2019 Annual Meeting Syllabus
Mastering Perioperative Pain Management

September 7-8, 2019
Potawatomi Hotel • Milwaukee, WI

Program Co-Chairs: Alaa Abd-Elsayed, MD, MPH & Peggy Kim, MD, MS, MBA

Up to 13.75 AMA PRA Category 1 Credits™ and 5.5 ABA MOCA 2.0™ Credits.

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GOALS & OBJECTIVES
After attending this program you should be able to:
• Discuss common usages and indications for medical marijuana and/or CBD oil, as well as the medicolegal issues and anesthetic/perioperative implications associated with use of these substances.
• Appreciate opportunities for utilizing different infusions for pain in the perioperative setting.
• Develop strategies and/or protocols for improving pain management in adult and child ICU settings.
• Articulate opportunities for implementing value-added services to their institution/hospital such as ERAS, chronic pain clinic, and acute/regional/inpatient pain services.
• Demonstrate anatomical placement and understand the use of ultrasound guidance for common regional/chronic pain blocks and/or point of care uses.
• Identify important current medicolegal issues facing anesthesiologists.
• Describe ways and strategies to improve preoperative patient care.
• Recognize the warning signs of physician burnout and suicidality and discuss ways to mitigate these risks and improve physician wellness.
• Develop individualized pain treatment plans, including nonpharmacologic and/or pharmacologic (non-opioid and opioid analgesics) as appropriate.

TARGET AUDIENCE
This program is designed for physicians or other practitioners in the field of anesthesia with an emphasis on current practice trends within the field of anesthesia.

OVERALL GOAL STATEMENT
The goal of this program is to provide informational and practical information on various developments within the field of anesthesia.

FACULTY DISCLOSURES
The following disclosure information below is provided to learners and contains the relevant financial relationships that individuals in a position to control the content disclosed to Amedco. All of these relationships were treated as a conflict of interest, and have been resolved.

* No Financial Relationship to Disclose
Al Abd-Elsayed, MD
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*Noreen Murphy, MD
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*Braeden O’Neill, MD
*Doris Ockert, MD
*Keth Pride, MD
*Jagan Ramamoorthy, MD
*Michael Ries, MD
*Gabriel Rodriguez, MD
*Richard Rosenquist, MD
*Natalie Schmitz, PharmD, MPA
*Kritha Schroeder, MD
*John Shepler, MD
*Justin Tawil, MD
*Luis Telles-Hernandez, MD
*Elizabeth Wilson, MD
*Christopher Yopp, MD
*Igor Zhukov, MD

Save the Date
WSA Member Luncheon at ASA
Saturday, October 19, 2019
12:00 – 1:00pm
Hyatt Regency Orlando, Manatee Spring I/II
Sign up at the registration desk or e-mail info@thewsa.org!
Saturday, September 7, 2019

6:00 – 7:00am: Registration and Continental Breakfast
Foyer

7:15 – 7:30am: Welcome
Serenity
Alaa Abd-Elsayed, MD, MPH; Peggy Kim, MD, MS, MBA

7:30 – 9:00am: Marijuana and CBD Oil Panel Discussion
Serenity
Maxim Eckmann, MD; Natalie Schmitz, PharmD, MPA; Guy DuBeau, JD

9:00 – 9:30am: Break with Exhibitors & Abstract Posters
Foyer & Clarity

9:30 – 10:30am: Pain Infusions in the Perioperative Setting
Serenity
Kristin Bevil, MD

10:30 – 11:30am: Challenges and Strategies for Managing Pain in ICU Settings Panel Discussion
Serenity
- SICU – Jagan Ramamoorthy, MD
- NICU – Timothy Casias, MD
- PICU – Timothy Casias, MD

11:30am – 12:00pm: Legislative Update
Serenity

12:00 – 12:30pm: Annual Business Meeting
Serenity
James Nicholson, MD, President, WSA

12:30 – 1:30pm: Luncheon & ASA Update
Woodland Ballroom
Michael Champeau, MD, FASA, Treasurer, American Society of Anesthesiologists

1:30 – 2:30pm: Demonstrating Value Panel Discussion
Serenity
- ERAS – Timothy McCormick, DO
- Establishing a Chronic Pain Clinic – Alaa Abd-Elsayed, MD, MPH
- Establishing an Acute Pain/Regional Anesthesia Service – Kristopher Schroeder, MD
- Establishing an Inpatient Pain Service – Kristopher Schroeder, MD

2:30 – 3:00pm: Break with Exhibitors & Abstract Posters
Foyer & Clarity

3:00 – 4:00pm: Q&A with WSA Legal Counsel
Serenity
Guy DuBeau, JD

3:00 – 4:30pm: Concurrent Workshops Pre-Registration Required
Prosperity
- Ultrasound-Guided Regional Anesthesia Workshop – Kristopher Schroeder, MD; John Shepler, MD; Lisa Klesius, MD; Jocelyn Blake, MD; Kristin Bevil, MD; Elizabeth Wilson, MD
- Point-of-Care Ultrasound Workshop – Jagan Ramamoorthy, MD; Christopher Cassara, MD; Jonathan Kay, MD; Doris Ockert, MD; Justin Tavill, MD; Noreen Murphy, MD; Igor Zhukov, MD
- Chronic Pain Ultrasound Workshop – Alaa Abd-Elsayed, MD, MPH; Peggy Kim, MD, MS, MBA; Keth Pride, MD; Christopher Yopp, MD

5:00 – 6:00pm: Cocktail Reception with Hors D’Oeuvres
Serenity Patio & Foyer

6:10pm: Milwaukee Brewers vs. Chicago Cubs Game
Ticket Required. Departure from Potawatomi Hotel at approximately 5:00pm.

Sunday, September 8, 2019

6:00 – 7:00am: Continental Breakfast with Best of MARC Presentations
Serenity
- Rapid Care and Management of Anaphylaxis in OR – Gabriel Rodriguez, BS, MD
- Anesthetic Considerations for Cesarean Delivery in a Patient with Pulmonary Hypertension – Julie Harvey, MD
- Thinking Extracorporeally: VV ECMO - Dustin Hang, MD
- Airway Management of a Neonate with Pierre Robin Sequence and Stickler Syndrome - Luis Telles-Hernandez, MD
- A Jaw-Dropping Reflex - Braeden O’Weil, DO
- Neuraxial Analgesia in the ICU Complicated by Epidural Hematoma and Paraplegia - Michael Ries, MD

7:00 – 8:30am: Resident Forum/Panel Discussion
Serenity
- Chronic Pain – Igor Zhukov, MD
- Cardiac Anesthesia – John Shepler, MD
- Acute Pain/Regional Anesthesia – Bridget Muldowney, MD
- Pediatric Anesthesia – Jagan Ramamoorthy, MD

8:00 – 9:00am: Health Maintenance for the Healthcare Provider
Serenity
Aimee Becker, MD; Bridget Muldowney, MD

9:00 – 9:30am: Break with Coffee
Foyer

9:30am – 12:30pm: ASA Pain: Anesthesiologists’ Tailored Approach to Patient Safety Considerations When Using Opioid Analgesics
Serenity
Alaa Abd-Elsayed, MD, MPH; Maxim Eckmann, MD, MPH; Maxim Eckmann, MD; Samer Narouze, MD, PhD; Richard Rosenquist, MD

12:30 – 12:45pm: Abstract Poster Awards
Serenity
- Best Case Report
- 1st, 2nd, 3rd Place for Original Investigations/QI Projects

12:45 – 1:00pm: Closing Remarks and Door Prize
Serenity
Alaa Abd-Elsayed, MD, MPH; Peggy Kim, MD, MS, MBA

1:00pm: Adjourn
Invited Faculty

Alaa Abd-Elsayed, MD, MPH
2019 Annual Meeting Co-Chair
University of Wisconsin, Madison

Aimee Becker, MD
University of Wisconsin, Madison

Kristin Bevil, MD
University of Wisconsin, Madison

Jocelyn Blake, MD
University of Wisconsin, Madison

Timothy Casias, MD
University of Wisconsin, Madison

Christopher Cassara, MD
University of Wisconsin, Madison

Michael Champeau, MD, FASA
Treasurer, American Society of Anesthesiologists
Associated Anesthesiologists Medical Group

Guy DuBeau, JD
Legal Counsel, WSA

Maxim Eckmann, MD
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Dustin Hang, MD
Medical College of Wisconsin

Julie Harvey, MD
Medical College of Wisconsin

Jonathan Kay, MD
University of Wisconsin, Madison

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Keth Pride, MD
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Jagan Ramamoorthy, MD
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Michael Ries, MD
University of Wisconsin, Madison

Gabriel Rodriguez, BS, MD
Medical College of Wisconsin

Richard Rosenquist, MD
Cleveland Clinic, Cleveland

Natalie Schmitz, PharmD, MPA
University of Wisconsin, Madison

Kristopher Schroeder, MD
University of Wisconsin, Madison

John Shepler, MD
University of Wisconsin, Madison

Justin Tawil, MD
Medical College of Wisconsin

Luis Telles-Hernandez, MD
Medical College of Wisconsin

Elizabeth Wilson, MD
University of Wisconsin, Madison

Christopher Yopp, MD
Medical College of Wisconsin

Igor Zhukov, MD
University of Wisconsin, Madison

Save the Dates

2020 Annual Meeting
September 12-13, 2020
The American Club | Kohler, Wisconsin

2021 Annual Meeting
September 11-12, 2021
Radisson La Crosse | La Crosse, Wisconsin
Thank you Exhibitors

Hotel Map

WiFi Password: blackjack
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**Best Case Report Award**
*1st Place Original Investigations/QI Projects Award*
**2nd Place Original Investigations/QI Projects Award**
***3rd Place Original Investigations/QI Projects Award***

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Video Laryngoscopy Assisting Anesthesiologist in Diagnosing Undiagnosed Conditions

Presenting Author: Kyle Behrens, BS, Chicago Medical School at Rosalind Franklin University School of Medicine and Science

Co-Author: Richard E. Galgon, MD, MS, University of Wisconsin School of Medicine and Public Health

Introduction: Video laryngoscopy (VL) has become readily available in clinical anesthesia practice, affording a number of benefits, including the ability to provide clear views of the vocal cords and glottic structures. During VL-facilitated tracheal intubation, anesthesiologists have the opportunity to screen the upper airway and glottic structures for abnormalities, contributing more broadly to the overall patient. We report a case where a vallecular cyst/polyp was found while utilizing VL during intubation.

Case Description: A 53 year-old woman with a thyroid nodule was brought to the operating room for a thyroid isthmusectomy that was thought to be causing her chronic cough and hoarseness. During VL-facilitated tracheal intubation, the patient was found to have an abnormality (Figure 1) in her vallecular region, which encroached on the glottis, but did not prevent intubation. The abnormality was captured using the screen shot function of the VL, and later downloaded for viewing and incorporation into her medical records. This was discussed with the surgeon, who referred the patient to otolaryngology for further evaluation. Of note, pre-operative imaging (chest CT and neck ultrasound) only demonstrated the patient’s thyroid nodule. The otolaryngologist diagnosed the patient with a benign vallecular mucous retention cyst, and provided voice therapy. At further follow-up, the patient’s symptoms of coughing and hoarseness improved.

Discussion: This case demonstrates the opportunity for anesthesiologists to broaden patient care with the use of advanced medical technology. VL has previous been noted to be of pronounced benefit to airway management in the perioperative setting, and recently the idea of utilizing its features to identify undiagnosed vocal cord lesions has been noted.1-4 This case illustrates and further emphasizes the expansion of VL’s diagnostic ability to facilitate the diagnosis of previously undiagnosed abnormalities of the periglottic structures. A device with screen capture capability is important for facilitating referral care.

Comparison of Use of a Shortened air-Q® Self-Pressurizing Intubating Laryngeal Airway versus the Williams Intubating Airway for Single-Operator Flexible Bronchoscopic Intubation: A Randomized Trial

Presenting Author: Kyle Behrens, BS, Chicago Medical School at Rosalind Franklin University of Medicine and Science, Chicago, IL

Co-Authors: Joshua Fast, MD, Kristopher M. Schroeder, MD, and Richard E. Galgon, MD, MS, University of Wisconsin School of Medicine and Public Health, Madison, WI

Introduction: Despite the introduction of videolaryngoscopes, flexible bronchoscopic intubation (FBI) remains a critical method for achieving tracheal intubation in patients with difficult airways.1 Unfortunately, FBI often requires two operators for success.2 The air-Q SP is a supraglottic airway device (SGA), that when used as an intubation conduit, can enable FBI by a single operator. However, this potential performance advantage has not yet been tested. Therefore, the purpose of this study is to compare use of a shortened air-Q SP (AQ) against the Williams Intubating Airway (WIA) for enabling FBI performed by a single operator.

Methods: After IRB approval and written informed consent, subjects presenting for elective surgery under general anesthesia with orotracheal intubation for airway maintenance were randomized to receive an AQ or WIA as a conduit for FBI. Subjects at increased risk for aspiration or poor SGA were excluded. After general anesthesia induction and adequate paralysis, the assigned study device was placed per routine clinical practice. Once in place, a flexible bronchoscope was passed to the end of the conduit, where the glottic view was graded (i.e., complete obstruction, partial obstruction, or clear). Regardless of the view, an FBI attempt was made. If needed, an airway maneuver (e.g., jaw thrust) by a second operator was employed. The primary study endpoint was single-operator FBI success. Secondary endpoints included conduit placement time and success, glottic view, overall intubation time, ease of tracheal tube advancement, and oropharyngeal injury and complaints.

Results: Thirty-two and 28 subjects were randomized to the AQ and WIA groups, respectively. Baseline characteristics (age, gender, height, weight, ASA physical status, and Mallampati score) were similar between the study groups. All subjects were intubated successfully per the study protocol. A single-operator FBI was achieved in 78% and 7% of subjects in the AQ and WIA study groups, respectively (p < 0.0001). Conduit placement time was slightly shorter for the WIA versus the AQ (4.3±2.4 vs. 6.9±3.5 sec; p < 0.0013), while a second placement attempt was required for one subject in the AQ group (100% vs. 97%; p > 0.9999). The AQ provided a view of the vocal cords more frequently than the WIA (75% vs 3%; p < 0.0001), while the overall times required for intubation through the assigned conduit and sore throat rates were similar (Intubation Time: 61.7±28.9 (WIA) vs 62.6±37.9 (AQ) sec; p = 0.9177; Sore Throat: 39% (WIA) vs 44% (AQ); p = 0.7964), while tracheal tube advancement was graded easy more often through the WIA versus the AQ (93% vs 72%; p = 0.0479).

Conclusions: Compared to the WIA, use of a shortened air-Q SP affords an improved glottic view and enables single-operator FBI.

Transnasal Sphenopalentine Ganglion Block For Postdural Puncture Headache in a Thrombocytopenic Patient with T-All

Presenting Author: Matthew Connolly, MD, University of Wisconsin Madison

Co-Author: John Shepler, MD, University of Wisconsin Madison

Background/Introduction: Postdural puncture headache (PDPH) is a well-known complication of neuraxial anesthesia and related procedures with variable incidence (<2%-70%) due to needle type, operator experience and technique. Definitive treatment for PDPH is the epidural blood patch (EBP) with a reported 75% efficacy [1]. However, it is an invasive procedure with similar risks as other neuraxial procedures including bleeding, infection, recurrent postdural puncture and pain [1]. Sphenopalantine ganglion (SPG) blocks have become increasingly popular since its first reported use in 1908. Although they have traditionally been employed for the treatment of chronic headaches, trigeminal neuralgia and temporomandibular joint disorders [2], their use has been broadened to treat PDPH in the fields of obstetrics, emergency medicine and anesthesiology [1,3,4]. SPG stimulation causes cerebral vasodilation of dural blood vessels via release of acetylcholine, vasoactive intestinal peptide and nitrous oxide, leading to increased cerebral blood (CBF) [5]. Inhibition of this pathway using a minimally invasive transnasal SPG block decreases dural CBF, ultimately relieving the patient’s pain [2].

Methods: IRB approval was waived for the study. Patient informed consent was obtained for submission of a case report. Pain level was assessed using the Verbal Numeric Rating Scale.

Case Report: A 19 year old male with a history of T-cell acute lymphoblastic leukemia (T-ALL) receiving intrathecal chemotherapy who presented to the ED with intractable headaches along with nausea, vomiting and low-grade fever 3 days following an uncomplicated, successful lumbar puncture. The headache was described as a severe, pounding headache, 8/10 without movement, 10/10 with movement. Conservative treatment with diphenhydramine, prochlorperazine, ketorolac and oxycodone yielded no changes in symptoms. There was mild improvement with lying flat, prompting consultation to the Pain Service for evaluation of an EBP for presumed PDPH. EBP was deferred given patient’s platelet count of 49. An SPG block was offered for pain relief while being admitted for further work-up. Cotton-tipped applicators with 5% lidocaine ointment were placed in bilateral nares until resistance was achieved at the posterior sinuses with confirmatory post-nasal sensory changes. The patient remained supine for 25 minutes until applicators were removed. Pre-procedure pain scores were noted to be 8/10 with immediate improvement to 3/10. The patient experienced a restful night for 10 hours until his pain returned to 8/10. His hospital course was significant for improvement in thrombocytopenia allowing for repeat LP, negative infectious work-up and gradual improvement of his headache over the next 72 hours.

Discussion: The above case presents a further example of the successful use of SPG block using the transnasal approach as a quick and safe alternative to an epidural blood patch for treatment of PDPH in a patient with thrombocytopenia. The patient received immediate relief of his headache for approximately 10 hours. Although there was concern the patient’s headache was due to meningitis, his infectious workup was negative. It is likely repeated SPG would have provided sustained pain relief given the patient’s initial response and based off other case reports. Further inquiry is warranted to determine optimal technique and pharmacologic agents to improve SPG block efficacy [1, 5].
References:
Radio Frequency Ablation for the Treatment of Refractory Occipital Neuralgia: A Case Report

Presenting Author: Michael Gyorfi, M4, UWSMPH

Co-Authors: Alaa Abd-Elsayed, MD, MPH: Medical Director, UW Health Pain Services, Medical Director, UW Pain Clinic, Section Head, Chronic Pain Medicine, Department of Anesthesiology

Background/Introduction: Occipital neuralgia is described as a paroxysmal stabbing or shooting pain in the posterior scalp that causes a headache sensation in the lesser, greater, and/or third occipital distributions. The pathophysiology of occipital neuralgia is uncertain. The most accepted hypothesis is a chronic entrapment of the occipital nerves by the posterior neck and scalp muscles. Occipital neuralgia develops spontaneously in most cases. The incidence and prevalence of occipital neuralgia are conflicting; this stems from a lack of consensus regarding the diagnostic criteria for occipital neuralgia. Current treatment strategies are widely variable in their effectiveness and often escalate overtime. Conservative management often consists of heat/cold packs, carbamazepine, pregabalin, and baclofen. Local occipital nerve block is often needed and provides a therapeutic as well as a diagnostic benefit. After conservative management has failed there is no clear next step. There are reports of botulinum toxin type A injections, and surgical decompression without a definitive conclusion of their efficacy. Our case report is of a 49-year-old female with refractory right sided occipital neuralgia who saw great benefit from a novel treatment modality: radio frequency ablation. Our patient’s history is also notable for trigeminal neuralgia, glossopharyngeal neuralgia, myofascial pain syndrome, and depression with anxiety. She had failed conservative treatment for her occipital neuralgia while taking Gabapentin, Norco, baclofen, escitalopram, and lorazepam prior to the radio frequency ablation.

Methods: Our patient was first trialed on conservative management for her various ailments which did not provide any meaningful relief for her occipital neuralgia. We discussed the pros and cons of the different treatment modalities and decided together to proceed with a therapeutic and possibly diagnostic occipital nerve block. She had significant pain improvement and elected to repeat the block once the pain returned. Once the pain returned again, we proceeded with an occipital nerve radiofrequency ablation. The right occipital artery was palpated at the level of the superior nuchal ridge and prepped. A radio frequency insulated needle was inserted just medial to the artery and advanced perpendicular to the periosteum of the underlying occipital bone. Then the needle was redirected superiorly to target the greater occipital nerve. Lesser occipital nerve was covered by placing a needle laterally and inferiorly. Following the placement of the needle, sensory stimulation was done to confirm the location before radio frequency ablation was carried out in lesion mode. The patient then followed up on a 3-6-month basis for her various conditions.

Results: The patients right occipital neuralgia pain flares were described as a 9 out of 10 while on conservative treatment. After the first greater and lesser occipital nerve block done on 11/26/2014 an improvement of 40% was reported for 2 months. Once the pain returned another greater and lesser occipital nerve block was performed on 2/4/15; this time yielding a 60% improvement for 2 months. On 7/1/2015 radio frequency ablation was performed on the right greater and lesser occipital nerve yielding a 70% improvement. On routine follow-up she reports continued 70% improvement from her baseline making her occipital neuralgia "much more tolerable" and stable for nearly four years.

Conclusion: In conclusion, occipital neuralgia is a progressive cause of posterior headaches that is not easily treated with conservative management. Although there are several potential treatment modalities for refractory cases, they lack support and reliability in their current studies. Radio frequency ablation is a promising treatment option that needs to be thoroughly trialed to establish its role in treating refractory occipital neuralgia.
Lidocaine Infusions for Lower Extremity Cramping for Hypercalcemia

Presenting Author: Manuchehr Habibi, MD

Co-Authors: Ratan K. Banik, MD, PhD; Peggy Y. Kim, MD, MS, MBA

Case Description: A 47-year-old woman with a history of poorly-controlled type-1 diabetes mellitus, fibromyalgia, and PTH-dependent hypercalcemia presented with bilateral lower extremity cramping and bone pain. The PTH was abnormal with a slightly elevated calcium level. She had tried NSAIDs, muscle relaxants, duloxetine, and lidocaine patches without symptom improvement, while amitriptyline, and gabapentin were slightly helpful. Tizanidine led to modest pain control at high doses only. Finally, she was started on lidocaine infusions with, consequently, more than 90% improvement in pain. Therefore, lidocaine infusions may be a helpful adjunct for pain control in hypercalcemia, although additional research is needed. (97 words)

Introduction: The effectiveness of lidocaine infusions in chronic pain patients with fibromyalgia\(^1\), diabetic neuropathy\(^2\) and other neuropathic pains has been previously demonstrated, but the utility of lidocaine infusions in lower extremity pain secondary to hypercalcemia has not been explored. This case will discuss another potential utility of lidocaine infusions in a patient with hypercalcemia-related lower extremity cramping/burning pain. Muscle cramping pain is a known manifestation in patients with hypercalcemia.\(^3\) A purported mechanism of action of lidocaine infusion is thought to be an inhibitory effect on voltage-gated Na\(^+\) channels as well as NMDA receptors and indirectly increasing endogenous opioids via muscarinic antagonism.\(^4\)

Case background: A 47-year-old woman with a history of poorly-controlled insulin-depended diabetes mellitus, fibromyalgia, PTH-dependent hypercalcemia presented with long standing (since 09/2016), 8/10, bilateral lower extremity cramping and “bone pain” from her bilateral groins down to her calves with dermal hypersensitivity to pressure but no allodynia. She had an extensive negative workup for tib-fib fractures, DVT, rhabdomyolysis, spinal cord impingement, vitamin B12 deficiency, multiple myeloma, HIV and Hep B and C. Her PTH was normal at 39 pg/mL but with a calcium level of 11 mg/dL. Her HgbA1c was 13.3% in Sep, 2016 and 7.3% in March, 2017. She had tried NSAIDs, cyclobenzaprine 30 mg QD, duloxetine 20 mg QD, and lidocaine patches without symptom improvement, while amitriptyline 50 mg QD, and gabapentin 3600 mg/day, and daily epsom salt baths and heating blankets were slightly helpful. Tizanidine led to modest pain control at high doses (4-6 mg Q6 hrs) only. Finally, she was started on lidocaine infusions 400 mg with partial relief for two days. The second trial of a higher dose of 650 mg provided more than 90% improvement in pain that lasted at least a week.

Conclusions: The presence of both fibromyalgia and diabetes in this patient brings an extra challenge to tease out the culprit of the patient’s symptoms. Our suspicion for diabetic neuropathy as the main cause of this pain was low as this patient did not present with a typical stocking and glove pattern and did not have any sensory deficits. It is possible that the underlying fibromyalgia had been causing/exacerbating her symptoms, though she reported her pain as focal and crampy in her bilateral calves (instead of widespread, and did not affect the feet). Her pain was much improved with lidocaine infusions, but it is difficult to know the exact etiology without further studies. In conclusion, lidocaine infusions could be a potential useful symptomatic treatment of lower extremity pain due to hypercalcemia, however more research needs to be done to exclude confounding disorders such as fibromyalgia and diabetic neuropathy.
Radiofrequency Ablation for Treating Headache Related Pericranial Neuralgia

Presenting Author: Ian Roche, MD PGY4 University of Wisconsin Hospital and Clinics

Co-Authors: Sean Nguyen, Kenneth Fiala, Dr. Alaa Abd-Elsayed

Background: Pericranial neuralgias are painful and often longstanding disorders that can result in headache. Commonly chronic and daily, the related headaches can be debilitating and difficult to treat. First-line pharmacologic monotherapy must be taken chronically and often is unable to achieve satisfactory levels of pain management. Surgical intervention can achieve headache cessation but also carry an increased cost and risk profile. Here, we evaluate the efficacy and safety of radiofrequency ablation (RFA) as a treatment for patients with pericranial neuralgia and associated headache conditions.

Objective/Hypothesis: RFA is an effective method for treating headache conditions associated with pericranial neuralgia measured by reduction in pain scores, headache-related emergency room (ER) visits, and percent improvement in headache condition.

Methods: This is a retrospective analysis which includes patients who received RFA of pericranial nerves to treat headache conditions relating to pericranial neuralgias from January 1, 2015 to January 31, 2018. Outcomes were patient-reported percent improvement in headache condition (including pain, severity, duration, frequency, and associated symptoms), pain relief duration in days, pain scores as measured on a visual analog scale (0-10), and number of headache-related ER visits pre- and post-RFA procedure.

Results: Of the 214 RFAs with reported follow up, 89.3% of RFAs resulted in a numeric or descriptive improvement in headache condition after procedure. RFA of pericranial nerves resulted in a patient-reported numeric headache improvement of 62.6% ± 33.7 (n=165, range 0-100). In addition, RFA resulted in an average duration relief of 182.8 days ± 154.5 days (n=152, range 0-730 days). Pain scores decreased from 5.69 ± 2.23 pre-procedure to 2.86 ± 2.29 post-procedure (n=207, P<0.001) and ER visits decreased from 4.20 ± 1.70 pre-procedure to 1.81 ± 0.47 post-procedure (n=244, P<0.001).

Conclusion: Our study finds RFA is a safe and effective treatment for patients with headache conditions associated with pericranial neuralgias. RFA may be a promising alternative for providing long lasting symptomatic and pain relief through a minimally invasive procedure.

References:
Evaluating the Efficacy of Checking the PDMP in Wisconsin on Reducing Opioid Prescriptions

Presenting Author: Christopher Schalow, MD, University of Wisconsin Hospitals and Clinics

Co-Authors: Larry Manders, MD; Alaa Abd-Elsayed, MD, MPH, University of Wisconsin-Madison

Objective: To determine whether mandatory prescriber review of a prescription drug monitoring program prior to each issuance of a controlled substance resulted in a reduction in the total number of controlled substance prescriptions dispensed.

Design: A retrospective review of the State of Wisconsin’s prescription drug monitoring program (PDMP) controlled substance database from April 2015 to March 2019 was performed. The evaluation compared the number of prescriptions among individual drug classes (opioids, benzodiazepines, stimulants) dispensed throughout the state both before and after April 1st, 2017, when implementation of a state law mandating the review of the PDMP during each patient encounter prior to issuing a prescription for a controlled substance took effect.

Results: Prior to the enforcement of the state’s mandatory PDMP legislation, an average of 844,314 controlled substance prescriptions were written monthly. Following the implementation of the law, the average monthly total prescriptions written within the state decreased to 708,063. This was an average monthly reduction of 136,251 prescriptions written or 16.1%. Statistically significant reductions were also seen in opioid and benzodiazepine subgroups (23.0%, 16.3%).

Conclusion: Our study suggests that state-enforced mandatory usage of a prescription drug monitoring program at every encounter prior to prescribing any controlled substance can provide for a significant reduction in controlled substance prescriptions, specifically opioids and benzodiazepines.
Creating a New PGY-1 Anesthesia Curriculum to Improve Knowledge, Wellness, and Engagement While Off-Service

Presenting Author: Michael Trawicki MD, University of Wisconsin School of Medicine and Public Health

Background/Introduction: Anesthesiology residents spend much of the PGY-1 year on other services such as medicine, surgery, and emergency medicine. With the exception of Intensive Care and one Anesthesia month, interns have little connection to the department, faculty, residents, and facilities except for infrequent social gatherings. Given the propensity for anesthesiology residents to report high levels of burnout, fatigue, and lack of wellness during training, a new curriculum was developed requiring one ½ day per month of relief from service obligations to participate in an Anesthesiology department educational, wellness, or team-building event. The intention is to produce a residency class that is increasingly tight-knit, improving work environment and social support.

Methods: This is a quality improvement project within the Department of Anesthesiology at the University of Wisconsin School of Medicine and Public Health. A four hour curriculum on nine days during the 2019-2020 academic year has been developed. The initial session will involve a group luncheon, followed by a low-ropes team-building course. Subsequent sessions will involve a “meet the residents,” “meet the faculty,” and “meet the anesthetists” lunch before the education session. Group discussions, small-group sessions with chief residents, and time for additional wellness activities will be intermittently scheduled during these sessions. Journal clubs, problem-based learning, mannequin-based simulation, and other workshops will be utilized for the academic goals in this multi-modal curriculum. The December session is reserved for revisiting wellness and teambuilding, as well as a mid-year feedback session regarding the curriculum.

Results: The new curriculum has been designed, faculty and senior residents recruited, and is ready for execution beginning in July 2019. Surveys will be distributed before the curriculum begins and at the end of the year to evaluate the program. Time is being allocated mid-year to have a feedback session regarding the curriculum to make adjustments for the second half of the academic year. Initial survey data will be available for WSA 2019.

Conclusion: With increasing awareness of fatigue and burnout among anesthesiology residents, especially while off-service, an engaging curriculum of educational, wellness, and team-building activities has been created for the 2019-2020 academic year.

Atypical Presentation of Cardiac Tamponade in a Postoperative CABG Patient

Presenting Author: Mark Wandzel DO

Co-Authors: Sylvia Dolinski MD FCCP, Rom Stevens MD FCCP, Medical College of Wisconsin

Introduction: Cardiac tamponade is a rapidly fatal complication seen after open-heart surgery making timely diagnosis and intervention essential. Echocardiography is the first-line imaging technique to diagnose and evaluate all pericardial disease etiologies that may lead to cardiac tamponade. In postoperative open-heart patients, cardiac tamponade is often the result of loculated pericardial effusions or blood clots that compress only select chambers creating a regional tamponade. In contrast to “classical” tamponade, which is the result of circumferential pericardial effusions leading to global chamber compression, the typical physical exam, hemodynamic, and echocardiographic findings are often absent in regional tamponade.

Case Presentation: A 75-year-old man, with a past medical history significant for hypertension and coronary artery disease, underwent cystoscopy after which he developed chest pain and had an elevated troponin level. Cardiac catheterization demonstrated >95% occlusion of the left main coronary artery. He was taken to the operating room for an urgent three-vessel CABG. Intra-operative events were notable for cardiac arrest on induction requiring CPR and an emergent sternotomy, and profound hypotension during emergence from bypass after a three-vessel graft surgery. After resumption of bypass, three additional arterial grafts were placed. Postoperatively, the patient was admitted to the CVICU on numerous inotropic and vasopressor support, an intra-aortic balloon pump, as well as inhaled nitric oxide. The next day, the patient remained hemodynamically unstable, with worsening lactic acidosis, liver enzymes, and creatinine. A coagulopathy required multiple transfusions. Mixed cardiogenic and vasoplegic shock was suspected. Transthoracic echo was unhelpful due to postsurgical chest changes and subcutaneous emphysema. Transesophageal echo by a cardiologist was deemed negative for cardiac tamponade. Concern for ischemic bowel lead to an exploratory laparotomy which too was unrevealing. Further chest exploration showed a “large” blood clot compressing the right and left ventricles. Upon clot evacuation, blood pressure and cardiac index (from <2 to >3) immediately improved. The culprit bleeding mammary artery was controlled. The patient was readmitted to the CVICU without vasopressor support and decreased inotropic requirements.

Discussion: Echocardiography remains the gold standard for diagnosis and evaluation of cardiac tamponade. However, echocardiography may be less reliable in postoperative open-heart surgery patients who have a propensity for regional tamponade as well as post-surgical chest wall changes that can reduce visibility. Additionally, typical signs of cardiac tamponade may be confounded by cardiogenic and vasoplegic shock, in these patients.

References:
Case Presentation: Homeopathy or Allopathy for Neuropathy? Evidence for Nerve Stimulators in the Treatment of Peripheral Neuralgia

Presenting Author: Lin Zhao MD

Co-Authors: Michael Ries MD, Alaa Abd-Elsayed MD MPH (faculty mentor)

Background/Introduction: The use of peripheral nerve stimulator (PNS) for chronic peripheral pain has been documented as early as 1967 when Wall and Sweet reported eight cases using PNS to reduce chronic peripheral pain [1]. Fifty years later peripheral nerve stimulation is still viewed as a last resort for chronic peripheral nerve pain. Today technological advancements allow for less invasive placement procedures and less noticeable stimulation, making implantation less morbid and more accessible [2]. Here we document the safe and effective use of PNS for a patient with refractory sural neuralgia.

Case Presentation: Our patient presented with a history of right cuboid fracture due to motor vehicle accident status post arthrodesis 10 years ago. Recovery was uncomplicated for seven years postoperatively until she started to experience pain and swelling at the prior surgical site. She subsequently underwent hardware removal for pain alleviation but her pain worsened thereafter with features consistent with sural neuropathic pain. Conservative management with therapy and medication failed therefore chronic pain management was consulted.

Methods: Three sural nerve block trials with 2ml of 0.25% bupivacaine and 40mg of triamcinolone acetonide were effective however duration was short lasting. A decision was made to try PNS to provide longer term relief. Patient underwent psychiatric evaluation and a PNS trial which provided more than 50% improvement in pain. Patient subsequently received a permanent PNS implant. Stimulator lead was placed between the lateral malleolus and achilles tendon, where the sural nerve is located, under fluoroscopic guidance and stimulation was provided using an external antenna and generator. Device was programmed to deliver high frequency stimulation.

Results: One month status post nerve stimulator implantation patient reported considerable improvement in her symptoms, an increased ability to resume long hours of heavy work load, and an ability to decrease her dose of neuropathic medications to half. At one year follow up, patient continued to report the same improvement.

Conclusion: PNS has been approved by FDA for pain relieve. We report here a case of significantly improved refractory chronic peripheral neuropathic pain with the use of PNS. Early pain referral with appropriate pain treatment can improve quality of life and avoid side effect of pain medication especially opioid. Further clinical trials and data analysis on PNS is worth investigation to determine if early PNS implantation could benefit patients and reduce overall pain treatment cost.

References:
Opioid Abuse Epidemic: Contrasting Publication Trends in Popular and Scientific Literature for Public Education

Presenting Author: Lin Zhao, MD
Co-Author: Kristopher M Schroeder, MD

Background: Public consciousness of the health crises related to opioid abuse and misuse has been notably increased in recent years. This can be directly traced to startling statistics that demonstrated dramatic increases in opioid related use and fatalities. The CDC and NIH have made raising public awareness of opioid overdose epidemic an issue of great importance and hope that through education, opioid related harm may be decreased. What is unclear is the role that the popular press versus scientific literature plays in recognizing and relaying these dangers to the general public. In an effort to understand publication trends related to opioid abuse, this study aimed to compare and contrast publication trends in the popular press and scientific literature.

Methods: This study did not involve the collection of patient data and therefore no IRB approval was obtained. Publication data from 2013 - 2018 was collected from Pubmed and Texture (an app with access to over 200 magazines). Popularity on Google Trends was also evaluated as an indicator for public awareness. Search terms included opioid epidemic, opioid crisis, and opioid overdose.

Results: An evaluation of the graphical data reveals that the number of publications focusing on the studied search terms on Pubmed significantly increased in 2016. There continued to be an exponential increase in 2017 and 2018. The number of publications in magazines increased in 2016 and 2017 but plateaued or slightly decreased in 2018. The search popularity on Google Trends was virtually non-existent prior to 2016, increased from 2016 through 2017, then the increase slowed down in 2018.

Conclusion: We observed a strong correlation between the timing and increased coverage of opioid related search terms in the scientific literature and popular magazines. Of note, these increases appear to have occurred simultaneously and it is unclear if interest in one publication format stimulated an increased interest in others. Further data analysis of cause and effect is warranted, but we feel strongly that this is a beneficial area for future research. For example, evaluation of Google Trends data may provide a mechanism to evaluate what topics are of greatest importance to our patients. Our aim for the next study is to identify the timeline for scientific findings to reach public awareness and analyze methods for possible acceleration of vital information transfer from early awareness within academia into public consciousness.
Recurrent Anaphylaxis in a Patient Undergoing Redo Aortic Surgery for a Large Pseudoaneurysm: Allergic to the Anesthesiologist?

Presenting Author: Jonathan Kay, MD

Co-Author: Mark Moss, MD

Case Report: A 67 year old man who was 13 years post resection of an ascending aortic aneurysm presented for redo sternotomy to repair a seven centimeter ascending aortic pseudoaneurysm. He reported no known allergies.

First Attempt: Preoperatively he developed itching and a pruritic rash presumed to be from his chlorhexidine skin prep. Anesthesia was induced with midazolam, propofol, and fentanyl, and tracheal intubation was facilitated with rocuronium. Maintenance included sevoflurane. A nine French right internal jugular introducer was placed without difficulty in preparation for floating a pulmonary artery catheter (PAC). Immediately prior to PAC placement the patient became tachycardic and severely hypotensive requiring CPR. Circulation was restored with ephedrine, phenylephrine, epinephrine, and two liters of rapidly administered fluids. He had no bronchospasm, or worsening rash, or elevated airway pressures. Antihistamines and corticosteroids were administered. The patient stabilized rapidly, recovered consciousness, and the trachea was extubated in the operating room. Serum tryptase and histamine levels were obtained. (See Table 1).

Second Attempt: Following consultation with an allergist, a second anesthetic was attempted two weeks later with an aggressive premedication plan. Allergy testing was deferred due to concern that testing in the 4-6 week post-anaphylaxis recovery phase would be inaccurate (1). Furthermore, the risk of rupture of the large pseudoaneurysm was a pressing concern. Rocuronium was suspected to have caused the anaphylactic reaction. He was pretreated with corticosteroids and antihistamines, and betadine was used for the skin prep. Anesthesia was induced with midazolam, fentanyl, and propofol. Twenty minutes after induction severe hypotension occurred which resolved with the administration of ephedrine, phenylephrine, and fluid. No paralytic or antibiotic had been given, and a latex free foley catheter had been inserted. Serum tryptase and histamine levels were drawn and the case aborted. See Table 1. Allergy skin testing was positive to chlorhexidine and propofol and negative to rocuronium, midazolam, and lidocaine. Serum IgE testing was negative for latex.

Third Attempt: Following pretreatment with corticosteroids and antihistamines a pre-induction arterial line was placed and he was induced with dexmedetomidine, etomidate, and methadone. Cisatracurium was used to facilitate intubation. Prior to PAC placement he became significantly hypotensive. Boluses of epinephrine, phenylephrine a rapid volume administration of fluid and an infusion of norepinephrine rapidly restored his circulatory status to normal. Serum tryptase was again significantly elevated (Table 1). Additional allergy testing is pending.

<table>
<thead>
<tr>
<th>Anesthetic</th>
<th>Medications</th>
<th>Tryptase*</th>
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<tbody>
<tr>
<td>1 Day 0</td>
<td>Midazolam, Fentanyl, Propofol, Rocuronium</td>
<td>68.2 mcg/L</td>
</tr>
<tr>
<td>2 Day 17</td>
<td>Midazolam, Alfenta, Ketamine, Propofol, no nmb or antibiotic</td>
<td>25.6 mcg/L</td>
</tr>
<tr>
<td>3 Day 46</td>
<td>Methadone, Cisatracurium, Etomidate, no antibiotic</td>
<td>38.4 mcg/L</td>
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<td></td>
<td>*Tryptase NL &lt; 10.9 mcg/L</td>
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Discussion: This patient had elevated tryptase levels during all three anesthetics suggesting a mast cell mediated allergic reaction. Pretreatment for the second and third anesthetics attenuated but did not prevent the reaction. Anaphylaxis occurs in 1:4,000 to 1:20,000 anesthetics (1). Although the neuromuscular blocking agents are most frequently implicated, antibiotics and a variety of other agents, including propofol and volatile anesthetics (2), are reported to induce anaphylaxis. Allergists suggest waiting four to six weeks following an episode of anaphylaxis to allow full immune recovery thereby reducing the number of false negative tests (3). The exact triggering agent during the third anesthetic remains elusive. Thirty to fifty percent of patients have no definable cause for their anaphylactic reactions (4). Of interest in 2014 Lee reported the successful use of anti-ICE globulin in a patient with a history of six episodes of intraoperative anaphylaxis (5). The only personnel common to all the anesthetics was the faculty anesthesiologist.

References:
Improved Preoperative Functional Assessment to Enhance Resource Allocation, Reduce Health Care Costs, Morbidity and Mortality

Presenting Author: Annie T. Huang, MD, MHA, Medical College of Wisconsin

Co-Author: Christopher J. Roberts, MD, PhD, Medical College of Wisconsin

Background: The health care system needs continued advancements in quality by improving patient outcomes while reducing expenses. One aspect of achieving this goal is refining risk-stratification prior to elective surgery to reduce risks. Accurate assessment of functional capacity is vital as low levels of functional capacity allude to high perioperative complications and mortality. The Duke Activity Status Index (DASI) is a validated, self-administered questionnaire that quantifies functional capacity by predicting metabolic equivalents (METs) of the patient based on the ability to perform specific physical activities. We tested the following hypotheses: 1) the DASI is more accurate at predicting METs than standard clinical interviews; and 2) the DASI could reduce costs or perioperative complications in comparison to traditional MET screening.

Methods: This study was conducted with Institutional Review Board (IRB) approval. DASI questionnaires were collected from 652 patients in a pre-evaluation testing clinic and compared METs assessments between the two to identify discrepancies. Our predefined, primary end point was calculating Number Needed to Treat (NNT) to detect one patient that would get a different screening test (i.e. stress test) if the DASI were used rather than interviews. Patient outcomes were extracted from the Vizient database to identify those with greater than expected length of stay (LOS), costs and morbidity or mortality. To calculate the effect that the DASI could have on annual expenses for our academic medical center, the data from these 652 patients was extrapolated to all patients undergoing surgical procedures (~15,000 patients per year).

Results: Compared to interviews, the DASI questionnaire can identify MET discrepancies (NNT = 9), warrant additional stress testing (NNT = 266), and avoid unnecessary stress tests (NNT = 177). Of the patients with greater than expected LOS there were 7.8% that would have been identified as less than 4 METs using DASI that were missed with interview. Likewise, of the patients with greater than expected hospital costs 7.4% were found to have DASI < 4 METs not identified on interview. Interestingly, of the patients with “above or well above expected morbidity or mortality” there were 17% that had DASI < 4 METs not identified on interview. Based on these findings, our hospital system would save $100,000 from unnecessary stress tests and order an additional 56 stress tests costing $67,000 for a net savings of $33,000 annually without including the cost savings that would be obtained by avoiding complications.

Conclusion: The DASI is an inexpensive clinical tool to assess functional capacity that can be implemented to provide safe, cost effective care. Using the DASI to enhance pre-evaluation testing can more accurately identify patients at increased cardiovascular risk. Assessments with increased sensitivity will lead to better utilization of hospital resources, which decreases morbidity and mortality and ultimately decreases costs. Risk-stratification with increased specificity leads to fewer unnecessary preoperative tests, which decreases healthcare expenditures. The DASI is a valuable tool to integrate into the electronic medical record system with a tangible impact on hospital length of stay and health care costs.

Transversus Abdominis Plane Block as Treatment Modality for Chronic Abdominal Pain

Presenting Author: Susan Luo, BS, University of Wisconsin School of Medicine and Public Health

Co-Authors: Alaa Abd-Elsayed, MD, MPH, University of Wisconsin; Cody Falls, BS, University of Wisconsin School of Medicine and Public Health

Background/Introduction: Chronic abdominal pain can be an especially difficult condition to treat and manage for patients and providers. Few treatment options exist and patients are left with medications that may have limited efficacy, lead to addiction, and present with issues in the future. This study describes the use of transversus abdominis plane (TAP) blocks to treat and manage chronic abdominal pain in patients who have exhausted other treatment options. Typically, this is a procedure prescribed for treating acute abdominal pain following various abdominal surgeries. In this article, we evaluate the use of TAP blocks for longer relief from chronic abdominal pain. The objective of this study is to assess the efficacy of TAP blocks for pain control in patients with chronic abdominal pain. Identifying other treatment modalities could increase the quality of life for patients with chronic abdominal pain, while reducing the risks associated with opioid usage.

Methods: This was a retrospective chart review and data analysis of TAP block procedures performed over a length of five years. We reviewed the charts of 92 patients who had received TAP blocks for their chronic abdominal pain after previous forms of pain management were ineffective. Some patients underwent multiple TAP blocks, with a total of 163 individual procedures identified in this review. Data collected included patient demographics, medications, surgical history, emergency department visits, TAP block procedure details, and improvement following each block. For the majority of blocks, a solution of 0.25% bupivacaine (Marcaine) and triamcinolone (Kenalog) was injected into the TAP. Efficacy of the injection was measured using pain scores before and after the procedure, percent improvement, as well as duration of relief from pain.

Results: TAP blocks were associated with a statistically significant (p-value ≤ 0.05) improvement in abdominal pain scores in 81.9% of procedures performed. Percentage improvement was 50.3% ± 39.0% with an average duration of improvement of 108 days after procedures with ongoing pain relief at time of follow up were removed. There was a statistically significant reduction in ER visits for abdominal pain before and after the procedure (p-value ≤ 0.05).

Conclusion: The role of the TAP block can be extrapolated for treating abdominal pain beyond acute settings. TAP steroid injections can be considered as a treatment option for patients with somatosensory chronic abdominal pain refractory to other forms of pain management.