Dear Reader:

Welcome to our 2014-2015 UNC Department of Anesthesiology Annual Research Report. I hope that this summary gives you a better understanding of the exciting research work being done in the department. Our goal is to serve our patients through discovery, and we have had a very productive year.

The research success summarized in this report is achieved by three main factors. First, we are fortunate to have gathered together an incredible group of faculty and staff in the department. Second, these individuals excel at working together in collaborative, multidisciplinary teams. Research is truly a team sport. The effective collaboration of individuals in each of the projects described in this report accounts for our success, and we are fortunate that our numbers continue to grow. Finally, we have a Chair who fully embraces the mission of the university to reduce suffering and improve outcomes through advances which lead to improved patient health. Dr. Zvara has provided the infrastructure and leadership necessary for transformative research, even during very challenging economic times.

I encourage you to check back often and keep up with our department research activities via http://www.med.unc.edu/anesthesiology/research. Also, if you have any questions regarding our research or work, don't hesitate to email me any time at smclean@aims.unc.edu.

Sincerely,

Samuel McLean, MD, MPH
Vice Chair, Research, Department of Anesthesiology
The University of North Carolina at Chapel Hill
Chapel Hill, NC
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Areas of Departmental Research Focus

1. TRYUMPH Program:
   Trauma Recovery: Understanding Mechanism and Promoting Healing

A. African American CRASH: Applying the Biopsychosocial Model to Post-MVC Pain Development in African Americans (R01AR060852, PI McLean)

The goal of this study is to examine genotypic and phenotypic characteristics associated with the development of pain and related outcomes in African Americans experiencing motor vehicle collision. Patients involved in motor vehicle collision are enrolled via a network of study sites including sites in Michigan, Massachusetts, Pennsylvania, New Jersey, Washington D.C., North Carolina, Alabama, and Florida. This study is supported by the National Institute of Arthritis and Musculoskeletal and Skin Diseases of the National Institutes of Health (R01AR060852), and is enrolling 900 African Americans experiencing motor vehicle collision. Study participants complete a baseline assessment in the ED as well as a follow-up interview 6 weeks, 6 months, and 1 year following the motor vehicle collision. This study completed its 4th year of funding in 2014-2015. An updated listing of abstracts and manuscripts from R01AR060852 is available at: http://www.med.unc.edu/anesthesiology/research/tryumph-research-group-1/tryumph-studies/african-american-project-crash

2014-2015 abstracts and publications related to R01 AR060852 (African American CRASH)


B. European American CRASH: Genetic Predictors of Acute and Chronic Musculoskeletal Pain After Minor MVC  (R01AR056328, PI McLean)
Project CRASH is a prospective cohort study examining genotypic and phenotypic characteristics associated with the development of acute and persistent pain and related outcomes after motor vehicle collision. This study is funded by the National Institute of Arthritis and Musculoskeletal and Skin Diseases. Over 900 patients involved in motor vehicle collision were enrolled in the study at one of nine emergency department study sites in Michigan, Massachusetts, New York, and Florida. Study participants completed a baseline assessment in the ED as well as a follow-up interview 6 weeks, 6 months, and 1 year following the motor vehicle collision. Recruitment and follow-up for this study have been completed. Data analyses and manuscript preparation from this project are ongoing. An updated listing of abstracts and manuscripts from R01AR056328 is available at: http://www.med.unc.edu/anesthesiology/research/tryumph-research-group-1/tryumph-studies/european-american-project-crash

2014-2015 abstracts and publications related to above R01 AR056328


2014-2015 Publications Related to Above Studies

Linnstaedt SD, Hu J, Bortsov AV, Soward AC, Swor RA, Jones JS, Lee DC, Peak DA, Domeier RM, Rathlev NK, Hendry PL, McLean SA. µ-Opioid Receptor Gene A118G Variants and Persistent Pain Symptoms among Men and Women Experiencing Motor Vehicle Collision. Accepted J of Pain


TRYUMPH Research Group, August 2015

Back Row (L to R): Dr. Andrey Bortsov, Johanna Wicker, Joey Duronio, Sean Flannigan, Dr. Sam McLean, Dr. Tim Platts-Mills, Dr. Sarah Linnstaedt

Front Row (L to R): Ben McLean, Natalie Richmond, Sherie Royster, Adeola Keku, Andrea Liu, June Hu, April Soward, Felisha Westbrook

Not Pictured: Sara Battles, Jackie Kostyla, Dr. Matthew Mauck, Bobby Nicholson, Kyle Riker, Ashley Villard, Jackie Kostyla
C. Older Adult CRASH: Persistent Pain in Older Adults after Motor Vehicle Collision (K23 AG038548, PI Platts-Mills)

The Older Adult CRASH study is the first prospective study to examine the incidence, predictors, and etiology of persistent pain among independently living older adults who come to the emergency department for care after motor vehicle collision and are discharged to home. The study enrolls patients 65 and older at eight study sites, and it has enrolled over 100 patients from these eight sites. This project was supported by Dr. Platts-Mills' KL2 career development award funded by the National Center for Research Resources through UNC's Translational and Clinical Sciences Institute. In May of 2013, Dr. Platts-Mills received a K23 career development award from the National Institute on Aging to continue this study and to examine the contributions of fear of movement and PTSD symptoms to the development of persistent pain and functional decline after MVC. An updated listing of abstracts and manuscripts from this project is available at:
http://www.med.unc.edu/anesthesiology/research/tryumph-research-group-1/tryumph-studies/older-adult-project-crash

Related Abstracts 2014-2015


(Presented as an oral presentation at the Society for Academic Emergency Medicine meeting and as a poster at the American Geriatric Society meeting)

(L to R): Dr. Chris Jones, Sean Flannigan, Bobby Nicholson, Dr. Tim Platts-Mills, Katie Hunold

2014-2015 Related Publications

Poise Research Group Spring Dinner, April 2015.
Back (L to R): Sean Flannigan, Wesley Holland, Bobby Nicholson, Dr. Tim Platts-Mills, John Butler
Front (L to R): Meredith Hoover, Natalie Yosipovitch, Erin Isenberg, Sowmya Mangipudi, Tiffany Ho, Collin Burks.
D. The BURN Experiences Study  
(Jaycee Burn Center Foundation, PI McLean)

The BURN Experiences Study is a prospective longitudinal pilot study examining the recovery process after major thermal burn injury. Participants requiring tissue autograft surgery after major thermal burn injury are enrolled at the time of initial admission and followed prospectively for one year. The study is being conducted at a network of burn centers including the Jaycee Burn Center at The University of North Carolina at Chapel Hill, the Nathan Speare Regional Burn Treatment Center at Crozer-Chester Medical Center, and the Burn Center at MedStar Washington Hospital Center. Data collected are being used to demonstrate study feasibility and to collect pilot data for a large-scale trial. An up-to-date listing of abstracts and manuscripts from this project is available at:

http://www.med.unc.edu/anesthesiology/research/tryumph-research-group-1/tryumph-studies/burn-experiences

Related Abstracts 2013-2014

E. The HELP PAIN Trial (Mayday Fund, PI McLean)

The HELP PAIN Trial is an Emergency Department-based randomized controlled trial. The purpose of this first-in-kind study is to assess the potential efficacy of venlafaxine in reducing acute pain and the transition to persistent pain in high-risk patients that present to the Emergency Department following a motor vehicle collision. Patients presenting to the Emergency Department post-MVC with severe musculoskeletal neck pain will be randomized to receive either venlafaxine or placebo. Data from this pilot study is being used to assess study feasibility and to design a large-scale randomized controlled trial.

F. The Women’s Health Study: Influence of PTSD Symptoms on Chronic Pain Development after Sexual Assault (1R01AR064700-01A1, PI McLean)

The Women’s Health Study is a large-scale prospective study of sexual assault survivors. The five-year study will enroll 900 women who present for emergency care after sexual assault and will follow them prospectively for one year. This study will yield important new insights into sexual assault survivor experiences. In addition, the study will evaluate genetic, psychosocial, and environmental factors influencing adverse outcomes after sexual assault including chronic pain and posttraumatic stress disorder. This past year was spent identifying and developing study sites, and beginning our nationwide study launch.
G. OSPREY II: Observational Studies of Pain Medication Response in the Elderly (KL2 RR025746-03, PI Platts-Mills)

OSPREY II is an observational study of the relationship between shared decision making and pain and pain recovery among adults age 65 or older with acute musculoskeletal pain. Results from the first OSPREY study were recently published in the Journal of the American Geriatrics Society. OSPREY II addresses the major limitations of the first study by assessing shared decision making in the first 24 hours after motor vehicle collision using a validated measure. This study has enrolled 30 patients and is now expanding to a second site. An updated listing of abstracts and manuscripts from this project is available at:

http://www.med.unc.edu/anesthesiology/research/tryumph-research-group-1/tryumph-studies/osprey

Related Abstracts 2014-2015

John M. Butler, Kevin Biese, Wesley C. Holland, Natalie L. Richmond, and Timothy F. Platts-Mills. Measures Taken to Prevent Constipation for Older Adults Discharged from the Emergency Department with an Opioid Prescription. Academic Emergency Medicine, Volume 22, Issue Supplement S1, May 2015, Page S192, ISSN 1069-6563

(Presented as an ePoster at the Society for Academic Emergency Medicine meeting and as a poster at the American Geriatric Society meeting)
H. Linnstaedt Lab

Research in the Linnstaedt Lab defines molecular mediators that drive the transition between trauma exposure and chronic pain or PTSD development. Initial studies have focused on the role of blood microRNA to predict chronic pain development following motor vehicle collision in African American individuals (as a part of AA CRASH). The results of this work have been recognized two consecutive years in a row by Genetics and Basic Science Special Interest Groups organized by the American Pain Society (APS). Current and future studies aim to expand microRNA studies related to AA CRASH, begin microRNA studies in a cohort of women sexual assault survivors, and to perform mRNA expression studies in both cohorts. Human sample studies are complimented in the lab with the use of cell culture, molecular assay, and animal model sample analyses. In late 2014, Dr. Linnstaedt was named a “Future Leader in Pain Research” by APS, and received a prestigious grant to support some of these studies. She was also awarded a grant through the Mayday Fund (Co-PI with Dr. Samuel McLean). A long-term goal of the lab is to one day develop clinically useful biomarker assays or to identify novel targets for therapeutic intervention.

2014-2015 Related Abstracts:

Linnstaedt SD, Walker MG, Bortsov AV, Sons RL, Swor RA, Jones JS, Lee DC, Peak DA, Domeier RM, Rathlev NK, Hammond SM, McLean SA. A genetic variant in ADRA2A is associated with acute pain severity and is a determinant of miR-34a binding efficiency. Poster presentation at the 2014 RNA silencing Keystone Meeting, January 31 – Feb 5, Seattle, WA

Linnstaedt SD, Walker MG, Bortsov AV, Swor RA, Jones JS, Lee DC, Peak DA, Domeier RM, Rathlev NK, McLean SA. The ADRA2A genetic variant rs3750635 influences extent and severity of acute pain after motor vehicle collision and may do so by regulating microRNA function. Poster presentation at the 2014 Annual Meeting of the American Pain Society, Tampa FL, May 2014


2014-2015 Related Publications:


Linnstaedt Lab Research Assistants

Matt Carson,
Freshman undergraduate student, UNC

Michael
2nd year medical student, UNC

Gonzalez,
2nd year medical student, UNC

Lindsey Jung,
Junior undergraduate student, UNC

Evan Harmon,
2nd year medical student, UNC
From left: Lindsey Jung (Junior), Karan Koyani (3rd year medical student), Sarah Linnstaedt, Michael Gonzalez (2nd year medical student), Evan Harmon (2nd year medical student), Kyle Riker (Junior), Matt Carson (Freshman), Alan Wu (Senior)
I. Bortsov Epidemiology Research

Dr. Andrey Bortsov is currently involved in several projects evaluating the predictors of chronic pain after trauma.

Clinical prediction tool to identify individuals at increased risk of chronic axial pain development after motor vehicle collision

Millions of Americans present to the emergency department (ED) each year after motor vehicle collision (MVC). Acute musculoskeletal pain is the norm in these individuals and 20-40% transition to chronic musculoskeletal pain, most commonly in the axial region (neck/shoulders, back). ED-based risk stratification tools have been developed for a variety of clinical conditions, and are a necessary foundation for the development of effective preventive interventions for high-risk individuals. However, no risk stratification tools are available for chronic post-MVC axial pain. We are developing a risk stratification tool for pain, using data from a prospective multisite longitudinal study of individuals evaluated 6 weeks, 6 months, and 1 year after MVC (n=860). Chronic post-MVC axial musculoskeletal pain was present in 37% of participants. Initial modeling identified substantial differences in predictors (interactions) by sex, thus separate models were developed for men and women. The reduced models (separate for males and females) demonstrated good discrimination and calibration. We then developed a web-based version of the tool which can be accessed via the Department website. This tool may be used for validation testing or other research purposes and allows the user to set the desired probability threshold. We are currently working on further refinement and validation of the tool.

Vitamin D deficiency and chronic pain among African Americans experiencing motor vehicle collision

Evidence suggests that rates of chronic pain development after trauma (such as minor MVC) are increased in African Americans. Biological mechanisms responsible for elevated risk in this population remain poorly understood. Vitamin D deficiency is known to be more prevalent among African Americans. It has previously been suggested that vitamin D deficiency increases the risk of chronic pain via augmenting neuroinflammatory processes. We evaluated the hypothesis that vitamin D deficiency is associated with worse overall pain and axial pain outcomes among a cohort of AAs (n=133) seen in the ED after MVC and discharged to home. We found that study participants with vitamin D deficiency experienced more severe overall pain than participants with normal vitamin D levels. The influence of vitamin D deficiency on worse pain outcomes was somewhat attenuated after adjustment for measures of socioeconomic status (education and income) that have also been linked to vitamin D deficiency. These data warrant further studies evaluating the potential association between vitamin D deficiency and post-MVC pain and psychological outcomes.
2. Anesthesiology Clinical Trials Research Unit

The UNC Anesthesiology Clinical Trials Research Unit specializes in pain management interventional studies involving medications or devices. Their facilities at the hospital of UNC Health Care and the Pain Management Center at Southern Village allow them to attract a diverse patient population.

They work with Department of Anesthesiology faculty to manage and conduct both industry-sponsored clinical trials and investigator-initiated studies. Their track record is a testament to this outstanding team: UNC is currently a national and international leader in the recruitment and retention of individuals for several clinical trials. Their team of professionals includes a full-time research coordinator and nursing staff, as well as regulatory and other support staff. Individual faculty studies performed in collaboration with the clinical trials team are described below.

A. A Phase IV Study to Evaluate the Pharmacokinetics and Safety of Oxycodone Oral Solution in Pediatric and Adolescent Subjects (VistaPharm, Inc. and Lehigh Valley Technologies, Inc., Site PI Valley)

The objective of this study is to characterize the pharmacokinetics and to evaluate the safety of single and multiple doses of Oxycodone Oral Solution in pediatric and adolescent subjects following a surgical procedure. It is an open-label, multicenter study. Subjects are enrolled preoperatively or postoperatively with the expectation that they will require IV access after surgery and postoperative analgesia with an opiate-level medication. After dosing, subjects are carefully monitored for safety and pharmacokinetic samples are obtained for a 24-hour period.
3. Faculty Research Studies

A. Teaching CA-1 Anesthesia Residents by “Flipping the Classroom” Improves Knowledge Acquisition and Resident Satisfaction, Dr. Susan Martinelli

This study compares two instructional methods to determine which is most effective and which is most preferred by residents. Residents will be taught material through a traditional lecture-based style and then the same teachers that delivered the traditional lecture will prepare a video of their lecture that will be used for the flipped classroom style teaching. Data will be collected regarding residents’ opinion on the different teaching methods, the amount of preparation time outside of the classroom, prior ITE and USMLE test scores, and any prior graduate medical training. As the “flipped classroom” sessions will provide more active learning, we anticipate the residents to perform better on multiple-choice tests corresponding to their flipped classroom curriculum and the residents will have higher satisfaction with the flipped classroom model.

B. Enhanced Recovery after Surgery (ERAS): A multidisciplinary perioperative protocol to improve outcomes for patients undergoing pancreatic surgery, PI Kolarczyk

The primary objective of Dr. Lavinia Kolarczyk and her team is to determine if the Enhanced Recovery After Surgery (ERAS) pathway can improve the quality of care of pancreatic surgery patients at UNC. ERAS is a set of well-established best practice guidelines for patients undergoing a variety of intra-abdominal surgeries. The goals of the ERAS guidelines are to maintain normal physiologic function and to facilitate early postoperative recovery. These goals are met through a variety of interventions throughout the perioperative period, including: decreased use of preoperative bowel preps, carbohydrate drinks on the day of surgery, thoracic epidural analgesia, intraoperative goal directed fluid therapy, standardized anesthetic protocols, thromboembolic prophylaxis, early mobilization and oral intake in the postoperative period, and the limited use of urinary catheters and nasogastric tubes. ERAS protocols allow for standardization of best practice perioperative care, which ultimately improves the quality of care delivered, accelerates recovery and safety, and optimizes utilization of health care resources.

ERAS protocols for colorectal and pancreatic surgeries have shown to decrease 30 day morbidity by over 50% and reduce length of stay by 2.5 days. What has not yet been well studied is the application of an ERAS protocol for upper gastrointestinal surgery. Our plan is to introduce a perioperative ERAS protocol for major gastrointestinal surgeries at UNC Hospitals. Through a multidisciplinary, team-based approach, we will create, implement, and study our own ERAS
protocol. The goals of our project are to: 1) improve patient outcomes and satisfaction through standardization of perioperative care, 2) accelerate patient recovery, and 3) establish a vehicle for future projects.

4. Resident Team-Based QI/Research Projects

The Anesthesiology Research Department at UNC Chapel Hill is committed to engaging our residents in a variety of ways. During the 2014-2015 academic year, all of our clinical anesthesia residents participated in Team-based Quality Improvement (QI) project. Each team was comprised of one resident from each residency class and a faculty mentor. The CA-2 resident served as the team leader and was responsible for developing the project and carrying it through to completion. The department implemented these team-based projects because we recognize that continuous quality improvement must be a core component of any contemporary academic training program and health care organization. These projects also have increased resident participation at regional and national conferences, and led to academic publications and improved patient care. All of the team-based projects from the 2014-2015 academic year were presented at the Resident Symposium.

1st Place
*Pediatric Intraoperative Emergencies: Educating Our Perioperative Team*

**Chelsea Willie, MD, Jennifer Jutson, MD, Eva Waller, MD, Peggy McNaull, MD, Kimberly Blasius, MD**

2nd Place
*Enhanced Pathway Decreases Hospital Length of Stay*

**Hayden Kirby, MD**

Kolarczyk, Timothy Rohman, MD (presenter), Ryan Bialas, MD, Lavinia MD

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1st Place
*Pediatric Intraoperative Emergencies: Educating Our Perioperative Team*

**Chelsea Willie, MD, Jennifer Jutson, MD, Eva Waller, MD, Peggy McNaull, MD, Kimberly Blasius, MD**

2nd Place
*Enhanced Pathway Decreases Hospital Length of Stay*

**Hayden Kirby, MD**

Kolarczyk, Timothy Rohman, MD (presenter), Ryan Bialas, MD, Lavinia MD
3rd Place
*Intraoperative Fluid Administration Practices in Pediatric Anesthesia: the Good, the Bad, and the Ugly*
Kevin Powell, MD, Christoforos Frangopoulos, MD, Gabe Rice, MD, Ann Bailey, MD, Kimberly Blasius, MD

“Where in world have they been?”: Resident presentations at national and international conferences in 2014-2015

<table>
<thead>
<tr>
<th>Presenter</th>
<th>Title</th>
<th>Conference</th>
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<tr>
<td>Helgren</td>
<td>Case Report and Poster Presentation: Tumefactive Multiple Sclerosis Presenting as Acute Neurologic Deficits in Pregnancy</td>
<td>Society of Obstetric Anesthesia and Perinatology Meeting 2014</td>
<td>Toronto, Canada</td>
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<td>Potisek</td>
<td>The Great Awakening. Unexpected and Sudden Recovery From Toxic Metabolic Encephalopathy in a 61-Year-Old Status Post Ivor Lewis Esophagectomy and Wedge Resection, Subsequently Found to Have a 10cm Esophagopleural fistula</td>
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<td>Dickerson</td>
<td>Patient Satisfaction with the use of Nitrous Oxide for Labor Analgesia</td>
<td>SOAP 2015</td>
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<td>Judd</td>
<td>Liver Transplantation in a Patient with Moderate Portopulmonary Hypertension: When to Proceed Versus Cancel</td>
<td>American Society of Anesthesiologists Annual Meeting 2014</td>
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<td>Qadri</td>
<td>Idiopathic Verapamil Sensitive Ventricular Tachycardia After Transhiatal Esophagectomy</td>
<td>IARS 2015 Annual Meeting and International Science Symposium</td>
<td>Honololu, HI</td>
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<td>Shah</td>
<td>Obesity increases the risk of persistent moderate or severe overall pain 6 months and 1 year after motor vehicle collision</td>
<td>American Society of Anesthesiologists Annual Meeting 2014</td>
<td>New Orleans, LA</td>
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<tr>
<td>Shah</td>
<td>Intraoperative Pulmonary Embolism during Mediastinoscopy: Medical and Ethical Decision Making in the Midst of Catastrophe</td>
<td>American Society of Anesthesiologists Annual Meeting 2014</td>
<td>New Orleans, LA</td>
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<td>Shah</td>
<td>A Best Practice Guideline: An updated look at a protocol for anesthetic management for posterior spinal fusions</td>
<td>Society of Pediatric Anesthesia Conference 2014</td>
<td>Fort Lauderdale, FL</td>
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<td>Suchar</td>
<td>Caudal Catheter Complication: The Dreaded Epidural Abscess</td>
<td>Society of Pediatric Anesthesia 2015 Annual Meeting</td>
<td>Phoenix, Arizona</td>
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<td>Suchar</td>
<td>Intravenous Dexmedetomidine in Dental Rehabilitation: Cost Effectiveness Issues</td>
<td>Society of Pediatric Anesthesia 2014 Annual Meeting</td>
<td>Fort Lauderdale, FL</td>
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<tr>
<td>Waller</td>
<td>Auditory Brainstem Implantation: What the Pediatric Anesthesiologist Needs to Know</td>
<td>Society of Pediatric Anesthesia 2015 Annual Meeting</td>
<td>Phoenix, Arizona</td>
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<td>Willie</td>
<td>Children’s Operating Rooms on the Ready: Pediatric Perioperative Critical Event Training</td>
<td>Society for Pediatric Anesthesia Annual Meeting</td>
<td>Phoenix, AZ</td>
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<tr>
<td>Waller</td>
<td>Acute onset of Severe Neck and Facial Edema in the PACU: A Unique Presentation of Subcutaneous Emphysema</td>
<td>American Society of Anesthesiologists Annual Meeting 2014</td>
<td>New Orleans, LA</td>
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Departmental Research Products

1. Published Abstracts (in alphabetical order of first author)

Beaudoin FL, Gutman R, Peak DA, Jones JS, Swor RA, Domeier RM, Lee DC, Rathlev NK, Hendry PL, McLean SA. Treatment effects of opioids versus NSAIDs prescribed from the emergency department following motor vehicle crash: the impact on pain outcomes at 6 weeks. Accepted for publication/presentation to the 2015 meeting of the American Pain Society.

Bortsov AV, Velilla MA, Damiron K, Pearson C Jones JS, Hendry PL, Kurz MC, McLean SA. Vitamin D deficiency is associated with worse overall pain outcomes over time among African Americans experiencing motor vehicle collision. Accepted for publication/presentation to the 2015 meeting of the American Pain Society

Bruno KA Systematic Capture of Regional Anesthesia Quality Metrics for Labor Analgesia Presented 3/16/2015 at SOAP.


Hu J, Bollen KA, Lane ST, Bortsov AV, Peak DA, Jones JS, Swor RA, Domeier RM, Lee DC, Rathlev NK, Hendry PL, McLean SA. Evaluation of the influence of stress-induced pain vulnerability and sociodemographic characteristics on acute pain after a motor vehicle collision using structural equation modeling. Accepted for publication/presentation to the 2015 meeting of the American Pain Society

Hu J, Kessler RC Bortsov AV, Battles SR, Peak DA, Jones JS, Swor RA, Domeier RM, Lee DC, Rathlev NK, Hendry PL, McLean SA. Evaluating musculoskeletal pain pathogenesis in the aftermath of motor vehicle collision in a multi-dimensional context. Accepted for presentation to the 2015 meeting of the American Pain Society


Lateef B, Liu AY, Hu J, MO Martel, RR Edwards, Swor RA, Peak DA, Jones JS, Rathlev NK, Lee DC, Domeier RM, Hendry PL, McLean SA. Pain Catastrophizing as a Predictor of Opioid Administration in Patients Presenting to the Emergency Department (ED) After Motor Vehicle Collision (MVC) Accepted for publication/presentation to the 2015 meeting of the American Pain Society


Mauck MC, Liu AY, Bortsov AV, Jones S, Hwang J, Williams FN, Shupp JW, Karlnoski T, Smith DJ, Krishnan A, Wesp B, Gellatly M, Cairns B, McLean SA. Predictors of pain severity after major thermal burn injury vary according to phase of burn wound healing. Accepted for publication/presentation to the 2015 meeting of the American Pain Society

Nyland JE, McLean SA, Averitt DL. Combined serotonin and norepinephrine reuptake inhibition reduces the effects of stress on post-injury pain behaviors in a rat model of burn injury. Accepted for publication/presentation to the 2015 meeting of the American Pain Society


Villard MA, Beaudoin FL, Hu J, Orrey D, Peak DA, Jones JS, Swor RA, Domeier RM, Lee DC, Rathlev NK, Hendry PL, McLean SA. Few individuals at high risk of persistent musculoskeletal pain after motor vehicle collision receive early psychological or physiotherapy intervention. Accepted for publication/presentation to the 2015 meeting of the American Pain Society

2. Journal Articles (in alphabetical order of first author)


Isaak RS, Furman W, Con: Patients at risk for spinal cord ischemia after thoracic endovascular aortic repairs should not receive prophylactic CSF drainage, *Journal of Cardiothoracic and Vascular Anesthesia*, http://dx.doi.org/10.1053/j.jvca.2015.05.191


Koenig M, Kopp V Relaxant-free intubation in children: what do we (really) know about it? Submitted to *Anesthesiology* 1/29/15

Kopp V, Koenig M Age-related oxygen supplementation in anaesthesia - letter to the editor. Submitted to *British Journal of Anaesthesia* 1/21/15


Linnstaedt SD, Hu J, Bortsov AV, Soward AC, Swor RA, Jones JS, Lee DC, Peak DA, Domeier RM, Rathlev NK, Hendry PL, McLean SA. μ-Opioid Receptor Gene A118G Variants and Persistent Pain...


3. Books


Passannante AN: Patient Safety: Does the Anesthesia Care Team Contribute to Infection Risk? Audio-Digest Anesthesiology 56(37) ISSN 0271-1265, October 2014

4. Grants and Grant Funding Salary Support

Title: Applying the Biopsychosocial Model to Post-MVC Pain Development in African Americans
Award Number: R01AR060852  
Sponsor: National Institute of Arthritis Musculoskeletal Skin Disease  
Principal Investigator: Samuel McLean

Title: The HELP PAIN Trial: Healing with Venlafaxine after motor vehicle collision  
Sponsor: Mayday Fund  
Project Dates: 12/8/2010-12/31/2016  
Principal Investigator: Samuel McLean

Title: The Influence of microRNA in chronic pain development  
Sponsor: Mayday Fund  
Project Dates: 7/1/2012-6/30/2014  
Principal Investigator: Samuel McLean

Title: Grant Funding Salary Support for Co-Investigators: Evaluations of Genetic Variance Pathway Related Neurosteroids on Outcomes after MVC  
Sponsor: Department of Veteran Affairs  
Project Dates: 09/01/2013-8/31/2014  
Co-Investigators: Sarah Linnstaedt and Andrey Bortsov

TITLE: Influence of PTSD Symptoms on Chronic Pain Development after Sexual Assault  
Award Number: R01AR064700  
Sponsors: NIAMS, NINDS, OD, NINR, NIMH, NICHD  
Project Dates: 2014-2019  
Principal Investigator: Samuel McLean