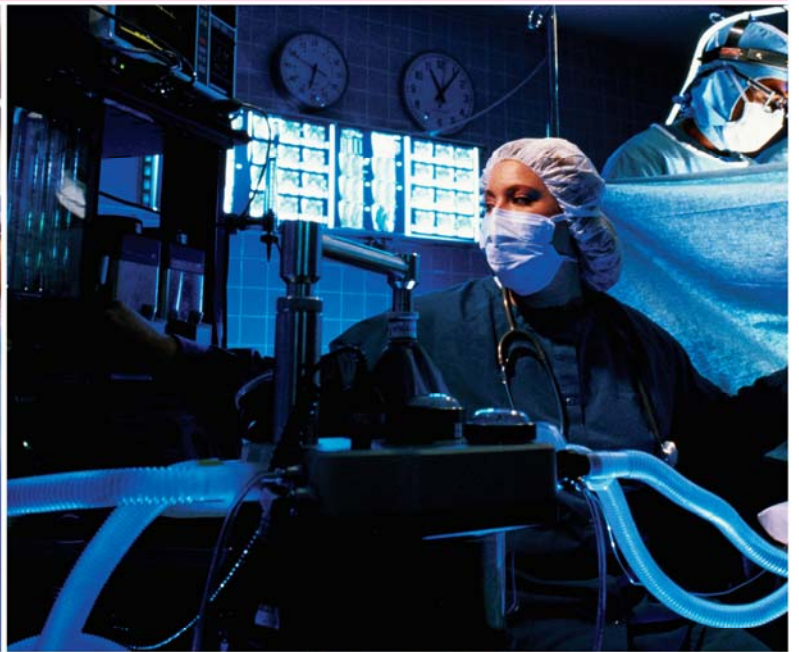


Ohio State University Department of Anesthesiology 2008 Annual Report



Department of Anesthesiology
2008 Annual Report

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July 1, 2007 – June 30, 2008

Department of Anesthesiology
The Ohio State University College of Medicine
Columbus, Ohio

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Overview



Ronald L. Harter, MD
Associate Professor Clinical
Interim Chair

Anesthesiology: Improving people's lives through innovation in research, education and patient care.

In the Department of Anesthesiology, we have modified The Ohio State University Medical Center mission statement as presented above. It is simple, clear and compelling. In 2008, we in the Department of Anesthesiology have made great strides forward to achieve this mission.

In research, we have invested in our people and our infrastructure. Our progress in basic and clinical research is measurable. In 2008 we recruited a clinical research coordinator, a technical editor, postdoctoral Fellows, clinical research assistants, technicians, NIH road map Fellows, 4 new externally-funded PhD students in the OSBB and MCDB programs, and a foreign national research Fellow (MD/PhD). We now have 13 Principal Investigators, 8 co-investigators, 22 research personnel (PhD students, Fellows, associates), and additional medical students and residents engaged in research. This level of involvement has resulted in both an increase in peer-reviewed manuscripts and abstracts presented at national and international meetings and impact of our publications. Some of our abstracts have received scientific awards at international meetings. This surface activity is also supported by an increase in research funding in the department – 2008 represents the third consecutive year of increased research funding. There was a remarkable increase in funded multi-center clinical trials bringing in nearly \$1 million in new awards on 9 new trials by 3 investigators. In addition, last year, our researchers and physician scientists submitted for over \$6.5 million in sponsored research dollars, including multiple NIH grant applications, more than a dozen multi-center clinical trials, and from various other anesthesia and biomedical national funding agencies. To support this team and our growing research program, we have embarked on an aggressive plan to increase funded research space, build a new clinical research processing lab, recruit key research personnel, and develop a clinical research office and conference area for our anesthesia research team – these initiatives have been largely fulfilled. We also linked up our junior tenure track faculty with senior NIH-funded mentors in the BRT and identified shared research space to accommodate their growing needs. Investment in our growth and development as an academic department is done with fiscal responsibility and accountability – at least 50% of our research is supported by extramural funding or other

cost-sharing mechanisms, and we plan to continue to improve on this in a step-fast pace. Our goals for next year are to continue to improve our research infrastructure, increase our funding and quality publications, and obtain additional NIH funding. Recruitment of an NIH-funded neuroscientist will add to our strengths in NIH-funded research in enteric neuroscience, a growing program in spinal cord injury, brain imaging and industry-funded research in Neuroanesthesia. NIH NIDDK studies have received continuous funding on one or multiple R01-type grants for the past 17 years; we also serve on NIH study sections. We have set the bar high in our department and 2008 established new levels of productivity and funding. Our long term goal is to align ourselves with the OSUMC mission to be a top 20 anesthesia department by 2015.

Education is the heart of Ohio State's Medical Center. Our clinicians take extraordinary pride in our training program, and for good reason. Since 2004, 53 of our 55 resident graduates have passed their written board examination on first attempt, which constitutes a 96% pass rate, compared to less than 90% pass rate nationally for the same interval. Our program enjoys a full four-year accreditation from the Accreditation Council for Graduate Medical Education (ACGME).

Over the past year, Andy Roth, MD was named associate program director for the Department of Anesthesiology. Dr. Roth is a graduate of the anesthesiology residency program at Ohio State, and has infused a refreshing combination of enthusiasm and experience to the leadership of the residency program.

I continue to serve in the role of residency program director. I have the pleasure of representing Ohio State nationally as the chair of the Committee on Residents and Medical Students for The American Society of Anesthesiology. I participated in a panel on "Becoming the Ideal Resident Candidate" to the Medical Student Component at the American Society of Anesthesiologists' 2008 annual meeting.

Also of national note, Mark Gerhardt, MD serves the American Board of Anesthesiology as one of only four oral board examiners practicing in the state of Ohio.

Ritu Kapoor, MD and Andy Roth, MD have developed and expanded the role of anesthesia simulation education in the department, with clinically-based scenarios in anesthesiology management to enrich and enhance the education of medical students and residents in anesthesiology throughout their 36 months of training. Our Simulation Education Center is registered with the American Society of Anesthesiologists in its directory of simulation centers.

The residency program will present its third annual CA-2 (PGY-3) retreat on practice management in the spring. In 2008, we trained our first Fellow in Regional Anesthesiology, adding Ohio State to a short list of programs nationally offering such a training opportunity. In addition, we now have an ACGME-accredited fellowship in cardiothoracic anesthesiology, and are training a Fellow in pain medicine in our ACGME-accredited Pain Medicine Fellowship. Fellowships represent the pinnacle of

post-graduate physician training, and we are delighted to offer these training opportunities at Ohio State.

I am pleased to report that in the arena of patient care, the Department of Anesthesiology has improved our patients' lives through innovation and a sincere commitment to excellence. OSUMC provides medical and surgical care that traverses the entire spectrum of medical care. The breadth of services provided requires the highest level of clinical skill among our faculty. We provide preoperative, intraoperative and postoperative expertise every minute of every day at OSUMC. The growth in clinical volume throughout OSUMC has created opportunities to add additional skilled practitioners to our department. Over the coming months, we will be adding anesthesiologists with expertise in pain management, neuroanesthesia and various other anesthetic skills, allowing us to continue providing the highest quality care to our patients.

This has been an important year for the department. We have experienced significant growth in our volume of cases in the operating rooms (OR), in the volume of procedures requiring anesthetic management outside the OR suite, in the volume of patients requiring obstetrical anesthetic care; we have done this within our budget. Despite the rigorous demands of providing this growth in service throughout OSUMC, our physicians, house officers, nurse anesthetists, administrative support staff, researchers and students exhibit a growing sense of teamwork and shared purpose as we carry on the extraordinary work that we do every day.

Research



Fedias L. Christofi, PhD

Professor and Vice Chair of Anesthesiology
Professor of Physiology & Cell Biology

It is my pleasure to provide a brief report on our progress in research in 2008. I am pleased to report that we continue to experience growth in research in the following areas:

1. We further developed our research infrastructure for both basic and clinical research (please see later descriptions).
2. In 2007, we provided start-up funds, scientific mentors, protected non-clinical time, laboratory space, and the research infrastructure for 3 physician scientists on the RTT and 1 basic researcher on the RTT to develop their independent research programs towards securing extramural/NIH funding. Their progress in 2008 can be measured by their productivity in quality publications, development of new animal models of disease, and their efforts to submit NIH, industry, or other grant applications. We are hopeful that 2009 will result in extramural funding including NIH grants.
3. Expansion of basic and clinical research programs and interdisciplinary collaborations involving Children's Hospital, DHLI, Neuroscience and Spinal Cord Injury, Minimally Invasive Surgery, Wound Healing and Surgery, Physiology & Cell Biology.
4. Participation in the training of PhD students in the OSBB program, MCDB program, and MD/PhD medical scientist program; foreign national Fellows; students on foreign national training programs; and NIH road map Fellows at OSU.
5. Experienced significant growth in newly-funded multi-center national clinical trials relevant in Anesthesiology.
6. For the third year in a row, we show a steady upward trend in our funding from extramural agencies.

7. We invested in research with fiscal responsibility.

Progress Highlights:

- **Anesthesia research team:** In 2008 we recruited a clinical research coordinator with additional experience in running a clinical research lab, a new technical editor, several postdoctoral research Fellows (with clinical backgrounds), 2 NIH road map Fellows, and 4 new PhD students (bringing our total to 6 currently). Overall, there are 13 principal investigators (PIs), 8 co-PIs, 22 research personnel (PhD students, Fellows, associates), and many medical students and residents engaged in clinical or basic research in our department. For the first time, we had 5 senior residents who requested and received block time to conduct research. A significant number of residents, students and Fellows have co-authored abstracts, as well as made scientific and case-report presentations at regional and national meetings this past year. Some are beginning to get published in peer-reviewed journals.
- **Internal jump-start funds:** We will continue the internal jump-start fund mechanism to support small seed grants (up-to-10K/grant) for clinical or basic research of our faculty/residents. Funds provided to support an investigator-initiated clinical trial by one of our junior faculty on RCT aimed at improving the standard of care for patients undergoing cardiac surgery to protect renal function is well on its way, with ~ 30 patients enrolled to date. Another clinical study investigates the impact of local anesthetics on wound healing in cardiac patients in collaboration with senior investigators in the DHLRI and Department of Surgery.
- **Technical Editor:** We have recruited a new technical editor in 2008 who is preparing our first quarterly newsletter, updating and modernizing the research component on the anesthesia Web site, editing and submitting journal articles, reports and abstracts, and providing support on electronic grant submissions.
- **MOU with Center for Biostatistics:** We are continuing to provide biostatistics support for everyone in the Department of Anesthesiology through the continuation of a signed MOU with the Center of Biostatistics and David Jarjoura, PhD; this has proven to be extremely beneficial to our scientists, residents, students, Fellows, and clinical research staff to provide team support of our research programs and education for the residents. It is beginning to payoff in quality publications, and more of our physician scientists are utilizing the service for developing experimental design in clinical studies and IRB submissions, analysis of large data sets and data mining in gene array expression studies, and as a consulting service or collaboration on submitted or pending NIH or other grant applications (NIH, SMBS and IARS).
- **Cramblett Hall shared research space:** Completed the construction of the new Cramblett Hall shared research staff office and conference facility and

relocation/staffing, with 8 clinical research personnel including postdoctoral Fellows, clinical research assistants and clinical research coordinators, as well as our technical editor. Several personnel were recruited in 2008 to improve our capabilities in conducting multi-center clinical trials; funding for a majority of these positions is from funded clinical trials. The new facility is equipped with 9 computer workstations, separate conference room, secured-file storage area, and large conference table equipped with LCD projector for scheduling department research/staff and committee meetings. This has improved our organization and efficiency.

- **More protected time awarded:** Non-clinical protected research time for 4 faculty members (3 on the RTT and 1 on the RCT) received ~ 2 days/week to pursue their research and develop their research programs; awarding of non-clinical research time with clear metrics of accountability has steadily increased since 2004. Several other RCT faculty members with active growing clinical research programs receive significant non-clinical time (~ 1 day/wk) to pursue their research activities.
- **Journal articles with more impact:** In 2008, we are pleased to report that we published 27 journal articles that were comparable to the number published in the previous two years, but the number of impact publications is steadily increasing. The average impact factor in 2006 was 2.2, in 2007 it was 2.52, and 2008 2.721; the upward trend is encouraging. These include publications in *AJP*, *NGM*, *JBC*, *Anesthesia & Analgesia*, *Anesthesiology*, etc. There were also 8 book chapters and 4 books edited or published.
- **Abstracts:** There were 23 peer-reviewed abstracts presented at national or international meetings and published in the proceedings of their respective societies (including ASA, IARS, Copenhagen Purine meeting, AGA, Neuroscience). Numerous additional abstracts were presented at local or regional meetings, including the Midwest Anesthesia Research Conference (MARC) (a main conference for our residents) and OSUMC Research Day.
- **Growth in clinical trials:** Our initial investment in developing research infrastructure, support personnel, and awarding of non-clinical research time to support clinical research has resulted in a clear increase in growth and numbers of clinical trials awarded and funds received from 2006-2008. In 2006 there were 4 active funded multi-center clinical trials and 11 clinical trials in 2007, representing an increase of 7 over the previous year. In 2008 we are pleased to report that this was yet another record year for us with 9 new active and funded multi-center clinical trials in 2008. Awards were made to 3 different PIs and many co-PIs in the Department of Anesthesiology. Data obtained from the PI portal indicates that a total of \$197,740 was awarded from industry in 2006, increasing to \$515,000 in 2007. The year of 2008 was a record year, with clinical trial awards totaling \$1,156,000. A total of \$337,227 was received from clinical trials at OSURF in 2007 compared to \$63,563 in 2006. In 2008 we are pleased to report

that a total of \$880,869 was received from clinical trials at OSURF. A majority of those funds were awarded to Sergio Bergese, MD (Assistant Professor on the RCT, Director of Neuroanesthesia, Department of Anesthesiology). This is a remarkable achievement, and Dr. Bergese has established the Department of Anesthesiology as a prominent site for multi-center clinical trials.

- **Clinical processing laboratory:** To further support our clinical research, we invested additional funds and are in the process of establishing a new ~200 square-foot clinical processing lab, newly furnished in the Department of Anesthesiology. The lab is well equipped and meets all safety regulations for processing human samples, tissues or fluids from clinical studies or multi-center clinical trials. This will improve our capabilities and further support and leverage external funding for larger multi-center clinical trials and investigator-initiated clinical studies in our department. The anticipated completion date is April 2009. Partial support for equipment (-80⁰C freezer, a BCL-2 biohazard hood, etc.) is from extramural funding, including NIH funds awarded to Fievos L. Christofi, PhD.
- **NIH grants:** We have a 5-year R01 NIDDK grant in its 14th year and 3rd renewal at \$284,000 in 2008, and a 5-year K08 NIDDK grant (in a no-cost extension). Additional unsuccessful efforts to secure NIH, industry and other funding include grants totaling \$5,299,524. Some of these grants are in the revision stages (ie, NIH NHLBI, AHA, NIH NIDDK, R21 or R01 grants, IARS grants, Children's Cardiomyopathy Association, industry grants for basic research).
- **Research awards:** One physician scientist (Mark Gerhardt, MD, PhD) received a mid-career development award from the Society of Cardiac Anesthesia for \$40,000. This is a significant achievement because there was only 1 funded in the United States in 2008.
- **2009 progress:** In the first 3 months of 2009, 3 new clinical trials were submitted, 1 R01 application, 1 clinical grant to the American Society of Metabolism and Bariatric Surgery (SMBS) in collaboration with investigators in Minimally Invasive Surgery/General Surgery; there is a pending industry grant (~\$100-\$150,000) in the process of awarding for basic research studies on vascular reactivity to assess the efficacy of an L-type Ca channel blocker as an arterial selective vasodilator.

Fiscal responsibility

A significant portion $\geq 50\%$ of our research efforts and salary support is provided by extramural funding from industry, NIH, or other mechanisms (fellowships, etc.) of our research expenditures. One of the goals is to move towards eventually supporting 80% or more of our costs for research.

NIH study sections

We have 1 member of the department (Fievos L. Christofi, PhD) who has served on 3 different NIH NIDDK study sections in 2008 and served as Acting Chair of 1 special emphasis study section of P01 program project applications. He also serves as a permanent member of the CIGP study section over the next 4 years.

PhD fellowship program, channel program between Al-Azhar University, Cairo Egypt and Hamdy Hassanain, PhD's laboratory

There are 5 PhD students on fellowship support in his laboratory in the OSBB and MCDB programs with full salary support, supplies, and program fees for a 4-year period. Total support provided by the foreign government for their training in our department is ~ \$1,100,000 over 4 years.

Honors/Awards

Our residents, Fellows, and students have received awards and acknowledgement for their scientific and case-report presentations at local, regional, and national meetings.

Goals for 2009

1. **Focus:** As was the case in 2008, in 2009 our focus will be on impact publications, NIH submission/scored grants, continuing to develop our research infrastructure and aggressively recruit an NIH-funded neuroscientist to complement our strengths. Areas of focus and growing strengths in the department include enteric neuroscience, ischemic spinal cord injury, monitoring devices in the perioperative setting, neuroimaging of the brain and cells, cardiovascular diseases, neurogastroenterology, postoperative ileus, opioid bowel dysfunction and neuroplasticity in inflammatory bowel diseases, neuroanesthesia, and wound healing in response to anesthetics. We need to develop and standardize our clinical research practice (budgets, billing, management, etc.), set up a certified clinical research lab, and further align with college programs.
2. **National ranking:** Our goal is to align ourselves with the college mission to be top 20. In this category, our target is to be ranked at 23rd to 24th in the country according to NIH/other indicators in the next 4 to 5 years; this includes recruitment of 1 NIH-funded neuroscientist. However, aggregate national standards of progress and productivity will be adopted, not just NIH ranking, to further assess our standing (total funding/clinical trial and NIH, national awards, impact factors, citations of impact articles, editorials, news releases, numbers of publications, numbers of grants, NIH study sections, editorial boards of journals, national committees, etc.).
3. **Expand clinical trial research** and provide education and training to residents, faculty, and students in the department.
4. **Recruit an NIH-funded neuroscientist to complement our strengths in the field:** To date, we have 1 basic researcher (F.L. Christofi, PhD, Vice Chair of Research), and 1 physician scientist (Yun Xia, MD, PhD) who have succeeded in

securing NIH funding through NIDDK to carry out studies in neurogastroenterology, with a focus on inflammatory bowel diseases, irritable bowel syndrome, second messengers, and neuroplasticity. A number of new NIH grants are planned in 2009. The vice chair of research has been funded through NIH NIDDK/NCRR for 17 years on 4 separate grants, a 4-year NIH fellowship for an MD/PhD student (currently pursuing an academic career in gastroenterology), and 5 additional R01's as co-PI. We plan to do our best to align ourselves with the neuroscience signature program and other related programs (ie, neurogastroenterology and the GI division, Internal Medicine) in our recruitment efforts. Several senior residents completed research blocks in neurogastroenterology, and 1 resident is now on faculty. There is a postdoctoral Fellow gastroenterologist (MD/PhD) recruited in Dr. Christofi's laboratory who trained with a prominent world-renowned clinical motility physician scientist, Dr. Joseph Sung, at the Chinese University of Honk-Kong (chair of Internal Medicine & Therapeutics, associate dean, faculty of medicine, director of digestive diseases institute). There is also an MD/PhD physician scientist from Germany who trained with the vice chair for a number of years, and will now pursue an academic career in anesthesiology; she has strong interests in neurogastroenterology and in continuing established collaborations. We are building from the bottom up, but we need 1 or more funded neuroscientists to facilitate our progress. Overall, there are currently 4 physicians/scientists who are aggressively pursuing NIH funding opportunities on new R01-type applications. Each of them has their own research programs. Our goal is to be in the top 20 academic anesthesia departments in the country, but this will take some time.

5. **Further develop research infrastructure and our research team in the Department of Anesthesiology:** Research in progress meetings (CME credit), research staff meetings, workshops, research education, a CA-1 resident research rotation (now running for 7 years, with 65 residents participating to date), a quarterly research newsletter, and an updated anesthesia Web site are all activities that will help in this regard.

Research Funding

Active

Christofi, Fievos L.

R01 DK44179-12 to 17

12/01/2005 to 11/31/2010

Source: NIH NIDDK

Title: Purinergic regulation in enteric neural reflexes

Role: Principal Investigator

1R01 ES12991-01 (Wani, AA, PI)

6/1/2004 to 5/31/2009

Source: NIH

Title: Cross-talking pre-incision events of eukaryotic NER
Role: Consultant

Gerhardt, Mark

07/01/2008 - 06/30/2010

Source: Society of Cardiovascular Anesthesiologists

Title: Cytoskeletal alterations in a porcine model of restrictive ventricular septal defect

Role: Principal Investigator

Xia, Yun

5 K08 DK060468

09/30/2003 - 06/30/2009

Source: NIH NIDDK

Title: GDNF in the enteric nervous system

Role: Principal Investigator

Clinical Trial/Industry Awards for 2008

Arbona, Fernando Luis

1. Multi-center continuous peripheral nerve block surveillance study comparing ultrasound-guided catheter placement to non ultrasound-guided catheter placement techniques.
I-Flow Corporation

Bergese, Sergio D.

2. CPI-APA-351: A phase III, multi-center, open-label, prospective, repeated dose, randomized, controlled, multi-day study of the safety and efficacy of intravenous acetaminophen in adult inpatients.
Cadence Pharmaceuticals, Inc.
3. Economics of readmission in patients having undergone a surgical procedure and a case for the use of cost-saving anti-emetic prophylactic treatment for postoperative nausea and vomiting.
Eisai Co. Ltd.
4. Awake intubation: Why not Dexmedetomidine for airway management?
Hospira, Inc.
5. A randomized, multiple-center, double-blind, placebo-controlled, study of the safety and analgesic efficacy of repeated dosing of PMI-150 (intranasal ketamine) to treat acute postoperative pain following orthopedic trauma, injury, or surgery.
Javelin Pharmaceuticals, Inc.

6. The evaluation of patients with acute hypertension and intracerebral hemorrhage with intravenous clevidipine treatment (ACCELERATE).
The Medicines Co.
7. SKY0402C208 - A multi-center, randomized, double-blind, parallel-group, active-control, dose-ranging study to evaluate the safety, efficacy, and comparative systemic bioavailability of a single administration of SKY0402 via local.
Pacira Pharmaceuticals, Inc.
8. A phase 3, multi-center, randomized, double blind, parallel group, active control study to evaluate the safety and efficacy of a single administration of SKY0402 for prolonged postoperative analgesia in subjects undergoing total knee arthroplasty.
Pacira Pharmaceuticals, Inc.
9. A randomized, double-blind multi-center dose-ranging study of the efficacy and safety of pregablin compared to placebo in the adjunctive treatment of post-surgical pain after primary inguinal hernia repair.
Pfizer Inc.
10. A phase III, open-label study to investigate the safety and tolerability of the CollaRx Bupivacaine implant in patients after pelvic, abdominal or gynecologic surgery.
Premier Research Group, PLC

Xia, Yun

11. A multi-center open-labeled study of the long-term safety and efficacy of Lubiprostone in patients with opioid-induced bowel dysfunction.
Sucampo Pharmaceuticals, Inc.

Pending Grant Proposals 2009

Bergese, Sergio D.

1. A Phase 2, Randomized, Double-Blind, Placebo-Controlled, Proof of Concept Study to Evaluate the Analgesic Efficacy and Safety of Intravenous CR845 During the Postoperative Period in Subjects Undergoing Laparoscopic-assisted Hysterectomy.
Cara Therapeutics, Inc.
\$85,964.00
2. Evaluating the Accuracy of Continuous Non-invasive Blood Pressure Algorithm in Hospital Operating Room and Acute Care Settings Versus Intra-arterial Line
Covidien

\$255,470.00

3. Studying the Effectiveness of Triple Therapy with Palonosetron, Dexamethasone and Promethazine for Prevention of Postoperative Nausea and Vomiting in High Risk Patients Undergoing Neurological Surgery and General Anesthesia.

Eisai, Inc.

\$74,372.00

4. A Prospective, Randomized, Double-Blinded Study Assessing Indices of SNAPTTM II Versus VISTATTM on Surgical Patients Undergoing General Anesthesia. (PRECISION GA).

Stryker Instruments

\$85,370.00

Hassanain, Hamdy H.

5. The Role of Profilin 1 in Vascular Remodeling

NIH

\$1,875,000.00

Hessein-Hassona, Mohamed D.

6. Role of Actin Dynamics in Controlling Blood Pressure

American Heart Association - Great Rivers

\$46,000.00

Needleman, Bradley J. and Christofi, Fievos L.

7. Impact of Obesity, Laparoscopic Roux-en-Y Gastric Bypass Surgery, and Weight Loss on Purinergic Pathways in Adipocytes

ASMBS

\$50,000.00

IRB Protocols

Fernando Arbona – Principal Investigator

1. CBLOC2007001: A multi-centered, prospective, randomized clinical study on the use of ultrasound for the placement of the continuous peripheral nerve blocks.

Constantino Benedetti – Principal Investigator

2. Evaluation of pain assessment tools, II
3. Ketamine: Safety and efficacy in advanced cancer patients

4. Evaluation of pain assessment tools
5. How symptoms affect cancer patients' quality of life
6. Can the costs of pain medications interfere with patient compliance?
7. Cost of medication survey for cancer patients

Sergio Bergese – Principal Investigator

8. Clinical validation of the MEDRAD MRI monitor
9. A review of effects of Dexmedetomidine during neurological surgery
10. Economics of readmission of patients having undergone a surgical procedure and a case for the use of cost-saving anti-emetic prophylactic treatment for postoperative nausea and vomiting. Retrospective study of effects of dexmedetomidine on the intraoperative somatosensory evoked potential, 2
11. Variation of the cerebral state index during carotid cross-clamping in patients undergoing carotid endarterectomy
12. Aprepitant versus ondansetron in preoperative triple-therapy treatment of nausea and vomiting
13. 3200L2-301-WW: A multicenter, randomized, double-blind, placebo-controlled, parallel-group study of the intravenous Methylnaltrexone (MOA-728) for the treatment of postoperative ileus after ventral hernia repair
14. A gender comparison of the usefulness of BMI as a predictor of difficult intubations
15. A head-to-head comparison of STRYKER SNAP II and BIS VISTA brain function indices during isoflurane anesthesia
16. Studying the effectiveness of triple therapy with Palonosetron, Dexamethasone, and Promethazine for prevention of postoperative nausea and vomiting in high-risk patients undergoing neurological surgery and general anesthesia
17. SNAP II brain monitoring indices of sedation levels during MAC procedures
18. CPI-APA-351: A phase IIIB, multi-centered, open-label, prospective, repeated dose, randomized controlled multi-day study of the safety and efficacy of intravenous acetaminophen in adult patients

19. The efficacy of Dexmedetomidine, Remifentanyl, and Propofol as an anesthetic regimen in deep brain stimulation procedures
20. TMC-CLV-07-02: The evaluation of patients with acute hypertension and intracerebral hemorrhage with intravenous Clevidipine treatment (ACCELERATE)
21. INN-CB-009: A phase III, open label study to investigate the safety and tolerability of the CollaRx[®] Bupivacaine implants in patients after pelvic, abdominal or gynecological surgery
22. 311: A phase 3, multi-center, randomized, double-blind, parallel-group, active-control study to evaluate the safety and efficacy of a single administration of SKY0402 for prolonged postoperative analgesia in subjects undergoing total knee arthroplasty (TKA)
23. KET-017: A randomized, multi-center, double-blind, placebo-controlled study of the safety and analgesic efficacy of repeated dosing of PMI-150 (Intranasal ketamine) to treat acute post-operative pain following orthopedic trauma, injury or surgery
24. INN-SWI-002: A randomized, controlled, phase 3 study of gentamicin-collagen sponge (COLLATAMP[®] G) in general surgical subjects at higher risk for surgical wound infection
25. PALO-08-11: A double-blind, multi-center, randomized, stratified, parallel, 2 arm, phase 2 study to assess Palonosetron versus Ondansetron as rescue in subjects that developed postoperative nausea and vomiting (PONV) in the post anesthesia care unit (PACU)
26. DFC-010: An open-label, multiple-dose, multiple-day, non-randomized, single-arm safety study of repeat doses of DIC075V (intravenous diclofenac sodium) in patients with acute post-operative pain
27. 315: A phase 3, multicenter, randomized, double-blind, parallel-group, active-control study to evaluate the safety and efficacy of local administration of SKY0402 for prolonged postoperative analgesia in subjects undergoing bilateral, cosmetic sub-muscular breast augmentation
28. CR845-CLIN2001: A phase 2, randomized, double-blind, placebo controlled, proof of concept study to evaluate the analgesic efficacy and safety of intravenous CR845 during the postoperative period in subjects undergoing laparoscopic assisted hysterectomy

Bergese Co-investigator

29. Prospective, double arm, comparative study for the evaluation of postoperative pain, quality of life, and determination of molecular inflammatory markers profile in patients undergoing robotic versus open laparotomy approach for staging of endometrial cancer (Cohn, David - PI)

Fievos L. Christofi – Co-investigator

30. Impact of gastric bypass/banding on adipocyte purine genes, diabetes, and depression (Needleman, Bradley - PI)

Fievos L. Christofi – Principal Investigator

31. Neural bowel physiology and dysfunction in inflammatory bowel disease

Roger Dzwonczyk – Principal Investigator

32. Examining the effects of electromagnetic interference from intraoperative magnetic resonance imaging in electrocardiogram signals

Roger Dzwonczyk – Co-investigator

33. Inconsistencies of endotracheal tube markings: clinical implications for neonates (Cordero, Leandro - PI)

Michael B. Howie

34. Monitoring human cardiac allograft rejection via myocardial electrical impedance
35. Linking user error to lab and field study of medical IT

Stephen Spanos (CA-3 resident)**

36. Comparison of J-TIP needle-free injections of 1% lidocaine and needle infiltration of 1% lidocaine prior to labor epidural placement

Katja Turner (2 center-clinical trial)**

37. Reduction of acute renal failure associated with cardiovascular surgery: a randomized prospective study comparing sodium bicarbonate to normal saline

Yun Xia

38. Effects of histamine on human enteric nervous system in vitro
39. SPI/0211OBD-0632: A multiple center, randomized, placebo-controlled, double-blind study of efficacy and safety of lubiprostone in patients with opioid induced

bowel dysfunction

40. SPI/0211OBD-06S1: A multi-center, open-labeled study of the long-term safety and efficacy of lubiprostone in patients with opioid-induced bowel dysfunction

IACUC Protocols

Fievos L. Christofi

1. Alterations of gut-nerve function in intestinal inflammation and purinergic signaling
2. Exploring the mechanisms of postoperative ileus in a canine model

Mark Gerhardt

3. Porcine model of ventricular septal defect
4. Mechanical assistance in an ovine model of chronic heart failure
5. Ovine model of right ventricular failure

Hamdy H. Hassanain

6. RAC 1 gene regulates cutaneous wound repair
7. Gene knock-out and transgenic rodents: generation and training in use of

Yun Xia

8. Actions of glial cell derived neurotropic factor (GDNF) in the enteric nervous system

Publications

Peer Reviewed Journal Articles, Case Reports and Other Publications

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2. Swarm R, Anghelescu DL, **Benedetti C**, Boston B, Cleeland C, Coyle N, Deleon-Casasola OA, Eidelman A, Eilers JG, Ferrell B, Grossman SA, Janjan NA, Levy MH, Lynch M, Montana GS, Nesbit S, Oakes L, Obbens EA, Paice J, Syrjala KL, et al. Adult cancer pain. *J Natl Compr Canc Netw.* 2007 Sept;5(8):726-751.
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5. Hachwa B, Walker M, Dalton R, Gerhardt M, **Bergese SD**. Giant cerebral aneurysm clipping in combination with coronary artery bypass graft. *Anesth Analg.* 2007;104(1):220-221. (case report)
6. Wunderlich JE, Needleman BJ, Chen Z, Yu JG, Wang Y, Grants I, Mikami DJ, Melvin WS, Cooke HJ, **Christofi FL**. Dual purinergic synaptic transmission in the human enteric nervous system. *Am J Physiol Gastrointest Liver Physiol.* 2008 Feb;294(2):G554-66.
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9. Emery CF, Fondow MDM, Schneider CM, Christofi FL, Hunt C, Busby AK, Needleman BJ, Melvin WS, **Elsayed-Awad HM**. Gastric bypass surgery is associated with reduced inflammation and less depression: a preliminary investigation. *Obesity Surg.* 2007 June;17(6):759-763.
10. Lubow M, Grzybowski D, **Awad H**. Denileukin diftitox vision loss is not PION. *Leuk Lymphoma.* 2008 Feb;49(2):370-1. (correspondence)

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21. Subramaniam B, **Park KW**. Impact of TEE in noncardiac surgery. *Int Anesthesiol Clin*. 2008 Spring;46(2):121-136.
22. **Weaver JM**. New drugs on the horizon may improve the quality and safety of anesthesia. *Anest Prog*. 2008 Summer;55(2):27-28. (editorial)
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27. Levy JH, Mancao MY, Gitter R, Kerieakes DJ, Grigore AM, Aronson S, Newman MF, **Zvara DA**. Clevidine effectively and rapidly controls blood pressure preoperatively in cardiac surgery patients: the results of the randomized, placebo-controlled efficacy study of clevidine assessing its preoperative antihypertensive effect in cardiac surgery-1. *Anesth Analg*. 2007 Oct;105(4):918-925.

Abstracts

1. Bender SP, **Bergese SD**. 2007. Change in BIS value due to acute intraoperative anemia: a case report. Abstract.
2. Bender SP, **Bergese SD**. 2007. Intraoperative anemia and brain monitoring depressions: a case report. Abstract.
3. **Bergese SD**, Barua E, Dzwonczyk R, Rogers B. 2007. Intraoperative MRI: an analysis of its application and benefits for brain tumor resections. Abstract.
4. **Bergese SD**, Bender P, Sage K. 2007. Midazolam versus dexmedetomidine as a base of a combined technique in awake fiberoptic intubations: a comparative study. Abstract.

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24. **Elsayed-Awad H**. 2008. Persistent left superior vena cava and placement of Swan-Ganz catheter in the coronary sinus. Abstract. International Anesthesia Research Society 82nd Congress, March 29-April 1, 2008. *Anesth Analg*. 2008;106:S-44.
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34. Phillips A, Monreal G, Wold LE, Bauer JA, **Gerhardt MA**. 2008. Alterations in β 1-integrin and connexin-43 in restrictive ventricular septal defect. Abstract. The Research Institute at Nationwide Children's Hospital - Research Retreat.
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40. Vogt KM, Ibinson JW, Schmalbrock P, **Small RH**. 2007. Combined correction with regression for measured respiratory, cardiac, and capnometry variations in pain FMRI studies improves model fit. Abstract. *Proc Intl Soc Mag Reson Med*: p. 1825. Berlin, Germany. [Peer Reviewed]
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44. Sun X, **Xia Y**, Wang Y, Qu M, Wang X, Wang G, Needleman B, Mikami D, Melvin WS, Bohn L, Ueno R, and Wood JD. Lubiprostone reverses the inhibitory action of morphine on mucosal secretion in the human jejunum. *Gastroenterology*, 134 (4, Suppl 1):p 112. DDW meeting (Oral presentation) May 2008 in San Diego, CA.
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Chapters in Books

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2. Andritsos M, **Gerhardt MA**, Zvara DA. 2008. Chapter 2, Cardiovascular Pharmacology. In *Atlas of Anesthesiology and Pharmacology: Cardiothoracic Anesthesia*.
3. **Gerhardt MA**. 2008. Chapter 3: Monitoring the Cardiac Surgical Patient. In *A Practical Approach to Cardiac Anesthesia, 4th edition*, ed. FA Hensley, DE Martin, and GP Gravlee. Lippincott, Williams & Wilkins.
4. **Gerhardt MA**. 2008. Chapter 9: Postoperative Care of the Cardiac Surgical Patient. In *A Practical Approach to Cardiac Anesthesia, 4th edition*, ed. FA Hensley, DE Martin and GP Gravlee. Lippincott, Williams & Wilkins.
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6. Burch TM, Groban L, **Zvara DA**. 2007. Transesophageal echocardiography--Examinations, questions, etc. In *Conquer the PTE exam*, ed. Longnecker DE, ed. Anesthesiology. Atlanta: Saunders/Elsevier.
7. Chaney MA, Cheung AT, Troianos CA, Willert JL, **Zvara DA**, Sherman SK. 2007. Cardiac Anesthesia. In *Anesthesiology*, ed. Longnecker DE, ed. New York: McGraw Hill.
8. Royster RL, MD, Butterworth JF, MD, Groban L, MD, Slaughter TF, MD, **Zvara DA, MD**. 2008. Cardiovascular Pharmacology. In *Essentials of Cardiac Anesthesia*. Philadelphia, PA, USA: Saunders Elsevier. 118-163.

Books

1. **Howie MB**, Martin D, Gravlee G, Hensley F. 2007. *Introduction of Anesthesia*. Philadelphia: Lippincott Williams & Wilkins.
2. **Park KW**. (ed) Perioperative echocardiography. *Int Anesthesiol Clin* 2008; 46(2). Philadelphia: Lippincott Williams & Wilkins; 2008.
3. Burch TM, Groban L, **Zvara DA**. 2007. *Conquer the PTE Exam*. Philadelphia: Saunders.
4. DiNardo JA, **Zvara DA**. 2007. *Anesthesia for Cardiac Surgery, 3rd Edition*. Blackwell Publishing Limited.

Reviews

1. **Zvara DA.** 2007. Review of Transesophageal Echocardiography. HSF Reviews. [Editor Reviewed]

Other Scholarly Contributions

The Ohio State University is a National Emphysema Treatment Trial (NETT) center. The publications associated with these trials include:

1. Criner GJ, Scharf SM, Falk JA, Gaughan JP, Sternberg AL, Patel NB, Fessler HE, Minai OA, Fishman AP, National Emphysema Treatment Trial Research Group. Effect of lung volume reduction surgery on resting pulmonary hemodynamics in severe emphysema. *Am J Respir Crit Care Med.* 2007;176:253-260.
2. Demeo DL, Hersh CP, Hoffman EA, Litonjua AA, Lazarus R, Sparrow D, Benditt JO, Criner G, Make B, Martinez FJ, Scanlon PD, Sciruba FC, Utz JP, Reilly JJ, Silverman EK, National Emphysema Treatment Trial Research Group. Genetic determinants of emphysema distribution in the National Emphysema Treatment Trial. *Am J Respir Crit Care Med.* 2007;176:42-48.
3. Falk JA, Martin UJ, Scharf S, Criner GJ; for the National Emphysema Treatment Trial Research Group. Lung elastic recoil does not correlate with pulmonary hemodynamics in severe emphysema. *Chest.* 2007;132:1476-1484.
4. Fan VS, Ramsey SD, Giardino ND, Make BJ, Emery CF, Diaz PT, Benditt JO, Mosenifar Z, McKenna R Jr, Curtis JL, Fishman AP, Martinez FJ; for the National Emphysema Treatment Trial Research Group. Sex, depression, and risk of hospitalization and mortality in chronic obstructive pulmonary disease. *Arch Intern Med.* 2007 Nov 26;167(21):2345-2353.
5. Fisher MR, Criner GJ, Fishman AP, Hassoun PM, Minai OA, Scharf SM, Fessler HE; for the National Emphysema Treatment Trial Research Group. Estimating pulmonary artery pressures by echocardiography in patients with emphysema. *Eur Respir J.* 2007 Nov;30(5):914-921.
6. Martinez FJ, Curtis JL, Sciruba F, Mumford J, Giardino ND, Weinmann G, Kazerooni E, Murray S, Criner GJ, Sin DD, Hogg J, Ries AL, Han M, Fishman AP, Make B, Hoffman EA, Mosenifar Z, Wise R, National Emphysema Treatment Trial Research Group. Sex differences in severe pulmonary emphysema. *Am J Respir Crit Care Med.* 2007 Aug 1;176(3):243-252.
7. Criner GJ, Sternberg AL; for the National Emphysema Treatment Trial Research Group. A clinician's guide to the use of lung volume reduction surgery. *Proc Am*

Thorac Soc. 2008 May 1;5(4):461-467.

8. Washko GR, Fan VS, Ramsey SD, Mohsenifar Z, Martinez F, Make BJ, Scirba FC, Criner GJ, Minai O, Decamp MM, Reilly JJ; for the National Emphysema Treatment Trial Research Group. The effect of lung volume reduction surgery on chronic obstructive pulmonary disease exacerbations. *Am J Respir Crit Care Med.* 2008 Jan 15;177(2):164-169.

Education



Ronald L. Harter, MD

Associate Professor Clinical
Vice Chair of Education and Professional Development
Residency Program Director

What defines the ideal anesthesiology residency program? In my opinion, it combines a clinical experience filled with challenging cases across the spectrum of anesthesiology subspecialties, combined with a strong didactic program that facilitates successful completion of the Board examination process. It is critically important that this transpires in an environment that is friendly, supportive, and stimulating. The Ohio State University Medical Center's Department of Anesthesiology provides all of these components in our advanced and categorical residency training and fellowship programs.

The extensive list of required cases and procedures, as delineated by the Accreditation Council for Graduate Medical Education (ACGME)'s Residency Review Committee for Anesthesiology, helps to ensure that residents trained in anesthesiology have adequate exposure to cases across all anesthesiology subspecialties. The clinical experience available at Ohio State's Medical Center permits our residents to complete the majority of their clinical case requirements by the end of their CA-2 year, essentially leaving the CA-3 year for the pursuit of subspecialties of interest, including a variety of clinical and basic science research opportunities, without being encumbered by having to complete case requirements. With the exception of the rotations in pediatric and regional anesthesia, all rotations are conducted at OSUMC, fostering a "team" approach and allowing great friendships and camaraderie to develop during residency training.

OSUMC's anesthesiology residency program has a long-standing tradition of excellence in preparing its graduates for success in the Board certification process. Year in and year out, our pass rates for the written and oral exams are above the national average. In the past 20 years, virtually 100% of our graduates have successfully obtained ABA certification.

During 2007-2008, 766 medical students applied to our residency program. Nearly 80 candidates were interviewed, and 12 matched to fill all of our spots. The relatively small size of this residency program ensures that a resident will get individual attention and not become "lost," while being large enough to provide peer support and interaction. In our resident selection process, we value those residents who have demonstrated a commitment to teamwork, cooperation, and leadership. The end result is a terrific group

of residents who work well together, becoming excellent anesthesiologists while building lifelong friendships.

For those resident graduates who wish to go on to post-graduate physician training, OSUMC now offers ACGME-approved fellowships in pain medicine and cardiothoracic anesthesiology, and non-ACGME approved fellowships in regional anesthesiology and neuroanesthesia.

Graduating Residents and Fellows

In 2008, 8 anesthesiology residents finished their program and received completion certificates. Of those graduates, 3 began subspecialty fellowships, 3 went in to private practice, and 2 went on to pursue academic medicine. Three Fellows completed subspecialty training programs; 2 in CT anesthesia and 1 in pain medicine:

- **Patrick Bender, MD**
Dr. Bender completed the anesthesiology residency program and began a Fellowship in Critical Care Medicine at Beth Israel Deaconess Medical Center in Boston, Massachusetts.
- **Joseph DeLapa, MD**
Dr. DeLapa completed the anesthesiology residency program and began a Pain Medicine Fellowship at OSUMC, Department of Anesthesiology.
- **Natalie Godzik Suver, MD**
Dr. Godzik completed the anesthesiology residency program and entered private practice at Kettering Medical Center, Dayton, Ohio.
- **Charles Hamilton, MD**
Dr. Hamilton completed the anesthesiology residency program and began a faculty appointment at OSUMC, Department of Anesthesiology.
- **Michael Ingerski, MD**
Dr. Ingerski completed the Cardiothoracic Anesthesiology Fellowship and currently holds a Clinical Professor of Anesthesiology appointment at Penn State Hershey, specializing in cardiac and vascular anesthesiology.
- **Michael Kreuter, MD**
Dr. Kreuter completed the anesthesiology residency program and entered private practice at Doctors Hospital, Columbus, Ohio.
- **Mark Malinowski, DO**
Dr. Malinowski completed the anesthesiology residency program and began a 6-month Regional Anesthesiology Fellowship at OSUMC, Department of Anesthesiology, followed by a 6-month Pain Management Fellowship at Texas Tech Health Sciences Center in Lubbock, Texas.

- **Kenneth Moran, MD**
Dr. Moran completed the anesthesiology residency program and began a faculty appointment at OSUMC, Department of Anesthesiology.
- **William Perez, MD**
Dr. Perez completed the Cardiothoracic Anesthesiology Fellowship and began a faculty appointment at OSUMC, Department of Medicine.
- **Kevin Sage, DO**
Dr. Sage completed the anesthesiology residency program and entered private practice at Doctors Hospital, Columbus, Ohio.
- **Sergio Souza, MD**
Dr. Souza completed the Pain Medicine Fellowship and will join the OSUMC Department of Anesthesiology faculty, specializing in pain medicine on February 1, 2009.

Awards

Department of Anesthesiology

- Chief Residents: **Patrick Bender, MD**
Charles Hamilton, MD
- Resident of the Year for 2008: **Charles Hamilton, MD**
- Teacher of the Year for 2008: **Hamdy Elsayed-Awad, MD**

The Ohio State University College of Medicine



Hamdy Elsayed-Awad, MD received the Outstanding Teaching Award from the medical student class of 2008. This award recognizes teaching faculty who have made a significant contribution to the educational mission of the University and the College. The names of all faculty teaching award winners are enshrined on the first floor of Meiling Hall.



Andrew Roth, MD received the Excellence in Teaching Award at the Honors Convocation on June 5. This award was created in 2002 in the College of Medicine to ensure that outstanding faculty educators are recognized.

Other Teaching Awards



Thomas Reilley, DO received The Woody Hayes Leadership Award 2007-2008 at the Emergency Medicine Annual Resident Awards ceremony in recognition of excellence in resident teaching.



Roger Dzwonczyk, PE received The Ohio State University, College of Engineering, 2008 Boyer Award for Excellence in Teaching Innovations for significant contributions made to student-centered learning, teamwork and the use of real-world problems in educating engineering students, related to local and international work associated with the OSU student organization Engineers for Community Service.

Medical Student Awards

The Department of Anesthesiology presented two outstanding medical students with the Dominic Mandalfino Award for Excellence in Anesthesiology at the 2008 OSU COM Honors Convocation. The recipients were:

- **Eric Freeman** – Eric matched for a transitional year program at Mt. Carmel Medical Center in Columbus, and an advanced anesthesiology residency at Mayo School of Graduate Medical Education in Rochester, MN.
- **Erik Hustak** – Erik matched for an anesthesiology residency position at the University of Texas, Galveston.

Visiting Professors

- **Albert Perrino, MD**
Yale University Department of Anesthesiology
Topic: Hemodynamic Instability
- **Krzysztof M. Kuczkowski, MD**
UCSD Medical Center Department of Anesthesiology
Topic: Post-dural puncture headache in an obstetric patient: an old problem – new solutions
- **Jerry O' Hara**
President, Ohio Society of Anesthesiologists
Ohio Society of Anesthesiologists: History and Your Role?
- **Luc Quinton, MD, PhD**
Lyon-Villeurbanne, France
Topic: Alpha-2 agonists: From Perioperative Circulatory Stabilization to Improved Outcome and Physiological Hindsight

Presentations

1. **Allen Keller J**, Presenter. October 25, 2007. Pharmacology of Muscle Relaxants and their Antagonists. Presented at CA-2 and CA-3 lecture.
2. **Andritsos MJ**, Presenter. 2007. Blood Product Administration and Cardiac Surgery. Presented at Cardiac Conference, Physicians.
3. **Andritsos MJ**, Presenter. 2007. Open Forum. Presented at Anesthesiology Subspecialty Conference, Cardiac Anesthesia.
4. **Andritsos MJ**, Presenter. 2007. Resident Education. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH, Residents.
5. **Andritsos MJ**, Presenter. 2007. Coagulation and Cardiac Surgery. Presented at Anesthesiology Subspecialty Conference, Cardiac Anesthesia.
6. **Andritsos MJ**, Presenter. July 5, 2007. Inhaled Prostacylin. Presented at Anesthesiology Subspecialty Conference, Cardiac Anesthesia.
7. **Andritsos MJ**, Presenter. July 17, 2007. Inhaled Prostacylin in CT Surgery. Presented at CT Surgery Subspecialty Conference.
8. **Andritsos MJ**, Presenter. July 31, 2007. The OR Record. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
9. **Andritsos MJ**, Presenter. August 23, 2007. Heparin Induced Thrombocytopenia. Presented at Department of Anesthesiology Grand Rounds, Physicians.
10. **Andritsos MJ**, Presenter. September 13, 2007. M&M Case Discussion. Presented at Department of Anesthesiology Grand Rounds, Ohio State University, Columbus, OH.
11. **Andritsos MJ**, Presenter. September 20, 2007. Blood Product Administration and Cardiac Surgery. Presented at CT Anesthesiology Subspecialty Conference.
12. **Andritsos MJ**, Presenter. November 8, 2007. Mitral Valve Repair in an Achondroplastic Dwarf. Presented at Anesthesiology Subspecialty Conference, Cardiac Anesthesia.

13. **Andritsos MJ**, Presenter. January 10, 2008. Pericardial Disease. Presented at CT Anesthesiology Subspecialty Conference.
14. **Andritsos MJ**, Presenter. March 27, 2008. The Management of CPB in a Patient with HITT. Presented at CT Anesthesiology Subspecialty Conference.
15. **Andritsos MJ**, Presenter. April 5, 2008. Coagulation and Cardiac Surgery. Presented at CT Anesthesiology Subspecialty Conference.
16. **Andritsos MJ**, Presenter. April 7, 2008. Anesthesia for Patients with Endocrine Disease. Presented at CA-1 lecture.
17. **Andritsos MJ**, Presenter. May 28, 2008. Implantable Cardiac Pulse Generators, Pacemakers and Cardioverter-Defibrillators. Presented at CA-2 and CA-3 lecture.
18. **Andritsos MJ**, Presenter. May 29, 2008. Cardiac Surgery and the Jehovah's Witness Patient. Presented at CT Anesthesiology Subspecialty Conference.
19. **Andritsos MJ**, Presenter. June 18-22, 2008. Anesthesia and the Endovascular Stenting Patient. Presented at Society of Cardiovascular Anesthesiologists 30th Annual Meeting and Workshops, Vancouver, BC, Canada.
20. **Benedetti C**, Lecturer. (1) Pain Pathophysiology and Therapy (2) Palliative Medicine. Presented at Academic Lecture (Monthly lectures to 4th-year Medical Students).
21. **Benedetti C**, Presenter. November 20, 2007. Pain Management. Presented at CA-1 Lecture, The Ohio State University Medical Center, Columbus, OH.
22. **Benedetti C**, Lecturer. June 24, 2008 - June 26, 2008. Struggling to Control Pain. Dignity for the Person. Presented at Sanit 2008, TriTone197, Rome, Italy.
23. Barua E, Dzwonczyk R, Rogers B, **Bergese SD**. 2007. The OSU iMRI Experience. Presented at The Ohio Society of Anesthesiologists, 68th Annual Meeting, Cincinnati, OH.
24. **Bergese SD**, Presenter. 2007. Brain Function Monitoring on Monitoring Consciousness. Presented at TANA (Tennessee Association of Nurse Anesthetist), AANA (American Association of Nurse Anesthetists), 70th Annual Meeting and Convention, Franklin, TN.
25. **Bergese SD**, Presenter. 2007. Current uses and stage of Evoked Potentials (SSEP's and MEP's), Anesthetic Considerations. Presented at Department of Anesthesiology, Riverside Methodist Hospital, Columbus, OH.

26. **Bergese SD**, Presenter. 2007. Electro-Physiologic Principles of Somato-Sensorial and Motor Evoked Potentials and their Anesthetic Considerations. Presented at Department of Anesthesiology, Ruby Memorial Hospital, West Virginia University, Morgantown, WV.
27. **Bergese, SD**, Presenter. 2007. Electro-Physiologic Principles of Somato-Sensorial and Motor Evoked Potentials and their Anesthetic Considerations. Presented at OSANA (Ohio State Association of Nurse Anesthetists), Columbus, OH.
28. **Bergese SD**, Presenter. 2007. Evoked Potentials, Anesthetic Considerations. Presented at Department of Anesthesiology, Shadyside Hospital, University of Pittsburgh School of Medicine, Pittsburgh, PA.
29. **Bergese SD**, Presenter. 2007. Evoked Potentials, Anesthetic Considerations. Presented at Via Christy Medical Center, Department of Anesthesiology and Medical Education, Kansas University School of Medicine, Wichita, KS.
30. **Bergese, SD**, Presenter. 2007. Evoked Potentials, Anesthetic Considerations. Presented at Miami Valley Hospital, Department of Anesthesiology, Dayton, OH, Physicians.
31. **Bergese SD**, Presenter. 2007. Evoked Potentials, Anesthetic Considerations. A Close look to MEP's Clinical Correlation. Presented at Department of Anesthesiology, University Hospitals, The Ohio State University, Columbus, OH.
32. **Bergese SD**, Presenter. 2007. Evoked Potentials, Newer Anesthetic Agents and Considerations for Neurophysiologic Monitoring. Presented at Department of Anesthesiology, St. Louis University, St. Louis, MO.
33. **Bergese SD**, Presenter. 2007. Hypertension Management and Neurosurgical Diseases, a Review. Presented at Saint Luke's Hospital, Kansas City, MO, Physicians.
34. **Bergese SD**, Presenter. 2007. Management of Evoked Potentials in the Pediatric Population and their Anesthetic Considerations. Presented at Department of Anesthesiology, Presbyterian Pittsburgh Children Hospital, UPMC, University of Pittsburgh School of Medicine, Pittsburgh, PA.
35. **Bergese SD**, Presenter. 2007. Management of Hypertensive Emergencies in the Neuro Acute Care Setting. Presented at Departments of Neurological Surgery and Anesthesiology, St. Francis Hospital, Cape Girardeau, MO.
36. **Bergese SD**, Presenter. 2007. Management of Hypertensive Emergencies in the Neuro Acute Care Setting. Presented at Departments of Neurological Surgery,

Anesthesiology and Emergency Department, St. Anthony's Hospital, St. Louis, MO.

37. **Bergese SD**, Presenter. 2007. Monitoring Consciousness. Presented at Department of Anesthesiology, Community Health Partners Hospital, CPH Regional Medical Center, Lorain, OH.
38. **Bergese SD**, Presenter. 2007. Neurological Implications and Management of Hypertensive Emergencies. "A Neurological Focus." Presented at Departments of Anesthesiology, Neurology and Neurological Surgery, SSM De Paul Health Center, Bridgeton, MO.
39. **Bergese SD**, Presenter. 2007. Newer Anesthetic Agents and Considerations for Neurophysiologic Monitoring. Presented at Department of Anesthesiology, Visitor Professor Series, University of Alabama School of Medicine, Birmingham, AL.
40. **Bergese SD**, Presenter. 2007. Pharmacologic Management of Evoked Potentials and its Anesthetic Considerations. Presented at Bethesda Hospital, Cincinnati, OH, Physicians.
41. **Bergese SD**, Presenter. 2007. Role of Consciousness Monitors Devices in Anesthesiology. An Overview of Electro Physiologic Principles and Current Marketed Technology. Presented at The Cleveland Clinic Health System, Department of Anesthesiology, Fairview Hospital, Cleveland, OH.
42. **Bergese SD**, Presenter. 2007. The Management of Hypertensive Emergencies in the Neuro Acute Care Setting. Presented at Via Christy Medical Center, Department of Anesthesiology, Wichita, KS, Physicians.
43. **Bergese SD**, Presenter. 2007. The Role of the Anesthesiologist and the Management of Hypertensive Emergencies for Interventional Radiology. Presented at Wesley Medical Center, Department of Radiology, Interventional Radiology, The University of Kansas School of Medicine, Wichita, KS.
44. **Bergese SD**, Presenter. 2007. The Role of the Anesthesiologist and the Management of Hypertensive Emergencies for Neurosurgery. Presented at Department of Neurological Surgery, St Mary's Health Center, St. Louis University, St. Louis, MO.
45. **Bergese SD**, Presenter. 2007. Visiting Professor Department of Anesthesiology University of Alabama School of Medicine. Presented at Visiting Professor, Birmingham, AL.
46. **Bergese SD**, Editor. 2007. Visiting Professor New York University, Department of Anesthesiology, Division of Neuroanesthesia. Presented at Visiting

Professor, New York, NY.

47. **Bergese SD**, Nieves-Ramos R, Dzwonczyk R. 2007. Phase II, Clinical Evaluation of the MedRad Veris MR, iMRI Patient Monitor. Presented at American Society of Anesthesiologists Annual Meeting, San Francisco, CA.
48. **Bergese SD**, Presenter. 2007. The Management of Hypertensive Emergencies in the Neuro Acute Care Setting. Presented at Department of Anesthesiology, The Cleveland Clinic Health System, Fairview Hospital, Cleveland, OH, Physicians.
49. **Bergese SD**, Presenter. 2007. The Role of the Anesthesiologist Managing Hypertensive Emergencies and Stroke for Interventional Radiology. Presented at Department of Neurology, St. Anthony Hospital, St. Louis, MO.
50. **Bergese SD**, Presenter. July 10, 2007. Visiting Professor Department of Anesthesiology, The Cleveland Clinic Health System, Department of Anesthesiology, Fairview Hospital. Presented at Visiting Professor, Cleveland, OH.
51. **Bergese SD**, Presenter. August 21, 2007. Management of Hypertensive Emergencies in the Neuro Acute Care Setting. Presented at Department of Anesthesiology, Ruby Memorial Hospital, West Virginia University, Morgantown, WV.
52. Godzik N, Dzwonczyk R, **Bergese SD**. September 14, 2007. Clinical Evaluation of the MedRad Veris MR, iMRI Patient Monitor. Presented at The Ohio Society of Anesthesiologists, 68th Annual Meeting, Cincinnati, OH.
53. Sage K, **Bergese SD**. September 14, 2007. Midazolam versus Dexmedetomidine in Awake Fiber Optic Intubations. Presented at The Ohio Society of Anesthesiologists, 68th Annual Meeting, Cincinnati, OH.
54. Sage K, Goldman E, **Bergese SD**. September 14, 2007. Vigilance in Detecting a Venous Air Embolism in Semi Sitting Craniotomy: A Case Report. Presented at The Ohio Society of Anesthesiologists, 68th Annual Meeting, Cincinnati, OH.
55. Moran K, Mani M, **Bergese SD**. September 14, 2007. Acromegaly, Endocrine Dysfunction and Polyostotic Fibrous Dysplasia Associated with McCune-Albright Syndrome: Anesthetic Considerations. Presented at The Ohio Society of Anesthesiologists, 68th Annual Meeting, Cincinnati, OH.
56. Bender SP, **Bergese SD**. September 14, 2007. Change in BIS Value Due to Acute Intraoperative Anemia: A Case Report. Presented at The Ohio Society of Anesthesiologists, 68th Annual Meeting, Cincinnati, OH.

57. **Bergese SD**, Presenter. September 19, 2007. Visiting Professor Department of Anesthesiology, Shadyside Hospital, University of Pittsburgh School of Medicine, UPMC. Presented at Visiting Professor, Pittsburgh, PA.
58. **Bergese SD**, Presenter. September 20, 2007. Evoked Potentials, Anesthetic Considerations. Presented at Western Pennsylvania Society of Anesthesiology and University of Pittsburgh School of Medicine, Department of Anesthesiology, UPMC, Pittsburgh, PA.
59. **Bergese SD**, Visiting Professor. September 20, 2007. Department of Anesthesiology, Presbyterian Hospital, University of Pittsburgh School of Medicine, UPMC. Presented at Visiting Professor, Pittsburgh, PA.
60. **Bergese SD**, Presenter. October 11, 2007. Evoked Potentials and Anesthesia. Presented at Department of Anesthesia Grand Rounds, Columbus, OH.
61. **Bergese SD**, Barua E, Dzwonczyk R, Rogers B. October 13, 2007. Intraoperative MRI: An Analysis of its Application and Benefits for Brain Tumor Resections. Presented at American Society of Anesthesiologists Annual Meeting, San Francisco, CA.
62. **Bergese SD**, Bender P, Sage K. October 13, 2007. Midazolam Versus Dexmedetomidine as a Base of a Combined Technique in Awake Fiber Optic Intubations: A Comparative Study. Presented at American Society of Anesthesiologists Annual Meeting, San Francisco, CA.
63. **Bergese SD**, Presenter. 2008. Evoked Potentials, Update on SSEP's and MEP' and its Anesthetic Considerations. Presented at Washington DC Society of Anesthesiologists, Washington DC.
64. **Bergese SD**, Judge. 2008. Judged the 6th Annual OSUMC Graduate and Postgraduate Research Day, Columbus, OH.
65. **Bergese SD**, Presenter. 2008. Neurophysiologic Monitoring, Evoked Potentials, Update on SSEP's and MEP's and its Anesthetic Considerations. Presented at Louisville Society of Anesthesiology, Louisville, KY.
66. **Bergese SD**, Visiting Professor. 2008. Visiting professor at Department of Anesthesiology, Western Pennsylvania Hospital, West Penn Allegheny Health System, Pittsburgh, PA.
67. **Bergese SD**, Visiting Professor. 2008. Visiting professor at Department of Anesthesiology, Easter Main Medical Center, Bangor, ME.

68. **Dalton R**, Presenter. August 8, 2007. Pulmonary Pharmacology. Presented at CA-2 and CA-3 lecture, Columbus, OH.
69. **Dalton R**, Presenter. August 9, 2007. Spinal Case/Neuro Case. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
70. **Dalton R**, Presenter. October 18, 2007. M&M Case Discussion. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
71. **Dalton R**, Presenter. November 1, 2007. M&M Case Discussion: Contusion. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
72. **Dalton R**, Presenter. December 20, 2007. Faculty Meeting. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
73. **Dalton R**, Presenter. January 24, 2008. M&M Case Discussion. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
74. **Dalton R**, Presenter. February 28, 2008. M&M Case Discussion: Pressors. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
75. **Dalton R**, Presenter. March 6, 2008. M&M Case Discussion: Neonatal Resuscitation. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
76. **Dalton R**, Presenter. April 10, 2008. Perioperative Stroke and MI; Intraoperative Stroke. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
77. **Dalton R**, Presenter. April 24, 2008. Acid/Base, Access, Difficult Patient; Preoperative Airway. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
78. **Dalton R**, Presenter. May 15, 2008. M&M. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
79. **Dimitrova G**, Presenter. July 12, 2007. HOCM. Presented at Cardiac Anesthesia.

80. **Dimitrova G**, Presenter. August 30, 2007. Coronary Artery Stenting. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
81. **Dimitrova G**, Presenter. September 19, 2007. Intravenous Opioid Anesthetics. Presented at CA-2 and CA-3 lecture.
82. **Dimitrova G**, Presenter. December 13, 2007. CHF - Physiology and Pharmacologic Therapy. Presented at Cardiac Conference.
83. **Edwards F**, Presenter. October 9, 2007. Intravenous Drug Delivery Systems. Presented at CA-2 and CA-3 lecture.
84. **Elsayed-Awad H**, Presenter. 2007. Anesthetic Robotic Prostatectomy. Presented at Florida Hospital Celebration Health.
85. **Elsayed-Awad H**, Presenter. 2007. Cardiac Anesthesia and the Future Direction. Presented at Medical Student lecture, Medical Students.
86. **Elsayed-Awad H**, Presenter. 2007. Paraplegia and Aortic Surgery. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH, Residents.
87. **Elsayed-Awad H**, Griffin O, Seelandt C. 2007. Brain Oedema in Focal Ischaemia: Molecular Pathophysiology and Theoretical Implications. Presented at Neuroanesthesia lecture.
88. **Elsayed-Awad H**, Louis L, Abdeldayem M, Yanssens T, Blais D, Sun B. 2007. Anesthetic Experience with Off Pump Left Ventricular Assist Device Implantation: A Single Center Review of the First Twenty Consecutive Cases. Presented at SCA Annual Meeting.
89. **Elsayed-Awad H**, Ohr M, Patel V, Kirk-Fetsko L, Yan W. 2007. Effects of Deep Trendelenburg Positioning and Anesthesia on Intraocular Pressure During Robotic Prostatectomy. Presented at 2007 Ophthalmology Research Symposium.
90. **Elsayed-Awad H**, Yaksh TL, Weinger MB, Lecturer. 2007. Brain Oedema in Focal Ischaemia: Molecular Pathophysiology and Theoretical Implications. Presented at Neuroanesthesia Lecture.
91. Yan W, Dimitrova G, Ross P, **Elsayed-Awad H**. 2007. Poster Case Report: Role of Permissive Hypercapnia in Hyperkalemic Cardiac Arrest During Reperfusion Phase of Single Lung Transplant. Presented at International Anesthesia Research Society.

92. **Elsayed-Awad H**, Nathan N. 2007 - 2007. Coronary sinus and What Anesthesiologists Need to Know. Presented at CV meeting.
93. **Elsayed-Awad H**, Presenter. 2007. Pharmacology of vasoconstrictors. Presented at Resident Lecture, Residents.
94. **Elsayed-Awad H**, Presenter. August 23, 2007. Surgical Therapy of CHF. Presented at Cardiac Anesthesia.
95. **Elsayed-Awad H**, Presenter. October 10, 2007. Pharmacology of Muscle Relaxants and their Antagonists. Presented at CA-2 and CA-3 Lecture.
96. **Elsayed-Awad H**, Presenter. October 18, 2007. ARF after CPB. Presented at Cardiac Conference.
97. **Elsayed-Awad H**, Presenter. October 20, 2007. The Use of Esophageal Echo in the PACU. Presented at Ohio Perianesthesia Nurses Association Convention.
98. **Elsayed-Awad H**, Presenter. December 17, 2007. Anesthesia for Thoracic Surgery. Presented at CA-1 Lecture.
99. **Elsharydah A**, Presenter. 2007. ACLS/Code. Presented at Clinical Skills Immersion Experience for 3rd year Medical Students, Medical Students.
100. **Elsharydah A**, Presenter. 2007. Additives to Local Anesthetics in Peripheral Nerve Blocks. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
101. **Elsharydah A**, Presenter. 2007. Anesthesia Adjuncts. Jeopardy Form. Presented at CA-1 Lecture.
102. **Elsharydah A**, Presenter. 2007. Delayed Subarachnoid Migration of Epidural Catheter. Presented at Morbidity & Mortality Pain Medicine Lecture, OSU Spine Center, Columbus, OH.
103. **Elsharydah A**, Presenter. 2007. Management the Difficult Pain Patient. Presented at Pain Medicine Lecture Series, OSU Spine Center, Columbus, OH.
104. **Elsharydah A**, Presenter. 2007. Pharmacology of Local Anesthetics. Presented at Pain Medicine Lecture Series.
105. **Elsharydah A**, Presenter. 2007. Urine Toxicology Screen and Compliance Monitoring of Chronic Pain Patients. Presented at Pain Medicine Lecture Series, OSU Spine Center, Columbus, OH.

106. **Evers, M**, Presenter. 2004 - 2008. Didactic Lectures to Anesthesia Residents. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
107. **Evers M**, Presenter. July 25, 2007. Mechanisms of Action. Presented at CA-2 and CA-3 lecture.
108. **Evers M**, Presenter. September 6, 2007. Nonvolatile Anesthetic Agents. Presented at CA-1 lecture.
109. **Forrest A**, Presenter. March 13, 2008. Upper Airway Anatomy and Laryngeal Intubation Injuries. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
110. **Gerhardt M**, Presenter. December 6, 2007. M&M Case Discussion: Epidural Overdose. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
111. **Gupta B**, Presenter. August 2, 2007. Posterior Fossa Surgery: Anesthetic Considerations. Presented at Grand Rounds, Columbus, OH.
112. **Gupta B**, Presenter. August 9, 2007. Myasthenia Gravis. Presented at Morning Report, Columbus, OH.
113. **Gupta B**, Panelist. August 23, 2007. Anesthetic Considerations for Posterior Fossa Craniotomy. Presented at Grand Rounds, Columbus, OH.
114. **Gupta B**, Presenter. September 24, 2007 - September 27, 2007. NeuroAnesthesia and Airway Management Lecture. Presented at Prof. Seminar Exam Prep Course, Austin, TX.
115. **Gutmann RM**, Presenter. 1996 - 2008. Didactic Lectures for Anesthesia Residents. Presented at Department of Anesthesiology, The Ohio State University Medical Center, Columbus, OH.
116. **Gutmann RM**, Presenter. 2002 - 2008. Introductory Didactics Residents Lecture Series. Presented at Department of Anesthesiology, The Ohio State University Medical Center, Columbus, OH.
117. **Gutmann RM**, Presenter. October 1, 2007. Spinal, Epidural & Caudal Blocks. Presented at CA-1 lecture.
118. **Halim-Armanios, M**, Presenter. July 2007. Bicuspid Aortic Valve and Post Stenotic Dilatation. Presented at MARC 2008, The Ohio State University Medical Center, Columbus, OH.

119. **Halim-Armanios**, M, Presenter. July 2007. Ultrasound Guided Epidural. Presented at MARC 2008, The Ohio State University Medical Center, Columbus, OH.
120. **Halim-Armanios**, M, Presenter. July 2007. X Linked Lymphoproliferative Disorders. Presented at MARC 2008, The Ohio State University Medical Center, Columbus, OH.
121. **Halim-Armanios**, M, Presenter. December 2007. Thrombocytopenia: Causes and Management in Pregnancy. Presented at OB Nurse Anesthetists, The Ohio State University Medical Center, Columbus, OH.
122. **Hamilton C**, Presenter. June 5, 2008. The Pathophysiology and Anesthetic Implications of Obstructive Sleep Apnea. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
123. **Harter RL**, Presenter. July 7, 2007. The Impaired Physician. Presented at Anesthesia Resident Lecture, The Ohio State University Medical Center, Columbus, OH.
124. **Harter RL**, Presenter. July 12, 2007. The OR Record. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
125. **Harter RL**, Presenter. September 9, 2007. Inhalation Anesthetics. Presented at Anesthesia Resident Lecture, The Ohio State University Medical Center, Columbus, OH.
126. **Harter RL**, Presenter. March 5, 2008. Private Practice Options with Dr. Highley. Presented at CA-2 and CA-3 Lecture, The Ohio State University Medical Center, Columbus, OH.
127. **Harter RL**, Presenter. April 1, 2008. Financial Planning with Dr. Highley. Presented at CA-1 Lecture, The Ohio State University Medical Center, Columbus, OH.
128. **Harter RL**, Presenter. May 15, 2008. Pediatric Anesthesia with Dr. Thomas. Presented at CA-1 Lecture, The Ohio State University Medical Center, Columbus, OH.
129. **Harter RL**, Presenter. June 5, 2008. Resident Meeting. Presented at Morning Report, The Ohio State University Medical Center, Columbus, OH.
130. ScipioP, Sun G, Alhaj M, Christofi F, Awad H, **Hassanain H**, Presenters. March 28, 2007. The Role of C-Reactive Protein (CRP) in Atherosclerosis

Causal Link or Simple Association? Presented at The Ohio State University Research Day, Columbus, OH.

131. **Howie M**, Presenter. November 5, 2007. Anesthesia for Cardiovascular Surgery. Presented at CA-1 Lecture, Columbus, OH.
132. **Howie M**, Presenter. December 12, 2007. Cardiac Physiology. Presented at CA-2 and CA-3 Lecture, Columbus, OH.
133. **Khabiri B**, Presenter. September 6, 2007. Basics of Ultrasound. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
134. **Magino J**, Presenter. July 19, 2007. Surgical Care Improvement Project. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH, Residents.
135. Armen T, **Nathan N**, Presenter. 2007. Identification of Segmental Left Ventricular Ejection Fraction Changes with Cardiac Positioning During Off-pump Coronary Artery Bypass (OPCAIB) Using 3D Echocardiographic Left Ventricular Analysis. Presented at Society of Cardiovascular Anesthesiologists Annual Meeting.
136. Armen T, **Nathan N**, Presenter. 2007. Identification of Segmental Left Ventricular Ejection Fraction Changes With Cardiac Positioning During Off-pump Coronary Artery Bypass (OPCAIB) Using 3D Echocardiographic Left Ventricular Analysis. Presented at SCA Annual Meeting, The Ohio State University, Department of Anesthesiology, Columbus, OH.
137. **Nathan N**, Presenter. 2007. Intra-operative Echocardiography: Standpoint Views from Anesthesiologists. Presented at Department of Cardiology Echo Rounds, The Ohio State University Medical Center, Columbus, OH.
138. **Nathan N**, Presenter. 2007. Three Dimensional Echocardiography and Mitral Valve Repair. Presented at Taiwan Veterans Hospital Department of Anesthesia.
139. **Nathan N**, Presenter. August 9, 2007. TEE Rounds. Presented at Cardiac Anesthesia.
140. **Norton J**, Presenter. September 24, 2007. Neuromuscular Blocking Agents. Presented at CA-1 Lecture, Columbus, OH.
141. **Norton J**, Presenter. November 21, 2007. The Autonomic Nervous System. Presented at CA-2 and CA-3 Lecture, Columbus, OH.

142. **Park K**, Presenter. November 1, 2007. Pre-op Cardiac Evaluation. Presented at Department of Anesthesiology Grand Rounds, Starling Loving Hall, The Ohio State University, Columbus, OH.
143. **Park K**, Presenter. 2008. Use of Metrics in Operational Decision-making in the Operating Room, Fisher School of Business, The Ohio State University, Columbus, OH.
144. **Park K**, Moderator. 2008. Poster discussion on Vascular and Thoracic at Society of Cardiovascular Anesthesiologists Annual Meeting, Vancouver, BC.
145. **Park K**, Professor. 2008. Presented at Preoperative Cardiac Evaluation Beth Israel Deaconess Medical Center, Harvard Medical School Grand Rounds, Boston, MA, Residents.
146. **Pope-Harman A**, Presenter. Medical Approach to ARDS. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
147. **Reilley T**, Presenter. February 14, 2008. M&M Case Discussion: Pneumothorax. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
148. **Reilley T**, Presenter. June 19, 2008. Alternative Mechanical Ventilation Strategies. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
149. **Roberts WD**, Presenter. August 13, 2007. The Anesthesia Machine. Presented at CA-1 Lecture, Columbus, OH.
150. **Rogers B**, Presenter. June 26, 2008. Pituitary Tumors. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
151. **Rogoski J**, Presenter. August 20, 2007. Airway Management. Presented at CA-1 Lecture.
152. **Rogoski J**, Presenter. September 18, 2007. Intravenous Nonopioid Anesthetics. Presented at CA-2 and CA-3 Lecture.
153. **Roth A**, Presenter. August 16, 2007. M&M Case Discussion/OB Total Spinal Case. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.

154. **Shao Y**, Presenter. July 19, 2007. Cardiac Anesthesia Conference. Presented at Minimally Invasive Cardiac Surgery.
155. **Shao Y**, Presenter. July 26, 2007. Basic Echo Exam. Presented at Cardiac Anesthesia Conference.
156. **Shao Y**, Presenter. August 28, 2007. Patient Monitors. Presented at CA-1 Lecture.
157. Vogt K, Ibinson J, Schmalbrock P, **Small R**, Presenter. 2007. Correction of Pain fMRI Data for Respiratory, Cardiac, and Capnometry Variations Changes Functional Activation Maps. Presented at Midwest Anesthesiology Residents Conference, St. Louis, IL.
158. Vogt K, Ibinson J, Schmalbrock P, **Small R**, Presenter. 2007. The Effects of Correcting for Physiologic Fluctuations in Pain fMRI Experiments. Presented at OSUMC Research Day, The Ohio State University Medical Center, Columbus, OH.
159. **Small R**, Presenter. May 8, 2008. Spinal Anesthesia. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
160. **Smith T**, Presenter. September 24, 2007. Cholinesterase Inhibitors. Presented at CA-1 Lecture.
161. **Smith T**, Presenter. October 2, 2007. Cholinesterase Inhibitors. Presented at CA-1 Lecture.
162. **Speas G**, Presenter. December 3, 2007. Respiratory Physiology: The Effects of Anesthesia. Presented at CA-1 Lecture.
163. **Speas G**, Presenter. December 5, 2007. Respiratory Physiology and Respiratory Function During Anesthesia. Presented at CA-2 and CA-3 Lecture.
164. **Speas G**, Presenter. May 1, 2008. Evidence Based Medicine. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
165. **Sutton C**, Presenter. September 20, 2007. Adults with Congenital Heart Disease. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
166. **Szabo M**, Presenter. July 3, 2007. Preoperative Evaluation. Presented at Department of Anesthesiology CA-1 Lecture, The Ohio State University

Medical Center, Columbus, OH.

167. **Szabo M**, Presenter. July 24, 2007. OPAC Presentation. Presented at Division of General and Gastrointestinal Surgery, The Ohio State University Medical Center, Columbus, OH.
168. **Szabo M**, Presenter. January 17, 2008. Preoperative Evaluation Guidelines. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
169. **Szabo M**, Presenter. February 27, 2008. Preoperative Evaluation. Presented at Department of Anesthesiology CA-2 and CA-3 Lecture, The Ohio State University Medical Center, Columbus, OH.
170. **Szabo M**, Presenter. March 13, 2008. Preoperative Evaluation. Presented at Department of Obstetrics and Gynecology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
171. **Szabo M**, Presenter. April 16, 2008. OPAC: OSUMC Preoperative Assessment Center. Presented at Division of Vascular Surgery, The Ohio State University Medical Center, Columbus, OH.
172. **Szabo M**, Presenter. May 8, 2008. OPAC Preoperative Evaluation Guidelines. Presented at OSU East Medical Staff Meeting, The Ohio State University Medical Center, Columbus, OH.
173. **Szabo M**, Presenter. May 22, 2008. OPAC: OSUMC Preoperative Assessment Center. Presented at Department of Neurosurgery Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
174. **Traetow W**, Presenter. September 7, 2007. Inhaled Anesthetic Delivery Systems. Presented at CA-2 and CA-3 Lecture.
175. **Turner K**, Presenter. April 2007. Identification of Segmental LV Ejection Fraction Changes with Cardiac Positioning During Off-Pump Coronary Artery Bypass (OPCAB) Using 3D Echocardiographic LV Analysis. Presented at MARC, St. Louis, MO.
176. **Turner K**, Presenter. April 2007. The Role of Intra-Operative TEE in Diagnosis of Management of a Lung Embolism. Presented at MARC, St. Louis, MO.
177. **Turner K**, Presenter. August 22, 2007. Cardiovascular Pharmacology. Presented at CA-2 and CA-3 Lecture.

178. **Turner K**, Presenter. November 15, 2007. M&M Case Discussion: Tracheal Rupture. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
179. **Turner K**, Presenter. November 30, 2007. Anesthesia for Patients with Cardiovascular Disease. Presented at CA-1 Lecture.
180. **Xia Y**, Presenter. November 15, 2007. Complementary and Alternative Therapies. Presented at CA-2 and CA-3 Lecture.
181. **Xia Y**, Presenter. January 3, 2008. ASA Practice Guidelines for OB Anesthesia; What's New? Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.
182. **Yablok D**, Presenter. 1989 - 2008. Malignant Hyperthermia and Pheochromocytoma. Presented at Annual Lectures to CA-1, CA-2 and CA-3 Anesthesia Residents, The Ohio State University, Columbus, OH.
183. **Yablok D**, Presenter. 1989 - 2008. Respiratory Physiology. Presented at Anesthesia Machines, Lectures presented to medical students six times a year, The Ohio State University.
184. **Yablok D**, Presenter. 1989 - 2008. Respiratory Physiology. Presented at Anesthesia Machines, Anesthetic considerations of Various Disease States. Lectures presented to the anesthesia residents twice a year, The Ohio State University.
185. **Yablok D**, Presenter. December 20, 2007. Hepatic Physiology and Pathophysiology. Presented at CA-2 and CA-3 Lecture.
186. **Zvara DA**, Presenter. July 26, 2007. Case Discussion - Blindness. Presented at Grand Rounds.
187. **Zvara DA**, Presenter. October 13, 2007 - October 17, 2007. Aortic Dissection. Presented at American Society of Anesthesiologists Annual Meeting, San Francisco, CA.
188. **Zvara DA**, Presenter. December 13, 2007. Anesthesia for Patients with Respiratory Disease. Presented at CA-1 Lecture.
189. **Zvara DA**, Presenter. April 3, 2008. Airway Management in Obstructive Sleep Apnea. Presented at Department of Anesthesiology Grand Rounds, The Ohio State University Medical Center, Columbus, OH.

Clinical Director Reports

Cardiothoracic and Vascular Anesthesia



Michael J. Andritsos, MD

Assistant Professor Clinical
Director, Cardiovascular Anesthesia

The Division of Cardiothoracic and Vascular Anesthesia has shown continued growth and progress throughout the academic year of 2007-2008. This steady growth has been evident in research and clinical care.

Clinically we experienced a steady plateau in the number of cardiac cases, averaging approximately 65 open heart cases per month. We continue performing CABG, OPCAB, and CABG-valve surgeries, VAD procedures, heart transplants and thoracoscopic MAZE procedures. We are expanding our horizons with cardiac robotic surgeries, having performed approximately 20 cases from January to June 2008. In thoracic anesthesiology, the volume of thoracotomies continues to rise. Although the lung transplant service dropped to a low of only 4 for the academic year, the lung volume reduction surgery program is expanding. In vascular anesthesiology, we are seeing a steady increase in the number of endovascular procedures for abdominal and thoracoabdominal aneurysms.

In echocardiography, in addition to being fully digital, we are acquiring additional transesophageal echocardiography (TEE) machines with real-time 3-D capabilities. We are also in the process of upgrading to mixed venous oximetric monitoring on all cardiac cases.

Administratively, we continued to improve operating room efficiency at Ohio State's Ross Heart Hospital, as reported by the Ross Heart Hospital Quality Management Committee. We have seen a steady decline of delays in operating room start times with a one month all time low of 5% and reduction of case turnover times.

Our fellowship program is gaining momentum. Michael Ingerski, MD and William Perez, MD both completed their fellowship training in cardiovascular anesthesiology and passed the American Society of Echocardiography (ASE) perioperative TEE exam for perioperative TEE certification. Our Cardiovascular Fellowship program, under the direction of Galina Dimitrova, MD, gained Accreditation Council for Graduate Medical Education (ACGME) status.

In the area of research, we continue to excel with numerous publications and continued research awards. Notably, the following have excelled in their research over the past academic year:

- Mark Gerhardt, MD
 - 7 peer-reviewed journal articles
 - 5 peer-reviewed abstracts
 - Co-author 3 anesthesiology textbook chapters
 - Continued funded research as Principal Investigator (PI) in 3 projects
 - PI in 4 OSU IACUC Protocols
 - International Anesthesia Research Society (IARS) Annual Congress “Best of Session” abstract in March 2008
 - IARS Annual Congress “Co-first place, Best of Meeting” abstract presentation in March 2008

- David Zvara, MD
 - Co-editor of a cardiac anesthesiology textbook
 - Using Heat Shock Protein to Ameliorate Spinal Cord Ischemic Injury; NIH GRANT00491463, PI Tytell M, Co-Pi Zvara D
 - 4 presentations and co-chair at the Society of Cardiovascular Anesthesiologists (SCA) TEE Annual Meeting in February 2008
 - Co-chair at the SCA Annual Meeting in June 2008

- Hamdy Elsayed-Awad, MD
 - PI in 3 active OSU IRB Protocols
 - 2 peer-reviewed journal articles
 - 1 peer-reviewed case report
 - 2 peer-reviewed journal articles submitted
 - 1 presentation at the IARS Annual Meeting in March 2008

- Katja Turner, MD
 - PI in 1 active OSU IRB Protocol
 - 1 presentation at the SCA Annual Meeting in June 2008

- Michael Andritsos, MD
 - 1 presentation at the SCA Annual Meeting in June 2008

In summary, the Division of Cardiothoracic and Vascular Anesthesia has grown and seen success, specifically in the areas of research and education. We continue to excel in clinical service, as evidenced in our operating room efficiency and patient satisfaction.

Certified Registered Nurse Anesthetists (CRNAs)



Charles E. Martin
Chief CRNA

- The Ohio State University Medical Center currently consists of 53 part- and full-time Certified Registered Nurse Anesthetists (CRNAs) with another 10 CRNAs working Internal Resource Pool (IRP) or as needed. We employ 1 Anesthesia Assistant (AA) as an IRP.
- CRNAs work in a number of settings and provide anesthesia throughout the patient care services of The Ohio State University Medical Center, including University Hospital, The James Cancer Hospital, Richard M. Ross Heart Hospital, University Hospital East, and the soon-to-be-opening Outpatient Surgery Center.
- CRNAs perform a variety of cases, including hearts, neurology, and OB that require an advanced level of training.
- CRNAs work a range of hours, including overtime, to meet the demands of the schedule.
- As of 2008, Ohio State's Medical Center is now a clinical site for Student Registered Nurse Anesthetists (SRNAs) from the University of Akron.
- Five new CRNA recruits joined our team last year. These recruits came from as close as The University of Akron and as far as Duke University.
- We have 1 CRNA currently traveling to Florida to speak at the annual conference on Anesthesia for Robotic Surgery. Opportunities for research are available.

Clinical Operations



Luis A. Lopez, MD
Clinical Associate Professor
Director, Clinical Operations

Summary of Clinical Activities

This academic year has brought exciting growth and new challenges in the clinical operations of the Department of Anesthesiology:

- Implementation of the faculty swing shift provides continuous overlapping coverage between 2 PM and 11 PM, creating more consistent personnel utilization at any given time. This has resulted in a clear decrease in overtime pay for faculty, even with an increase in surgical volume, while maintaining quality and continuity of care for our patients.
- The department implementation of RAAMP for faculty to teach and cover regional anesthesia has been a success. The number of patients receiving regional anesthesia has dramatically increased, including postoperative pain management. This has resulted in an increase in the patients' satisfaction with the surgery and has also reduced the operating expenses per patient.
- The department has designated four faculty to the PACU to provide better postoperative care of our patients, consistent teaching in the resident rotation, and to help the residents achieve their education objectives.
- We have increased the number of operating rooms (ORs) running during weekdays: 23 rooms on Monday, 24 rooms from Tuesday through Thursday, and 22 rooms on Friday. This was due to an increase in the number of cases, complexity and hours of surgery. We are working on the number of cases 10 to 15% over budget.
- We created a shift for CRNAs to cover weekday evenings/nights between 6 PM to 7 AM. This is due to an increase in the number of cases going past midnight. In addition, we permanently assigned a CRNA on Saturday

from 7 AM to 5 PM due to increases in urgent and emergency cases performed during the day. This gives us the opportunity to run one more OR during the day. On Sundays, we also have a CRNA beeper call to accommodate more cases or semi-emergency cases that would be difficult to do on Mondays when we already have a full schedule.

- OR 98 was created for neurosurgery angiography cases, which have been moved to OR 21. OR 98 is ready for angiography and regular operations in case they are required, and we are able to provide the safest and most rapid transition from a closed case to an open case without moving the patient to a different OR.
- OR 97 and OR 96 were created to provide coverage for the EP lab in Ross Heart Hospital to manage the patients' need for anesthesia service in compliance with state law requiring anesthesia involvement in their cases. We are scheduling faculty and CRNAs daily to cover their needs.
- We are organizing off-site services, since the demand for our service has increased dramatically. Some include:
 - Invasive radiology (eg, coiling, TIPPS, line placement, nephostomy tube placement, BBBB) continued to increase in volume.
 - Endoscopy service has requested our assistance in patients with any type of problem for colonoscopy, endoscopy and ERCP; we are working to schedule them in OR 98 for two full days. The other day will be dedicated to pulmonary service, as they have requested anesthesia coverage for some of their bronchoscope cases.
 - MRI continued to be a challenge with their schedule since they have to accommodate OR 99 after radiation oncology and ECT. Some of these patients are scheduled for four or more hours when in combination with neurosurgery and this presented a challenge for our department to cover these long cases.
- The department faculty schedule is now live with Spinfusion; however, this is a work in progress since the procreation has been a challenge.
- Our department experienced an increase in the number of surgical procedures performed in the ORs as well as an increase in the number of ORs running past 5:00 PM for elective cases. We have opened one more OR in University Hospital. We have extended hours past 5:00 PM in the James Cancer Hospital.

With the growth experienced throughout the last year, we have maintained efficiency and quality of service. I am proud of what our faculty, residents and staff members have accomplished, not only for this academic year, but also for the last several years.

Together we look forward to a successful future.

James Anesthesia



John S. Rogoski, DO
Assistant Professor Clinical
Director, James Anesthesia Section

Mission Statement

The Ohio State University Comprehensive Cancer Center – James Cancer Hospital and Solove Research Institute is one of 6 “Signature Programs” at The Ohio State University Medical Center, and its volume and scope of services will continue to expand in the future.

Just as it is the goal of Ohio State’s Medical Center to have OSUCCC-James represent a top tier National Cancer Center (NCC) organization, our goal is to continue to improve patient safety, provide state of the art anesthesia, and demonstrate to our patients the highest level of caring professionalism.

Surgical cases for fiscal year 2008 numbered 5,371, which is a slight decrease from the previous year’s total of 5,392 surgical cases. This represents 895 procedures for each of the 6 operating rooms.

The cases were distributed as follows:

- 2,476 (46%) ambulatory service unit (ASU) cases; compared to 43% in 2007
- 1,797 (34%) admitting day surgery (ADS) cases; compared to 35% in 2007
- 1,098 (20%) in-patient cases; compared to 22% in 2007

Improvements that have been made to help increase patient safety and overall efficiency include:

- Capital requests were made for the purchase of several new anesthesia machines with increased ventilatory capability and electronic medical record compatibility.

- Capital requests were made for the purchase of an ultrasound unit for use in nerve blocks and vascular access.
- Several technologies for providing patient normothermia have been trialed and these trials were still in progress at year's end.
- An additional GlideScope system was purchased. There has been an increased demand placed on the current systems as the practitioners are more frequently incorporating their use in airway management.
- Continued education and reinforcement regarding timely preoperative antibiotic administration to help decrease surgical wound infections. Up-to-date antibiotic administration and redosing guidelines are in place on all back stands.
- Continuing education and reinforcement of the need for tighter perioperative glucose control. Guidelines for the management of insulin infusions have been placed on all the back stands. The literature is supporting tighter glucose control for decreased morbidity, mortality and wound infections and we would like to offer these benefits to our patients.

Neuroanesthesia



Sergio Bergese, MD
Assistant Professor Clinical
Director, Neuroanesthesia Services

The Neurosciences Signature Program strives to create the Neurosciences Institute as a top-ranked facility with a strong foundation of research, education and patient care. It is known for compassionate, full-service, individualized “state-of-the-art” care, cutting-edge research and a scholarly environment.

Ranked among the most competitive programs, we appraise our success by evaluating the program’s current state, external competition, *U.S. News & World Report* rankings, and the ability to strengthen other signature programs. The following selected opportunities will have an immediate, positive impact on the neuroscience program:

- Consolidate the neuroscience research programs to facilitate translational research and collaboration between clinicians, clinical researchers and basic science researchers.
- Consolidate the inpatient and outpatient care areas to maximize expertise specific to the neurosciences population and improve care coordination.
- Enhance the educational aspect through additional fellowships.
- Develop a Neurosciences Institute to coordinate all neurosciences activity, drive strategic development and uphold accountability for financial performance.
- Expected outcomes include an increase in average daily census of 10 patients per day (from 75 to 85).

The scope and complexity of the program warrants the development of an institute to encompass all aspects of the neurosciences program. The institute would be responsible for setting the strategic priorities of the neurosciences program. The institute will also be accountable for all financial responsibilities.

A major focus of our plan is around space consolidation, infrastructure building and faculty/research recruitment. With these investments, the average daily census will

increase from 75 to 85 patients per day. Louis Caragine, MD and the Departments of Anesthesiology and Neurosurgery have developed a task force to identify a leader to develop a Neuro-SICU program.

The Neuroanesthesia Fellowship is fully approved under the co-supervision of Sergio Bergese, MD and Bhagwandas Gupta, MD. We have 1 applicant confirmed for the second half of 2009, Katie Fig, MD. For 2010, we are in the process of confirming a second applicant, Sonia Stripe, MD for the first half, and Barrington Arthurs, MD has applied for the position for the second half.

Neuroanesthesia, as part of the neurosciences program, will continue to recruit heavily to meet our surgical clinical needs. The 3 fellowship candidates have strong intentions to stay on staff. Not only are we going to focus our efforts on recruiting these candidates, but we will also pursue additional candidates from around the country. A combined effort was made with the Department of Neurosurgery in the *Journal of Anesthesiology* to promote this prestigious position.

Also, neuroanesthesia will continue its expansion of clinical research. For the past 6 months, the newly developed Office of Research Support in Cramblett Medical Clinic has been utilized by a technical editor and 9 clinical research professionals. This office fully complies with patient care and confidentiality involved in appropriately conducting department and sponsored clinical trials.

A total of 13 IRB-approved research protocols are actively enrolling, among which 6 are phase-3, multi-center trials. We have several active grants which have generated over \$1 million for the 2008-2009 fiscal year. Seven papers have been accepted and approved for publication. Numerous abstracts have been presented at scientific societies' meetings. Currently we have 4 Fellows in clinical research working on different research projects and multiple abstracts for the upcoming Midwest Anesthesia Residents Conference.

Our interest in neuro-physiology, neuro-monitoring and consciousness monitoring is growing. Several lectures on these topics were presented at conferences and grand rounds, solidifying our division as experts in this arena. We have performed a retrospective study on evoked potential, which has been accepted for presentation at the International Anesthesia Research Society (IARS) annual meeting.

Resident education continues to be one of our priorities. The weekly lecture (CME category 1), which was added to the curriculum last year, continues with great success. Barbara Rogers, MD has collaborated with the clinical research team to facilitate a weekly Journal Club. In addition, Dr. Rogers will play a pivotal role for our equipment maintenance and replacement.

Clinically, we continue to grow stronger. Since late last year we have been providing a sub-specialty call to match the vision of The Ohio State University Medical Center. This

call covers neurosurgical and spine cases, endovascular procedures, MRI and stroke treatment.

A high volume of patients continue, with over 2,400 neurosurgical cases staffed by our service, including gamma knife, endovascular neuroradiology, ENT-middle fossa craniotomies, and spine surgery (Neurosurgery and Orthopedics). This represents phenomenal growth considering that in 2004 less than 600 cases were performed. Clearly, our need for neuroanesthesiologists will continue to grow. An active recruitment plan is underway to meet those needs. Our major growth in the past year has been with the spine surgery service performing increasingly complex cases. This area of neurosurgery is expected to grow the most in the following years.

Another successful project started in 2005 was the intraoperative MRI-OR suite. It was inaugurated on April 2005 and hundreds of cases have been performed to date. This has provided better patient care with a 35% reduction of early re-operations. Also, due to our high performance, we were chosen as a “visit site” by the manufacturer and a visitor site contract was signed. In September 2008, the intraoperative angio suite was finalized. Housed within operating room 21, it is one of the only hybrid neuro rooms in the country. The room is designed to coil an aneurysm and open an aneurysm in the same day without moving the patient in and out of the room. This tremendous accomplishment could not have been achieved without tireless effort and teamwork trans-departmentally.

Our goal of providing excellent clinical care with efficiency remains our priority. Our major asset is teamwork as defined in Ohio State’s Medical Center vision statement:

Working as a team, we will shape the future of medicine by creating, disseminating and applying new knowledge, and by personalizing health care to meet the needs of each individual.

Obstetric Anesthesia



Mona Y. Halim, MD
Assistant Professor Clinical
Director, Obstetric Anesthesia

Clinical Activities

Overview of Our Numbers in 2008

Our numbers at The Ohio State University Medical Center have continued to increase to a total of 4,528 live births. We have been involved in the care of over 3,950 anesthetics during this year, without counting the patients who were taken care of on Labor and Delivery for labor analgesia and who also required care in the operating room during operative intervention. This number also includes anesthesia for over 600 tubal ligations, with or without cesarean deliveries. Additionally, labor analgesia was provided for many of the patients that had intrauterine fetal demise. Anesthesia was also provided during surgery for incompetent cervix, twin to twin transfusion syndromes, removal of retained placenta, or removal of cerclage sutures.

Cesarean deliveries are about 32% of total deliveries. Cesarean sections were performed on elective basis or non-elective basis. Total numbers are approximately 1,345 cases. In some of the cases, the procedure may have been combined with tubal ligation or cesarean hysterectomy to control obstetric hemorrhage or more extensive surgery secondary to comorbidities. Additionally, a percentage of elective cesarean sections were performed on high-risk patients, which mandated special monitoring and intensive care admissions. The percentage of cesarean sections performed under general anesthesia was about 7.66%, which included emergencies and contraindication to regional anesthesia or inadequate regional anesthesia.

The other part of patient care is provision of labor analgesia to patients in labor. About 75 - 80% of these patients received regional analgesia techniques in the absence of any contraindication. There is some overlap between those numbers because some of the patients in labor may have been delivered in the operating room. The anesthetic provided in the operating room may rely on the epidural or a different anesthetic, which could be a regional or a general anesthetic depending on a variety of factors.

The complexity and acuity of a good percentage of our patients keep us on edge at all times. We have refined our OB anesthesia consult service and developed a procedure for the OB anesthesia consult that should soon be available on eResults.

We have continued our commitment to pregnant cardiac patients through combined efforts with the congenital adult heart disease group of cardiologists, including Curt Daniels, MD, Steven Cook, MD, and the high-risk maternal fetal medicine attending, David Colombo, MD. We have been recognized for our effort and superb patient care in Ohio State's Medical Center publications for the care of a patient with severe pulmonary hypertension.

We have committed ourselves to patient safety through adherence to time out before performing epidurals, double-checking medication labels to be administered in the epidural space, and meticulous attention to the use of alcohol hand rubs and washing hands. Together with strict asepsis in performance of neuroaxial anesthesia techniques, we are ensuring safety and prevention of infectious complications by doing our best in those areas.

We initiated our own patient satisfaction surveys in August 2008 and are much encouraged with the feedback we receive from our patients.

We are continuing to develop and acquire higher technical expertise in the use of ultrasound technology as a diagnostic tool to identify the anatomy, insertion point, and depth of the epidural space from the skin. This will be of utmost value for the care of our morbidly obese patient population, as well as the normal population.

New nurse anesthetists have been trained in regional anesthesia and became additional assets to our OB anesthesia coverage during many days and nights. They complement the anesthesia care team concept and have been selected from the best CRNAs in the main operating room. They also have great interest in the care of our high-risk population. Quarterly educational meetings are ongoing to maintain proficiency and currency in applied knowledge.

Only through thorough postoperative follow-up of patients and attention to minor or significant issues are we able to pursue consults or diagnostic workups if needed. These are the tools we have utilized over the past 6 years which allowed us to take care of over 20,000 patients without a significant anesthesia-related morbidity or mortality.

Equipment and Technical Support

We have increased our anesthesia technical support to 5 to 6 day shifts per week. The anesthesia technician has some weekend coverage during which our supplies are replenished in preparation for a trauma in the 3 operating rooms on the sixth floor.

A GlideScope is finally part of our airway equipment and is kept in Labor and Delivery on the sixth floor. Airway elevation pillows and other necessary equipment in our OB airway carts are essential tools during difficult airway management emergencies.

New fibre optic laryngoscopes with better lighting are definitely necessary. They have been ordered and should arrive soon.

A new Loss of Resistance syringe, “Episure,” is under trial. The rationale is that it may be a helpful tool to identify the epidural space and provide a lower incidence of dural puncture.

Educational Activities

We continue to gather data on an OB Excel log and generate many of our statistics from the data spreadsheets. In 2009, our department expert, Roger Dzwonczyk, will help us refine data entry to obtain information in a simpler way and start utilizing it more for education and publications.

We will present some of our complex cases at the next Midwest Anesthesia Residents Conference (MARC) as well as the Society for Obstetric Anesthesia and Perinatology (SOAP) in April.

Our senior anesthesia residents are given the opportunity to develop more skills and confidence while being on call at night with the attending anesthesiologist covering OB. The feedback we have received is incredible and illustrates the value and worthiness of the residents’ experience with this training.

The obstetric anesthesia article package has been updated and intense effort is directed towards the discussion of such landmark topics during the rotation.

A core combined anesthesia and fetal surgery group is being developed for performing more fetal surgery. We have refined our anesthesia techniques for the more common twin to twin transfusion surgery and will have 2 EXIT procedures performed in April 2009.

Obstetric resident anesthesia education is important for improving communication on the obstetric floor. We take every opportunity to discuss or present our point of view and participate in the residents’ lecture series.

Off Site Anesthesia Services



David O. Yablok, MD
Assistant Professor Clinical
Director, Off Site Anesthesia

The year of 2008 has brought significant growth, change, innovation, and education opportunities for the off site (out of operating room) anesthesia service. Providing anesthesia care in locations outside of the operating room (OR) continues to be an increasingly important part of the healthcare delivery system. In addition to a notable growth in case volume, we have initiated a 1-month resident rotation in off site anesthesia.

Growth

- The service consists of up to 5 separate unique anesthesia locations designated as OR 99, 98, 97, 96 and 95. The total staff commitment can be as high as 3 faculty members and 4 residents/certified registered nurse anesthetists (CRNAs) at any time.
- The total number of cases has continued to increase over the past few years. The average monthly case count in the first quarter 2008 was 124. For the last quarter, the average monthly volume was roughly 170, which was an additional 34% increase.

We provide out of OR care on a 24/7 basis. Many emergent and emergency cases are handled during off hours. Increased familiarity with these cases by a larger percentage of our department has greatly enhanced the ease and efficiency of these situations.

- Continued coverage of the electrophysiology procedures. State of Ohio law forbids registered nurses to administer deep sedation or to give propofol; therefore, we have been asked to provide general anesthesia for a potentially large number of EP cases.
- We have experienced significant growth in the number of endoscopy cases. These include, but are not limited to, ERCP, EUS, and enteroscopy cases. The GI

department has indicated that they have an almost limitless capacity to utilize our services.

Change

- We have once again begun to provide anesthesia for Blood Brain Barrier Disruption procedures. The protocols remain open and they have recruited at least 1 additional patient.
- As above, the number of GI procedures has increased. The GI services have moved into a new facility with state-of-the-art procedure rooms. The ERCP and EUS room are especially anesthesia friendly, greatly facilitating our efficiency and safety.
- The MRI scanners have also been relocated to a modern facility. This area greatly improves our anesthesia patient care with updated monitors, specific anesthesia space, and better proximity to our department and the ORs.

Innovation

- We are continually improving and refining our techniques for patient care. These innovations lead to more efficient patient care, which results in increased patient volume in a given time period and thus, decreased costs.
- We are constantly striving to minimize the down time of the radiation equipment caused by anesthesia preparation and issues. Wasted time is wasted money. As an example, every half hour saved in the MRI scanner is worth \$2,000 to the hospital, not including idle staff time. While no data is available, there has clearly been a significant improvement in anesthesia efficiency.
- An additional goal of the off site cases is to minimize the use of the post anesthesia care unit (PACU). Sending patients to the PACU increases costs and workloads in an already stressed nursing staff. With our currently developed protocols, the need to transfer a patient to the PACU is an extreme rarity. We currently only utilize the PACU for patients that have required intubation, which is a small and decreasing percent of our experience. In addition, we are working with the endoscopy nursing staff to develop the ability to recover intubated patients in their unit, also bypassing the PACU, with a resultant significant cost savings.

Education

- We have developed a 1-month rotation for residents to learn to perform anesthetics out of the OR. The early feedback has been overwhelmingly positive.

- At the beginning of the year, almost all cases were performed by a solo anesthesiologist. Due to ever increasing off site staffing requirements, all members of our department need to be educated and comfortable with off site cases. Our goal for this year is to make sure all staff feel comfortable in providing anesthesia care in the off site environment.
- This educational component, while still in development, is important because off site (out of OR) cases are becoming a larger part of our anesthetic experience on the local and national level.

Ohio State University Hospital East



Fernando Arbona, MD
 Assistant Professor Clinical
 Clinical Director, Ohio State University Hospital East

We continue to be very busy in the operating rooms at OSU East. Although our total number of surgical cases decreased by 207 cases (-2.6%), this was offset by an increase of 1,477 surgical hours (+11.3%) for the year. In addition, we continued to grow our application of ultrasound guidance for regional anesthesia in our patient care. With the addition of a new regional anesthesia and acute pain nurse, Laura Carlson, we have been able to greatly expand our perineural catheter service. This has been evidenced by our consistently high patient satisfaction scores, especially in regards to pain control in the operating room venue, as well as increased revenue generation from our regional anesthesia since her start in mid-March of 2008. With this increase in surgical hours, as well as our increase in procedures performed outside of the operating rooms in the form of regional anesthetic procedures, we are still able to continue to provide high quality and efficient care to our patients and surgeons.

OSU East Surgical Cases for Calendar Years 2007 & 2008

Calendar Year 2007	8,010
Calendar Year 2008	7,803
Change	-207
% Change	-2.6%

OSU East Surgical Hours for Calendar Years 2007 & 2008

Calendar Year 2007	13,103
Calendar Year 2008	14,580
Change	+1,477
% Change	+11.3%

OSU East Anesthesiology has also been active in the academic arena during the past year. Fernando Arbona, MD, Babak Khabiri, DO, and John Norton, DO have been

diligently working under contract with Cambridge University Press to write a new textbook on ultrasound guided regional anesthesia. In addition, there have been several research studies performed by OSU East anesthesiologists, as well as several articles for publication submitted, some of which are currently still pending.

Fernando L. Arbona, MD is clinical director for Anesthesiology at OSU East. The other members of the anesthesia faculty with a 100% FTE allocation to OSU East are Babak Khabiri, DO, John Norton, DO, and Alan Kover, MD. Other faculty members who have 50% FTE allocation to OSU East include Andrew Roth, MD, Kenneth Moran, MD and Charles Hamilton, MD. We all continue to work well with the preoperative nurses, the surgeons, and the Medical Management Team (MMT) to ensure high-quality and efficient preparation of the operative patients. We also continue to work with the operating room management team regarding the OR block time schedule, in which the availability of time based on the surgeon's utilization of blocked time, to further improve the efficiency of the operating rooms. Currently there are a total of 13 functioning operating rooms, of which 12 to 13 have blocked surgical time almost every day.

For the upcoming year, we expect our surgical volume to vary, with a resultant eventual growth. With the expected opening of the Gowdy Fields surgery center this summer, there is going to be an expected shift of much of our ENT, and potentially hand, surgical volume from OSU East to this new site. This shift is expected to be offset, along with an additional growth of surgical volume at OSU East, by the new start of Dr. Jason Calhoun as the new chairman of the Department of Orthopedic Surgery. He has plans to recruit many new surgeons into his department, of which the strong majority of their surgical volume is planned to be performed at OSU East. Therefore, in the long term, we expect an overall growth in surgical volume at OSU East.

The area specific to anesthesia that we wish to develop during the next year involves leading research studies that can have a significant impact on clinical practice, while maintaining and continuing to improve our high-quality and efficient patient care.

Pain Medicine Services



Steven A. Severyn, MD, MBA

Assistant Professor Clinical
Director, Pain Medicine Services
Director, Pain Section, The Ohio State University
Comprehensive Spine Center
Director, Multi-disciplinary Pain Medicine and Regional
Anesthesia Fellowships

Overview

During the 2008 academic year the Department of Anesthesiology Pain Services executed its mission of management of acute and chronic pain conditions as envisioned and described in the annual report of that year without significant variance. Utilization of the consolidated inpatient hospital services for management of acute and chronic pain conditions increased approximately 15%. Spine Center operations and revenue continued to surpass budgetary projections. The Multi-disciplinary Pain Medicine Fellowship again received Accreditation Council for Graduate Medical Education (ACGME) re-accreditation for a period of 2 years for a complement of 1 Fellow trainee. The service instituted and formalized a Regional Anesthesia Fellowship program (non-accredited) that trained and graduated its first Fellow. Re-establishing a separate Pain Medicine Facility remains a future objective.

Inpatient Pain Medicine Services, Department of Anesthesiology

Inpatient pain medicine services is a shared responsibility of a group of 4 regularly rotating core physicians, 3 of whom participate in outpatient and the full spectrum of inpatient services to bring a common skill set to both settings, resulting in coordination of inpatient and outpatient care. Physician weekend rounds, generally assisted by a dedicated resident or Fellow, yielded substantially improved continuity of care and availability for responding to weekend consultation requests. The inpatient service provides care across a spectrum of acute and chronic pain conditions in an active consulting role that includes the entering of orders and adjusting of treatment. The daily inpatient service census, on average, remains nearly evenly distributed between care of patients receiving postoperative epidural infusion and the active consultant practice for acute and chronic pain. The addition of a weekday evening RN shift improved continuity of care, timely responsiveness to issues concerning epidural drug delivery, and satisfaction of both patients and customer physician services, and also substantially reduced the level of responsibility for epidural management during evening hours that was previously relegated to the on-call anesthesiology resident team.

The Acute Pain Service provides a steadily increasing number of implanted intrathecal catheter and programmable infusion pumps for the care of patients with pain due to chronic non-cancer conditions, pain due to cancer conditions, and management of spasticity of central nervous system etiology. These patients receive their principle care through the Departments of Anesthesiology, Internal Medicine Pain & Palliative Medicine, and Physical Medicine & Rehabilitation, respectively. Patients receiving intrathecal infusion of opioids for pain management constitute the only exception in which the Department of Anesthesiology also manages oral analgesic medication prescribed for cancer pain. The regular presence of physicians experienced in pump management on the inpatient service continues to foster a closer integration of the individual services, benefiting patient satisfaction and the efficient provision of care.

Pain Section, The Ohio State University Comprehensive Spine Center (Spine Center)

One full-time and 3 part-time physicians constitute 3.0 FTE positions for provision of evaluation and management (E&M), invasive procedural, and operative surgical services to patients who are experiencing pain due to spinal and non-spinal conditions or who are experiencing muscle spasticity due to central nervous system injury or diseases. The Spine Center program continues to outperform budgetary projections. Department of Anesthesiology physicians serve in intake, procedural referral, and follow-up care capacities. Performance of operative and major nerve block procedures continues to rely upon Ohio State University Hospital East clinical service locations, including the Invasive Radiology suites of that site, so as to allow for conscious sedation and associated patient recovery.

Pain medicine consultation and procedural services for the care of inmates of the Ohio Department of Rehabilitation and Correction largely takes place at the Corrections Medical Center in south Columbus. Two of our physicians rotate at the Corrections Medical Center on a regular basis, finding greater efficiencies of practice there than had previously been attainable when all inmate care was performed at The Ohio State University Medical Center. Fluoroscopic procedures for this patient population can only be provided relying on Ohio State's Medical Center operating room sites due to security concerns; however, up to 6 cases are now performed routinely in an afternoon as opposed to 4 per afternoon, as was the case last year. We reduced a significant service request backlog by devoting 1 physician each Friday during the 3rd and 4th quarters of calendar year 2008 and have since returned to a bimonthly schedule for services.

The availability of our physicians for care of chronic pain conditions not due to spinal diseases continues to be under-recognized within OSUMC, as indicated by a limited occurrence of referrals for conditions other than spinal etiology. Patient referral for non-spinal pain conditions from outside OSUMC is even less common, and may be falling subject to scheduling bias or role appreciation within the Spine Center. Our capacity to accept new patients for medical management, regardless of physician practice affiliation, remains negligible. Approaching these obstructions to growth opportunities will require the re-establishment of a Pain Medicine Center that if not housed at a separate location, will at least be recognizable as a distinct clinical entity. Our ability, however, to respond

to such growth opportunities will depend upon our ability and financial capacity to recruit several more physicians and retain those we currently have. Conditions do not yet appear favorable for attaining these outcomes. Further, the clinics of the Departments of Internal Medicine and Family Practice have communicated their preference not to receive from us any patients that seek to re-establish their primary care under an OSUMC physician if the patient has been seen by our service. OSUMC may yet reconsider the benefits of supporting a Pain Medicine entity separate from the Spine Center. Care should be taken regarding our taking on such an activity so as not to be a disadvantage to our established services, and instead would best be pursued as an addition to them without incurring an obligation to re-direct our role on account of an inadequate physician complement at the onset.

Multi-disciplinary Pain Medicine and Regional Anesthesia Fellowship Programs

Our Multi-disciplinary Pain Medicine Fellowship program integrates members of 4 academic departments (Anesthesiology, Neurology, Physical Medicine & Rehabilitation, and Psychiatry) and distributes the Fellow's training experiences among chronic outpatient non-cancer pain, cancer pain, palliative medicine, pediatric pain, acute and postoperative inpatient pain, chronic inpatient pain, interventional pain management, and the outpatient clinics of the 3 non-anesthesiology departments. Morbidity and Mortality Conferences and Pain Medicine Journal Club Meetings are category 1 credit activities. Research activity remains scant despite encouragement. Two recent graduates successfully completed their Pain Medicine board examinations this past year. The faculty complement remains at an institutional all-time high and optimistically will include an ACGME-accredited neurologist beginning in July 2009. The fellowship again received ACGME re-accreditation for a period of 2 years for a complement of 1 Fellow trainee. An increase in complement, and at some future time even the continued accreditation of the program, will likely depend upon securing and retaining ACGME-accredited faculty members in all the cooperating departments.

We established a non-accredited Regional Anesthesia Fellowship in July 2008 and graduated our first trainee in December. The didactic material incorporated areas more specific to regional anesthesia and retained significant portions of the Pain fellowship material content. Clinical service site was limited to OSUMC to the benefit of the clinical service of that location. The department has requested upgraded ultrasound units for needle localization. The program possesses significant research and academic potential and is positioned to promote expanded employment of regional anesthesia for intraoperative and postoperative analgesia at OSUMC.

Post Anesthesia Care Unit (PACU)



Ryan E. Dalton, MD

Assistant Professor Clinical
Director, Post Anesthesia Care Unit

The year of 2008 saw many improvements in our approach to patient care in the perioperative setting:

1. We have adopted intraoperative glucose monitoring for all diabetic patients who are having a procedure that lasts longer than 1 hour. There are an increasing number of diabetic patients in America that need personalized care in an attempt to reduce complications associated with their disease. We hope to improve surgical outcomes with this measure.
2. We have opened the post anesthesia care unit (PACU) in the morning to allow anesthesia providers to see their patients before going to the operating room (OR). This allows anesthesia providers to obtain a history and physical, consent, intravenous access and sedate the patient in a setting aside from a busy OR or hallway. We feel that this will provide a much better experience for our patients.
3. A new director has been appointed for the PACU. Thomas Smith, MD has replaced Ryan Dalton, MD.
4. We implemented a 2-step sign-out procedure that helps us better evaluate and document a patient's readiness for discharge from phase I of recovery to phase II.
5. PACU staff members include the following:
 - Thomas Smith, MD
 - Mike Evers, MD
 - Gaylynn Spease, MD
 - Jeff Swan, MD
 - Ryan Dalton, MD

The Ohio State University Medical Center Preoperative Assessment Center (OPAC)



Martha Zorko Szabo, MD

Section Director, Preadmission Testing
Assistant Professor Clinical

The business plan for The Ohio State University Medical Center Preoperative Assessment Center (OPAC) was approved by senior leadership in June 2007. The goal was to create a physician-based Preoperative Evaluation Center on the 4th floor of the Martha Morehouse Medical Plaza (MMH). With the vision and enthusiasm of multiple individuals within Ohio State's Medical Center, including David Zvara, MD, the first patients were seen on January 22, 2008.

The mission of OPAC includes:

1. To provide timely, comprehensive preoperative assessment of patients that will lead to a greater opportunity for patient, surgeon, and anesthesiologist satisfaction.
2. OPAC will make preoperative assessment scheduling easier for surgical office staff and patients, resulting in fewer delays and cancellations.
3. OPAC will provide a single location for the coordination of the patient's entire preoperative process.
4. OPAC will deliver personalized health care by providing the right care for each patient based on his or her individual needs.

During the first and second quarters of fiscal year '08, our business plan moved forward with the acquisition of space on the 4th and 2nd floors of MMH tower. The facilities include 4,500 square feet on the 4th floor, with 9 exam rooms, 3 team rooms, and a waiting area. The 2nd floor facilities include a shared space for registration with the bariatric surgery program and a chart preparation and processing area for OPAC. There is a lab on the 1st floor of MMH that processes the specimens acquired in OPAC and provides a valuable resource for any questions which may arise regarding specimens or

testing. Specimens are processed immediately and the results are transmitted via direct printer into OPAC.

Radiology is located on the 1st floor of MMH pavilion, where patients can have plain films, CT or MRI. Collaborative relationships have been established with cardiology and general internal medicine, where referrals for further evaluation and testing can take place in an efficient and timely fashion. The off-campus location has improved accessibility for patients coming from multiple surgeons' offices around the area, including Stoneridge Medical Center/Stoneridge Internal Medicine in Dublin, The OSU Heart Center at Mill Run in Hilliard, OSU Plastic Surgery - Knightsbridge, Cramblett Medical Clinic, Ohio State's James Cancer Hospital and Solove Research Institute, and the MMH complex.

Scope of Services

The scope of services is broad and includes much more than the traditional preanesthesia evaluation. A range of services has been designed to consolidate the preoperative preparation process and decrease delays and cancellations that have traditionally occurred due to inadequate patient preparation. These services touch all aspects of the preoperative preparatory process and include:

1. Completion of a comorbidity screening tool
2. Patient registration for OPAC visit and day of surgery
3. Comprehensive history and physical
4. Completion of the anesthesiology preoperative assessment
5. Anesthesia consent
6. Medications reconciliation into Computer Accessed Patient Information (CAPI) for access on day of surgery*
**The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) requirement*
7. Determination of appropriate testing based on guidelines approved by OSUMC, Department of Anesthesiology
8. Phlebotomy and management of all testing results including documentation and triage for abnormal results
9. Acquisition of type and screen specimens for the blood bank
10. Performance of ECGs
11. Patient education for day of surgery, advanced directives, and surgical soap

12. Utilization of an 'Anesthesia Alert' system, a multifaceted method of informing various members of the surgical team about patient care issues that may affect the day of surgery, including difficult intubations, difficult IV placement, malignant hyperthermia, and other complex medical issues
13. Acquisition and documentation of previous outside testing
14. Referral of patients for further evaluation, including cardiology, pulmonary, hematology, etc.
15. Completion of the patient chart in Chart Central
16. Scanning of entire patient chart into eResults for electronic access of all patient information
17. Delivery of all patient charts to the appropriate business unit/ambulatory surgery unit (ASU) in order to eliminate the day of surgery shuffle

Personnel

OPAC is open 10 hours a day, 250 days per year, and is staffed by 1 anesthesiologist, 2 physician assistants (PA), 4 registered nurses, 4 medical assistants, and 1 pharmacy technician. Internists from the hospitalist service are available on a consultative basis.

Based on recently established Accreditation Council for Graduate Medical Education (ACGME) requirements, 1 anesthesiology resident per month is also on site for training in all aspects of preoperative assessment.

Five faculty contribute to the daily operations of OPAC, including Michael Andritsos, MD, Heather Eck, MD, Ritu Kapoor, MD, Barbara Rogers, MD, and Martha Zorko Szabo, MD.

OPAC is administered jointly through the OSUMC, Department of Anesthesiology and OSUMC administration. These leaders include David Zvara, MD and Cheryl Dickerson. Debbie Czerwinski, RN is the nurse manager and Martha Zorko Szabo, MD is the section director for preoperative assessment.

Statistics

The volume of patients seen in OPAC has increased steadily over the past 6 months. OPAC has seen 1,075 patients, including patients from OSU James Cancer Hospital and Solove Research Institute, Ohio State's University Hospital, and Ohio State's Richard M. Ross Heart Hospital operating rooms.

Additionally, 25 anesthesiology consults were performed and 76 surgeons have referred patients for OPAC visits. Although the volume of patients and referrals has been less than initially projected, our growth has been steady.

Research

The faculty and staff of OPAC are fully dedicated to the research mission objective of the Department of Anesthesiology. We have participated in clinical research from multiple departments within OSUMC:

- We have provided a location for performance of testing for Yun Xia, MD's lubiprostone study
- Collaboration with OSU James Cancer Hospital and Solove Research Institute's prostate cancer/soy/tomato study, including space for education and counseling, and phlebotomy services
- Early identification of patients with TAAA for Hamdy Elsayed-Awad, MD's studies

Future Plans

Over the next 12 months OPAC will face many challenges and opportunities, including: 1) increasing patient volumes, 2) increasing referring surgeon volumes, 3) improving existing communication methods within OPAC, 4) improving methods of communication to referring surgeons and the anesthesiology care team, 5) improving communication with all business units regarding patients, 6) implementation of Patient Link/Epic in OPAC, and 7) moving from the 4th floor of MMH to another location to provide space for the growth and expansion of The James dermatological surgery offices. Additionally, we plan to expand our education of residents, PAs, nurse practitioners, and other medical specialty residents.

Transplant Anesthesia



Ernesto Goldman, MD

Associate Professor

Director, Transplant Anesthesia

- Provide and supervise coverage of the increasing number of kidney (cadaveric and living-related), pancreas, liver, and combined transplant procedures. We have continued to grow in the area of living kidney donors. The challenges for the upcoming year include the goal to perform 38 liver transplant cases.
- Interact with the transplant surgeons regarding scheduling, assignment, and management of difficult cases.
- Teaching residents and CRNAs and supporting junior faculty in the complex liver and kidney transplant cases.
- Data gathering for an active IRB protocol #2004H0168, PIE.Goldman MD, part of a multicenter study on the effect of vasopressin on renal function during liver transplantation.
- Membership OSU Liver Program Strategic Program. Work in progress: Assessment and policy on the blood products usage during liver transplantation.
- Manuscript in progress (E.Goldman MD first author) regarding survival of liver transplantation in relation to the severity of liver disease (MELD score). MELD score calculated by using the OSU Transplant database.

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