanded our clinical operations to the Lemuel Shattuck Hospital. At LSH, a variety of cases representing almost all specialties are performed. With two busy operating rooms and an active endoscopy suite we will complete over one thousand cases. Our clinical expertise has helped maintain medium complexity cases at the site, added provision of regional analgesia for certain case types and created management guidelines for acute and acute on chronic pain issues.

Robert Knapp

DO

Chief, Department of Anesthesiology,
Lemuel Shattuck Hospital

Assistant Professor,
Tufts University School of Medicine
Center for Pre-operative Assessment

The Center for Pre-operative Assessment (CPA) is responsible for determining the readiness of a patient for surgery. Located on South 5, it fosters a patient-centered encounter, with resources for blood-drawing, EKG testing and complete physical evaluations on-site. The clinic has a multidisciplinary team including dedicated anesthesiologists, anesthesia resident, nurse practitioners, registered nurses, medical assistants and administrative staff.

Patients scheduled for elective surgery and procedures at Tufts Medical Center are evaluated by the pre-operative staff. Annually, about six thousand patients are evaluated in the CPA. Additionally, registered nurses complete approximately ten thousand telephone interviews. Our team interacts with nearly 85% of all patients scheduled for elective surgical procedures at Tufts Medical Center.

In-person visits to the CPA are typically based on the patient’s condition and the complexity of the proposed surgery. That said, we are available to evaluate any patient scheduled for surgery if the evaluation is requested by the patient or their surgeon. Regardless of the screening type, all patients are contacted by a nurse prior to surgery to review their health issues, confirm medications and review preoperative instructions. Patients that are seen in the clinic by a nurse practitioner or anesthesia resident receive a thorough pre-anesthesia evaluation and, depending on surgery service, surgical history and physical. During the clinic visit, medical assistants are on hand to draw blood for indicated laboratory tests and to perform EKGs. An anesthesiology attending is always available at the clinic to answer questions and provide more in-depth consultations about the type of anesthesia to be used and the risks involved. The center is covered by a core group of attending anesthesiologists.

A number of initiatives have recently been launched at the CPA. These include:

- Tufts For Pneumonia (T4P) aimed to decrease postoperative pulmonary complications.
Delirium prevention. This project aims to identify patients with a high risk for postoperative delirium.

Identification of patients with undiagnosed OSA and implementation of OSA-related intra- and postoperative protocols.

Pilot projects with the Departments of Orthopedics and Neurosurgery to decrease the amount of unnecessary preoperative testing and consultations.

Immunonutrition and preoperative oral hydration in selected groups of patients (part or ERAS).

Smoking cessation and counseling.

An area of a future expansion of the CPA services is to create a true Perioperative Surgical Home environment which will include a successful implementation of above mentioned protocols and active participation of social services and case management to further optimize perioperative patients’ care. A complex approach to achieve an Enhanced Recovery After Surgery (ERAS) will also soon be implemented in selected patient groups.

The Center for Preoperative Assessment is a truly multidisciplinary, state-of-art unit that provides a comprehensive patient-centered preoperative assessment. Our main goal is to optimize patients’ experience, eliminate unnecessary delays and cancellations, and minimize the costs while providing the best possible care.
Post-Anesthesia Care Unit (PACU) Anesthesia

The PACU is our unit responsible for recovering patients that have received anesthesia for operative procedures. The mission of the PACU is to provide support to the patient having a smooth emergence after surgery and to assist the patient in transitioning to an awake state with effective analgesia. The PACU also acts as a critical care location for patients whose disposition may be unclear. To support patients in this process, we have state-of-the-art monitoring, such as end-tidal CO2.

The PACU is divided into two units: Phase 1 and Floating. Phase 1 is located on South 5. This unit has fourteen recovery spaces and is mainly responsible for recovering patients after out-patient surgery. The Floating PACU is located on Floating 5. This unit has seventeen recovery spaces and generally recovers in-patients. Between these two areas, more than 1000 patients are recovered per month. Although the PACU receives most patients from the main OR, off-site procedure areas, such as radiology, electrophysiology and endoscopy also send patients to these units. Additionally, the PACU acts as a location to perform some minor procedures. These include gynecological procedures, electroconvulsive therapy for psychiatric patients and Baclofen intrathecal injections for neurology patients.

Dr. Arnel Almeda is the anesthesiology director for the PACU. Each day, the Anesthesia Department staffs the PACU with an attending anesthesiologist and an anesthesia resident. This assignment rotates between dedicated staff that provide consistent leadership and teaching to this area.

The PACU staff also support broader critical needs in the institution. This team attends all major trauma calls that pass through the emergency department. They are also frequently called to provide airway and resuscitative support in emergency situations throughout the hospital grounds. As hospital census and OR volume can fluctuate, the introduction of the PACU Transitional Unit (PTU) provides flexibility when stable patients have a delayed disposition. We also have plans to support our Hematology/Oncology patients by having bone marrow biopsies be performed in the PACU space. In all, the PACU has been and will be a vibrant space for collaboration between PACU staff, nursing, anesthesia services and other critical services throughout the Medical Center.

Arnel Almeda
MD
Medical Director,
Post Anesthesia Care Unit
Assistant Professor,
Tufts University School of Medicine
Cardiac Division

The members of our cardiac anesthesia division are committed to delivering an exceptional experience to both patients and their families, every day. At Tufts Medical Center, our patients represent the highest acuity cardiac patients in the Boston area with a very large number of our patients suffering from advanced heart failure. Year after year, we also have the very best published outcomes in Boston. Our tremendous success at Tufts MC in caring for individuals suffering from cardiac disease is rooted in our clinical experience caring for patients with severe and complex cardiovascular disease. We perform approximately 60 heart transplants and 60 ventricular assist devices per year. While our anesthesiologists provide carefully tailored care to each patient as individuals, we harness the power of caring for over a thousand suffering from complex cardiac disease per year. Our clinical volume is growing and has significantly increased in the last three years.

Importantly, the Cardiac Division has created a true culture of innovation. We refuse to rest on tradition and constantly strive to find ways to improve how we care for patients using the latest technology. We emphasize collaboration with other disciplines in a patient’s care to provide for a seamless transition as patients travel into and out of the operating room. We acknowledge that coping with heart disease and heart surgery can be stressful and focus on keeping our patients warm, pain free and safe, with the goal of facilitating their expeditious recovery so they can return home to their friends and families as soon as possible.
Residency and Fellowship Training

While caring for the patients with cardiac disease is the focus of our mission, we excel at teaching the next generation of anesthesiologists. Our goal is to train the future leaders in our field. Given the high acuity of our patient population, graduates from the Tufts MC Anesthesia program are exceptionally well prepared. Residents in our program gain early exposure to both two and three-dimensional echocardiography. By the third and final year of training, we work with residents to teach them how to not only induce critically ill patients, but also separate from cardiopulmonary bypass. Journal clubs are held once per month, and allow residents to learn to critically review literature. Residents have been consistently accepted into the top cardiac anesthesiology training programs across the country.

We also have an outstanding cardiac anesthesia fellowship program at Tufts Medical Center. Fellows, like residents, quickly become very comfortable caring for the most complex cardiac cases in the region. What is considered an index case by many centers is a daily routine for our fellows. Their training in echocardiography is on a post-graduate level and by the end of their time at Tufts MC, they are experts. We not only have a 100% pass rate on the boards with our fellows, but they ace them. Our goal is not only to train our fellows, but also to help them start their careers. They have consistently received job offers in the cities where they want to live and at the institutions where they want to work.

Research

We embrace a culture of innovation as always searching for new ways to improve. A key aspect of this cultural ethos is research. Most of our work is “home grown.” We have been particularly excited about our work measuring the impact of a new drug that has decreased our blood product utilization in heart transplants. Similarly, we have invested in new technology that we are testing to keep patients warm, decrease infection rates and lower use of blood products. Significant work is also being done with intra-operative cardiac imaging. We have also attracted the attention of multi-institutional trials. An example of this is our involvement in the Levosimendan trial in which we are one of the leading centers in the country. Importantly, we involve everyone in our academic efforts. This includes not only attending staff, but also residents, fellows and anesthesia technicians. We also embrace multidisciplinary collaboration with cardiology and cardiac surgery. Over this last year, our efforts resulted in over a dozen abstracts submitted to the 2017 annual meeting of the Society of Cardiovascular Anesthesiologists and multiple peer reviewed publications.
The Critical Care Division is increasing the footprint of the department in the hospital and ready to grow in numbers. Our old members: Ruben Azocar, MD, John Adam Reich, MD, Andrea Tsai, MD and Michael Young, MD welcomed new hires this October in Jennifer Chatburn, MD and Eric Ursprung, MD. Our intensivists practice in the Surgical Intensive Care Unit (SICU), Cardiothoracic Intensive Care Unit (CTU) and Cardiac Care Unit (CCU).

Accomplishments in FY 2016 included expanding coverage to CCU, completing advanced training in ExtraCorporeal Membrane Oxygenation (ECMO), providing ECMO consultation for the hospital outside our home units, and coordinating the care of complex medical and surgical care in the perioperative realm.

A large role of the Critical Care Division is supporting the mission of the Cardiovascular Center. We have continued to support the evolution of postoperative pathway for TAVR patients. And, we have been helpful in continuing to decrease the length of stay – specifically in regards to the Orthotopic Heart Transplant program and Ventricular Assist Device Programs. In FY 2016 we had a length of stay index below that of expected for both our VAD/transplant program and our CT surgery program. This is an amazing accomplishment given that we increased the number of cardiac cases by over 200, and shattered the historical transplant record for New England—all while having the same 10 bed ICU.

John Adam Reich

MD
Vice Chair for Critical Care
Director, Cardiothoracic Unit
Assistant Professor, Tufts University School of Medicine
Division of Vascular & Thoracic Anesthesia

The Division of Vascular and Thoracic Anesthesiology at Tufts Medical Center provides services to a wide variety of vascular and thoracic procedures.

From the vascular anesthesia perspective, our expertise includes the management of this challenging patient population ranging from comprehensive preoperative evaluation, intraoperative anesthesia, and postoperative pain management. Multimodal pain management is an integral component of the anesthetic care encompassing neuraxial techniques, regional nerve blocks, and acute pain services.

Since the opening of the hybrid operating room in 2012, which provides superb imaging capabilities, our vascular surgical colleagues have expanded their capabilities and brought greater precision to their procedures. This has also created a unique educational environment for us and our trainees in the light of new technological advancements. In addition, over the past year the volume of vascular cases has increased by 25%.

The complexity of our patients demonstrated by the highest CMI in the city, our growing volume and variety of procedures and the expertise of our surgical colleagues have provided us the unique opportunity to pursue excellence in teaching our medical students and residents by conducting intraoperative clinical discussions and perfecting their technical skills.

The Division of Thoracic Anesthesia at Tufts Medical Center provides anesthesia for the full spectrum of thoracic surgical patients and interventional pulmonary procedures.

In terms of thoracic anesthesia, our Division has enjoyed a consistent increase in the volume and variety of thoracic surgical procedures with an increase in volume of 33% over the past year. These procedures include, but are not limited to rigid and flexible bronchoscopy.
mediastinoscopy, removal of anterior mediastinal masses, lung volume resection, pneumonectomies, laparoscopic hiatal hernia repair, Nissen’s fundoplication and esophagectomies.

Our expertise includes general anesthesia for patients with advanced lung disease, managing difficult airways and performing neuraxial and regional anesthesia for perioperative pain management. In addition we use a variety of lung isolation techniques and one lung ventilation with airway devices such as double lumen tubes, univent endotracheal tubes and bronchial blockers.

Complementing our perioperative anesthesia care, the Division takes part in teaching medical students, residents and fellows through activities as lectures, journal clubs and hands on clinical experiences practicing technical aspects of lung isolation and use of CPAP and PEEP and alternative ventilatory techniques.

We work in close collaboration and communication with our surgical counterparts in order to advance patient care and satisfaction.

![Vascular Cases](image-url)
The Division of Neurosurgical Anesthesiology is committed to the expert and compassionate care of our patients undergoing the most advanced brain and spine surgeries. Our neuroanesthesiologists are proud of their collaborative relationships with neurosurgeons, neuro-intensivists, neurologists, neurophysiologic monitoring personnel and neurosurgical operating room nurses.

With over 1,000 neurosurgical cases in FY16, our anesthesia residents continue to find the subspecialty of Neuroanesthesia challenging and fulfilling. Some of our senior residents in the past year, in conjunction with the neuroanesthesia faculty, have set forth a complete and elaborate, evidence-based clinical protocol for our adult spine patients who are scheduled to undergo major spine deformity correction surgery. This has enhanced our Division’s ability to consistently provide optimum pain control, aid in the reduction of blood loss, maintain normothermia and provide optimal conditions for neurophysiologic monitoring intra-operatively.

A special challenge for neuroanesthesiologists have always been the cases involving awake craniotomy. Awake craniotomies are performed based upon the surgical location and indication, including redundant regions, eloquent areas, and epilepsy foci. This provides the benefit of neurocognitive testing during the intra-operative period. We believe the key to our management of patients who must undergo this style of procedure is our involvement with the patient at the initial preoperative assessment visit. Our purpose during this visit is not only the standard history and physical assessment, but also the development of the anesthesia team-patient relationship. We provide details of the anesthetic management including discussions of the periods of asleep and wakefulness during the procedure. We also find this period useful in rehearsing of the type of neurocognitive testing used intraoperatively. Our ultimate goal is for our neurosurgical patients be well-informed, reassured and confident that they will receive the best of care.
The Labor Delivery & Recovery floor at Tufts Medical Center is a tertiary referral center and a high-risk obstetric unit. The Obstetric Anesthesia Division consists of 16 full and part-time staff who provide clinical, academic and administrative services.

The clinical services consist of providing specialized anesthetic care to pregnant women. The gamut of services include analgesia options during labor, anesthesia for cesarean delivery, anesthetic techniques for other non-delivery procedures (external version, cervical cerclage, bilateral tubal ligation, among others), consultation and post-partum care.

Besides labor and delivery, the Obstetric Anesthesia Division provides care of the parturient throughout pregnancy. We provide a consultative service for high-risk and complex medical pregnant patients, along with management of patients with post-partum complications, like massive hemorrhage, cardiac problems, neurologic deficits, post-dural puncture headache.

In 2015, the Obstetric Anesthesia Division provided over 1500 anesthetics, including analgesia for vaginal deliveries, anesthesia for cesarean deliveries and peripartum care. The pre-delivery consultation service is also very active, seeing about 500-600 high-risk patients annually. As expected, we also saw an increase in the number of cases with abnormal adherent placenta, out of which some required gravid hysterectomies following the cesarean deliveries. Our Division also maintains a comprehensive QA program, as all our patients are seen on the first postpartum day and all the QA data are recorded.

Around 80% of the pregnant women delivering at Tufts MC receive labor analgesia. Our Division is responsible for a large majority, providing labor epidural analgesia, combined spinal-epidural analgesia and intravenous patient-controlled narcotics for women who are not candidates for neuraxial techniques. Another large part of our service is providing anesthesia for cesarean deliveries, either elective or for cesarean after
labor on an urgent or emergent basis. Cesarean deliveries are performed under spinal anesthesia, combined spinal-epidural anesthesia, epidural anesthesia or general anesthesia.

Approximately 40% of patients are delivered by cesarean, while the general anesthesia rate remained below 2%. We consistently meet and exceed all quality goals set by Mass Health maternity and The Joint Commission perinatal care measures. Our Division also provides the highest quality post-cesarean section analgesia, including neuraxial opioids, epidural analgesia, parenteral/oral medication and transversus abdominus plane block if necessary.

Recent advances required the creation of enhanced capabilities for obstetric hemorrhage, which also included new protocols for L&D, and were developed through a multidisciplinary collaboration between the Blood Bank, Laboratory Services, Department of Pharmacy, along with our usual partners of Obstetrics and Nursing Departments. Very soon we will also be introducing the availability of Nitrous Oxide for laboring patients, as an added option for patients that do not desire neuraxial techniques or desire less invasive analgesic techniques.

In addition to interdepartmental initiatives and improvements, the Obstetric Anesthesia Division recently started regularly using an electronic anesthesia record keeping system (AIMS) not just for operative procedures, but also for labor epidural analgesia, completing the integration of AIMS for all obstetric anesthesia cases.
The Acute Pain and Regional Anesthesia Service (APS) at Tufts Medical Center is a comprehensive service that takes a multimodal approach for the management of perioperative, acute-on-chronic and chronic pain patients. We have a core, dedicated team of expert faculty that both directly participate in patient care and teach anesthesiology residents up-to-date, evidence-based interventions, including neuraxial, truncal and peripheral nerve blocks for managing post-operative pain for a myriad of surgical procedures in addition to pharmacological modalities. Our management encompasses a multimodal analgesia approach that is individualized to optimize patient comfort in our challenging, complex patient population.

As part of the Anesthesiology Department’s perioperative surgical home initiatives, we attempt to identify challenging pain patients during their preoperative visit. We coordinate their care through communication with the primary, surgical and anesthesiology teams in addition to the rest of the APS team. This facilitates giving patients the highest quality of care, as they are followed by our team from their arrival to their discharge.

Our goal in the Acute Pain Service is to provide the highest, safest quality of care to all our patients.

Whether a patient comes to Tufts MC for a knee arthroscopy or for a major abdominal procedure, we aim to keep our patients as comfortable as possible during the difficult postoperative period. We are always readily available for any specialty at Tufts MC to consult us.
Pain Management Center

The fiscal year 2015-2016 was dominated by response to the challenges that faced the hospital and the pain practice over the prior year. Through aggressive outreach and marketing, we have been able to dramatically increase our practice volume to levels far beyond prior years. We increased our pain clinic volume by 14% and generated close to 20% more RVU’s. We have worked with our marketing department to develop a greater web presence, including production and publication of a patient centered informational video. As a result of the increase in volume, consideration is being given to further increasing staffing. We are also in the process of reviewing potential satellite offices as a means to accommodate patients and referring providers outside of the local area.

The past year has also been one where the prescription opiate crisis has come to the forefront nationwide. We continue to work closely with our referring providers in the face of these challenges presented by the prescription opiate crisis, both clinically and institutionally. We continue to provide a consultative service to our referring providers regarding chronic opiate patients, both in identifying at risk patients, and in maximizing non-narcotic means to manage these patients. We also serve on a hospital task force created in response to this crisis, not only in educating providers as to how to manage these patients, but also in implementing new state and federal regulations and guidelines regarding opiate prescribing. This committee has also been tasked with adapting and updating hospital polices to reflect the ongoing changes necessary to stay current with these guidelines.
Floating Hospital for Children at Tufts Medical Center
The Division of Pediatric Anesthesia was founded in the mid 1950’s by Dr. Robert. N. Reynolds, a very distinguished physician and teacher. Working with interdisciplinary specialists throughout the hospital, members of our department play an active role within Tufts Medical Center and the integrated Floating Hospital for Children. Floating Hospital for Children is a full service Level 1 Pediatric Trauma Center at Tufts MC, with surgical representation in almost every pediatric surgical subspecialty including pediatric cardiac surgery, major craniofacial and airway reconstruction surgery. Our 46 bedded Neonatal ICU is a top choice for critically ill infants throughout New England. Floating Hospital has long been known for its many innovations in pediatric medicine.

Our board certified pediatric anesthesiologists work tirelessly to provide safe, compassionate and state-of-the-art care to children of all ages from premature neonates to young adults. In addition to cases in the operating rooms, the Division of Pediatric Anesthesia also provides care in multiple offsite locations within the hospital most notably in MRI, CT, Interventional Radiology and the Pediatric Cath Lab.

Our faculty is committed to excellence in patient care, education, and research. Our research interests are primarily clinical and educational research. Several educational platforms have been created by our faculty to assist trainees with their learning. The Division’s digital clinical handbook www.maskinduction.com is immensely popular both within and outside our institution. www.anesthesiahub.com is another platform which provides a repository of anesthesia resources on the web. A testament to the commitment to resident teaching in our Division is demonstrated through teaching scores where pediatric anesthesia faculty have consistently scored higher relative to their peers.

Remarkable progress has been made in our specialty over the last 30 years, and our dedicated team of pediatric anesthesiologists remains firmly committed to help shape an even better future.
Pediatric Cardiac Anesthesia

Rapid change is occurring in the sub-division of Pediatric Cardiac Anesthesia. With the hiring of a new congenital cardiac surgeon, Dr. Dennis Mello, in 2014, pediatric bypass cases have exponentially increased. Last year, we had 38 pediatric cardiac surgical cases and 46 pediatric catheterization lab cases (27 interventional and 19 diagnostic). Furthermore, congenital cardiac patients are presenting to the operating rooms in various stages of repair for non-cardiac surgeries.

Congenital cardiac cases performed at Tufts Medical Center have spanned from atrial and ventricular septal defect repairs and patent ductus arteriosus closures all the way to the arterial switch operation for transposition of the great arteries and the Stage I Norwood repair for patients with hypoplastic left heart syndrome. It has truly been a pleasure providing anesthesia for these very vulnerable and critically ill patients. The incredible teamwork seen between the anesthesia department, pediatric cardiac surgery team, pediatric cardiologists, pediatric intensivists, pediatric nursing, perfusionists and pharmacy has been inspiring. We look forward to continued growth as well as following these patients throughout their care at Tufts.

Fellowship Training

Each year 2 candidates are accepted into our fellowship program, which offers a superb training opportunity in all aspects of pediatric anesthesiology. Our case volume, breadth of clinical material, and experienced faculty provide for an exceptional fellowship experience.

The program aims to create role models who serve as responsible, respectful and reliable team leaders in their field. It is important for trainees to understand a pediatric patient in the context of his or her family, culture, values, and goals. Trainees must learn to embrace diversity and show adaptability in their approach. It is these values which we try to inculcate in our trainees.
The nurse anesthetists practice is primarily in a clinical role within the Department of Anesthesiology. Certified Registered Nurse Anesthetists (CRNA’s) practice in a care team model providing perioperative care for all of the surgical subspecialties in our institution and most of the departments. CRNA’s participate in medical student and paramedic re-credentialing training.

CRNA’s also participate in the Clinical Practice Committee and help to teach ACLS and PALS for Tufts Medical Center. The CRNA’s are involved in research projects within the department and have been published for their efforts. They also present and participate in quality assurance initiatives.

The Division currently includes 15 highly skilled, dedicated CRNA’s. This past fiscal year, CRNA’s stepped up to the challenge of continually staffing the cardiac surgery rooms. This has enabled the Cardiac Surgery Department to increase their surgical volume by assuring their operating rooms are staffed by qualified CRNA’s providing their anesthesia care with the cardiac anesthesia team. The nurse anesthetists also provide the majority of anesthesia care delivered in the very busy adult endoscopy suites. CRNA’s staff this area 4 out 5 days per week providing sedation to an array of healthy to complex patients with multiple co-morbidities.

Student Registered Nurse Anesthetists

Tufts Medical Center is a primary clinical site for the Northeastern University Bouve College of Health Sciences School of Nursing. The CRNA’s serve as mentors and teachers for a class of 5-6 graduate student registered nurse anesthetists each year. Each year, critical care nurses in the hospital and from outside our facility shadow our highly skilled CRNA’s to help make their career decisions regarding advanced practice nursing in anesthesia. Our Department is rewarded for the CRNA teaching and mentoring we provide by enabling the recruitment of the students we foster.
Anesthesiology Residency Program

The Anesthesiology Residency Program at Tufts Medical Center is a medium-sized residency program with a current total of 30 categorical positions and approximately 40 attending faculty. Tufts Medical Center and Floating Hospital for Children are tertiary care hospitals affiliated with Tufts School of Medicine, giving our residents exposure to a wide range of cases and patient populations. One distinctive feature of our program is that it integrates exposure to sub-specialties early in the CA-1 year. This integration allows residents to expand their educational foundation and view how these subspecialties fit neatly into the whole. It also allows residents to learn adaptive skills and different foci that are required in each subspecialty. It is hoped that this will allow residents to make better choices regarding their post-graduate education and become more competitive candidates.

Tufts Medical Center has a large heart transplantation program, the largest in New England, and we have one of the most complex patient populations in the region. This allows our residents to develop excellent technical and clinical skills and many opportunities in crisis management. Our faculty is dedicated to the training of exceptional perioperative consultants initially through close clinical supervision, followed by increasingly graduated autonomy. Our smaller size ensures that the residents are provided with consistent teaching and allows faculty to better tailor teaching to the needs of each resident. Our dedication to outside clinical teaching has been a cornerstone of the program for many years, with 6 hours of dedicated didactic time per week for residents.

In the last academic year we have been revising our curriculum to modernize our modes of learning. Our didactics include daily keyword sessions, interactive lectures with PBLDs, simulation, journal club, QA/QI sessions, self-study time and written and oral board preparation. In the past year, through Dr. Azocar’s initiative, we have supported the certification of additional simulation instructors and purchased a new mobile mannequin that will allow us to create...
scenarios anywhere in the hospital. Our new EMR system, custom developed for our institution, has improved QA/QI reporting, case logs and improved patient care through reduced time with documentation and clear documentation of previous anesthetics. It has also been instrumental in our research endeavors, with greater ease of access to large amounts of data. Through the use of tablets, we have been able to take our electronic system throughout the hospital and enjoy the ability to download all information for our patients on the spot, allowing residents to get lab values, test results and consultants notes without leaving the patient’s side in search of a desktop.

Our program is also rich in teaching and supervisory opportunities for our residents with MS3 and MS4 anesthesia rotations as well as our Acute Pain Service rotation, supervision of SRNAs, Jr residents and residents from surgical specialties.

Medical Student Education

One of the greatest joys of being an academic anesthesiologist is teaching and inspiring motivated medical students. The Department of Anesthesiology and Perioperative Medicine has enjoyed a long, productive partnership with the Tufts University School of Medicine and continues to host electives for third, and fourth-year medical students as well as a six-week selective for first-year students looking to get their feet wet in the busy and fast-paced environment of the operating rooms. In recent years we have expanded our student capacity, introduced a cloud-based multimedia resource learning hub through Evernote, and revised goals and objectives. Increasingly, anesthesiology residents and fellows are getting earlier exposure to the transition from student to teacher by taking on a more active role in medical student education.

We have been fortunate to have several highly qualified Tufts medical students matriculate to our anesthesiology residency program (some even continuing on as faculty) who have been able to help serve in a mentorship role. We look forward to welcoming new students in the department and encourage all third year medical students – regardless of their interest in ultimately pursuing a career in anesthesiology – to join us for two weeks to learn about the perioperative medical and anesthetic management of complex adult and pediatric operative patients.
Center for Medical Simulation

During 2016 we embarked upon the task of resuscitating the simulation center in our department. The efforts began with the purchase of a brand new state of the art high fidelity simulator as well as an anesthesia machine. Several faculty members were able to attend a simulator instructor course at the Center for Medical Simulation in Charlestown, MA. Our efforts to reincorporate simulation in regular bases into the Anesthesia Residency curriculum began in June 2016.

For this academic year our aim is to make simulation an integral part of resident education with monthly sessions. Our goals are also to provide access to this resource to other Departments and establish multidisciplinary training. The Departments of Internal Medicine, Cardiology and Pulmonary already utilize our facilities to train their residents as well. We are collaborating with the Cardiology Division coordinating multidisciplinary code scenarios. As a broader goal we are working with nursing education to begin a program of interdisciplinary simulation for the perioperative team. This comprises creating scenarios in the operating room and well as pre-op and PACU. We strongly believe that simulating crisis scenarios will help improve communication and team work dynamics amongst anesthesia, nursing, surgery and other perioperative services. Practice and preparedness are essential for when a real life situation unfolds.
Dr. Ruben Azocar, Chairman of the Department of Anesthesiology and Perioperative Medicine together with Dr. Roman Schumann, the Vice-Chair for Academic Affairs oversee the departmental academic and research activities of our involved faculty and trainees. The focal areas of our research endeavor includes basic science neuroinflammation, cardiac anesthesia, pain medicine, obesity and anesthesia as well as perioperative outcomes.

## Basic Science

Our research in a rat model of non-infectious fever and fetal neuroinflammation led to a 2 year research grant from the Society of Obstetric Anesthesia and Perinatology (SOAP) in the 2015 with an ongoing collaboration of researchers formerly at Tufts MC and now based at the University of Michigan and Wake Forest University respectively. Our research on IL-6 induced fetal neuro-inflammation was nominated a second time for oral presentation and ‘Best Paper’ award at the national SOAP meeting in May 2016.

Building on this successful experience we expanded the scope of our basic science research to include a project entitled “Pharmacological Inhibition of Neuronal Apoptosis in a Translational Rat Model of Neonatal Sedation”. We also transitioned our lab to be led by the basic science investigator, Tinatin Chabrashvili, MD, PhD, who holds a dual appointment as a clinician in the Department of Neurology and as a basic scientist in our Department. This research is supported by the Richard Saltonstall Charitable Foundation. The lab is located on the 13th floor of the Tupper building (Tupper 1330), and employs Jesus Azocar as the lab technician and Iwona Bonney, PhD in an advisory capacity as needed. Finding ways to inhibit neonatal neuro-inflammation and injury could alter the care for our most vulnerable pediatric population. Going forward we anticipate expanding our investigation into the vulnerable aging brain in the context of the ASA ‘Healthy Brain Initiative’.
Clinical Research

Our vibrant research enterprise include cardiovascular echo and outcomes, respiratory monitoring, evidence based medicine (Cochrane collaboration), simulation and survey studies, retrospective analyses, pediatric research and outcome studies. Our efforts involve IRB approved studies by many members of the Department as well as QA/QI projects engaging a large proportion of faculty, trainees and medical students. Our Department currently has 26 active studies listed with the institutional review board. Active studies include:

- Dr. Konstantin Balonov is the site PI for a multicenter European trial investigation of the effects of lung protective ventilation in an obese population (PROBESE). This study is currently ongoing, and we are one of 8 US centers participating.

- Dr. England is the site PI for a multicenter funded trial examining a novel lusitropic agent, levosimendan, in cardiac surgical patients.

- Both, Drs. Ianchulev and Schumann are studying clinical devices for thermoregulation and ventilation monitoring, respectively.

- Dr. Cobey is coordinating multiple research projects related to the echocardiographic evaluation of cardiovascular function in cardiac surgical patients. This includes research with medical students during their Harold Williams Summer Research Fellowship. Dr. Cobey is very involved with inter-departmental and inter-institutional projects that broadens the scope and reach of our work and fosters trans-departmental collaboration.

- Drs. Balonov, Azocar and Almeda are involved with patient satisfaction assessment and perioperative surgical home outcomes evaluation including the impact of ERAS protocols.

As a result of these efforts, our Department is represented regularly and successfully at large national and international meetings including the annual meetings of the International Anesthesia Research Society (IARS), the Society for Cardiovascular Anesthesia (SCA), and the American Society of Anesthesiologists (ASA) to name a few.

Residents are very involved in some of these research studies and are required to fulfill an academic project during their time with us. Quarterly resident’s research rounds facilitate exchange of ideas and introduction of their work to their peers. A separate roster of their involvement is kept to provide oversight over ongoing QA/QI and research activity.
The Department of Anesthesiology and Perioperative Medicine is committed to excellence and innovation in technology and clinical informatics. Our Anesthesia Information Management System (AIMS), Anesthesia TouchTM (Plexus TG), was deployed in 2013 and is now used extensively in all anesthetizing locations including 23 ORs, MRI, CT, EP lab, labor & delivery, interventional radiology, cardiac catheterization, and endoscopy suites. Each clinician in the department utilizes a wirelessly networked iPad to manage patient workflow and perioperative clinical documentation. We are fortunate to have in the Department a dedicated full time AIMS analyst, Jeffrey Johnson, as well as two anesthesiologists newly board-certified in clinical informatics: Drs. David Moss and Charles Plant. In addition, Drs. Thomas Sung and Aman Kalra are often involved with daily AIMS operational issues.

Beyond the substantial impact Anesthesia TouchTM has had on efficiency, workflow, and the integrity of documentation, we have also leveraged the system to support research and administrative functions within the department and surgical services. Using code written in R by Dr. Moss, surgical case data is transformed and analyzed to optimize resident evaluations, incentivize timely and accurate completion of documentation, assess individual and Departmental performance on clinical quality measures, and inform operating room efficiency. Additional data we obtain by surveying patients postoperatively has enabled us to initiate specific quality improvement efforts aimed at increasing patient satisfaction.

Communication has also been greatly facilitated by the use of technologies introduced in the past few years. Anesthesia and nursing personnel are now able to easily communicate with each other via hands-free lightweight portable and wearable networked devices (Vocera). We use the cloud-based note-sharing app Evernote to provide individuals in the Department immediate access to clinical and other relevant information. We have also used Evernote to augment the structure of our medical student, residency, and pediatric fellowship training programs. Drs. David Moss (anesthesiahub.com) and Aman Kalra (maskinduction.com) both maintain anesthesia-related websites that are used for reference throughout the world.
The Quality Assurance and Improvement program has gradually transformed itself into the largest spectrum of Quality Improvement and Patient Safety position.

We have worked consistently to spread our quality endeavors throughout the Department and across departmental lines into perioperative nursing divisions and surgical specialties. Our goal is to ensure that accepted standards of care are met, that safety metrics are used to monitor and benchmark us against peers, and that we can ensure alignment with the hospital and the ACGME requirements and vision.

**Continuous Quality Improvement**

The Department of Anesthesiology and Perioperative Medicine performs over 16,000 procedures yearly and cares for the patients in the Cardiothoracic and Cardiac Critical Care units in the hospital. Each of our cases has to have a Quality Assurance entry into the AIMS documenting the presence of absence of adverse events, near misses or other pertinent to the patient safety issues. Those cases are then screened, reported to the Department and used as a database for quality improvement rounds presentations or further reviews as needed. Our AIMS is under continuous improvement of the processes to correspond to the needs of the department.

Our monthly QA meetings are all inclusive: from the anesthesia technologists, residents, fellows, CRNAs, faculty and PACU nursing. Often we invite our surgical or medical colleagues to weigh in on the case review and help understand and improve the entire process. The case presentations follow the ACGM and hospital initiated format of RCA review as well as process review and process improvement. Residents, SRNAs, CRNAs and faculty present cases and contribute to the Departmental education process.

An integral part of our QAQI process is the resident and fellow participation in quality improvement projects. We have been working on improving

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**Stefan Ianchulev**

**MD**

Cardiac Anesthesiologist
Director of Quality Improvement
Clinical Associate Professor, Tufts University School of Medicine
hypothermia in TAVR and now in cardiac patients as we strive to extubate those patients in the operating room. Additionally, we have followed up on our extubation times in the cardiac intensive unit and reviewed our muscle relaxant utilization prior to sugammadex becoming formulary in the hospital. Our process of quality improvement brought up a review of steroid administration in our orthopedic cardiac transplant patients. A follow-up on compliance is under evaluation after adjustments have been made to the protocol.

Our group is reviewing reports of skin integrity injury in cardiac patients and further efforts will be made in this direction to prevent future injuries. We are looking into additional areas of improvement: blood utilization, anesthesia record compliance and postoperative note compliances.

**Patient Satisfaction Survey**

We have initiated an anesthesia-led patient satisfaction survey focused on patients separated in three groups: adults, pediatric and Obstetric patients. Our results were evaluated and helped guide strategy for future improvement and design of the preoperative management of our patients.

**Patient Safety**

In order to achieve better patient safety, our hand-off procedures are undergoing restructuring and the introduction of a TuftsPass is eminent in PACU and ICUs. As all our endeavors, this one is the result of several members of our department, resident’s contribution and input by our PACU nurses.

**QA/QI Education**

Transforming our Morbidity and Mortality process into a Quality Improvement process underwent a seamless transition over the past year. An effort with each individual presenter was directed toward the structure and understanding of the QI process. In addition, our residents were enrolled in the QAQI modules of the Institute for Healthcare Improvement (IHI). We have recently reviewed this educational module to be more evenly spread over the time frame of the residency. The final effort is a QI project under the direction of a faculty member of the department or interdepartmental endeavor where this accumulated knowledge finds direct application. We have initiated the conversations for collaboration with the Department of Surgery and are in the process of evaluating common areas of interest.

Our future goal is to enroll our faculty in the IHI educational modules and to increase faculty presence in leading QI projects in the department.

The Quality Improvement within the Department of Anesthesiology and Perioperative Medicine is a continuous and ever evolving process. Our goal is to identify new areas of improvement and keep older ones under control while adjusting to the new challenges of the healthcare field.
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• Schumann R., Rocuts-Martinez A., Phan T., Finkelman M., Knapp R. “High Flow Nasal Cannula Availability is Associated with Anesthesia Practice and Outcomes Change During Endoscopy Procedures”

ASA Medically Challenging Cases:

• Cohen A., Liu P. Acute Cardiovascular Collapse in a Down’s Syndrome Patient Following Positioning for Cervical Laminectomy and Fusion.

• Pisano D., Claus K., Lozada G., Dave B., Ventricular Bigeminy During Desflurane Anesthesia: A Case Report.

• Caresky H., Tirmizi, H., Conversion of Rapid Atrial Fibrillation to Normal Sinus Rhythm after Propofol Bolus in a Patient with Wolfe-Parkinson-White-Syndrome.

• Gittens L., Lozada G., Inducing a Patient Status-Post Tetralogy of Fallot Repair with a Left-to-Right Shunt and Pulmonary Hypertension for an Emergent Cesarean Section.
• **Kelly B., Cobey F., Lyvers J.**, Echocardiographic Findings in Amniotic fluid Embolism: Combined Right and Left Ventricular Failure.

• **Ayoub C., Cobey F., Naseem T.**, Bariatric Surgery after Heartware-Ventricular Assist Device as Bridge-to-Transplantation.

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**4th Annual ISPCOP Symposium**
October 26, 2015, San Diego, CA

• **Moreno-Duarte I, Schumann R.,** The Demographic of Obesity as a Focus in Anesthesiology Research Between 2000 and 2014: An Observation

**ASRA’s 41st Annual Regional Anesthesiology and Acute Pain Medicine Meeting**
March 31-April 2, 2016, New Orleans, LA

**ASRA Medically Challenging Cases:**

• **Edward Doherty, Andrea Tsai, E. Adriana Desillier,** Stellate Ganglion Blockade for Medically Refractory Electrical Storm in a patient with Impella LVAD

**SPA/AAP Pediatric Anesthesiology 2016 Meeting**
April 1-3, 2016, Colorado Springs, CO

• **Vo V.**, Sullivan CA, Quinonez LG, Brown ML, Comparison of Postoperative Pain Management Strategies for Thoracotomies in Congenital Cardiovascular Surgery

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April 1 – 4, 2016, Boston, MA

• **Javeed I. Schumann R.,** Tarnoff ME, Lechan RM. Pheochromocytoma-Related Cardiomyopathy: A Case Series. Endocrine Reviews 2016
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- Lyvers J, Rohrer B, Weintraub A, Cobey F. “Pre-operative Diastolic Dysfunction Assessed by E/e’ is Associated with Worse One-Year Survival in Transcatheter Aortic Valve Replacement Patients.”

- Rohrer B, Kelly B, Tighiouart H, Cobey F, Ianchulev S. “Preventing Hypothermia in Transcatheter Aortic Valve Replacement”

- Gebhardt B, Jain A, Ianchulev S, Breeze J, Cobey F. Use of Transesophageal Echocardiography for the Prediction of Severe Right Heart Failure Following LVAD Implantation

- Jain A, Rohrer B, Gebhardt B, Breeze J, Cobey F. “Left Ventricular Assist Devices Thrombosis is Associated with An Increase in The Systolic to Diastolic Velocity Ratio Measured at The Inflow and Outflow Cannulas Using Transesophageal Echocardiography.”

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Arnel Almeda, MD
- Factors that Influence Patient Satisfaction Regarding Perioperative Pain Management

Konstantin Balonov, MD
- Protective Ventilation with Higher versus Lower PEEP during General Anesthesia for Surgery in Obese Patients: The Probese Randomized Controlled Trial

Iwonna Bonney
- Blinded Observational Study to Evaluate a Non-Invasive Respiratory Volume Monitor in the Post-Anesthesia Care Unit and on the General Hospital Floor

Frederick Cobey, MD
- Fractal analysis in hemodynamics
- Diastolic Dysfunction as a Prognostic Factor for Patients Undergoing Transcatheter Aortic Valve Implantation
- Impact of dexmedetomidine on cardiac surgery outcomes
- Detecting Continuous-Flow Left Ventricular Assist Device (LVAD) through Thrombosis Using Intraoperative Transesophageal Echocardiography (TEE)
- Automated Interpretation of Echocardiographic Data
- Intraoperative Pulmonary Artery Pulsatility Index is Associated with Positive Heart Transplant Outcomes
- Statistical significants on variability of EKG Polarization Magnitude between pre and post CRT patients

Michael England, MD
- Levosimendan in cardiac surgery

Stefan Ianchulev, MD
- Heart Rate Variability in Patients with Heart Rhythm Devices
- Efficacy of Allon Warming Device in Cardiac Surgery Patients
- Perioperative Patient Satisfaction Survey
- Blood Product Wastage Reduction Initiative
- Perioperative Pediatric Patient Satisfaction Survey
- CTU Extubation Times
- PONV Practice and Guidelines Dev.
Gustavo Lozada, MD
- The Effects of Non-pharmacological Interventions in Perioperative Pain Management for Arthoscopic Knee Surgery: A Randomized Controlled Trial, study
- Public Perception on Attending Physician Work-Hours in the United States: How Will it Affect the Future of Health Care?

Virgil Manica, MD
- Timing of Nonelective C-Sections in an Academic Medical Center

Ewan McNicol, Pharm D, MHPREP
- Perioperative risk factors for persistent postsurgical pain: systematic review and meta-analysis (collaboration with Washington University in St. Louis).

David Moss, MD
- Perioperative Patient Satisfaction Survey
- Perioperative Pediatric Patient Satisfaction Survey
- PONV Practice and Guidelines Development
- Spiralith Study

Roman Schumann, MD
- The correlation between non-invasive oscillometric blood pressure and invasive arterial blood pressure in patients undergoing bariatric surgery
- Anesthesiology morbid obesity management survey study and research database
- Improving the sensitivity and specificity of the STOP-Bang screening questionnaire for patients with obstructive sleep apnea
- The evaluation of a respiratory monitor in surgical patients with a BMI >35 undergoing elective surgery under general anesthesia
- The evaluation of a respiratory volume monitor in patients undergoing overnight polysomnography
- High flow nasal cannula during sedation for endoscopy procedures
- Proper NIBP Cuff Fit and Correlation with Arm Circumference in Morbidly Obese Patients
- Comparison of Invasive and Non-Invasive Pulse Pressure Variation in Morbidly Obese Patients
- Assessing Intraoperative Airway Changes and their Regression to Baseline in Patients Undergoing Elective Surgical Procedures in the Prone and Trendelenburg Positions
- Retrospective Study of Pheochromocytoma Perioperative Management at Tufts Medical Center
Recent Grant Reviews and Reviews For Scientific Journals

Ruben J. Azocar, MD, MHCM, FCCM
- Anesthetic and Analgesia, Reviewer
- Journal of Clinical Anesthesiology, Reviewer
- Journal of Intensive Care, Reviewer

Frederick Cobey, MD
- Journal of Cardiothoracic and Vascular Anesthesia, Editorial Board
- Plos One, Reviewer
- Heart, Reviewer

Nathaniel Katz, MD, MS
- PAIN, Ad Hoc Reviewer

Ewan McNicol, Pharm D, MHPREP
- Cochrane Collaboration Pain, Palliative Care and Supportive Care Group, Editor
- Journal of Pain & Palliative Care Pharmacotherapy, Editor
- AHRQ EPC Project - Effectiveness of Treatments for Diabetic Peripheral Neuropathy Technical Expert Panel Member
- Israeli Science Foundation. Grant application, Reviewer
- JAMA, Reviewer
- Cochrane Collaboration, Reviewer
- Pain Medicine, Reviewer
- PAIN, Reviewer

Morton Rosenberg, DMD
- Dimension of Dental Hygiene, Managing Medical Emergencies, Reviewer
Dimensions of Dentistry, Prepare for Medical Emergencies, Reviewer
Journal of the Massachusetts Dental Society, What Every Dentist Should Know About Subcutaneous Emphysema, Reviewer

Roman Schumann, MD

- Journal of Clinical Anesthesia
- Anesthesia & Analgesia
- Obesity Surgery (Associate Editor)
- Cochrane Collaboration of Systematic Reviews
- Transplant International
- American Journal of Transplantation
- Saudi Journal of Anesthesia (Consulting editor, Board of Trustees)
- PlosOne
- ESC Heart Failure
- Inflammation Day Planning Grant

Peishan Zhao, MD., PhD.

- Journal of Translational Perioperative and Pain Medicine, Reviewer

Lectures and Meeting Participation Outside the Department

Ruben J. Azocar, MD


Daniel B. Carr, MD

- AMA Mid-year meeting (Dr Patrice Harris, Chair, AMA Board of Trustees = workshop chair and lead presenter; other presenters included Tom Frieden, Head, CDC): Reducing Stigma Associated with Chronic Pain. Chicago, IL, November 2016
- American Academy of Pain Medicine: 2016 annual meeting cochair, inviter/ moderator of plenary lecture by Dr Patrice Harris, Chair-elect, AMA Board of Trustees. Palm Springs, CA
- Program Director, Program on Pain Research, Education and Policy
- Tufts Slater Gallery exhibit on Palliative care in Kenya, Africa
- Lecturer, Tufts College course, “Science and the Human Experience” (J Garlick, Dir)

**Frederick Cobey, MD, MPH, FASE**
- Co-chair for VADS session at ASE meeting, Seattle, WA. January 25, 2016

**Adriana Desillier, MD**
- Grand Rounds Department of Cardiology, “Sedation and Analgesia” July 2015
- Grand Rounds Lawrence General Hospital, “Management of Acute Postoperative Pain” September 29, 2015
- Pain Research and Education Program, Tufts School of Medicine, “Acute Pain” February 2, 2016

**Will Hynes, MD**

**Maurice Joyce, MD**
- Evaluation of Clinical Competence, Medical Education Elective (MED436-TM), Tufts Medical School, March 3, 2016, Boston, MA
Gustavo Lozada, MD
- Update on Ultrasound-Guided Regional Anesthesia, Puerto Rican Society of Anesthesiology. San Juan, Puerto Rico. October 2015

Jeffrey Lyvers, MD

Virgil Manica, MD
- 4th Congress of Moldovan Anesthesia Society, Chisinau, Republic of Moldova, September 10, 2015, Labor Analgesia Options
- 4th Congress of Moldovan Anesthesia Society Chisinau, Republic of Moldova, September 10, 2015, Analgesia after Cesarean Section
- 4th Congress of Moldovan Anesthesia Society Chisinau, Republic of Moldova, September 10, 2015 Obstetric Hemorrhage Management Update
- Anesthesia Department Grand Rounds St. Elizabeth Hospital, Brighton, MA, October 4, 2015 Update on Obstetric Hemorrhage Management
- 13th Annual Anesthesia Updates Conference Timisoara, Romania, October 22, 2015 Analgesia after Cesarean Section
- 13th Annual Anesthesia Updates Conference Timisoara, Romania, October 22, 2015
- What is New in the Management of Obstetric Hemorrhage
- 13th National Ob/Gyn Conference “Prof Dobrovici”, Iasi, Romania, April 15, 2016, Post Cesarean Delivery Analgesia
- 13th National Ob/Gyn Conference “Prof Dobrovici”, Iasi, Romania, April 15, 2016, Update on Management of Obstetric Hemorrhage
- 42nd Annual SRATI Congress, Sinaia, Romania, May 13, 2016, Labor Epidural and Maternal Fever
- 42nd Annual SRATI Congress, Sinaia, Romania, May 13, 2016, Updated ASA Obstetric Anesthesia Guidelines

Ewan McNicol, Pharm D, MHPREP

- Evidence Based Pain Therapy. Masters in Pain Research, Education and Policy. Tufts University, Boston, Massachusetts. April 21, 2016.


**Morton Rosenberg, DMD**


- Lead Faculty. ACLS and Airway Rescue via High Fidelity Human Simulation. Florida Dental Society of Anesthesiology. Tampa, Florida. November 7-8, 2015

- Medical and Sedative Emergencies. Course Director. All day course, Annual Meeting of the American Academy of Periodontology. Orlando FL. November 15-17, 2015

- High Fidelity Human Simulation Experiences for Moderate and Deep Sedation Providers Out of Hospital Providers. Lead Faculty. Chicago IL, Dec 7-8, 2015

**Roman Schumann, MD**

- Obesity, Morbid Obesity and Ultra Obesity: The Large Challenge in Anesthesia. ASA, Annual meeting San Diego, CA October 25, 2015

- Invited panel presentation: Respiratory Physiology for Anesthesiologists Optimizing ventilation: obesity and pneumoperitoneum—any data? ASA, Annual meeting San Diego, CA October 26, 2016

- Should UPP for Severe Sleep Apnea be Performed at Ambulatory Surgery Centers. ASA, Annual meeting San Diego, CA, October 27, 2015

- “Obesity, metabolic syndrome and OSA – What we know and what we would like to know” San Francisco, CA, USA May 21-24, 2016.

San Francisco, CA, USA. IARS Annual Meeting, invited panel presentation
Peishan Zhao, MD, PhD

- Do I need epidural analgesia during my childbirth, NPLD-GHI Obstetric anesthesia conference? FuZhou, FuJian, China. September 8-9, 2015
- Can’t we do anything during “nature childbirth?” The 10th Congress of OB Critical Care and 3rd Congress of Normal Delivery. Shanghai, China. September 11, 2015
- Post Dural Puncture Headache New Youth Anesthesia Webinar, January 30, 2016
- Anesthesia management of OB emergency 2016 West China Anesthesiology and Intensive Care Week and 7th Visual technology in Anesthesia/Pain/Critical care/Emergency Medicine and the POC Ultrasound training course after the meeting. Chengdu, Sichuan Province, P.R. China. May 11-19, 2016
Department of Anesthesiology and Perioperative Medicine