SOUTHWESTERN SURGICAL CONGRESS

70th Annual Meeting

April 8–11, 2018
The Meritage Resort & Spa | Napa, California

FINAL PROGRAM

PRESIDENTIAL ADDRESS
Daniel Margulies, MD

CLAUDE H. ORGAN, JR. MEMORIAL LECTURE
Gregory J. Jurkovich, MD

THOMAS G. ORR MEMORIAL LECTURE
Kenric Murayama, MD

EDGAR J. POTH MEMORIAL LECTURE
Walter Biffl, MD

www.swscongress.org
The Southwestern Surgical Congress would like to thank the following companies for their generous support as Exhibitors:

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- Z-Medica
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*See inside back cover for future meetings.*
SWSC President Daniel R. Margulies, MD welcomes you to the SWSC 2018 Annual Meeting at The Meritage Resort & Spa in Napa, CA!

Hands-On Surgical Practicum
Surgical Practicum: Issues in Trauma Care and General Surgical Update
75 Quick Shots
34 Oral Presentations
66 ePosters

OTHER MEETING HIGHLIGHTS:
Mock Oral Boards
Top 10 Trauma & General Surgery Papers
Experts Panel
Dealing with Mass Casualties
ACS Update
## OFFICERS, STATE COUNCILORS & REPRESENTATIVES

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Nicolas Melo
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The Lowry Fund honors Nonie Lowry, Past SWSC Director, for her strength, professionalism, and dedication to the Southwestern Surgical Congress. Donations to the Fund will be used for the annual Lowry Award (best paper by a new member), educational grants for medical students and residents, and other educational initiatives to be supported and defined by the Southwestern Surgical Congress. The Lowry Fund Donor Levels are named for the first 6 Presidents of the SWSC. Donations made to the Lowry Fund of the SWSC Foundation are tax deductible.

Donation levels are based on lifetime giving through March 15, 2018.

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Ronald Sing  
Gus Slotman  
John Smith  
R Stephen Smith  
Harl Stump  
Randolph Szlabick  
Gary Timmerman  
Deidre Wyrick
PAST PRESIDENTS & MEETING LOCATIONS

1949 - *Walter Stuck, MD - Shamrock Hotel, Houston, Texas
1950 - *Thomas G. Orr, MD - Shirley Savoy, Denver, Colorado
1951 - *Leo J. Starry, MD - Hotel Jefferson, St. Louis, Missouri
1952 - *Michael E. DeBakey, MD - Baker Hotel, Dallas, Texas
1953 - *Louis P. Good, MD - Hotel Utah, Salt Lake City, Utah
1954 - *Philip B. Price, MD - Skirvin Hotels, Oklahoma City, Oklahoma
1955 - *Lawrence P. Engel, MD - Hotel Muehlebach, Kansas City, Missouri
1956 - *Charles R. Rountree, MD - Pioneer Hotel, Tucson, Arizona
1957 - *John V. Goode, MD - Broadway Hotel, Wichita, Kansas
1958 - *Kenneth C. Sawyer, MD - Shamrock Hotel, Houston, Texas
1959 - *Lewis M. Overton, MD - Brown Palace Hotel, Denver, Colorado
1960 - *Fred H. Krock, MD - Riviera Hotel, Las Vegas, Nevada
1961 - *Howard D. Cogswell, MD - Chase Park Plaza, St. Louis, Missouri
1962 - *Charles M. O’Leary, MD - Western Skies Hotel, Albuquerque, New Mexico
1963 - *Edgar J. Poth, MD - Maria Isable Hotel, Mexico City, Mexico
1964 - *Eugene M. Bricker, MD - Granada Hotel, San Antonio, Texas
1965 - *Wayne C. Bartlett, MD - Velda Rose Towers, Hot Springs, Arkansas
1966 - *O. Ernest Grua, MD - Flamingo Hotel, Las Vegas, Nevada
1967 - *John A. Growdon, MD - Del Webb-Town House, Phoenix, Arizona
1968 - *Robert B. Howard, MD - Brown Palace Hotel, Denver, Colorado
1969 - *John H. Clark, MD - Sahara Tahoe Hotel, Lake Tahoe, Nevada
1970 - *Jean C. Gladden, MD - Sheraton-Dallas Hotel, Dallas, Texas
1971 - *J. Robert Spencer, MD - Caesar’s Palace Hotel, Las Vegas, Nevada
1972 - *John G. Shellito, MD - Hilton Inn, Albuquerque, New Mexico
1973 - *James B. Growdon, MD - Mountain Shadows Hotel, Scottsdale, Arizona
1974 - *Lawrence H. Wilkinson, MD - Del Monte Hyatt House, Monterey, California
1975 - *George H. Mertz, MD - Caesars Palace Hotel, Las Vegas, Nevada
1976 - *John B. Gramlich, MD - Hyatt Regency Hotel, Houston, Texas
1977 - *Howard T. Robertson, MD - Princess Hotel, Acapulco, Mexico
1978 - *Cyril Costello, MD - Riviera Hotel, Palm Springs, California
1979 - *MacDonald Wood, MD - Caesars Palace Hotel, Las Vegas, Nevada
1980 - *Gilbert S. Campbell, MD - Broadmoor Hotel, Colorado Springs, Colorado
1981 - *Wallace L. Chambers, MD - Hyatt del Monte, Monterey, California
1982 - *Albert J. Kukral, MD - Hotel del Coronado, Coronado, California
1983 - Livingston Parsons, Jr., MD - The Pointe Resort, Phoenix, Arizona
1984 - *Raymond C. Read, MD - The Hyatt Regency, Honolulu & Maui, Hawaii
1985 - *Claude H. Organ, Jr., MD - Caesars Palace Hotel, Las Vegas, Nevada
1986 - Ronald C. Elkins, MD - Hyatt Regency San Francisco, San Francisco, California
1987 - *Joseph L. Kovarik, MD - Hotel del Coronado, Coronado, California
1988 - Arlo S. Hermreck, MD - The Pointe at Squaw Peak, Phoenix, Arizona
1989 - Frederic C. Chang, MD - Hyatt Regency Monterey, Monterey, California
1990 - Kent C. Westbrook, MD - LaQuinta Golf & Tennis Resort, La Quinta, California
1992 - David V. Feliciano, MD, Marriott’s Camelback Inn Resort, Scottsdale, Arizona
1993 - Dominic Albo, Jr., MD - Hyatt Regency Monterey, Monterey, California
1994 - Ernest Poulos, MD - The Westin LaPaloma, Tucscon, Arizona
1995 - Robert B. Sawyer, MD - Hyatt Regency Hill Country Resort, San Antonio, Texas
1996 - Carey P. Page, MD - Marriott’s Camelback Inn Resort, Scottsdale, Arizona
1997 - James H. Thomas, MD - Westin Mission Hills Resort, Rancho Mirage, California
PAST PRESIDENTS & MEETING LOCATIONS

1998 - Charles H. McCollum, MD - Hyatt Regency Hill Country Resort, San Antonio, Texas
1999 - Ernest E. Moore, Jr., MD - Loews Coronado Bay Resort, Coronado, California
2000 - Victor J. Zannis, MD - The Broadmoor, Colorado Springs, Colorado
2001 - Nicholas P. Lang, MD - Fiesta Americana Coral Beach Resort, Cancun, Mexico
2002 - James A. Edney, MD - Hotel del Coronado, Coronado, California
2003 - Russell G. Postier, MD - Loews Ventana Canyon Resort, Tucson, Arizona
2004 - Jon S. Thompson, MD - Hyatt Regency Monterey, Monterey, California
2005 - Jeffrey R. Saffle, MD - Westin La Cantera Resort, San Antonio, Texas
2006 - Ernest L. Dunn, MD - Kauai Marriott Resort and Beach Club, Kauai, Hawaii
2007 - Scott R. Petersen, MD - Rancho Las Palmas Resort and Spa, Rancho Mirage, California
2008 - Alan G. Thorson, MD - Fairmont Acapulco Princess, Acapulco, Mexico
2009 - Maria D. Allo, MD - Hotel del Colorado, Coronado, California
2010 - Frederick A. Moore, MD - Loews Canyon Resort, Tucson, Arizona
2011 - Edward Nelson, MD - JW Marriott Ihilani, Oahu, Hawaii
2012 - Robert C. McIntyre, Jr., MD - Terranea Resort, Rancho Palos Verdes, California
2013 - David Antonenko, MD, PhD - Bacara Resort, Santa Barbara, California
2014 - Kenric M. Murayama, MD - Westin Kierland Resort, Scottsdale, Arizona
2015 - Ronald Stewart, MD - Hyatt Regency Monterey, Monterey, California
2016 - John Potts, III - Hotel del Coronado - Coronado, California
2017 - Clay Cothren Burlew - Hyatt Regency Maui – Maui, HI

* Deceased
EDUCATIONAL OBJECTIVES

LEARNING OBJECTIVES:
The scientific program of the Annual Meeting of the Southwestern Surgical Congress will provide contemporary information on the management of a broad range of surgical diseases for community surgeons, academic surgeons and the surgeon-in-training. Topic areas discussed will incorporate a comprehensive perspective of surgical practice including abdominal and gastrointestinal surgery, emergency general surgery, trauma / critical care surgery, surgical education, thoracic and vascular surgery, surgical oncology, and breast and endocrine surgery. The intent of the program is to broaden the knowledge base of the audience and enhance the quality of patient care and patient safety. Audience participation and interaction will be encouraged. The content and format of the program have been developed based on evaluations and suggestions of attendees of previous programs of the Southwestern Surgical Congress.

At the end of this activity, attendees will / will be able to perform the following:

• Develop an understanding of current issues relevant to the advancement of the art and practice of surgery, specifically in the evaluation and management of hernia, breast, endocrine, gastrointestinal, thoracic, vascular, trauma / critical care and emergency / acute care surgical disease.
• Discuss the highlighted translational data and evidence based practice with respect to the potential impact on the future of patient care and evolution of surgical best practice.
• Implement a strategy to establish new technologies within the context of the individual’s current surgical practice.
EDUCATIONAL OBJECTIVES

CME CERTIFICATES AND EVALUATION FORMS
Evaluation completion, CME and Self Assessment credit will be completed online. You will receive emailed instructions on how to claim CME online immediately following the conference.

DISCLOSURE INFORMATION
In compliance with the ACCME Accreditation Criteria, the American College of Surgeons, as the accredited provider of this activity, must ensure that anyone in a position to control the content of the educational activity has disclosed all relevant financial relationships with any commercial interest. All reported conflicts are managed by a designated official to ensure a bias-free presentation. Please see the insert to this program for the complete disclosure list.

CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

Accreditation
This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American College of Surgeons and Southwestern Surgical Congress. The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

*AMA PRA Category 1 Credits™ - Annual Meeting
The American College of Surgeons designates this live activity for a maximum of 22.25 *AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.*
Of the *AMA PRA Category 1 Credits™* listed above, a maximum of 14.5 credits meet the requirements for Self-Assessment.

*AMA PRA Category 1 Credits™* - Surgical Practicum: Issues in Trauma Care

The American College of Surgeons designates this live activity for a maximum of 2 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Of the *AMA PRA Category 1 Credits™* listed above, a maximum of 0 credits meet the requirements for Self-Assessment.

*AMA PRA Category 1 Credits™* - Surgical Practicum: General Surgical Update

The American College of Surgeons designates this live activity for a maximum of 1.75 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Of the *AMA PRA Category 1 Credits™* listed above, a maximum of 0 credits meet the requirements for Self-Assessment.

*AMA PRA Category 1 Credits™* - Surgical Practicum: Laparoscopic Management of Choledocholithiasis: Tips and Tricks for the General Surgeon

The American College of Surgeons designates this live activity for a maximum of 2.5 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Of the *AMA PRA Category 1 Credits™* listed above, a maximum of 0 credits meet the requirements for Self-Assessment.
GENERAL INFORMATION

HOTEL
The Meritage Resort & Spa
875 Bordeaux Way
Napa, CA 94558
(844) 283-4588

REGISTRATION
The registration desk hours are as follows
(Vineyard Pre-Function):
Sunday    7:30am – 5:00pm
Monday    6:30am - 12Noon
Tuesday    6:45am - 5:00pm
Wednesday  6:45am - 11:30am

OPTIONAL ACTIVITIES

Monday, April 9
YOGA ON THE VINEYARD
Cost: $30 per person
Time: 6:30am - 7:30am
Location: Vineyard Deck
Start your morning with a moment of yoga amid the rolling hills of the resort’s own 9-acre vineyard. You will greet the day with an invigorating yoga flow class to energize the body and awaken the mind. Towels and yoga mats included. Namaste!
Monday, April 9
GOLF TOURNAMENT
Cost: $125 per person
Time: 1:00pm - Shotgun Start
Eagle Vines Golf Club
The annual golf tournament will be held at Eagle Vines Golf Club. Cost includes greens and cart fees, tournament coordination and prizes and a boxed lunch. Eagle Vines Vineyards & Golf Club is tucked away in the foothills of Napa Valley, offering one of the most scenic courses in the area. It is also considered by many locals to be one of the most challenging. Every hole on the golf course provides stunning views of the surrounding vineyards. The layout sprawls across gently rolling hills that weave through stands of mature cherry and oak trees, shimmering waterfalls, and meandering creeks. The golf course offers challenging multi-tiered greens and postage-stamp landing areas that demand well placed iron shots. The memorable seventh hole features an even more difficult island green. There are also some tricky fairways that seem much more open than they are. Eagle Vines numerous risk-reward opportunities that will have golfers using every club in their bag.

VINEYARD TOUR & TASTING
Cost: $45 per person
Time: 1:00pm – 2:30pm
Location: Meet outside entrance to Estate Cave by Bocce Ball Courts
90 minutes wine guided tour through Meritage Resort and Spa vineyard. 5 flight wine tasting included.

SCIENCE OF FOOD & WINE TOUR
Cost: $55 per person
Time: 1:00pm – 2:30pm
Location: Meet in Estate Cave
90 minute class. Learn how elements of wine interacts with elements of basic flavor building in food. 5 wines and pairings included.
Tuesday, April 10

BIKE TOUR

Cost: $125 per person
Time: 1:00pm – 4:00pm
Location: Meet in Meritage Hotel Lobby for transfer to Cuttings Wharf
Enjoy a 3 hour guided bike tour through scenic the Carneros wine region. Learn the history of wineries and take in picturesque views along the way! The difficulty level is leisurely and can accommodate all skill levels. Riders will stop at 2 wineries (tastings not included in price). Guests will be picked up right from the lobby and dropped off after. Unlimited water, transportation and guide gratuity included in price.
PRESIDENTIAL ADDRESS

SURGERY, THE VIEW FROM AN ISLAND

Sunday, April 8, 2018
4:30pm - 5:15pm
Meritage Ballroom Salons V - X

Introduction:
Shanu Kothari, MD
Gundersen Health System

Daniel R. Margulies, MD
Cedars Sinai Medical Center

Daniel R. Margulies, MD, FACS is the Chief, Section of Trauma, Emergency Surgery and Surgical Intensive Care; Associate Director of the Division of General Surgery; Professor of Surgery at Cedars-Sinai Medical Center; Health Sciences Clinical Professor of Surgery at the University of California at Los Angeles David Geffen School of Medicine. He is board certified in general surgery and surgical critical care. Dr. Margulies has been a staff physician and member of the faculty at CSMC, a Level I Trauma Center, for over twenty-four years. In his current role as Trauma Medical Director and Director of Acute Care Surgery he oversees trauma, emergency surgery and surgical critical care. In his academic role as Professor of Surgery, Dr. Margulies is the two-time recipient of the Leo Rigler Golden Apple Outstanding Teaching Award, a testament to his excellence in educating, mentoring and training residents and medical students. Dr. Margulies is an active member of the American College of Surgeons’ Committee on Trauma and will serve as Chairman

70TH ANNUAL MEETING 2018 19
PRESIDENTIAL ADDRESS

of the Verification Review Committee March, 2018. He is a member of the Emergency Medical Services Committee and State Faculty for the American College of Surgeons Advanced Trauma Life Support, and the current President of the Southwestern Surgical Congress, District Representative of the Western Surgical Association. He is a Commissioner of Emergency Medical Services for the State of California, and currently serves as an editorial reviewer for The Journal of Trauma and Acute Care Surgery. Dr. Margulies earned his bachelor’s degree from Stanford University in mechanical engineering, and earned his medical degree from the University of Hawaii John A. Burns School of Medicine. He completed his general surgery internship and residency at the University of Hawaii School of Medicine, followed by a Clinical Fellowship in Surgical Critical Care at Cedars-Sinai Medical Center.
EDGAR J. POTH
MEMORIAL LECTURESHIP

EVIDENCE-BASED MEDICINE IN TRAUMA AND ACUTE CARE SURGERY—WHAT DOES THAT LOOK LIKE?

Tuesday, April 10, 2018
3:45pm - 4:30pm
Meritage Ballroom Salons V-X

Introduction: Daniel R. Margulies, MD
Cedars Sinai Medical Center

Walter Biffl, MD
Scripps Memorial Hospital La Jolla

Dr. Biffl earned his Bachelor of Science degree from Duke University, and Medical Degree from the George Washington University. He performed his surgical training at the University of Colorado Health Sciences Center, including a two-year NIH-sponsorerd Trauma Research Fellowship. Upon completion of residency he accepted a faculty position at Denver Health Medical Center with the University of Colorado. In 2002 he moved to Providence, RI, where he spent five years as Chief of the Division of Trauma and Surgical Critical Care at Brown Medical School. He returned to Denver Health in 2007 where he served as Associate Director of Surgery and Assistant Director of Patient Safety and Quality. He is currently Medical Director of Trauma and Acute Care Surgery at Scripps Memorial Hospital La Jolla in La Jolla, CA.
EDGAR J. POTH MEMORIAL LECTURESHP
PAST PRESENTERS

1975 - George H. Mertz, MD
1976 - Frank G. Moody, MD
1977 - Claude H. Organ, Jr., MD
1978 - Raymond C. Read, MD
1979 - William W. Monafo, MD
1980 - George C. Morris, MD
1981 - Ronald C. Elkins, MD
1982 - MacDonald Wood, MD
1983 - J. Bradley Aust, MD
1984 - Ernest E. Moore, Jr., MD
1985 - Stephen L. Wangensteen, MD
1986 - David V. Feliciano, MD
1987 - David Roos, MD
1988 - Kent C. Westbrook, MD
1989 - Carey P. Page, MD
1990 - James H. Tomas, MD
1991 - Lawrence W. Way, MD
1992 - Jon M. Burch, MD
1993 - Jeffrey R. Saffle, MD
1994 - G. Patrick Clagett, MD
1995 - Jon S. Thompson, MD
1996 - Wayne H. Schweginger, MD
1997 - Glenn C. Hunter, MD
1998 - Courtney M. Townsend, Jr., MD
1999 - James A. Edney, MD
2000 - Robert J. Fitzgibbons, MD
2001 - Gregorio A. Sicard, MD
2002 - Layton F. Rikkers, MD
2003 - Kenneth W. Sharp, MD
2004 - B. Timothy Baxter, MD
2005 - John F. Eidt, MD
2006 - David Antonenko, MD, PhD
2007 - Edward W. Nelson, MD
2008 - Kenric Murayama, MD
2009 - Karen R. Borman, MD
2010 - Alden D. Harken, MD
2011 - Anees Chagpar, MD
2012 - Clay Cothren Burlew, MD
2013 - R. Stephen Smith, MD
2014 - Peter Angelos, MD, PhD
2015 - J. Patrick Walker, MD
2016 - David Mercer, MD
2017 - Christine Cocanour, MD
THOMAS G. ORR
MEMORIAL LECTURESHIP

MY NAME IS *****
AND I AM A
GENERAL SURGEON

Monday, April 9, 2018
8:10am - 8:55am
Meritage Ballroom Salons V-X

Introduction:
Daniel R. Margulies, MD
Cedars Sinai Medical Center

Kenric Murayama, MD
University of Hawaii at Manoa–John A Burns School of Medicine

Dr. Murayama is the JABSOM Department of Surgery Chair. Dr. Murayama, a native of Hawai`i, did his undergraduate studies at the University of Washington and obtained his medical degree at JABSOM. He completed his surgery training at Northwestern University Feinberg School of Medicine during which time he did a two-year research fellowship in pancreatic physiology.

Dr. Murayama began his academic surgery career at the University of Nebraska and has subsequently been on the surgical faculty at Saint Louis University, Northwestern University, the University of Hawai`i, and the University of Pennsylvania. He is past Chair and Program Director at Abington Memorial Hospital in Pennsylvania and Adjunct Professor of Surgery at Temple University School of Medicine.
Dr. Murayama’s clinical interest is minimally invasive gastrointestinal surgery with a focus on laparoscopic treatment for benign esophageal disorders, abdominal wall hernias, and morbid obesity and its metabolic consequences.

Dr. Murayama has a longstanding commitment to surgical education and leadership development in surgery. He has served as Residency Director at Abington Memorial Hospital and developed the Quality, Outcomes, and Performance Improvement Committee to engage residents and emphasize the importance of patient safety and quality improvement in their journey of lifelong learning. As Medical Director of the operating rooms, he led the initiative to create a corporate model for the department of surgery across two institutions. In that capacity he was actively involved in operational and strategic planning and implementation with specific goals of improving efficiencies, cost containment, and program development.

Dr. Murayama has been an active participant in surgical societies nationally and is a Past President President of the Southwestern Surgical Congress.
THOMAS G. ORR MEMORIAL LECTURESHEIP
PAST PRESENTERS

1966 - Michael E. DeBakey, MD
1967 - Edgar J. Poth, MD
1968 - Stanley R. Friesen, MD
1969 - Philip B. Price, MD
1970 - Kenneth C. Sawyer, MD
1971 - Merlin K. DuVal, MD
1972 - C. Frederick Kittle, MD
1973 - Eric E. Peacock, MD
1974 - Eugene M. Brickner, MD
1975 - William R. Waddell, MD
1976 - Denton A. Cooley, MD
1977 - Gilbert S. Campbell, MD
1978 - Howard T. Robertson, MD
1979 - Norman M. Rich, MD
1980 - W. Gerald Rainer, MD
1981 - Arthur C. Beall, Jr., MD
1982 - Arlo S. Hermreck, MD
1983 - G. Rainey Williams, MD
1984 - Samuel A. Wells, Jr., MD
1985 - Layton F. Rikkers, MD
1986 - Ronald C. Jones, MD
1987 - W. Sterling Edwards, MD
1988 - Laurence Y. Cheung, MD
1989 - Tom R. DeMeester, MD
1990 - Charles M. Balch, MD
1991 - Alex G. Little, MD
1992 - Donald E. Fry, MD
1993 - Keith Reemtsma, MD
1994 - C. James Carrico, MD
1995 - Frederick L. Grover, MD
1996 - Ernest E. Moore, Jr., MD
1997 - Nicholas P. Lang, MD
1998 - Alden H. Harkin, MD
1999 - Frederick A. Moore, MD
2000 - H. Harlan Stone, MD
2001 - Russell G. Postier, MD
2002 - Richard J. Andrassy, MD
2003 - Keith Lillemoe, MD
2004 - Alan Thorson, MD
2005 - Nathaniel Soper, MD
2006 - Thomas Weber, MD
2007 - Byers W. Shaw, MD
2008 - Shuvo Roy, PhD
2009 - Mark A. Talamini, MD
2010 - Barbara Lee Bass, MD
2011 - John Potts, III, MD
2012 - David Mercer, MD
2013 - Alicia Mangram, MD
2014 - Daniel R. Margulies, MD
2015 - Raul S. Coimbra, MD, PhD
2016 - Donald Lesslie, MD
2017 - S. Rob Todd, MD

70TH ANNUAL MEETING 2018
CLAUDE H. ORGAN, JR.
MEMORIAL LECTURESHIP

SURGICAL M&M: AN
ANACHRONISM OR THE
KEY TO QUALITY CARE

Wednesday, April 11, 2018
9:15am - 10:00am
Meritage Ballroom Salons V-X

Introduction:
Daniel R. Margulies, MD
Cedars Sinai Medical Center

Gregory J. Jurkovich, MD
UC Davis Health System, Sacramento

Gregory “Jerry” Jurkovich, MD is the Donant Professor of Trauma Surgery and Vice-Chairman for Clinical Affairs and Quality at the UC Davis Health System in Sacramento, California. Prior to relocating to California, Dr. Jurkovich served as Chief of Surgery at Denver Health, a position followed nearly 24 years at the University of Washington and Harborview Medical Center in Seattle as Professor and Chief of Trauma. He began his surgical career as Chief of Trauma at the University of South Alabama. Dr. Jurkovich has held numerous leadership positions. He is a Director of the American Board and Surgery, and Chair of the Trauma and Critical Care Component Board. He has been the President of the AAST (trauma society), the
Western Trauma Association (WTA), and the Western Surgical Association (WSA). He also has served as Vice Chairman of the ACS Committee on Trauma. His the current Chair of the National Trauma Institute and co-director of CNTR: The Coalition for National Trauma Research. He serves on the editorial board of the Journal of Trauma and Acute Care Surgery, Annals of Surgery, and the Journal of the American College of Surgeons. He is also the editor of the textbook “ACS Surgery: Principles and Practices.” Dr. Jurkovich is well known for his leadership of AAST in defining the future training and practice paradigm of Acute Care Surgery. Throughout the course of his career, Dr. Jurkovich has explored some of the most critical problems in trauma systems and trauma care. Dr. Jurkovich is a Minnesota native, from the Mesabi Iron range. He received an undergraduate degree in biomedical engineering (cum laude) from Northwestern University and his MD degree from the University of Minnesota. His surgery residency was at the University of Colorado, with a trauma research fellowship at Duke University.
CLAUDE H. ORGAN, JR. MEMORIAL LECTURESHIP PAST PRESENTERS

1996 - V. Suzanne Klimberg, MD
1997 - LaSalle D. Leffall, Jr., MD
1998 - Samuel A. Wells, Jr., MD
1999 - Hiram C. Polk, Jr., MD
2000 - F. Charles Brunicardi, MD
2001 - John B. Cone, MD
2002 - Douglas S. Reintgen, MD
2003 - Frank Lewis, MD
2004 - Philip Schauer, MD
2005 - Sean J. Mulvihill, MD
2006 - John Hanks, MD
2007 - Glen D. Warden, MD
2008 - Dmitry Oleynikov, MD
2009 - Mary L. Brandt, MD
2010 - Ernest E. Moore, MD
2011 - Ronald M. Stewart, MD
2012 - Eugene Foley, MD
2013 - Kelly McMasters, MD
2014 - Shanu N. Kothari, MD
2015 - Roxie M. Albrecht, MD
2016 - Terry C. Lairmore, MD
2017 - John Moore, MD
AWARDS

JACK A. BARNEY RESIDENT’S AWARD
Dr. Jack A. Barney received his medical degree in 1956 from the University of Oklahoma. He completed his surgical residency training at St. Anthony Hospital and the University of Oklahoma Health Science Center before entering private practice in Oklahoma City. Dr. Barney continued in private practice in Oklahoma City and Clinical Assistant Professor of Surgery at the University of Oklahoma.

The Barney award is given to the best paper presented by a resident.

1987 - Ronald M. Stewart, MD  
1988 - T.L. Demmy, MD  
1989 - Ronald M. Stewart, MD  
1990 - George Orloff, MD  
1991 - L. Lee Nelson, MD  
1992 - Phillip M. Brown, MD  
1993 - Timothy C. Hollingsed, MD  
1994 - Walter L. Biffl, MD  
1995 - Daniel R. Meldrum, MD  
1996 - David A. Partrick, MD  
1997 - Evan R. Kokoska, MD  
1998 - Tari King, MD  
1999 - David G. Affleck, MD  
2000 - Philip A. Woodworth, MD  
2001 - Elizabeth K. Paulsen, MD  
2002 - Sandra Wong, MD  
2003 - Ketan Desai, MD  
2004 - Joseph A. Davis, MD  
2005 - Elizabeth Fitzsullivan, MD  
2006 - Hyong Kim, MD  
2007 - Marcene McVay, MD  
2008 - Jodi Gerdes, MD  
2009 - Jennifer Keller, MD  
2010 - Brenda Kopriva, MD  
2011 - Stephanie Cohen, MD, MS  
2012 - Paul Bjordahl, MD  
2013 - Irminne Van Dyken, MD  
2014 - Katie Wiggins-Dohlvik, MD  
2015 - Abdul Alarhayem, MD  
2016 - Abdul Alarhayem, MD  
2017 – Hunter Moore, MD
LOWRY AWARD
The Lowry Award is given in recognition of the best paper by a new member (within the first two years of membership from your induction date).

2017 – Derek Wall, MD
IN MEMORIAM

DEATHS REPORTED 2017 – 2018
As of March, 2018

Clifford Buckley – Temple, TX

Gilbert Campbell – Little Rock, AR
SWSC 1980 Past President

Please report any known member deaths to the Southwestern Surgical Congress:

Southwestern Surgical Congress
2625 W. 51st Terrace
Westwood, KS 66205

t: 913-402-7102
SWSC@lp-etc.com
www.swscongress.org
2017–2018 NEW MEMBERS

Katherine Arnim MS, PA-C
Loren Bonenclark MPAS, PA-C
Lindsay Dyer-Kindy MS, PA-C
Laura Juarez PA-C, MPAS, MPH
Michelle Jupin ACNP, ANCC
Aaron Pugh PA-C
Shana Rogers ACNP
Nicole Tobin AG-ACNP
Zane Ashman MD
Lindel Dewberry MD
Ahmed Khouqueer MBBS
Anton Simorov MD
Moriah Wright MD
Deidre Wyrick MD
Jayson Aydelotte MD
Rodney Barker MD
Benjamin Davis MD
Subrato Deb MD
Jose Diaz MD
Jay Doucet MD
Julie Dunn MD
Saju Joseph MD
Gregory Jurkovich MD
Jason Kempenich MD
Mary Kimbrough MD
Ashley Lemere MD
Michele Loor MD
Jay MacGregor MD
David Meyer MD, MS
Nicole Nadlonek MD
Jeffry Nahmias MD, MHPE
Wendy Peterson MD
Elizabeth Pomfret MD, PhD
Catherine Ronaghan MD
Thomas Schroeppl MD
Rachel Tyler MD
Mark Watson MD
Jordan Weinberg MD
Krzysztof Wikel MD
Frank Zhao MD

Aurora, CO
Baltimore, MD
Aurora, CO
Salt Lake City, UT
Little Rock, AK
Murray, UT
Baltimore, MD
Baltimore, MD
Torrance, CA
Aurora, CO
Houston, TX
Omaha, NE
Omaha, NE
Little Rock, AK
Austin, TX
Farmington, UT
Little Rock, AK
Oklahoma City, OK
Baltimore, MD
San Diego, CA
Loveland, CO
Las Vegas, NV
Sacramento, CA
San Antonio, TX
Little Rock, AK
Williston, ND
Houston, TX
Grand Forks, ND
Houston, TX
Lone Tree, CO
Orange, CA
Denver, CO
Aurora, CO
Lubbock, TX
Colorado Springs, CO
Tulsa, OK
Dallas, TX
Phoenix, AZ
Denver, CO
Honolulu, HI
SCHEDULE AT-A-GLANCE
SCHEDULE AT-A-GLANCE

Saturday, April 8, 2018

1:00pm – 2:00pm  Executive Committee Meeting Salon HJ
2:00pm – 5:00pm  Council Meeting Salon HJ
5:00pm – 6:00pm  Program Directors Meeting Salon HJ
6:30pm – 7:00pm  Lowry Donors Reception Vineyard Terrace
7:00pm – 8:30pm  Presidents & Residents Reception Vineyard Terrace

Sunday, April 8, 2018

7:30am – 5:00pm  Registration Vineyard Pre-Function
8:00am – 9:55am  Surgical Practicum - Issues in Trauma Care Meritage Ballroom Salons V - X
9:55am – 10:10am  Surgical Practicum Morning Beverage Break Vineyard Pre-Function
10:10am – 12:00pm  Surgical Practicum – General Surgical Update Meritage Ballroom Salons V - X
1:00pm - 2:30pm  Scientific Session 1: General Surgery/Oncology Meritage Ballroom Salons V - X
2:30pm – 2:45pm  Introduction of New Members Meritage Ballroom Salons V - X
2:45pm – 3:15pm  Afternoon Beverage Break, Exhibits & ePoster Viewing Meritage Ballroom Salons I - IV
SCHEDULE AT-A-GLANCE (continued)

3:15pm - 4:30pm  Scientific Session 2: Trauma  
Meritage Ballroom Salons V - X

4:30pm – 5:15pm  Presidential Address  
Meritage Ballroom Salons V – X

5:30pm – 6:30pm  SWSC ePoster Rounds  
Meritage Ballroom Salons I - IV

6:30pm – 7:30pm  Welcome & Exhibitor Reception  
Meritage Ballroom Salons I - IV

Monday, April 9, 2018

6:30am – 7:30am  Yoga on the Vineyard  Vineyard Deck
6:30am – 12Noon  Registration  Vineyard Pre-Function
6:30am – 8:30am  Continental Breakfast, Exhibits &  
ePoster Viewing  Meritage Ballroom Salons I - IV
6:45am - 8:00am  Quick Shot Session 1: Acute Care Surgery  
Meritage Ballroom Salons V - X
6:45am - 8:00am  Quick Shot Session 2: Trauma  Salons BC
6:45am - 8:00am  Quick Shot Session 3: Minimally  
Invasive Surgery/Hernia  Salons AK
8:10am – 8:55am  Thomas G. Orr Memorial Lecture  
Meritage Ballroom Salons V - X
8:55am – 10:15am  ACS Session I - Credentialing and  
Changes in the MOC Process  
Meritage Ballroom Salons V - X
10:15am – 10:30am  Morning Beverage Break, Exhibits &  
ePoster Viewing  Meritage Ballroom Salons I - IV
10:30am – 12Noon  ACS Session II - Future of Surgery  
Meritage Ballroom Salons V - X
SCHEDULE AT-A-GLANCE

12Noon – 12:30pm  **MCT Committee Meeting**
Meritage Ballroom Salons V - X

1:00pm  **SWSC Golf Tournament**
Eagle Vines Golf Course

1:00pm  **Vineyard Tour and Tasting**
Estate Cave Entrance

1:00pm  **Science of Food and Wine**  Estate Cave

**Tuesday, April 10, 2018**

6:45am – 5:00pm  **Registration**  Vineyard Pre-Function

6:45am – 8:30am  **Continental Breakfast, Exhibits & ePoster Viewing**  Meritage Ballroom Salons I - IV

7:00am - 8:15am  **Quick Shot Session 4: Education/Other**  Meritage Ballroom Salons V - X

7:00am - 8:15am  **Quick Shot Session 5: Trauma**  Salons AK

7:00am - 8:15am  **Quick Shot Session 6: Potpourri**  Salons BC

8:15am - 9:30am  **Scientific Session 3: Potpourri**  Meritage Ballroom Salons V - X

9:30am – 10:00am  **Morning Break, Exhibits & ePoster Viewing**  Meritage Ballroom Salons I - IV

10:00am - 11:15am  **Scientific Session 4: Critical Care/Infection**  Meritage Ballroom Salons V - X

11:15am – 12Noon  **Expert Panel Case Presentations**  Meritage Ballroom Salons V – X

12Noon – 2:00pm  **Mock Oral Boards**  
(Pre-registration required)  Salons BC

12:15pm – 1:30pm  **Luncheon: Dealing with Mass Casualties**  Salons AK
SCHEDULE AT-A-GLANCE (continued)

1:00pm – 3:00pm  Guest Activity: Biking Tour
Meet in Hotel Lobby

1:30pm - 2:30pm  Scientific Session 5: General Surgery
Meritage Ballroom V - X

Tuesday, April 10, 2018

2:30pm – 2:45pm  Afternoon Break, Exhibits & ePoster Viewing
Meritage Ballroom Salons I - IV

2:45pm - 3:45pm  Scientific Session 6: Education/Wellness
Meritage Ballroom V - X

3:45pm – 4:30pm  Edgar J. Poth Memorial Lecture
Meritage Ballroom V - X

4:30pm – 5:00pm  SWSC Annual Business Meeting
Meritage Ballroom V - X

5:15pm – 6:00pm  Advanced Practice Clinician Reception
Crush Lounge

6:00pm – 9:00pm  SWSC Reception
(pre-registration required) Estate Cave

Wednesday, April 11, 2018

6:45am – 11:30am  Registration Vineyard Pre-Function

6:45am – 8:30am  Continental Breakfast Vineyard Terrace

7:00am - 8:00am  Quick Shot Session 7: General Surgery
Meritage Ballroom Salons V - X

7:00am - 8:00am  Quick Shot Session 8: Trauma Salons AK

7:00am - 8:00am  Quick Shot Session 9: Oncology
Salons BC
SCHEDULE AT-A-GLANCE (continued)

8:00am – 9:15am  **Scientific Session 7: Trauma**  
Meritage Ballroom Salons V - X

9:15am – 10:00am  **Claude H. Organ, Jr. Memorial Lecture**  
Meritage Ballroom Salons V – X

10:00am – 10:45am  **Top 10 Papers in Trauma**  
Meritage Ballroom Salons V – X

10:45am – 11:30am  **Top 10 Papers in General Surgery**  
Meritage Ballroom Salons V – X

11:30am – 12Noon  **Awards Presentation & Closing Session**  
Meritage Ballroom Salons V – X
SCIENTIFIC PROGRAM
* Denotes Jack Barney Award
+ Denotes Lowry Award
• Denotes Medical Student
= Denotes APC Presentation
Saturday, April 7, 2018

1:00pm – 2:00pm
Executive Committee Meeting
Salon HJ

2:00pm – 5:00pm
Council Meeting
Salon HJ

5:00pm – 6:00pm
Program Directors Meeting
Salon HJ

6:30pm – 7:00pm
Lowry Donors Reception
Vineyard Terrace

7:00pm – 8:30pm
Presidents & Residents Reception
Vineyard Terrace

* Denotes Jack Barney Award       + Denotes Lowry Award
• Denotes Medical Student       = Denotes APC Presentation

70TH ANNUAL MEETING 2018
Sunday, April 8, 2018

7:30am – 5:00pm
Registration
Vineyard Pre-Function

8:00am – 9:55am
Surgical Practicum - Issues in Trauma Care
Meritage Ballroom Salons V - X
Moderator: Juan A. Asensio MD | Creighton University Medical Center

Trauma Resuscitation Over the Last 155 Years
John B. Holcomb MD | University of Texas Health Science Center

What to Do About the Truncal Hemorrhage Problem
John B. Holcomb MD | University of Texas Health Science Center

REBOA: Limitations and Lessons Learned
R. Stephen Smith MD RDMS | University of Florida

Challenging Vascular Injuries
David V. Feliciano MD | University of Maryland

Panel Discussion

9:55am – 10:10am
Surgical Practicum - Morning Beverage Break
Vineyard Pre-Function

* Denotes Jack Barney Award       + Denotes Lowry Award
• Denotes Medical Student       = Denotes APC Presentation
10:10am – 12:00pm

**Surgical Practicum – General Surgical Update**
Meritage Ballroom Salons V - X

**Moderator:** Clay Cothren Burlew MD | Denver Health Medical Center

- **Acute Appendicitis: Current Status of Antibiotics vs. Surgery**
  Daniel J. Vargo MD | University of Utah School of Medicine

- **Management of Cholecystectomy-Associated Bile Duct Injuries**
  Bryan M. Clary MD MBA | University of California, San Diego

- **Strangulated Small Bowel Obstruction**
  S. Rob Todd MD | Baylor College of Medicine

- **Reoperative Abdominal Surgery After Trauma / EGS Catastrophes - Lessons Learned**
  David V. Feliciano MD | University of Maryland

**Panel Discussion**
1:00pm - 1:15pm
1. THE SOUTHWESTERN SURGICAL CONGRESS MULTI-CENTER TRIAL ON SUSPECTED CHOLEDOCHOLITHIASIS
Presenter: Richard Frazee MD
Baylor Scott and White Healthcare
Invited Discussant: Kenric Murayama MD | University of Hawaii at Manoa-John A Burns School of Medicine

1:15pm - 1:30pm
+ 2. CHOLECYSTOSTOMY: ARE WE USING IT CORRECTLY?
Presenter: Alexander Colonna MD
University of Utah School of Medicine
Invited Discussant: Christine Cocanour MD | University of California, Davis Medical School
1:30pm - 1:45pm
* 3. THIS TOO SHALL PASS: STANDARDIZED GASTROGRAFFIN PROTOCOL FOR PARTIAL SMALL BOWEL OBSTRUCTION
Presenter: Samuel Long MD
The University of Texas at Austin
Invited Discussant: Krista Kaups MD, MSc | University of California, San Francisco at Fresno

1:45pm - 2:00pm
* 4. OUTCOMES FOLLOWING LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS (LRYGB) VARY BY SEX: ANALYSIS OF 83,059 MORBIDLY OBESE WOMEN AND MEN
Presenter: Malinda Lyon DO
Inspira Health Network
Invited Discussant: Shanu Kothari MD | Gundersen Health System

2:00pm - 2:15pm
* 5. PREDICTIVE FACTORS OF UPSTAGING DCIS TO INVASIVE CARCINOMA IN BCT VS MASTECTOMY
Presenter: William Sheaffer MD
Mayo Clinic Arizona
Invited Discussant: Colleen Murphy MD | University of Colorado

* Denotes Jack Barney Award       + Denotes Lowry Award
• Denotes Medical Student       = Denotes APC Presentation
2:15pm - 2:30pm
6. PREDICTORS OF ADJUVANT CHEMOTHERAPY USE AND SURVIVAL IN PATIENTS WITH LOCALLY ADVANCED RECTAL CANCER
Presenter: Moriah Wright MD 
Creighton University
Invited Discussant: Molly Gross MD | Iowa Clinic

2:30pm – 2:45pm
Introduction of New Members
Meritage Ballroom Salons V - X

2:45pm – 3:15pm
Afternoon Beverage Break, Exhibits & ePoster Viewing
Meritage Ballroom Salons I - IV

3:15pm - 4:30pm
Scientific Session 2: Trauma
Meritage Ballroom Salons V - X
Moderators: John B. Holcomb MD | University of Texas Health Science Center; Amy Kwok MD, MPH | University of California, San Francisco at Fresno

3:15pm - 3:30pm
7. DETERMINING THE IMPACT OF CULTURE ON VENOUS THROMBOEMBOLISM PREVENTION IN TRAUMA PATIENTS: A SOUTHWESTERN SURGICAL CONGRESS MULTICENTER TRIAL
Presenter: Justin Regner MD 
Baylor Scott and White Healthcare
Invited Discussant: Mitchell Cohen MD | Denver Health Medical Center
3:30pm - 3:45pm
* 8. DOES TRANEXAMIC ACID REALLY WORK IN THE UNITED STATES? A SINGLE LEVEL I TRAUMA CENTER’S EXPERIENCE
Presenter: Ashley Dixon MD
The University of Texas at Austin
Invited Discussant: Clay Cothren Burlew MD | Denver Health Medical Center

3:45pm - 4:00pm
* 9. DISCREPANCIES BETWEEN CONVENTIONAL AND VISCOELASTIC ASSAYS IN IDENTIFYING TRAUMA-INDUCED COAGULOPATHY
Presenter: Joshua Sumislawski MD
University of Colorado School of Medicine
Invited Discussant: Justin Regner MD | Scott & White Medical Center

4:00pm - 4:15pm
• 10. RISK OF INTRACRANIAL HEMORRHAGE AMONG PATIENTS TAKING NOVEL ORAL ANTICOAGULANTS
Presenter: Lobsang Marcia BS
Harbor-UCLA Medical Center
Invited Discussant: Michael Truitt MD | Methodist Dallas Medical Center
4:15pm - 4:30pm
* 11. THE RISK OF DELAYED INTRACRANIAL HEMORRHAGE WITH NOVEL ORAL ANTICOAGULANTS AFTER AN INITIAL NEGATIVE ADMISSION COMPUTED TOMOGRAPHY: A TWO-CENTER STUDY
Presenter: Navpreet Dhillon MD
Cedars Sinai Medical Center
Invited Discussant: Franklin Wright MD | University of Colorado Denver

4:30pm – 5:15pm
Presidential Address
Meritage Ballroom Salons V - X
Introduction: Shanu Kothari MD | Gundersen Health System
Surgery, the View from an Island
Daniel R. Margulies MD | Cedars Sinai Medical Center

5:30pm – 6:30pm
SWSC ePoster Rounds
Meritage Ballroom Salons I - IV

Kiosk 1: General Surgery
Moderators: Maria Allo MD | Santa Clara Medical Center;
Michael Truitt MD | Methodist Dallas Medical Center

5:35pm - 5:40pm
P 1. FRAILTY IN PATIENTS UNDERGOING PARAESOPHAGEAL HERNIA REPAIR (PEHR)
Presenter: Angela Kao MD
Carolinas Medical Center

* Denotes Jack Barney Award  + Denotes Lowry Award
* Denotes Medical Student = Denotes APC Presentation
5:40pm - 5:45pm
**P 2. TIME TO OPERATION DOES NOT INFLUENCE HEALTH OUTCOMES FOR PERFORATED PEPTIC ULCER DISEASE**
**Presenter:** John Lung BS
Texas Tech University Health Sciences

5:45pm - 5:50pm
**P 3. PAIN MANAGEMENT AFTER APPENDECTOMY AND CHOLECYSTECTOMY: AN INNOVATIVE PROTOCOL USING EXparel**
**Presenter:** Laura Petrey MD
Baylor University Medical Center at Dallas

5:50pm - 5:55pm
**P 4. PHEOCHROMOCYTOMA CRISIS: TREATMENT AND MANAGEMENT OF CARDIOPULMONARY COLLAPSE VIA EXTRACORPOREAL MEMBRANE OXYGENATION FOLLOWED BY SURGICAL INTERVENTION: A SINGLE INSTITUTION EXPERIENCE**
**Presenter:** Meagan Mahoney MD
University of Mississippi Medical Center

5:55pm - 6:00pm
**P 5. HISPANIC PATIENTS REQUIRING SURGERY FOR DIVERTICULAR DISEASE MORE LIKELY TO BE MALE AND YOUNGER COMPARED TO OTHER ETHNICITIES**
**Presenter:** Steven E Brooks MD
Texas Tech University Health Sciences

* Denotes Jack Barney Award  
* Denotes Medical Student  
+ Denotes Lowry Award  
= Denotes APC Presentation
6:00pm - 6:05pm
P 6. CECAL BASCULES OR CECAL VOLVULUS: DOES PRE-OPERATIVE IMAGING DIFFERENTIATE BETWEEN THE TWO AND DOES IT MATTER?
Presenter: Ann Holloway DO
HonorHealth John C. Lincoln Medical Center

6:05pm - 6:10pm
P 7. SURGICAL TREATMENT OF RECURRENT PILOMIDAL DISEASE WITH BILATERAL GLUTEAL FASCIOCUTANEOUS ADVANCEMENT FLAPS
Presenter: Arman Alizadeh BS
The Surgery Group of Los Angeles

6:10pm - 6:15pm
P 8. IMPLICATIONS OF TIME TO INTERVENTION IN PATIENTS PRESENTING WITH NECROTIZING SOFT-TISSUE INFECTION
Presenter: Rifat Latifi MD
Westchester Medical Center

6:15pm - 6:20pm
P 9. OUTCOMES FOLLOWING ELECTIVE PNEUMONECTOMY BY ACUTE CARE SURGEONS AT A SAFETY NET HOSPITAL
Presenter: Abhinav Singh MD
University of Colorado School of Medicine

* Denotes Jack Barney Award
+ Denotes Lowry Award
• Denotes Medical Student
= Denotes APC Presentation
6:20pm - 6:25pm
P 10. A LITERATURE-BASED COST ANALYSIS OF TISSUE PLASMINOGEN ACTIVATOR FOR PREVENTION OF BILIARY STRICTURE IN DONATION AFTER CIRCULATORY DEATH LIVER TRANSPLANTATION
Presenter: Jordan Jones
University of Louisville

6:25pm - 6:30pm
P 11. THE USE OF BOVINE CAROTID ARTERY GRAFTS FOR HEMODIALYSIS ACCESS DOES NOT AFFECT PANEL-REACTIVE ANTIBODY AND CAN SAFELY BE USED FOR VASCULAR ACCESS IN PATIENTS AWAITING ORGAN TRANSPLANTATION
Presenter: Alicia Heelan Gladden MD
University of Colorado School of Medicine

Kiosk 2: Minimally Invasive Surgery/Hernia
Moderators: Kenric Murayama MD | University of Hawaii at Manoa-John A Burns School of Medicine;
Dmitry Oleynikov MD | University of Nebraska Medical Center

5:35pm - 5:40pm
P 12. PREVENTING UNINTENDED THERMAL INJURY: STRATEGIES TO REDUCE STRAY ENERGY TRANSFER IN ROBOTIC SURGERY
Presenter: Heather Carmichael MD
Denver Veterans Affairs Medical Center
5:40pm - 5:45pm  
P 13. ROUX-EN-Y GASTRIC BYPASS VERSUS SLEEVE GASTRECTOMY: WHAT FACTORS INFLUENCE PATIENT PREFERENCE?  
**Presenter:** Michael Morell MD  
Gundersen Health System

5:45pm - 5:50pm  
P 14. AN INNOVATIVE THERAPEUTIC OPTION FOR NON-OPERATIVE TREATMENT OF AFFERENT LOOP SYNDROME IN THE POOR SURGICAL CANDIDATE  
**Presenter:** Spencer Hansen MD  
St. Joseph’s Hospital and Medical Center

5:50pm - 5:55pm  
P 15. THE ROLE OF FELLOWSHIP TRAINING IN BARIATRIC SURGERY: AN ANALYSIS OF METABOLIC AND BARIATRIC SURGERY ACCREDITATION AND QUALITY IMPROVEMENT PROGRAM DATA  
**Presenter:** Michael Morell MD  
Gundersen Health System

5:55pm - 6:00pm  
P 16. BARIATRICS BELOW THE BORDER AND TREATMENT OF UNFORSEEN COMPLICATIONS IN THE POST OPERATIVE PERIOD  
**Presenter:** Laura Ashley Griffin Ray MD  
University of Mississippi Medical Center

* Denotes Jack Barney Award  
+ Denotes Lowry Award  
• Denotes Medical Student  
= Denotes APC Presentation
6:00pm - 6:05pm
P 17. THE USE OF BOTULINUM TOXIN IN CONTAMINATED ABDOMINAL WALL RECONSTRUCTION (AWR)
Presenter: Kathryn Schlosser MD
Carolinas Medical Center

6:05pm - 6:10pm
P 18. RETRO-RECTUS PLACEMENT OF BIO-ABSORBABLE MESH IMPROVES PATIENT OUTCOMES
Presenter: Matthew Goldblatt MD
Medical College of Wisconsin

6:10pm - 6:15pm
P 19. DISAPPOINTING RESULTS WITH INTRAOPERATIVE SCLEROTHERAPY FOLLOWING VENTRAL HERNIA REPAIR: A SINGLE CENTER EXPERIENCE
Presenter: Joshua Weis MD
University of Texas Southwestern Medical Center

6:15pm - 6:20pm
P 20. LAPAROSCOPIC INTRAPERITONEAL REPAIR OF SPIGELIAN HERNIAS: THE GUNDERSEN EXPERIENCE
Presenter: Ryan Watson MD
Gundersen Health System

* Denotes Jack Barney Award
+ Denotes Lowry Award
• Denotes Medical Student
= Denotes APC Presentation
6:20pm - 6:25pm
P 21. REDUCING THE PAIN: A COST EFFECTIVENESS ANALYSIS OF TRANSVERSUS ABDOMINIS PLANE BLOCK USING LIPOSOMAL BUPIVACAINE FOR OUTPATIENT LAPAROSCOPIC VENTRAL HERNIA REPAIR
Presenter: Alexander Colonna MD, MSCI
University of Utah School of Medicine

6:25pm - 6:30pm
P 22. LIPOSOMAL BUPIVACAINE REDUCES OPIOID REQUIREMENTS AND IMPROVES PATIENT SATISFACTION IN OPEN HERNIA REPAIR
Presenter: Alyssa Fesmire MD
University of Missouri Kansas City

Kiosk 3: Trauma
Moderators: Clay Cothren Burlew MD | Denver Health Medical Center; James Davis MD | University of California, San Francisco at Fresno

5:35pm - 5:40pm
P 23. THE RELATIONSHIP BETWEEN PRE-HOSPITAL USE OF KETAMINE AND HOSPITAL OUTCOMES
Presenter: Gina Shirah MD
HonorHealth John C. Lincoln Medical Center

* Denotes Jack Barney Award  + Denotes Lowry Award
• Denotes Medical Student = Denotes APC Presentation
5:40pm - 5:45pm
P 24. POINT OF CARE ULTRASOUND BY FIRST RESPONDERS IN RURAL SETTINGS CAN IDENTIFY INJURIES AND CHANGE TRIAGE DECISION-MAKING.
Presenter: Elesea Villegas PA-C
Texas Tech University Health Sciences

5:45pm - 5:50pm
P 25. THE TRAUMA TERTIARY SURVEY: STILL NEEDED IN MODERN TRAUMA CARE?
Presenter: Brendan Mitchell BS
University of Kansas School of Medicine

5:50pm - 5:55pm
P 26. TRENDS IN POTENTIALLY PREVENTABLE TRAUMA DEATHS BETWEEN 2005-2006 AND 2012-2013
Presenter: Ezra Koh MD
University of Texas Health Science Center at Houston

5:55pm - 6:00pm
P 27. THE “ABC” SCORE AND THAWED FFP IMPROVES RESUSCITATION AND REDUCES PENETRATING TRAUMA MORTALITY
Presenter: Alicia Heelan Gladden MD
University of Colorado School of Medicine

6:00pm - 6:05pm
P 28. IMMEDIATE AVAILABILITY OF THAWED PLASMA FOR TRAUMA PATIENTS IS FEASIBLE AND TIME SAVING
Presenter: Heidi Brown
University of Kansas School of Medicine
6:05pm - 6:10pm
P 29. CAN SERUM HYPOKALEMIA BE USED AS A SURROGATE MARKER OF SEVERE INJURY IN YOUNG TRAUMA PATIENTS?
Presenter: Alessandra Landmann MD
University of Oklahoma Health Sciences Center

6:10pm - 6:15pm
P 30. AIRWAY RISK ASSOCIATED WITH THE HALO VEST FIXATION DEVICE
Presenter: Tammy Kopelman MD
Maricopa Medical Center

6:15pm - 6:20pm
P 31. MANAGEMENT OF TRACHEOBRONCHIAL INJURIES: A SINGLE INSTITUTION EXPERIENCE
Presenter: Amos Zimmermann
Baylor College of Medicine

6:20pm - 6:25pm
P 32. SHOULD NON-RESUSCITATIVE EMERGENT THORACOTOMY FOR BLUNT THORACIC TRAUMA BE GUIDED BY CHEST TUBE OUTPUT?
Presenter: Catherine Seger MD
Baylor College of Medicine

6:25pm - 6:30pm
P 33. INCREASED INCIDENCE OF PULMONARY EMBOLISM AMONG PATIENT WITH TUBE THORACOSTOMY
Presenter: Benjamin Fegale MD
Riverside University Health Systems

* Denotes Jack Barney Award + Denotes Lowry Award
Denotes Medical Student = Denotes APC Presentation
Kiosk 4: Trauma

Moderators: David Feliciano MD | University of Maryland; Alicia Mangram MD | HonorHealth John C. Lincoln & Deer Valley Medical Center

5:35pm - 5:40pm
P 34. MAXILLOFACIAL CT IN BLUNT TRAUMA PATIENTS- A SINGLE INSTITUTION REVIEW
Presenter: Elizabeth Alore MD
Baylor College of Medicine

5:40pm - 5:45pm
P 35. BLOOD ALCOHOL CONTENT (BAC) DOES NOT PREDICT THE USE, YIELD, OR TIME TO HEAD CT SCAN AMONG INTOXICATED TRAUMA PATIENTS
Presenter: Rifat Latifi MD
Westchester Medical Center/New York Medical College

5:45pm - 5:50pm
P 36. A CROSS-DISCIPLINARY APPROACH TO WEANING MECHANICALLY VENTILATED PATIENTS WITH TRAUMATIC BRAIN INJURY: AN ANALYSIS OF CLINICAL OUTCOMES
Presenter: Keith Burns BS
University of Toledo Medical Center

5:50pm - 5:55pm
P 37. PANCREATICO-PERICARDIAL FISTULA AFTER MULTICAVITY GUNSHOT WOUND: DIAGNOSIS AND MANAGEMENT
Presenter: Amy Lin BS
Emory University School of Medicine
5:55pm - 6:00pm
P 38. OUTCOMES FOLLOWING BLUNT TRAUMATIC SPLENIC INJURY TREATED WITH CONSERVATIVE OR OPERATIVE MANAGEMENT
**Presenter:** Sarah Corn MD
University of Kansas School of Medicine - Wichita

6:00pm - 6:05pm
P 39. DETECTION OF HOLLOW VISCUS INJURY - IMPORTANCE OF CLINICAL EXAM
**Presenter:** Kristin Carter MD
University of Mississippi Medical Center

6:05pm - 6:10pm
P 40. MOTORCYCLE INJURIES ARE ASSOCIATED WITH SIGNIFICANT RISK OF TESTICULAR OR SCROTAL TRAUMA: SOMETHING AMERICANS AND THE FRENCH CAN AGREE UPON
**Presenter:** Areg Grigorian MD
University of California, Irvine Medical Center

6:10pm - 6:15pm
P 41. MANAGEMENT OF TRAUMATIC VENTRICULAR LACERATION WITH TOPICAL HEMOSTATIC ONLAY
**Presenter:** Zachary Kimball BS
University of California, Davis

6:15pm - 6:20pm
P 42. IMPROVING THE SAFETY OF OLDER ADULT PEDESTRIANS IN HAWAII- AND THE REST OF THE U.S.
**Presenter:** Lauren Yap
University of Hawaii
6:20pm - 6:25pm
P 43. DEER STAND FALL EPIDEMIOLOGY: AN OPPORTUNITY FOR INJURY PREVENTION
Presenter: Michael Arnold MD
Carolinas Medical Center

6:25pm - 6:30pm
P 44. PRESSURE ULCER IN TRAUMA PATIENTS: A HIGHER SPINAL CORD INJURY LEVEL LEADS TO HIGHER RISK
Presenter: Areg Grigorian MD
University of California Irvine Medical Center

Kiosk 5: Oncology
Moderators: Victor Zannis MD | Comprehensive Breast Center of Arizona;
Barbara Pockaj MD | Mayo Clinic

5:35pm - 5:40pm
P 45. CONQUERING “STAGE FRIGHT”:
NAVIGATING THE NEW AJCC BREAST CANCER STAGING GUIDELINES
Presenter: Deidre Wyrick MD
Central Arkansas VA

5:40pm - 5:45pm
P 46. AN OPPORTUNITY FOR IMPROVEMENT IN ACRAL LENTIGINOUS MELANOMA:
A COMPARISON BETWEEN AFRICAN AMERICANS AND CAUCASIANS
Presenter: Laura Ashley Griffin Ray, MD
University of Mississippi Medical Center

* Denotes Jack Barney Award  + Denotes Lowry Award
• Denotes Medical Student  = Denotes APC Presentation
5:45pm - 5:50pm
**P 47. THE ANGEL WINGS INCISION: A NOVEL SOLUTION FOR MASTECTOMY PATIENTS WITH REDUNDANT AXILLARY TISSUE**
**Presenter:** Erica Hill DO
University of Arkansas for Medical Sciences

5:50pm - 5:55pm
**P 48. PERI-OPERATIVE ELECTROMAGNETIC TRANSTHORACIC LUNG NODULE LOCALIZATION**
**Presenter:** Christina Colosimo DO
Sky Ridge Medical Center

5:55pm - 6:00pm
**P 49. THE USE OF PRE-OPERATIVE VARIABLES TO PREDICT UNRESECTABILITY IN PANCREATIC CANCER**
**Presenter:** Kara Hesse DO
University of Kansas School of Medicine

6:00pm - 6:05pm
**P 50. ISOLATED RETROPERITONEAL LYMPH NODE METASTASIS IN RECTAL ADENOCARCINOMA: THE USE OF ROBOTIC RETROPERITONEAL LYMPH NODE DISSECTION**
**Presenter:** Patrick Hangge MD
Mayo Clinic Arizona

* Denotes Jack Barney Award  
+ Denotes Lowry Award  
• Denotes Medical Student  
= Denotes APC Presentation
6:05pm - 6:10pm
P 51. HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY ALTERS TIMING AND RATES OF COMPLICATIONS IN ONCOLOGIC COLON RESECTION
Presenter: Tyler Mouw MD
University of Kansas Medical Center

6:10pm - 6:15pm
P 52. POSTOPERATIVE MECHANICAL VENTILATION IS ASSOCIATED WITH INCREASED MORBIDITY AND A WORSE PERIOPERATIVE OUTCOME AFTER CYTOREDUCTION AND HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY
Presenter: Jeremiah Deneve DO
University of Tennessee Health Science Center

6:15pm - 6:20pm
P 53. CYTOREDUCTIVE SURGERY AND HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY (CRS/HIPEC): EARLY VS. LATE EXPERIENCE AT A SINGLE INSTITUTION
Presenter: Cristine Velazco MD, MS
Mayo Clinic Arizona
6:25pm - 6:30pm  
P 55. MULTIDISCIPLINARY CANCER CARE MODEL: THE EFFECT OF NURSE NAVIGATORS IN IMPROVING OUTCOMES OF CANCER PATIENTS  
**Presenter:** Robin Munoz MSN, NP-C, PHN, OCN  
University of California, San Francisco at Fresno

**Kiosk 6: Potpourri**  
**Moderators:** S. Rob Todd MD | Baylor College of Medicine;  
John R. Potts, III MD | ACGME

5:35pm - 5:40pm  
P 56. PUSHING THE C. DIFFICILE ENVELOPE: IS THERE A SIMPLER SURGICAL SOLUTION?  
**Presenter:** Danielle Pigneri MD  
Scripps Memorial Hospital La Jolla

5:40pm - 5:45pm  
P 57. COMBINATION OF LECTURE AND HANDS-ON PRACTICE IN CADAVERIC SKILLS COURSE SERVES AS EFFECTIVE TEACHING MODEL FOR HUMANITARIAN SURGICAL SKILLS  
**Presenter:** Julia Coleman MD, MPH  
University of Colorado

5:45pm - 5:50pm  
P 58. “BUT THEIR YELP REVIEWS ARE AWFUL!” ANALYSIS OF GENERAL SURGEONS’ YELP REVIEWS  
**Presenter:** Yosef Nasseri MD  
The Surgery Group of Los Angeles

* Denotes Jack Barney Award  
+ Denotes Lowry Award  
• Denotes Medical Student  
= Denotes APC Presentation
5:50pm - 5:55pm
P 59. THE PEDIATRIC SURGEON-SCIENTIST: SUCCEEDING IN TODAY’S ACADEMIC ENVIRONMENT
Presenter: Emily Steen MD
Baylor College of Medicine

5:55pm - 6:00pm
P 60. VENOUS THROMBOEMBOLISM RATES ARE NOT SIGNIFICANTLY GREATER IN OBESE PATIENTS EVEN IN EMERGENT SURGERY
Presenter: Theresa Nguyen BS
University of Kansas School of Medicine

6:00pm - 6:05pm
P 61. VENOUS THROMBOEMBOLISM PROPHYLAXIS IN MALIGNANCY: ARE LOCAL PRACTICES CONSISTENT WITH NATIONAL RECOMMENDATIONS?
Presenter: Patrick Hangge MD
Mayo Clinic Arizona

6:05pm - 6:10pm
P 62. EMERGENT LIVER TRANSPLANTATION FOLLOWING BLUNT INJURY TO THE LIVER
Presenter: Martin Rosenthal MD
University of Florida

* Denotes Jack Barney Award       + Denotes Lowry Award
• Denotes Medical Student       = Denotes APC Presentation

70TH ANNUAL MEETING 2018
6:10pm - 6:15pm
P 63. CONCOMITANT PLACEMENT OF RIGHT INTERNAL JUGULAR DUAL LUMEN DIALYSIS CATHETER AND CENTRAL VENOUS CATHETER: IS IT SAFE?
Presenter: Blake Spitzer MD
University of Kansas School of Medicine - Wichita

6:15pm - 6:20pm
P 64. MORNING REPORT DECREASES LENGTH OF STAY IN TRAUMA PATIENTS
Presenter: JD Wolfe BS
University of Arkansas for Medical Sciences

6:20pm - 6:25pm
P 65. FEASIBILITY OF SMS TEXTS TO ASSESS LONG TERM QUALITY OF LIFE IN TRAUMA PATIENTS
Presenter: Brannon Donovan
University of Kansas School of Medicine

6:25pm - 6:30pm
P 66. TRAUMA SURGEON AND PALLIATIVE CARE PHYSICIAN ATTITUDES REGARDING GOALS OF CARE DELINEATION FOR INJURED GERIATRIC PATIENTS
Presenter: Holly Cunningham MD
University of Texas Southwestern Medical Center

6:30pm – 7:30pm
Welcome & Exhibitor Reception
Meritage Ballroom Salons I - IV
Monday, April 9, 2018

6:30am – 7:30am
Yoga on the Vineyard
Vineyard Deck

6:30am – 12Noon
Registration
Vineyard Pre-Function

6:30am – 8:30am
Continental Breakfast, Exhibits & ePoster Viewing
Meritage Ballroom Salons I - IV

6:45am - 8:00am
Quick Shot Session 1: Acute Care Surgery
Meritage Ballroom Salons V - X
Moderators: Ronald Sing DO | Carolinas Medical Center; Annika Kay PA-C | Intermountain Medical Center

6:45am - 6:53am
QS 1. SIZE MATTERS: COMPUTED TOMOGRAPHIC MEASUREMENTS OF THE APPENDIX IN EMERGENCY DEPARTMENT SCANS
Presenter: Eliza Moskowitz MD
University of Colorado School of Medicine

6:53am - 7:01am
QS 2. DISPARATE OUTCOMES IN EMERGENCY APPENDECTOMY: EXAMINING THE EFFECT OF RACE/ETHNICITY USING ACS-NSQIP
Presenter: Elizabeth Alore MD
Baylor College of Medicine
7:01am - 7:09am
QS 3. USE OF WATER-SOLUBLE CONTRAST CHALLENGE IN SMALL BOWEL OBSTRUCTION MANAGEMENT
Presenter: Eliza Moskowitz MD
University of Colorado School of Medicine

7:09am - 7:17am
QS 4. PROGNOSTIC VALUE OF FECALIZATION SIGN FOR SURGERY AND ISCHEMIA IN PATIENTS WITH SMALL BOWEL OBSTRUCTION
Presenter: Yosef Nasseri MD
Cedars Sinai Medical Center

7:17am - 7:25am
QS 5. CHARACTERIZATION OF PEDIATRIC SMALL BOWEL OBSTRUCTION IN THE VIRGIN ABDOMEN
Presenter: Lindel Dewberry MD
University of Colorado School of Medicine

7:25am - 7:33am
QS 6. DELAYED TOTAL ABDOMINAL COLECTOMY FOR SEVERE CLOSTRIDIUM DIFFICILE INFECTION IS ASSOCIATED WITH INCREASED MORTALITY, POSTOPERATIVE COMPLICATIONS, AND COST
Presenter: Bradley Hall MD
University of Nebraska Medical Center

* Denotes Jack Barney Award  + Denotes Lowry Award
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7:33am - 7:41am
QS 7. TRANSITIONAL CARE COORDINATION: CAN WE REDUCE READMISSION IN HIGH RISK EMERGENCY GENERAL SURGERY PATIENTS?
Presenter: Lindsay O’Meara CRNP
University of Maryland Medical Center

7:41am - 7:49am
QS 8. OUTCOMES OF EMERGENCY GASTROINTESTINAL SURGERY IN IMMUNOSUPPRESSED PATIENTS
Presenter: Miguel Gomez Ibarra MD
Mayo Clinic Rochester

7:49am - 7:57am
QS 9. OUTCOMES AFTER EMERGENCY PALLIATIVE SURGERY IN PATIENTS WITH STAGE IV MALIGNANCIES
Presenter: Lobsang Marcia BS
Harbor-UCLA Medical Center

6:45am - 8:00am
Quick Shot Session 2: Trauma Salons BC
Moderators: Patrick Offner MD MPH | Sky Ridge Medical Center; Eric Campion MD | Denver Health

6:45am - 6:53am
QS 10. PREVENTION OF PULMONARY EMBOLISM IN PATIENTS UNDERGOING OPERATION FOR PELVIC FRACTURE: EFFICACY OF AN INSTITUTIONAL CLINICAL PATHWAY
Presenter: Thomas Smith
St. Joseph’s Hospital and Medical Center
6:53am - 7:01am
**QS 11. PEDIATRIC FALLS: WHICH FALL VARIABLES MATTER IN TRIAGE?**
**Presenter:** Michelle Baalmann MD
University of Kansas School of Medicine -Wichita

7:01am - 7:09am
**QS 12. PNEUMOMEDIASTINUM IN BLUNT TRAUMA: IF AERODIGESTIVE INJURY IS NOT SEEN ON CT, INVASIVE WORKUP IS NOT INDICATED**
**Presenter:** Nicholas Matthees MD
St. Joseph’s Hospital and Medical Center

7:09am - 7:17am
**QS 13. NATIONAL TRAUMA DATABASE RISK FACTORS FOR BLUNT CARDIAC INJURY: HEMOPNEUMOTHORAX IS THE STRONGEST PREDICTOR**
**Presenter:** Areg Grigorian MD
University of California, Irvine Medical Center

7:17am - 7:25am
**QS 14. CONCOMITANT CHEST TRAUMA AND TRAUMATIC BRAIN INJURY: BIOMARKERS PREDICT A CORRELATION WITH WORSE OUTCOMES**
**Presenter:** Angela Crawford MD
University of Maryland Medical Center

* Denotes Jack Barney Award       + Denotes Lowry Award
• Denotes Medical Student       = Denotes APC Presentation
7:25am - 7:33am  
**QS 15. HEPARIN ADMINISTRATION AFTER SEVERE TRAUMATIC BRAIN INJURY: CAN IT IMPROVE OUTCOMES?**  
**Presenter:** Kaley Kinnamon  
University of Kansas School of Medicine

7:33am - 7:41am  
**QS 16. CEREBRAL CROSS SECTIONAL AREA ON HEAD CT MAY PREDICT FRAILITY AND MORTALITY IN FALLING OCTOGENARIANS**  
**Presenter:** Chad Hall MD  
Baylor Scott and White Healthcare

7:41am - 7:49am  
**QS 17. TRENDS, PRESENTATIONS, RISK FACTORS AND OUTCOMES OF FALLS FROM HEIGHT AMONG ELDERLY: GENDER MATTERS**  
**Presenter:** Rifat Latifi MD  
Westchester Medical Center

7:49am - 7:57am  
**QS 18. DRIVING ONE INSANE: THE SOCIOECONOMIC CHALLENGES WITH PEDESTRIAN TRAUMA**  
**Presenter:** Mary Lindemuth MD  
University of Oklahoma Health Sciences Center
6:45am - 8:00am
Quick Shot Session 3: Minimally Invasive Surgery/Hernia
Salons AK
Moderators: Shanu Kothari MD | Gundersen Health System; Jason Johnson DO | Saint Joseph Hospital

6:45am - 6:53am
QS 19. LONG-TERM OUTCOMES OF LAPAROSCOPIC PARAESOPHAGEAL HERNIA REPAIR IN THE ELDERLY
Presenter: Javier Otero MD
Carolinas Medical Center

6:53am - 7:01am
QS 20. UNPLANNED REOPERATIONS FOLLOWING LAPAROSCOPIC BARIATRIC SURGERY: A MBSAQIP ANALYSIS
Presenter: Reza Fazl Alizadeh MD
University of California, Irvine Medical Center

7:01am - 7:09am
QS 21. AFTERNOON VERSUS MORNING ROBOTIC COLORECTAL PROCEDURES: IS THERE A DIFFERENCE?
Presenter: Anderson Lee BS
The Surgery Group of Los Angeles

7:09am - 7:17am
QS 22. MINIMALLY INVASIVE REPAIR OF PECTUS EXCAVATUM IN ADULTS: A TECHNICALLY DEMANDING OPERATION
Presenter: Raphael Nicolas Vuille-dit-Bille MD, PhD
University of Colorado School of Medicine
7:17am - 7:25am
**QS 23. A RETROSPECTIVE CHART REVIEW OF HERNIA RECURRENCE AFTER NOVEL BIOSYNTHETIC POLY-4-HYDROXYBUTYRATE (P4HB, PHASIXTM) MESH REPAIR OF INCISIONAL HERNIA**
**Presenter:** Moriah Wright MD
Creighton University

7:25am - 7:33am
**QS 24. REGIONALIZATION OF COMPONENT SEPARATION TECHNIQUE IN OPEN VENTRAL HERNIA REPAIR, A 9 YEAR ANALYSIS OF THE NATIONAL INPATIENT SAMPLE**
**Presenter:** Javier Otero MD
Carolinas Medical Center

7:33am - 7:41am
**QS 25. ROUTINE OPEN INGUINAL HERNIA SAC PATHOLOGIC ANALYSIS: IS IT NECESSARY?**
**Presenter:** Mallory Wampler MD
University of Texas Health Science Center at San Antonio

7:41am - 7:49am
**QS 26. THIRTY-DAY OUTCOMES OF COMBINED GROIN HERNIA REPAIR AND HYDROCELECTOMY: A RETROSPECTIVE REVIEW OF THE NATIONAL SURGICAL QUALITY IMPROVEMENT PROGRAM DATABASE**
**Presenter:** Emily Dubina MD
Harbor-UCLA Medical Center
7:49am - 7:57am
QS 27. BONE ANCHOR FIXATION IN ABDOMINAL WALL RECONSTRUCTION
Presenter: Kathryn Schlosser MD
Carolinas Medical Center

8:10am – 8:55am
Thomas G. Orr Memorial Lecture
Meritage Ballroom Salons V - X
Introduction: Daniel Margulies MD | Cedars Sinai Medical Center

My Name Is **** and I AM a General Surgeon
Kenric Murayama MD | University of Hawaii at Manoa-John A Burns School of Medicine

8:55am – 10:15am
ACS Session I - Credentialing and Changes in the MOC Process
Meritage Ballroom Salons V - X
Moderators: David B. Hoyt MD FACS | American College of Surgeons;
Daniel R. Margulies MD FACS | Cedars Sinai Medical Center

The ACS Perspective in Maintaining Surgical Competence
Lewis M. Flint MD FACS | Division of Education American College of Surgeons

Changes in the MOC Process
Roxie M. Albrecht MD FACS | University of Oklahoma

Credentialing
Leigh A. Neumayer MD MS FACS | University of Arizona

Panel Discussion and Q&A
10:15am – 10:30am
Morning Beverage Break, Exhibits & ePoster Viewing
Meritage Ballroom Salons I - IV

10:30am – 12:00noon
ACS Session II - Future of Surgery
Meritage Ballroom Salons V - X
Moderator: Sean J. Langenfeld MD FACS | University of Nebraska Medical Center

Tailoring Surgical Education to the Modern Trainee’s Learning Methods and Lifestyle
Christian M. deVirgilio MD FACS | Harbor UCLA Medical Center

Social Media Smarts: What Surgeons Should Know
Sharmila D. Dissanaike MD FACS | Texas Tech University Health Sciences Center

Financing Healthcare
David B. Hoyt MD FACS | American College of Surgeons

Panel Discussion and Q&A

12:00noon – 12:30pm
MCT Committee Meeting
Meritage Ballroom Salons V - X

1:00pm
SWSC Golf Tournament
Eagle Vines Golf Course

1:00pm
Vineyard Tour and Tasting
Estate Cave Entrance
1:00pm
Science of Food and Wine
Estate Cave
Tuesday, April 10, 2018

6:45am – 5:00pm
Registration
Vineyard Pre-Function

6:45am – 8:30am
Continental Breakfast, Exhibits & ePoster Viewing
Meritage Ballroom Salons I - IV

7:00am - 8:15am
Quick Shot Session 4: Education/Other
Meritage Ballroom Salons V - X
Moderators: Daniel Dent MD | University of Texas Health Science Center at San Antonio;
Paul W Nelson MD | Sunrise Health GME Consortium

7:00am - 7:08am
QS 28. PROSPECTIVE VALIDATION OF THE SAFETY AND EFFICACY OF A GENERAL SURGERY RESIDENCY TRAINING PROGRAM
Presenter: Tarik Madni MD
University of Texas Southwestern Medical Center

7:08am - 7:16am
QS 29. DEVELOPMENT OF A TECHNICAL, SKILL-FOCUSED CLINICAL ROTATION TO ADDRESS ACGME MANDATED INCREASES IN CASE VOLUME FOR SURGICAL TRAINEES
Presenter: Nicole Christian MD, MSCS
University of Colorado School of Medicine

* Denotes Jack Barney Award  + Denotes Lowry Award
• Denotes Medical Student  = Denotes APC Presentation
7:16am - 7:24am
QS 30. USING A REGIONAL CONFERENCE TO COLLABORATE ON EDUCATIONAL QUALITY IMPROVEMENT
Presenter: Ross Willis PhD
University of Texas Health Science Center at San Antonio

7:24am - 7:32am
QS 31. ASSESSING AMERICAN BOARD OF SURGERY IN-TRAINING EXAMINATION PERFORMANCE AFTER USE OF TRUELEARN QUESTION BANK
Presenter: Jonathan Imran MD
University of Texas Southwestern Medical Center

7:32am - 7:40am
QS 32. ARE RURAL GENERAL SURGEONS PREPARED TO PERFORM SPECIALTY PROCEDURES IN PRACTICE?
Presenter: Roxanne Stiles MD
University of Kansas School of Medicine - Wichita

7:40am - 7:48am
QS 33. THE IMPACT OF ELECTRONIC MEDICAL RECORD SCRIBES ON RESIDENT AND ATTENDING EXPERIENCE IN THE OUTPATIENT SURGERY CLINICS OF AN ACADEMIC MEDICAL CENTER
Presenter: Samuel Chen MD
University of California, Irvine Medical Center

* Denotes Jack Barney Award  + Denotes Lowry Award
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7:48am - 7:56am
QS 34. PREOPERATIVE LABORATORY TEST UTILIZATION IN YOUNG, HEALTHY PATIENTS UNDERGOING OUTPATIENT LOW-RISK SURGERY
Presenter: Joshua Tseng MD
Cedars Sinai Medical Center

7:56am - 8:04am
QS 35. SURGICAL FIRES: THE EFFECTS OF PREPPING AND DRAPING
Presenter: Daniel VanDerPloeg MD
University of Colorado School of Medicine

8:04am - 8:12am
QS 36. EFFICACY OF INTRAVENOUS ACETAMINOPHEN AS ADJUNCT POST-OPERATIVE ANALGESIC AFTER MEDIAN STERNOTOMY: A RETROSPECTIVE STUDY
Presenter: Omar Almoghribi MD
University of Kansas School of Medicine - Wichita
7:00am - 8:15am
Quick Shot Session 5: Trauma
Salons AK
Moderators: Lillian Liao MD MPH | University of Texas Health Science Center at San Antonio; Randolph Szlabick MD | University of North Dakota School of Medicine

7:00am - 7:08am
**QS 37. WHAT HAPPENS AFTER A STOP THE BLEED® CLASS? THE CONTRAST BETWEEN THEORY AND PRACTICE.**
Presenter: Navpreet Dhillon MD
Cedars Sinai Medical Center

7:08am - 7:16am
**QS 38. CATHETER DISTANCES AND BALLOON INFLATION VOLUMES FOR THE ER REBOA CATHETER: A PROSPECTIVE ANALYSIS**
Presenter: David Meyer MD, MS
University of Texas Health Science Center at Houston

7:16am - 7:24am
**QS 39. RESUSCITATIVE ENDOVASCULAR BALLOON OCCLUSION OF THE AORTA INFLATION TIMES AND ACUTE RENAL FAILURE: DOES TIME MATTER?**
Presenter: Megan Mont BS
University of Texas Health Science Center at Houston

* Denotes Jack Barney Award  + Denotes Lowry Award  
• Denotes Medical Student   = Denotes APC Presentation
7:24am - 7:32am
**QS 40. MAKING THE GOLDEN 10 MINUTES A REALITY: DEVELOPMENT OF A “FLY-BY PROTOCOL” AT A LEVEL 1 TRAUMA CENTER**
**Presenter:** Steven E. Brooks MD
Texas Tech University Health Sciences

7:32am - 7:40am
**QS 41. ORGANIZING CHAOS: A MODEL FOR DELIVERY OF A MASSIVE TRANSFUSION PROTOCOL BY ADVANCED PRACTICE CLINICIANS AT A LEVEL I TRAUMA CENTER**
**Presenter:** Brittany Gerali PA-C
Intermountain Medical Center

7:40am - 7:48am
**QS 42. OPERATING ROOM ETCO2 VALUES DO NOT ACCURATELY PREDICT BLOOD CO2 CONCENTRATION IN TRAUMA PATIENTS REQUIRING MASSIVE TRANSFUSION**
**Presenter:** Jamie Hadley MD
University of Colorado School of Medicine

7:48am - 7:56am
**QS 43. EXTRA-PARENCHYMAL SPLENIC ABNORMALITIES NOT VASCULAR INJURIES PREDICT NEED FOR SPLENECTOMY**
**Presenter:** Margaret Lauerman MD
R. Adams Shock Trauma Center at The University of Maryland
7:56am - 8:04am

**QS 44. OBESITY IS NOT ASSOCIATED WITH HEMORRHAGIC DEATH FOLLOWING MAJOR TRAUMA**
**Presenter:** Jenna Ball
University of Kansas School of Medicine

8:04am - 8:12am

**QS 45. DOES TEAM COMMUNICATION MATTER: PREDICTORS OF MEDICAL PERFORMANCE DURING TRAUMA ACTIVATIONS**
**Presenter:** Jessica Raley PhD
University of Texas Health Science Center at San Antonio

7:00am - 8:15am

**Quick Shot Session 6: Potpourri**
Salons BC
**Moderators:** Laura Moore MD | University of Texas Health McGovern Medical School;
Susan McLean MD | Texas Tech University Health Sciences Center at El Paso

7:00am - 7:08am

**QS 46. INSERTION OF INTRABRONCHIAL VALVES FOR TRAUMATIC BRONCHO-PLEURAL FISTULAS**
**Presenter:** Michael Arnold MD
Carolinas Medical Center

7:08am - 7:16am

**QS 47. CLINICAL OUTCOMES IN SEPTIC PATIENTS AFTER IMPLEMENTING A VISUAL CLINICAL DECISION SUPPORT SYSTEM**
**Presenter:** Vanessa Nomellini MD, PhD
University of Cincinnati
7:16am - 7:24am
QS 48. METAGENOMIC ANALYSIS REVEALS IMPORTANCE OF ANAEROBES IN DEVELOPMENT AND CLINICAL OUTCOME OF NECROTIZING SOFT TISSUE INFECTIONS
Presenter: Hannah Zhao-Fleming
Texas Tech University Health Sciences

7:24am - 7:32am
QS 49. TIMING OF PREOPERATIVE ANTIBIOTIC PROPHYLAXIS AND POSTOPERATIVE SURGICAL SITE INFECTIONS
Presenter: Michael Morell MD
Gundersen Health System

7:32am - 7:40am
QS 50. VOLUME OF TISSUE DEBRIDED IN NECROTIZING SOFT TISSUE INFECTIONS IS A PREDICTOR OF MORTALITY
Presenter: Erin Howell MD
Harbor-UCLA Medical Center

7:40am - 7:48am
QS 51. PREDICTORS AND OUTCOMES OF PROLONGED HOSPITALIZATION FOLLOWING LOWER EXTREMITY REVASCULARIZATION
Presenter: Zhobin Moghadamyeghaneh MD
University of California, San Francisco

* Denotes Jack Barney Award + Denotes Lowry Award
• Denotes Medical Student = Denotes APC Presentation
7:48am - 7:56am
QS 52. THE IMPACT OF FRAILTY ON MORBIDITY AND MORTALITY FOLLOWING VENTRAL HERNIA REPAIRS (VHR)
**Presenter:** Angela Kao MD
Carolinas Medical Center

7:56am - 8:04am
QS 53. I’LL TAKE MINE TO GO: A SINGLE CENTER EXPERIENCE WITH OUTPATIENT LOOP ILEOSTOMY REVERSALS
**Presenter:** Jesse Conner MD
University of Oklahoma Health Sciences Center

8:04am - 8:12am
QS 54. IDENTIFYING RISK FACTORS FOR DEVELOPMENT OF PERI-OPERATIVE VENOUS THROMBOEMBOLISM IN PATIENTS WITH GASTROINTESTINAL MALIGNANCY
**Presenter:** Neal Bhutiani MD
University of Louisville

* Denotes Jack Barney Award       + Denotes Lowry Award
• Denotes Medical Student       = Denotes APC Presentation
SCIENTIFIC PROGRAM | Tuesday, April 10, 2018

8:15am - 9:30am
Scientific Session 3: Potpourri
Meritage Ballroom Salons V - X
Moderators: Fredric Pieracci MD, MPH | Denver Health Medical Center;
Mark Savarise MD, MBA | University of Utah

8:15am - 8:30am
• 12. THE ERA OF THE AFFORDABLE CARE ACT, IMPACTS ON ELECTIVE GENERAL SURGERY
Presenter: Lilianna Yuen BS, MS
University of California, San Diego
Invited Discussant: John R. Potts, III MD | ACGME

8:30am - 8:45am
* 13. THE PARALYZING EFFECT OF INSURANCE STATUS ON THROUGHPUT OF ACUTE SPINAL CORD PATIENTS
Presenter: Mary Lindemuth MD
University of Oklahoma Health Sciences Center
Invited Discussant: Stephanie Gordy MD | Baylor College of Medicine

8:45am - 9:00am
* 14. PROSPECTIVE ANALYSIS OF OPERATING ROOM AND DISCHARGE DELAYS IN A BURN CENTER
Presenter: Tarik Madni MD
University of Texas Southwestern Medical Center
Invited Discussant: Lillian Liao MD MPH | University of Texas Health Science Center at San Antonio

* Denotes Jack Barney Award       + Denotes Lowry Award
• Denotes Medical Student       = Denotes APC Presentation
9:00am - 9:15am
* 15. MESH FISTULA AFTER VENTRAL HERNIA REPAIR: WHAT IS THE OPTIMAL MANAGEMENT?
Presenter: Michael Arnold MD
Carolinas Medical Center
Invited Discussant: John Uecker MD | The University of Texas at Austin

9:15am - 9:30am
* 16. EQUIVALENT OUTCOMES IN MIDLINE LAPAROTOMY WOUNDS USING NEGATIVE PRESSURE WOUND THERAPY WITH ONE VERSUS THREE WEEKLY DRESSING CHANGES
Presenter: Omar Beidas MD
University of Oklahoma Health Sciences Center
Invited Discussant: Wayne Anderson MD | CHI-St. Alexius Williston

9:30am – 10:00am
Morning Break, Exhibits & ePoster Viewing
Meritage Ballroom Salons I - IV
10:00am - 11:15am
Scientific Session 4: Critical Care/Infection
Meritage Ballroom Salons V - X
Moderators: Christine Cocanour MD | University of California, Davis Medical School; Elizabeth Scherer MD, MPH | University of Texas Health Science Center at San Antonio

10:00am - 10:15am
* 17. DECREASING FAILED EXTUBATIONS WITH THE IMPLEMENTATION OF AN EXTUBATION CHECKLIST
Presenter: Melanie Bobbs MD
The University of Texas at Austin
Invited Discussant: S. Rob Todd MD | Baylor College of Medicine

10:15am - 10:30am
* 18. CONTINUOUS RENAL REPLACEMENT THERAPY EQUALLY BENEFITS THE ELDERLY CRITICALLY ILL SURGICAL PATIENT
Presenter: Christos Colovos MD PhD
Cedars Sinai Medical Center
Invited Discussant: Michael Corneille MD | Southwest General Hospital

* Denotes Jack Barney Award   + Denotes Lowry Award
• Denotes Medical Student = Denotes APC Presentation
10:30am - 10:45am
19. ACUTE HYPERGLYCEMIA INCREASES SEPSIS RELATED GLYCOCALYX DEGRADATION AND ENDOTHelial CELLULAR INJURY: A MICROFLUIDIC STUDY
Presenter: Larry Diebel MD
Wayne State University
Invited Discussant: Terry Lairmore MD | Baylor Scott & White

10:45am - 11:00am
20. MUPIROCIN SURGICAL SITE DRESSINGS AND ITS EFFECT ON POSTOPERATIVE SURGICAL SITE INFECTIONS IN ELECTIVE COLORECTAL SURGERY: A PROSPECTIVE, RANDOMIZED CONTROLLED TRIAL
Presenter: Stephen Shapiro MD
Gundersen Health System
Invited Discussant: Sarah Judkins MD | Montrose Surgical Associates

11:00am - 11:15am
* 21. REDUCTION OF SURGICAL SITE INFECTIONS IN COLORECTAL SURGERY: A 10-YEAR EXPERIENCE FROM AN INDEPENDENT ACADEMIC MEDICAL CENTER
Presenter: Nolan Rudder DO
Gundersen Health System
Invited Discussant: Bartley Pickron MD | University of Utah

* Denotes Jack Barney Award        + Denotes Lowry Award
• Denotes Medical Student         = Denotes APC Presentation
11:15am – 12Noon
Expert Panel Case Presentations
Meritage Ballroom Salons V – X
**Moderator:** Courtney Scaife MD | University of Utah/ Huntsman Cancer Institute

*Panelists:*

Sharmila D. Dissanaike MD | Texas Tech University
Health Sciences Center
Barbara A. Pockaj MD | Mayo Clinic
John R. Potts III MD | ACGME
R. Stephen Smith MD RDMS | University of Florida
Ronald M. Stewart, MD | University of Texas Health Science Center at San Antonio

12Noon – 2:00pm
**Mock Oral Boards** (Pre-registration required)
Salons BC

12:15pm – 1:30pm
**Luncheon: Dealing with Mass Casualties**
Salons AK
**Moderator:** Brian J. Eastridge MD | University of Texas Health Science Center at San Antonio

**Trauma Systems in Disaster and Mass Casualty**

**Response: Response to Hurricane Harvey and the Mass Shooting at Sutherland Springs**
Ronald M. Stewart, MD | University of Texas Health Science Center at San Antonio

**The Las Vegas Shooting: Lessons Learned**
Deborah A. Kuhls MD | University of Nevada Las Vegas

**Florida Hurricanes: Mitigation through Preparation**
R. Stephen Smith MD RDMS | University of Florida
1:00pm – 3:00pm
Guest Activity: Biking Tour
Meet in Hotel Lobby

1:30pm - 2:30pm
Scientific Session 5: General Surgery
Meritage Ballroom V - X
Moderators: M. Andrew Davis MD | Baylor College of Medicine;
Ronald Stewart MD | University of Texas Health Science Center at San Antonio

1:30pm - 1:45pm
22. IMAGING UTILIZATION AND NEGATIVE APPENDECTOMY RATES IN APPENDICITIS: AN ACS-NSQIP STUDY
Presenter: Joshua Tseng MD
Cedars Sinai Medical Center
Invited Discussant: Richard Frazee MD | Baylor Scott and White

1:45pm - 2:00pm
* 23. EVALUATION OF WHITE BLOOD CELL COUNT AT TIME OF DISCHARGE IS ASSOCIATED WITH LIMITED ORAL ANTIBIOTIC THERAPY IN CHILDREN WITH COMPLICATED APPENDICITIS
Presenter: Patrick Bonasso MD
University of Arkansas for Medical Sciences
Invited Discussant: David Patrick MD | Children’s Hospital Colorado

* Denotes Jack Barney Award       + Denotes Lowry Award
• Denotes Medical Student       = Denotes APC Presentation
2:00pm - 2:15pm
* 24. ASSESSING OUTCOMES AND COSTS OF APPENDECTOMIES PERFORMED AT RURAL HOSPITALS
Presenter: Cynthia Tom MD
Harbor-UCLA Medical Center
Invited Discussant: Jorge De Amorim Filho MD | Northeastern Nevada Regional Hospital

2:15pm - 2:30pm
* 25. DOES HISTOLOGY INFLUENCE THE EFFICACY OF SURGERY AND CHEMOTHERAPY IN STAGE IV APPENDICEAL CANCER?
Presenter: Cristine Velazco MD, MS
Mayo Clinic Arizona
Invited Discussant: Sean Langenfeld MD | University of Nebraska Medical Center

2:30pm – 2:45pm
Afternoon Break, Exhibits & ePoster Viewing
Meritage Ballroom Salons I - IV
SCIENTIFIC PROGRAM | Tuesday, April 10, 2018

2:45pm - 3:45pm
Scientific Session 6: Education/Wellness
Meritage Ballroom V - X
Moderators: Thomas White MD | Intermountain Medical Center; David Borgstrom MD, MBA | West Virginia University

2:45pm - 3:00pm
= 26. THE IMPACT OF ADVANCED PRACTICE PROVIDERS ON THE SURGICAL RESIDENT EXPERIENCE: AGREE TO DISAGREE?
Presenter: Barbara Eaton CRNP
University of Maryland Medical Center
Invited Discussant: Thomas White MD | Intermountain Medical Center

3:00pm - 3:15pm
= 27. SAFETY OF IMPLEMENTING A SLEEP PROTOCOL IN HOSPITALIZED PATIENTS
Presenter: Melinda Patterson MSN, RN, OCN
University of Utah School of Medicine
Invited Discussant: John T. Moore MD | Veterans Healthcare Administration

3:15pm - 3:30pm
* 28. THE OPIOID CRISIS AND SURGEONS: NATIONAL SURVEY OF PRESCRIBING PATTERNS AND THE INFLUENCE OF MOTIVATORS, EXPERIENCE, AND GENDER.
Presenter: Maria Linnaus MD
Mayo Clinic Arizona
Invited Discussant: Courtney Scaife MD | Huntsman Cancer Institute, University of Utah
3:10pm - 3:45pm  
* 29. TRENDS IN PHYSICIAN WELLNESS  
(TAKE A SAD SONG AND MAKE IT BETTER):  
A COMPARISON OF SURGICAL RESIDENTS,  
FELLOWS AND ATTENDINGS  
Presenter: Theresa Jackson MD  
University of Oklahoma College of Medicine - Tulsa  
Invited Discussant: Christian de Virgilio MD | Harbor-UCLA Medical Center

3:45pm – 4:30pm  
Edgar J. Poth Memorial Lecture  
Meritage Ballroom V - X  
Introduction: Daniel Margulies MD | Cedars Sinai Medical Center

Evidence-Based Medicine in Trauma and Acute Care Surgery- What Does That Look Like?  
Walter Biffl MD | Scripps Memorial Hospital La Jolla

4:30pm – 5:00pm  
SWSC Annual Business Meeting  
Meritage Ballroom V - X

5:15pm – 6:00pm  
Advanced Practice Clinician Reception  
Crush Lounge

6:00pm – 9:00pm  
SWSC Reception  
Estate Cave

* Denotes Jack Barney Award  
+ Denotes Lowry Award  
• Denotes Medical Student  
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Wednesday, April 11, 2018

6:45am – 11:30am
Registration
Vineyard Pre-Function

6:45am – 8:30am
Continental Breakfast
Vineyard Terrace

7:00am - 8:00am
Quick Shot Session 7: General Surgery
Meritage Ballroom Salons V - X
Moderators: Krista Kaups MD, MSc | University of California, San Francisco at Fresno;
Nabil Wasif, MD, PhD | Mayo Clinic Arizona

7:00am - 7:08am
QS 55. EVALUATING THE EARLY IMPACT OF MEDICAID EXPANSION ON TRENDS IN TREATMENT OF BENIGN GALLBLADDER DISEASE IN KENTUCKY
Presenter: Neal Bhutiani MD
University of Louisville

7:08am - 7:16am
QS 56. A WAITING GAME: DELAYS TO INPATIENT CHOLECYSTECTOMY
Presenter: Kayla Watkins MD
University of Oklahoma Health Sciences Center

* Denotes Jack Barney Award    + Denotes Lowry Award
• Denotes Medical Student     = Denotes APC Presentation
7:16am - 7:24am
QS 57. EARLY INTERVENTION IN GALLSTONE PANCREATITIS—WHAT REPRESENTS EARLY?
Presenter: Anthony Manning MD
Baylor Scott and White Healthcare

7:24am - 7:32am
QS 58. A PREDICTIVE GRADING SCALE FOR ACUTE CHOLECYSTITIS
Presenter: Sammy Siada DO
University of California, San Francisco at Fresno

7:32am - 7:40am
QS 59. ABDOMINAL MALIGNANCY, RADIATION, STEM CELL TRANSPLANT, AND NEUTROPENIA ARE ASSOCIATED WITH NON-SURGICAL TREATMENT OF ACUTE CHOLECYSTITIS IN CANCER PATIENTS
Presenter: David Santos MD
University of Texas MD Anderson Cancer Center

7:40am - 7:48am
QS 60. STANDARDIZATION OF COMMON BILE DUCT SIZE USING ULTRASOUND IN PEDIATRIC PATIENTS
Presenter: Erika Lindholm MD
St. Christopher’s Hospital for Children

* Denotes Jack Barney Award       + Denotes Lowry Award
• Denotes Medical Student       = Denotes APC Presentation
7:48am - 7:56am
**QS 61. DISPARITIES IN CHOLECYSTECTOMY OUTCOMES BETWEEN MINORITIES AND WHITES IN BOTH LOW-BURDEN AND HIGH-BURDEN HOSPITALS**
**Presenter:** Erin Howell MD
Harbor-UCLA Medical Center

7:00am - 8:00am
**Quick Shot Session 8: Trauma**
Salons AK
**Moderators:** Rifat Latifi MD | Westchester Medical Center Health Network;
Cristobal Barrios MD | University of California, Irvine Medical Center

7:00am - 7:08am
**QS 62. BUILDING THE CASE FOR HELMETS FOR MOPED RIDERS: ANALYSIS OF NEVADA STATEWIDE OUTCOMES**
**Presenter:** Laura Gryder MA
University of Nevada Las Vegas

7:08am - 7:16am
**QS 63. ANALYSIS AND MAPPING OF GUNSHOT WOUND INJURIES AT A LOS ANGELES LEVEL I TRAUMA CENTER**
**Presenter:** Jasmin Neal
David Geffen School of Medicine at UCLA

* Denotes Jack Barney Award  
+ Denotes Lowry Award  
• Denotes Medical Student  
= Denotes APC Presentation
7:16am - 7:24am
QS 64. THE COMMUNITY NEED INDEX (CNI): A SIMPLE TOOL TO PREDICT EMERGENCY DEPARTMENT UTILIZATION FOLLOWING HOSPITAL DISCHARGE FROM THE TRAUMA SERVICE
Presenter: Dih-Dih Huang MD
St. Joseph’s Hospital and Medical Center

7:24am - 7:32am
QS 65. USE OF A STATEWIDE TRAUMA IMAGE REPOSITORY DECREASES THE RATE OF UNNECESSARY TRANSFERS TO A LEVEL 1 TRAUMA CENTER
Presenter: Timothy Harris BS
University of Arkansas for Medical Sciences

7:32am - 7:40am
QS 66. PREDICTORS OF DISCHARGE DESTINATION IN PATIENTS WITH TRAUMATIC INJURY: ANALYSIS OF THE OKLAHOMA TRAUMA REGISTRY
Presenter: Kaily Ewing DO
University of Oklahoma College of Medicine - Tulsa

7:40am - 7:48am
QS 67. INSURANCE STATUS: A RISK FACTOR FOR EARLY MORTALITY IN TRAUMATICALLY INJURED PATIENTS
Presenter: Morgan Bonds MD
University of Oklahoma Health Sciences Center

* Denotes Jack Barney Award  + Denotes Lowry Award
• Denotes Medical Student  = Denotes APC Presentation
7:48am - 7:56am
QS 68. INJURY SEVERITY IS PREDICTED BY COMPENSATORY RESERVE MEASUREMENT (CRM) AT ADMISSION AND AFTER INTERVAL RESPONSE TO MANAGEMENT
Presenter: Mallory Wampler MD
University of Texas Health Science Center at San Antonio

7:00am - 8:00am
Quick Shot Session 9: Oncology
Salons BC
Moderators: Barbara Pockaj MD | Mayo Clinic; Jeremiah Deneve DO | University of Tennesse Health Science Center

7:00am - 7:08am
QS 69. PRIMITIVE NEUROECTODERMAL TUMOR (PNET) INCIDENCE, TREATMENT PATTERNS, AND OUTCOME: A NATIONAL CANCER DATABASE ANALYSIS
Presenter: Young Hong MD
University of Louisville

7:08am - 7:16am
QS 70. THE IMPACT OF PET-CT IMAGING ON TREATMENT RESPONSE IN BORDERLINE RESECTABLE PANCREATIC CANCERS: CAN TUMOR REGRESSION BE IDENTIFIED BEFORE SURGERY?
Presenter: Alessandra Landmann MD
University of Oklahoma Health Sciences Center

* Denotes Jack Barney Award       + Denotes Lowry Award
• Denotes Medical Student       = Denotes APC Presentation
7:16am - 7:24am
QS 71. PREDICTORS OF RESIDUAL DISEASE IN PATIENTS WHO HAVE POSITIVE OR CLOSE MARGINS AFTER INITIAL LUMPECTOMY FOR PRIMARY BREAST CANCER
Presenter: Alicia Heelan Gladden MD
University of Colorado School of Medicine

7:24am - 7:32am
QS 72. FACTORS ASSOCIATED WITH DECISION TO UNDERGO CONTRALATERAL PROPHYLACTIC MASTECTOMY VERSUS UNILATERAL MASTECTOMY
Presenter: Julian Huang AB
Yale University

7:32am - 7:40am
QS 73. BARRIERS TO ACCESS AND CARE FOR BREAST CANCER PATIENTS UNDERGOING RADIATION THERAPY
Presenter: Vincent Gemma MD
St. Joseph’s Hospital and Medical Center

7:40am - 7:48am
QS 74. IMPACT OF SURVIVORSHIP CARE PLAN COUNSELING ON PATIENT’S BREAST CANCER KNOWLEDGE: IS IT WORTH IT?
Presenter: Juan Claros-Sorto MD
Texas Tech University Health Sciences

* Denotes Jack Barney Award  + Denotes Lowry Award
• Denotes Medical Student = Denotes APC Presentation
7:48am - 7:56am

QS 75. A NOVEL RISK CALCULATOR MODEL FOR PREDICTING LYMPHEDEMA FOLLOWING AXILLARY OR INGUINAL LYMPHADENECTOMY IN MELANOMA PATIENTS

**Presenter:** Alex Miller BS
University of Michigan Medical School

8:00am - 9:15am

**Scientific Session 7: Trauma**
Meritage Ballroom Salons V - X

**Moderators:** James Davis MD | University of California, San Francisco at Fresno;
Frank Zhao MD | The Queen’s Medical Center

8:00am - 8:15am

+ * 30. CHALLENGING DOGMA: ROUTINE COMPLETION ANGIOGRAPHY IS NOT WARRANTED FOLLOWING LOWER EXTREMITY TRAUMATIC ARTERIAL REPAIRS

**Presenter:** Ahmed Khouqeer MD
Baylor College of Medicine

**Invited Discussant:** Juan A. Asensio MD | Creighton
University Dept.of Surgery

* Denotes Jack Barney Award  
+ Denotes Lowry Award  
• Denotes Medical Student  
= Denotes APC Presentation
8:15am - 8:30am
31. AGE IS JUST A NUMBER: A LOOK AT “ELDERLY” SPORT-RELATED TRAUMATIC INJURIES AT A LEVEL I TRAUMA CENTER
Presenter: Annika Kay PA-C, MPAS
Intermountain Medical Center
Invited Discussant: Alicia Mangram MD | HonorHealth
John C. Lincoln & Deer Valley Medical Center

8:30am - 8:45am
32. A COMPARISON OF OUTCOMES IN PATIENTS WHO UNDERWENT RIB FIXATION USING MUSCLE SPARING MINIMALLY INVASIVE THORACOTOMY: DO GERIATRIC PATIENTS EXPERIENCE THE SAME BENEFITS?
Presenter: Francis Ali-Osman MD
HonorHealth John C. Lincoln Medical Center
Invited Discussant: Fredric Pieracci MD, MPH | Denver Health Medical Center

8:45am - 9:00am
33. EXCLUSIVE CLINICAL EXPERIENCE WITH A LOWER PROFILE DEVICE FOR RESUSCITATIVE ENDOVASCULAR BALLOON OCCLUSION OF THE AORTA (REBOA)
Presenter: Megan Brenner MD MS
University of Maryland Medical Center
Invited Discussant: Bryan Morse MS, MD | Emory University & Grady Memorial Hospital

* Denotes Jack Barney Award + Denotes Lowry Award
• Denotes Medical Student = Denotes APC Presentation
9:00am - 9:15am
34. SHOCK INDEX PREDICTS EMERGENCY SURGICAL INTERVENTION IN TRAUMA PATIENTS WHO OTHERWISE DO NOT MEET AMERICAN COLLEGE OF SURGEONS HIGHEST LEVEL TRAUMA RESPONSE CRITERIA
Presenter: Ryan Lawless MD
Denver Health Medical Center
Invited Discussant: Dennis Kim MD | Harbor-UCLA Medical Center

9:15am – 10:00am
Claude H. Organ, Jr. Memorial Lecture
Meritage Ballroom Salons V – X
Introduction: Daniel Margulies MD | Cedars Sinai Medical Center

Surgical M&M: An Anachronism or the Key to Quality Care
Gregory J. Jurkovich MD | University of California, Davis Medical School

10:00am – 10:45am
Top 10 Papers in Trauma
Meritage Ballroom Salons V – X
Introduction: Courtney Scaife MD | University of Utah/Huntsman Cancer Institute
Presenter: Mitchell Cohen MD | Denver Health Medical Center

* Denotes Jack Barney Award      + Denotes Lowry Award
• Denotes Medical Student      = Denotes APC Presentation
10:45am – 11:30am
**Top 10 Papers in General Surgery**
Meritage Ballroom Salons V – X

**Introduction:** Courtney Scaife MD | University of Utah/
Huntsman Cancer Institute

**Presenter:** Walter Biffl MD | Scripps Memorial Hospital La Jolla

11:30am – 12Noon

**Awards Presentation & Closing Session**
Meritage Ballroom Salons V – X
SCIENTIFIC PAPER ABSTRACTS

* Denotes Jack Barney Award
+ Denotes Lowry Award
• Denotes Medical Student
= Denotes APC Presentation
1. THE SOUTHWESTERN SURGICAL CONGRESS MULTI-CENTER TRIAL ON SUSPECTED CHOLEDOCHOLITHIASIS


*Baylor Scott and White Healthcare*

**Background:** Choledocholithiasis is present in up to 15% of patients undergoing cholecystectomy. Treatment of common duct stones can be surgical, endoscopic, or via interventional radiology techniques. We hypothesized that there is significant heterogeneity between hospitals nationally in the approach to suspected common duct stones. If so, adoption of treatment protocols to standardize care has the potential to eliminate redundant procedures, shorten hospital stay, and reduce costs.

**Methods:** The Southwestern Surgical Congress Multicenter Trials Group performed a retrospective review of patients with suspected common duct stones. Patients were included if they had a preoperative MRCP, endoscopic ultrasound, endoscopic retrograde cholangiopancreatogram (ERCP), or intra-operative cholangiogram performed for clinical concern of common duct stones. Statistical analysis was performed using chi square, t-test, and Wilcoxon rank sum test.

**Results:** Data were submitted from twelve participating institutions. There were 409 men and 854 women with a mean age of 49 years. Liver function tests (LFT’s) were elevated in 939 patients (75%). Average bilirubin level was 2.2 mg/dl and average common duct size was 6.9 mm. Institution, number of patients, initial intervention, interval from admission to initial intervention, number of patients having second intervention, and length of stay (LOS) are listed below: SEE TABLE Cholecystectomy with IOC was the most common initial procedure at five institutions, whereas endoscopy or MRCP was performed first at seven institutions. Second interventions were performed in 43-100% of patients.

**Conclusion:** Significant variation exists within the surgical community regarding the approach to suspected common duct stones. These results underscore the need for a protocol in the management of common duct stones to minimize multiple, redundant interventions.
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<th>#</th>
<th>Cholecystectomy With cholangiogram # (%)</th>
<th>Endoscopy # (%)</th>
<th>MRCP # (%)</th>
<th>CBDE</th>
<th>Median interval to initial intervention (hours)</th>
<th># 2nd interventions (%)</th>
<th>Mean Length Of Stay (Days)</th>
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2. CHOLECYSTOSTOMY: ARE WE USING IT CORRECTLY?
TM Griffiths BS, DC Robison, TM Enniss MD, JY MD, M McCrum MD, JN Nunez MD, R Nirula MD, RL Hardman MD
University of Utah School of Medicine

Background: Cholecystostomy tubes have become an accepted and common modality of treating acute cholecystitis in patients that are not appropriate surgical candidates. As percutaneous gallbladder drainage has rapidly increased newer research suggests that the technique may be overused and patients may be burdened with them for extended periods. We examined our experience with cholecystostomy tube placement to identify independent predictors of eventual cholecystectomy versus destination cholecystostomy.

Methods: All patients with cholecystitis initially treated with cholecystostomy from 2014-2017 were stratified by whether they underwent subsequent interval cholecystectomy. Demographic data, initial laboratory values, Tokyo Grade, Charlson Comorbidity Index, ASA Class, complications related to cholecystostomy, complications related to cholecystectomy, and mortality data were retrospectively collected. Descriptive statistics, univariable, and multivariable Poisson regression were performed.

Results: 166 patients received an initial cholecystostomy tube to treat cholecystitis. 51 (30.1%) patients went on to have an interval cholecystectomy. There were 4 minor complications reported after cholecystectomy. A total of 36 (22.0%) deaths were reported, only one of which was in the cholecystectomy group. Age, Tokyo Grade, liver function tests, ASA Class, and Charlson Comorbidity Index were significantly different between the cholecystectomy and no cholecystectomy groups. Univariable regression was performed and variables with p<0.2 were included in the multivariable model. Multivariable Poisson regression showed that increasing ASA Class (RR 0.35, p= 0.004, 95% CI 0.173-0.715) was associated with not receiving a cholecystectomy and that increasing Albumin (RR 2.03, p=0.004, 95% CI 1.25-3.30) was associated with having an interval cholecystectomy.

Conclusion: Patients that had destination cholecystostomy were older, had more comorbidities, higher Tokyo Grade, ASA Class, and initial laboratory values than those that eventually had cholecystectomy. Since interval cholecystectomy was performed with a very low rate of complications, we may be too conservative in performing cholecystectomy after drainage and condemning many patients to destination tubes.
PAPER ABSTRACTS (continued)

3. THIS TOO SHALL PASS: STANDARDIZED GASTROGRAFFIN PROTOCOL FOR PARTIAL SMALL BOWEL OBSTRUCTION
JS Wolf MD, B Coopwood MD, JD Aydelotte MD
The University of Texas at Austin

**Background:** One of the most common reasons for admission to a surgical service is for management of a partial small bowel obstruction. There is considerable variation in the treatment of these patients with many admitted to a medical rather than a surgical service. Options for management include a wide variety of therapies ranging from nasogastric suction, IV fluids, bowel rest, or any combination of those three. Several studies suggest that the use of Gastrograffin, a hyperosmolar contrast agent, can be helpful as a diagnostic agent as well as possibly therapeutic, reducing the need for operative intervention. We instituted a protocol at our hospital to utilize Gastrograffin after admission for a partial small bowel obstruction in late 2013. We were interested in evaluating the effectiveness of this protocol on our patient population. We hypothesized that this standardized algorithm of managing patients who present with small bowel obstruction would decrease the need for surgery and shorten a patient’s length of stay.

**Methods:** We performed a retrospective review over a five year period which included all patients admitted to two major hospitals in our network with the diagnosis of small bowel obstruction. Patients were excluded if they were admitted within thirty days after any sort of bowel surgery or if they were less than eighteen years of age. The primary variable for analysis was the subsets of patients who were placed on our protocol versus no protocol. Patients on our protocol had a nasogastric tube placed shortly after admission and were given 120 cc’s of Gastrograffin through the tube following initial decompression. The tube was then clamped for two hours and abdominal X-Ray’s were obtained at four hours and twenty-four hours post administration. If contrast was seen in the colon on either film, the nasogastric tube was removed and the patient’s diet was advanced. If not, then operative management was pursued. Primary outcomes included hospital length of stay, the rate of surgery during the same admission, and readmission within thirty days of discharge. All analyses were performed using Fisher’s Exact test or Mann-Whitney U Test, as appropriate.

**Results:** A total of 1570 patients with small bowel obstruction were identified (102 On-protocol and 1468 Off-protocol). On-protocol
patients had a lower rate of surgery (2% vs. 15%, p=0.0008), a shorter duration of hospitalization (mean, 4.9 days vs 6.2 days, p<.001), and similar rates of readmission for the same diagnosis (7.8% and 5.9%, p=0.26), compared to both off-protocol patients at our institution and our sister institution.

**Conclusion**: A top priority in the delivery of health care today is to improve the overall value of care to the patient as well as to the health care system. A major component to value with regards to hospitalized patients is length of stay. Many believe that by reducing variability in management of common surgical diseases, we can reduce cost and improve outcomes. A protocol utilizing Gastrograffin for management of small bowel obstruction decreased the need for surgery and shortened a patient's hospital length of stay.
4. OUTCOMES FOLLOWING LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS (LRYGB) VARY BY SEX: ANALYSIS OF 83,059 MORBIDLY OBESE WOMEN AND MEN
Gus J Slotman MD
Inspira Health Network

**Background:** We have reported significant variation in the pre-operative clinical characteristics between women and men seeking LRYGB, including age, weight, BMI and the distribution of weight-related medical conditions. However, in these complex and medically fragile patients, whether or not the post-operative response to LRYGB for weight, BMI and the resolution or persistence of obesity co-morbidities also varies by sex has not been investigated thoroughly. Our objective was to identify statistically and clinically significant variations in long-term outcomes between women and men who underwent LRYGB.

**Methods:** Pre-operative and follow-up data at 2, 6, 12, 18 and 24 months after surgery on 83,059 patients from the Surgical Review Corporation’s BOLD database who underwent LRYGB was analyzed retrospectively in two groups: Women (n=65,325) and Men (n=17,734). Data included age, weight, BMI, and 29 weight-related medical conditions. Continuous variables were analyzed using ANOVA with baseline and treatment in the model. Pair-wise comparisons were performed on the least squares means of the treatments calculated from the ANOVA model to find differences in the treatment groups. Distribution of obesity co-morbidities was examined by a general linear model with baseline and treatment in the model and modified for binomial distribution to account for dichotomous variables.

**Results:** Pre-operative age (47.5+-11.5 vs 44.5+-11.5), weight (156 ±30 vs 127 ± 23 kg) and BMI (49.0+-8.6 vs 47.3+-7.7) were higher for men than women (p<0.0001). Outcomes at 12 months after LRYGB included higher male weight (104+-21 vs 82+-17 kg), weight loss (53+-19 vs 45+-13 kg), and BMI (32+-6 vs 31+-6), p<0.0001. At 12 months women, compared with men, had increased (female%/male%) incidence of cholelithiasis (25.87%/10.34%), GERD (25.12%/20.97%), abdominal panniculitis (8.79%/6.98%), asthma (14.92%/10.02%), mental health diagnoses (10.5%/6.63%), depression (34.06%/21.03%), pseudotumor cerebri (1.88%/0.59%), psychological impairment (15.94%/11.01%), and stress urinary incontinence (17.5%/2.56%), (n=9, all p<0.0001). At 12 months, men compared with women, had increased (male%/female%), abdominal hernia (7.35%/4.53%), congestive heart failure...
PAPER ABSTRACTS (continued)

(3.23%/1.37%), diabetes mellitus (19.9%/13.21%), hypertension (41.5%/31.2%), obesity hypoventilation syndrome (1.89%/1.17%), obstructive sleep apnea (34.97%/22.69%), alcohol consumption (25.3%/20.56%), angina (3.03%/1.4%), gout (6.89%/1.55%), dyslipidemia (32.52%/25.17%)(p<0.0001), liver disease (7.57%/6.16%)(p<0.001), impaired functional status (2.92%/2.21%), lower extremity edema (16.3%/14.79%), substance abuse (0.59%/0.31%), tobacco abuse (5.2%/4.35%)(p<0.01) and pulmonary hypertension (1.67%/1.32%)(p<0.05).

Conclusion: Clinical outcomes following LRYGB vary significantly between men and women. In spite of greater weight loss, at 12 months BMI was higher for men. Women persisted in higher cholelithiasis, abdominal panniculitis, GERD, and stress incontinence, and in serious mental health conditions. Men failed to resolve clinically important cardiopulmonary/vascular issues, metabolic derangements (diabetes, gout, dyslipidemia), developed abdominal hernia, and were functionally impaired more than women. Increased alcohol consumption may contribute to increased male liver disease. Overall, women may benefit more from LRYG than do men. The advance knowledge from these results may facilitate optimized post-LRYGB management.
5. PREDICTIVE FACTORS OF UPSTAGING DCIS TO INVASIVE CARCINOMA IN BCT VS MASTECTOMY
WW Sheaffer MD, RJ Gray MD, N Wasif MD, CC Stucky MD, HE Kosiorék MS, VJ Pizzitola MD, B Patel MD, ME Giurescu MD, R Lorans MD, AE McCullough MD, IT Ocal MD, BA Pockaj MD
Mayo Clinic Arizona

Background: Ductal carcinoma in situ (DCIS) accounts for approximately 25% of breast neoplasms. The rate of upstaging to invasive disease varies from 8-56%. We aim to identify risk factors associated with upstaging in all DCIS patients and based on surgical intervention.

Methods: Patients with pre-operative diagnosis of DCIS undergoing either BCT or mastectomy from 1996-2017 were retrospectively reviewed. Patients with recurrent disease were excluded. Pre-operative demographics, tumor characteristics, imaging findings, procedure, final pathology and outcomes were collected. Univariate (chi-square test) and multivariate logistic regression were performed to identify factors predictive of upstaging.

Results: In total 617 patients were identified with a preoperative diagnosis of DCIS, (BCT = 394, Mastectomy = 223). Patients who underwent mastectomy for DCIS were younger (58.5 (SD = 12.4) v 64.6 (SD = 11.0) years; p < 0.001), had larger tumor size by pre-operative imaging (3.1 (SD = 2.5) cm v 1.4 (SD = 1.4 cm); p < 0.001), more frequently had a palpable lesion (17% vs 7%; p < 0.001), suspicion of invasive disease by surgeon (19% vs 9%; p < 0.001), and extensive/multifocal disease (38% v 0.0%; p < 0.001). Upstaging occurred in 74 (12.0%) of patients overall. There was no statistically significant difference in upstaging rate between mastectomy and BCT (10.9% v 13.9% P = 0.27). Sentinel lymph node biopsy was performed in 71% of mastectomy patients and 13% of BCT patients. Two BCT patients (0.5%) and one mastectomy patient (0.4%) were found to have a positive lymph node. Final T stages for the 74 upstaged patients were T1mic 13 (17.6%), T1a 27 (36.5%), T1b 17(23.0%), T1c 12(16.2%), T2 5(6.8%).

On univariate analysis, patients who were upstaged more frequently had suspicion of microinvasion on biopsy (35% vs 5% p < 0.001), surgeon suspicion of invasive disease (42% v 9% p < 0.001), larger tumor size (2.9 vs 2.0 p = 0.02) and PR negative (p=0.01). Interestingly, high grade was associated with a lower risk of upstaging. There was not a statistically significant difference in upstaging rates between age, palpable vs non-palpable lesions, grade, ER status, or comedonecrosis. In the BCT
group, multivariable analysis revealed only surgeon suspicion of invasive disease (OR 17.46, 95% CI 5.33-57.26) to be associated with increased risk of upstaging. In the mastectomy group, suspicion of microinvasion on biopsy (OR 9.88, 95% CI 3.59-27.19) and palpable lesion (OR 2.84, 95% CI 1.02-7.85) increased the likelihood of upstaging. In all patients combined, multivariable analysis found suspicion of microinvasion (OR 6.27 95% CI 1.92-20.54) and surgeon suspicion of invasive disease (OR 3.54 95% CI 1.20-10.45) when controlling for surgery type to be predictive. High grade was associated with lower likelihood of upstaging (OR 0.2, CI 0.09-0.6).

**Conclusion:** The rate of upstaging in our cohort is low (12%) with similar rates of upstaging between BCT and mastectomy patients. Suspicion of microinvasion on pathology and clinical suspicion by the surgeon were the strongest predictors of upstaging and can help determine which patients would benefit from the addition of SLN biopsy.
6. PREDICTORS OF ADJUVANT CHEMOTHERAPY USE AND SURVIVAL IN PATIENTS WITH LOCALLY ADVANCED RECTAL CANCER
ME Wright MD, M McCain BS, AG Thorson MD, GJ Blatchford MD, M Shashidharan MD, JS Beaty MD, CA Ternent MD
Creighton University

Background: Surgery is the standard of care treatment for locally advanced rectal cancer along with neoadjuvant chemoradiotherapy and adjuvant chemotherapy which have additive survival advantages. Recent studies have demonstrated that patients undergoing neoadjuvant chemoradiation followed by radical surgery and then adjuvant chemotherapy had better disease-free survival than those who did not receive adjuvant therapy. The purpose of this study is to determine whether the type of radical surgery and the use of minimally invasive techniques factor into the timeliness of initiation of adjuvant therapy and subsequently survival.

Methods: A retrospective chart review of patients undergoing curative intent low anterior resection (LAR) or abdominoperineal resection (APR) for stage II and III rectal cancer between March 2012 and December 2014. Demographic information, surgery specific data, oncologic data and outcomes were collected. Timing of adjuvant chemotherapy within 12 weeks of surgery (AC12) and postoperative Karnofsky performance score (KPS) were also assessed. Univariate and multivariate analyses were performed. Kaplan-Meier and log-rank test were used to compare overall (OS) and disease free (DFS) survival.

Results: Ninety-eight patients met inclusion criteria, 38 underwent APR and 60 underwent LAR. Median follow-up time was 41 months (6-64 months). Median age was 63 years and 55% were male. Median BMI was 26.5. No differences between the two surgical groups in follow-up time, length of stay, or cancer stage were noted. Seventy-seven percent of LAR patients received AC12 compared to 47% of APR patients (P=0.006). Patients who received AC12 had better 5-year DFS (90% vs 74%) and OS (95% vs 59%) than those who did not (P=0.02 and P<0.001, respectively). Univariate analysis showed that not receiving AC12 was associated with readmission, wound infection, presence of other postoperative complications, KPS and age. Multivariate regression showed that age and worse KPS were associated with decreased use of AC12 (P=0.001 and P=0.03, respectively).
**Conclusion**: Patients who do not receive AC12 following radical resection for locally advanced rectal cancer after neoadjuvant chemoradiation have worse DFS and OS. Advanced age and decreased postoperative functional status play a significant role in the likelihood that adjuvant therapy will not start within 12 weeks or be given at all.
7. DETERMINING THE IMPACT OF CULTURE ON VENOUS THROMBOEMBOLISM PREVENTION IN TRAUMA PATIENTS: A SOUTHWESTERN SURGICAL CONGRESS MULTICENTER TRIAL


Baylor Scott and White Healthcare

Background: Venous thromboembolism (VTE) remains one of the principal causes of death and morbidity in trauma patients that survive the first 24 hours. Most of the literature on VTE prevention focuses on choice and timing of chemoprophylaxis, specifically unfractionated heparin (UF) versus low molecular weight heparin (LMWH). This singular focus on a multifactorial process may be inadequate to fully understand the optimal approach to VTE prevention. We hypothesized that a multicenter survey would reveal variation in care and identify components of VTE prevention associated with better outcomes.

Methods: A 50 question survey of VTE management for years 2014-2016 was sent to participating centers. In addition, each center submitted their American College of Surgeons Trauma Quality Improvement Program (TQIP) Benchmark Report for Spring 2017. The survey included: demographics of the trauma centers, type and timing of chemoprophylaxis, VTE prophylaxis protocols, ambulation expectations, and complementary services (geriatric trauma service (GTS), mobility teams, physical and occupational therapy (PT/OT)). TQIP data included: mortality, observed rates of deep vein thrombosis (DVT) and pulmonary embolus (PE), and time to VTE prophylaxis. The survey and TQIP reports were blinded for analysis; descriptive statistics were utilized. The top DVT & PE TQIP performers were used to identify potential aspects of better care on the survey responses. The institutions’ DVT and PE rates were then compared for these responses using Wilcoxon-Rank-Sum test.

Results: Fifteen trauma centers (13 Level-1, 2 Level-2) completed the survey; the centers were University affiliated (11 of 15) with general surgery residencies (14 of 15), and admitted 1050–8000 traumas per
year (median 3000). The majority have Acute Care Surgery or Surgical Critical Care Fellowships (9 of 15) and critical care boarded-surgeons only on-call (9 of 15). Few have geriatric trauma services (3 of 15) or mobility teams (1 of 15). Half the trauma centers have dedicated PT/OT teams for trauma or weekend coverage. With a total of 20,878 TQIP patients analyzed, the average observed DVT and PE rates were 1.27% (range 0.1-5.2%) and 0.68% (range 0-1.6%). Weekly lower extremity surveillance duplex (2 of 15) increased DVT diagnosis (4.15% vs 0.80%, p=0.034) but did not decrease PE rates (1.05% vs 0.62%, p=0.229). Great variance was seen in choice, dosing and timing of chemoprophylaxis: UF (4), LMWH daily (1), LMWH twice-daily (5), LMWH weight-based dosing (4), and LMWH anti-Xa dosing (1). The top 3 performers for DVT and PE all used different chemoprophylaxis. These top performers had a prominent culture of mobility: dedicated PT/OT teams for trauma or weekends and expectation to ambulate 3-times per day. Weekend PT/OT teams were associated with lower DVT rates (median 0.40%, range 0.10-1.10 vs 1.30%, 0.60-5.20%, p=0.018), and ambulation 3-times per day was associated with lower PE rates (median 0.20%, range 0.00-0.20% vs 0.80, 0.40-1.60%, p<0.005).

**Conclusion:** Considerable variation in VTE chemoprophylaxis exists among trauma centers. “Best practices” in this area requires further investigation. However, an expectation of mobility and investment in mobility resources may better serve to decrease VTE rates in trauma than the singular current focus on type of chemoprophylaxis administered.
8. DOES TRANEXAMIC ACID REALLY WORK IN THE UNITED STATES? A SINGLE LEVEL I TRAUMA CENTER’S EXPERIENCE
AN Dixon MD, J Aydelotte MD, PG Teixeira MD, T Coopwood MD, MJ Daley Pharm D, K Spitz BS, S Ali MS, C Brown MD
The University of Texas at Austin

Background: The use of Tranexamic Acid (TXA) in trauma is controversial. The CRASH II trial, while randomized and prospective, did not include a patient population that is widely used as a treatment group in many trauma centers in the United States, the patient that requires a Massive Transfusion MT (greater than 10 units of blood products in the first 24 hours). We wanted to examine our population of patients who underwent a massive transfusion to see if those who actually received TXA had any benefit in mortality. Our hypothesis was that patients who received TXA had no difference in mortality.

Methods: We performed a single institution retrospective review of our Trauma Registry for all patients who received a massive transfusion between 2010 and 2017. Patients were separated into two cohorts, those who received TXA within the first 24 hours of admission and those who did not. The primary outcome of the study was mortality. Secondary outcomes included total blood products transfused, Deep Venous Thrombosis (DVT), Pulmonary Embolus (PE), Myocardial Infarction (MI), and cardiac arrest.

Results: 283 patients received MTP between 2010-2017. 179 (63%) did not receive TXA and 104 (37%) were treated with TXA. The groups were then propensity matched and yielded 62 patients in each group (124 total)(ISS 36±12 no TXA vs. 37±13 TXA; p=.59). There was no significant difference observed in mortality (50% no TXA vs. 39% TXA; P=.21), total PRBC’s transfused (20±11 no TXA vs. 23±18 TXA; P=.45), DVT (8% no TXA vs. 6% TXA; P=.99), PE (2% no TXA vs. 3% TXA; p=.99), MI (3% no TXA vs. 0% TXA; P=.50), or cardiac arrest (26% no TXA vs. 18% TXA; P=.28).

Conclusion: There does not appear to be any benefit to TXA administration in Trauma Patients in our institution. This is a single-center retrospective review. More data from other similar centers in the region or the United States is warranted.
9. DISCREPANCIES BETWEEN CONVENTIONAL AND VISCOELASTIC ASSAYS IN IDENTIFYING TRAUMA-INDUCED COAGULOPATHY
JJ Sumislawski MD, SA Christie MD, LZ Kornblith MD, GR Nunns MD, HB Moore MD, AS Conroy BA, EE Moore MD, A Sauaia MD PhD, RA Callcut MD, MJ Cohen MD
University of Colorado School of Medicine

Background: Trauma-induced coagulopathy (TIC) was first described using international normalized ratio (INR) and partial thromboplastin time (PTT) but is now commonly diagnosed with viscoelastic hemostatic assays. Patients often present with an abnormality in either a conventional or viscoelastic test but not both, suggesting a discordance of unknown biochemical and clinical significance. We hypothesized that these patients with discordant coagulopathies reflect different clinical phenotypes that provide prognostic and mechanistic insight.

Methods: Blood samples were collected prospectively from critically injured patients upon arrival at two urban Level I trauma centers. INR/PTT, thromboelastography (TEG), and a panel of coagulation factors were assayed. INR ≥1.4 and PTT ≥35 were considered abnormal. Injury/resuscitation characteristics and outcomes were compared.

Results: 1019 patients were included, of which 361 (35%, median ISS 17, mortality 22%) were coagulopathic upon arrival: 20% only with abnormal INR and/or PTT (CONVENTIONAL), 54% only with abnormal TEG (VISCOELASTIC), and 26% with both abnormal INR/PTT and TEG (BOTH). Compared with VISCOELASTIC, CONVENTIONAL and BOTH had higher ISS and presented with lower GCS; larger base deficit; and decreased factors II, V, and IX activities (all p<0.05). CONVENTIONAL and BOTH received more blood products within the first 24 hours and had more ICU/ventilation days (all p<0.05). Mortality was higher in CONVENTIONAL (44%) and BOTH (43%) than VISCOELASTIC (5%, p<0.001).

Conclusion: Only 26% of patients with TIC present with an abnormality in both conventional and viscoelastic hemostatic assays. Although TEG-guided resuscitation has been shown to improve survival after injury, INR and PTT identify coagulopathic patients with highest mortality regardless of TEG and likely represent distinct mechanisms independent of biochemical clot strength.
10. RISK OF INTRACRANIAL HEMORRHAGE AMONG PATIENTS TAKING NOVEL ORAL ANTICOAGULANTS
LO Marcia BS, A Moazzez MD, DS Plurad MD, B Putnam MD, DY Kim MD
Harbor-UCLA Medical Center

Background: Patients on blood thinners (antiplatelet agents, warfarin, or novel oral anticoagulants [NOACs]), are at high risk for intracranial hemorrhage (ICH) following blunt trauma. Furthermore, NOACs may pose a higher risk for ICH given lack of agents that could reverse their anticoagulant effect. Currently, there is not much literature describing the risk for ICH or worsening ICH for patients taking NOACs. Objective: To evaluate the risk for intracranial hemorrhage NOACs pose on patients following blunt head trauma.

Methods: We performed a two-year single institutional retrospective analysis of patients with suspected traumatic brain injury (TBI) on blood thinners. Patients were categorized in three groups those taking antiplatelet medication (aspirin, clopidogrel or prasugrel; n = 43), warfarin medication (n = 33) and NOACs medication (apixaban or rivaroxaban; n = 17). Patients who had a positive head CT (HCT) and a worse second head CT in each group were compared. For statistical comparison, the p values for categorical variables were obtained from chi-square tests and for continuous variables, ANOVA was used followed by post hoc Bonferroni adjustment.

Results: Ninety-three patients were identified. The mean age was 79.1 ± 12 years and 45.2% were female. Forty-six patients (49.5%) had a positive initial HCT, of which 16 (34.8%) had a worse second HCT. The rate of ICH was significantly higher in the antiplatelet group (69.6%) than in the warfarin (21.7%) or NOACs group (8.7%; p < 0.001). The rate of worsening ICH on second HCT was also higher in the antiplatelet group but not statistically significant. Patients in the antiplatelet group had on average higher head/neck AIS score (2.78) than those in the warfarin and NOAC groups (0.7 and 1 respectively; p < 0.05). ISS was 11.5 in the antiplatelet group compared to 8.15 in the warfarin group and 6.15 in the NOAC group (p < 0.07). No significant differences were observed for age, gender, field GCS, ED-GCS or mechanism of injury.

Conclusion: Our results suggest that NOACs do not pose a higher risk for ICH. Although those in the antiplatelet group seemed to have a higher risk for ICH, this group also had a higher head/neck AIS and ISS. Further studies are needed to elucidate whether taking antiplatelets or having a higher ISS and AIS have a bigger impact on causing ICH.
11. THE RISK OF DELAYED INTRACRANIAL HEMORRHAGE WITH NOVEL ORAL ANTICOAGULANTS AFTER AN INITIAL NEGATIVE ADMISSION COMPUTED TOMOGRAPHY: A TWO-CENTER STUDY

NK Dhillon MD, L Kobayashi MD, KA Patel, NT Linaval, R Coimbra MD PhD, DR Margulies MD, EJ Ley MD, G Barmparas MD
Cedars Sinai Medical Center

**Background:** Novel oral anticoagulants (NOACs) are assumed to increase the risk for intracranial hemorrhage (ICH) and excessive bleeding. The largest to date multi-institutional trial demonstrated that the use of NOACs did not increase the risk for ICH in patients presenting to trauma centers following a blunt injury. Nonetheless, the risk for the development of a delayed ICH after a negative admission computerized tomography (CT) remains unknown, leading to variation among trauma centers in disposition and follow up imaging. The aim of this study was to quantify the prevalence of delayed ICH in trauma patients on NOACs when the initial CT is negative.

**Methods:** Trauma patients on NOACs including apixaban, dabigatran, and rivaroxaban who were admitted from 11/2014 to 09/2017 to two tertiary, Level I Trauma Centers were reviewed. Patients diagnosed with ICH, those who did not receive a CT brain, or those discharged from the emergency department (ED) were excluded. Data collected included patient demographics, medication use, injury details, results of imaging studies, and mortality. The primary outcome was the presence of ICH on a subsequent CT brain.

**Results:** Of 316 trauma patients on NOACs, 54 had ICH, 10 did not undergo a CT brain, and none was discharged from the ED, leaving 252 for analysis. The median age was 81 years, 52.0% were male, and hospital admission occurred most frequently (80.6%) after a fall. The most commonly used NOAC was rivaroxaban (47.2%), followed by apixaban (41.3%) and dabigatran (11.5%). The median injury severity score (ISS) was 5 with the majority (94.3%) having an ISS < 16. A subsequent CT brain was obtained for 205 (81.3%) patients. There was one patient who died from unrelated complication before a second CT could be obtained. Only 3 subjects (1.2% of the entire population and 1.5% of those who underwent a repeat CT) had evidence of a delayed ICH; one of these patients required neurosurgical intervention or died. The median hospital stay for these patients was 5 days.
stay was 3 days. Of the patients who did not undergo a repeat CT brain, none had a change in their neurological exam during their hospital stay prompting repeat imaging.

**Conclusion:** Delayed ICH in trauma patients on NOACs after an initial negative CT was rare and its spontaneous occurrence was not associated with need for neurosurgical intervention and/or mortality. Development of consensus practice guidelines for the safe, cost effective management, and disposition of trauma patients on NOACs is needed.
Background: The Affordable Care Act (ACA) dramatically changed the healthcare system in the United States by expanding health insurance coverage for individuals. Since open enrollment (OE) took effect in 2014, the ACA has had a tremendous impact on patients' access to surgical care. This study aims to analyze this impact of the ACA OE on general surgery clinic visits and resultant procedures. We hypothesize that after the enactment of the ACA OE there will be fewer uninsured patient visits, fewer no-shows, and an increase in the number of elective surgical procedures performed.

Methods: A retrospective review was conducted on new patients who presented to the elective general surgery clinic at an academic medical center between Jan. 1, 2012 and Dec. 31, 2015. Based on the OE start date of Jan. 1, 2014 patients were divided into pre-ACA (Jan. 1, 2012 – Dec. 31, 2013) and post-ACA (Jan. 1, 2014 – Dec. 31, 2015) periods. We collected demographic data, type of insurance at the time of initial visit and missed appointments. Elective surgical procedures performed were also collected and categorized as: inguinal, umbilical or ventral hernia repairs, cholecystectomies, soft tissue excisions, hemorrhoidectomies, and “other” (anterior approach, multiple procedures, lymph node biopsies and bowel resections).

Results: There were 1,782 new patients seen in the general surgery clinic during the study period, with 847 patients pre-ACA and 935 patients post-ACA. There was no difference in mean age (48.5±15.6 vs. 49.0±14.9 years) or gender (57.6% vs. 58.5% male) between groups. Medi-Cal insurance coverage increased significantly post-ACA from 20.8% to 56.7%, p<0.001; concomitantly self-pay status went from 9.7% to 0%. The proportion of patients with private insurance decreased from 30.8% to 25.3%, p=0.54 in the post-ACA period. There were 301(35.5%) surgical procedures performed in the pre-ACA group and 347(37.1%), p=0.637, surgical procedures performed in the post-ACA group. Among the patients who underwent surgical procedures, 21.6% had Medi-Cal in the pre-ACA period while 58.2% had Medi-Cal post-ACA, p<0.001. Inguinal hernias significantly increased in the postACA period from 18.9% to 28.5% of all operation, p=0.025. “Other” operations significantly declined from 14.6% to 8.6%, p=0.34; however, no other
procedure types had a significant change. Missed clinic visits decreased after implementation of the ACA OE, with 26.7% no-shows pre-ACA and 20.7% no-shows post-ACA, p=0.021.

**Conclusion:** The ACA OE had a profound impact on the general surgery clinic with fewer uninsured patients, fewer no-shows and a modest increase in the number of procedures performed in the post period. Understanding the demographics of the newly insured is crucial to understanding the true impact of the ACA. There is a need for further research in this area to help guide future policy creation.
13. THE PARALYZING EFFECT OF INSURANCE STATUS ON THROUGHPUT OF ACUTE SPINAL CORD PATIENTS


University of Oklahoma Health Sciences Center

**Background:** Traumatic spinal cord injuries (SCI) result in a range of devastating disabilities. The economic and social strains caused by SCIs are potentiated by disparities in access to care once out of the acute period of injury. The purpose of this study was to determine whether lack of insurance is a predictor of poor outcomes and increased healthcare expenditure, as measured by length of hospital stay (LOS), for SCI patients admitted to a Level 1 trauma center. We hypothesized that uninsured SCI patients have longer LOS and increased hospital complications when compared with insured SCI patients.

**Methods:** This was a retrospective cohort study of trauma patients admitted with an acute, severe (AIS>=3) SCI and admission score of ASIA A to a Level 1 trauma center between January 2012 and December 2016. Exclusion criteria included patients younger than 18 years of age, those with pre-existing spinal cord injuries, death within 24 hours of arrival, and patients with Medicare/Medicaid. Patient characteristics and outcomes (LOS, complications) were compared between insured and uninsured patients. Multivariable adjustment was performed using lineal regression.

**Results:** Of the 76 patients who met eligibility, 44 had insurance, and 32 were uninsured (NOPAY). NOPAY SCI patients were more likely to have a penetrating injury (21.9% vs 9.1%); were on average not as severely injured (ISS 13.5 vs 20.3, p=0.0628); where significantly (p<0.05) less likely to have C-spine level injuries (34.4% vs 56.8%), and more likely to be T-spine level (56% vs 43%). Furthermore, despite having similar ventilator days (13 vs 12.1) and ICU LOS (20.1 vs 16.8), the NOPAY group had more ventilator-free days (22.3 vs 6.6; p<0.0001), longer Stepdown Unit length of stay (10.2 vs 2.3; p=0.0036), and a longer hospital length of stay (35.3 vs 18.7; p=0.0062). NOPAY patients were more likely to be readmitted to the ICU (15.6% vs 4.6%) and had a higher incidence of complications, in particular a higher rate of DVT (44.3% vs 6.8%; p=0.0002). NOPAY patients were less likely to be discharged to a rehabilitation facility (65.6% vs 75.0%) and more likely to be discharged home (15.6% vs 0%; p=0.0075). Even after adjusting
for age, overall injury severity, MAP protocol, and spinal level of injury, NOPAY patients had a significantly longer hospital length of stay. Overall, crude in-hospital mortality was not different between the two groups (p=0.7143).

**Conclusion**: These results suggest that NOPAY SCI patients face longer hospital LOS due to their insurance status and lack of funding for timely rehabilitation placement. This utilizes valuable hospital resources and puts them at risk for hospital related complications and further increased healthcare expenditures. Further studies are needed to investigate the full impact that healthcare disparity amongst acute SCI patients has on acute care hospitals.
14. PROSPECTIVE ANALYSIS OF OPERATING ROOM AND DISCHARGE DELAYS IN A BURN CENTER
TD Madni MD, JB Imran MD, AT Clark MD, E Barrios BS, P Rizk BS, BD Arnoldo MD, HA Phelan MD, SE Wolf MD
University of Texas Southwestern Medical Center

Background: Delays to the operating room or discharge lead to longer lengths of stay (LOS) and increased costs. Surprisingly, little work has been done to quantify the number and cost of delays for inpatients to the operating room, and to discharge to outpatient status. We sought to review our burn admissions, and determine how often a patient experiences delays in hospital-based healthcare delivery.

Methods: Data for all burn admissions were prospectively collected from December 2014 to November 2016. A quality improvement filter was created to define broadly acceptable parameters for patient through-put. Every hospital day was labeled as: 1) No delay, 2) Operation, 3) Delay to the Operating Room (OR), or 4) Delay to Discharge. Delay to OR was defined as follows: 1) Index operation occurring after hospital day (HD) two, 2) For a floor patient, greater than five days between multiple operations, and 3) For an ICU patient, greater than two weeks between multiple operations. Delay to Discharge was defined as follows: Any patient admitted to the floor who did not receive an operation, or had received their final operation, who was discharged greater than five days later. These parameters were confirmed via a Delphi panel of burn providers who are members of the Burn Research in Texas (BRIT) Consortium. Reasons generated for either OR or discharge delay were summarized.

Results: We had 1633 admissions: 432 ICU admissions (26%), and 1201 floor admissions (74%) with 615 patients (37.7%) receiving an operation during the index hospitalization. Patients with delays included 331 with OR delays (20.3%), and 503 patients with discharge delays (30.8%). Admission data included (Mean+SD): LOS=7.8+13.7 days, daily census=18.5+4.4 patients, OR delay days=4.7+6.2, discharge delay days=4.1+4.4. Overall, total number of hospital days was 13,009, divided into 1616 OR delay days (12%) and 2096 DC delay days (16%). Significant OR delays were due to: patient unstable for OR [n=387, (24%)], OR space availability [n=662, (41%)], indeterminate depth of wounds [n=437, (27%)], and donor site availability [n=83, (5%)]. Significant discharge delays were due to: medical goals not reached [n=388, (19%)], pain control and wound...
care [n=694, (33%)], PT/OT clearance [n=168, (8.0%)], and discharge placement delays [n=754, (36%)]. Estimated additional costs for OR and discharge delays based on inpatient bed operating expenses were $1.6 million and $1.4 million respectively, not including physician costs and ancillary services (i.e. pharmacy, laboratory, radiology, etc…) which would more than double these cost estimates.

**Conclusion:** Over 40% of our inpatient burn OR delays are due to OR space and time availability, while 36% of our delays to discharge are due to placement delays. Costs of increasing OR capacity and/or additional social work ancillary staff can be justified through millions of dollars of savings annually. Future work will focus on decreasing these variable delays in order to improve burn patient throughput.
15. MESH FISTULA AFTER VENTRAL HERNIA REPAIR: WHAT IS THE OPTIMAL MANAGEMENT?
MR Arnold MD, RF Sing DO, BT Heniford MD
Carolinas Medical Center

**Background:** Ventral Hernia Repair (VHR) is one of the more common operations in the world. Mesh use improves hernia outcomes, but mesh infection and mesh-intestinal fistula (MF) are uncommon but known complication of VHR. Optimal management of mesh fistula is challenging due to very difficult operations, wound complications, hernia recurrence, and lack of prospective data. Our aim was to determine long term, prospective outcomes of the surgical treatment of MFs.

**Methods:** Prospective data for patients with mesh fistulas from 2003-2017 was studied. Patient demographics, original operative data, mesh type, operative treatment, follow-up information and hospital charges were studied. Suture repair (SR) versus VHR with mesh (VHRM) at the time of mesh excision and MF takedown were compared. Standard statistical methods were utilized.

**Results:** 65 patients were managed for 67 mesh fistulas. Mean time from mesh implantation to MF was 44.7±61.6 months. Follow-up was 19.3±31.8 months from mesh excision and MF takedown. Average age (60.4±12.4 years), BMI (34.1±7.2), and number of comorbidities (5.5±2.6) were similar between groups (p>0.05). 55.2% were female, 35.8% had diabetes, and 23.9% were smokers. The preceding VHR were most often open (61.2%) and the most common mesh position was intraperitoneal (74.6%). Mesh types included polytetrafluoroethylene (PTFE, 44.8%) or polypropylene (PPE, 70.2%). The overall wound complication rate following MF takedown was 57.4%. There were 26 (40.0%) SR and 39 (60.0%) VHRM. Mean defect size (105.7±100.4cm² vs. 242.1±143.5cm²; p=0.05) was similar between groups. Components separation technique was more common in the VHRM group (24.0% vs. 71.8%;p=0.0002). Surgical complications following MF takedown including recurrent fistula rate (20.0% vs. 7.7%),and cellulitis (30.4% vs. 23.1%) were similar between groups (p>0.05). Overall hernia recurrence was similar between groups. When excluding bridged repairs, the difference in hernia recurrence was significantly higher following SR (56.0% vs.20.0%; p=0.0057). The most commonly used mesh was acellular porcine dermal matrix (APDM), followed by 9 other types. When comparing non-bridged repairs, APDM (23) vs. non-APDM (7) recurrence was (13.0% vs. 42.9%; p=0.12). Of patients with recurrent
hernia after SR, only 35.7% had their hernia repaired.

**Conclusion:** Resection of MFs are typically difficult operations that carry an expectedly high wound complication rate. However, patients undergoing definitive VHR with mesh at the time of MF takedown had lower recurrence rates and similar complications compared to SR followed by delayed VHR. Furthermore, the majority of patients with recurrent hernia do not undergo a delayed definitive repair. Thus, VHRM at the time of mesh excision and fistula takedown represents the patient’s best opportunity for a durable hernia repair.
16. EQUIVALENT OUTCOMES IN MIDLINE LAPAROTOMY WOUNDS USING NEGATIVE PRESSURE WOUND THERAPY WITH ONE VERSUS THREE WEEKLY DRESSING CHANGES

OE Beidas MD, RF Wicks MD, A Jalla MD, C Butler MD, Z Sarwar MS, TA Garwe PhD, RM Albrecht MD

University of Oklahoma Health Sciences Center

Background: Negative pressure wound dressing changes are painful and uncomfortable for the patient, time-consuming for the healthcare provider, and increase health care costs and material wastage. While negative pressure wound therapy (NPWT) has been used for decades, there is a paucity of data regarding the length of time between dressing changes. We hypothesized that changing a NPWT dressing once a week is equivalent to three times a week in terms of time to wound closure in open midline laparotomy incisions.

Methods: This was a prospective, randomized trial with stratified randomization by diabetes and obesity status. Eligible patients were those who underwent exploratory laparotomy with fascial closure and 1) subcutaneous NPWT, or 2) initial skin closure with subsequent opening of the wound and treatment with NPWT. The control group received the current standard of thrice weekly sponge changes (thrice) and the treatment group received once weekly sponge changes (once). The study’s primary outcome was time to wound closure. Secondary outcomes consisted of: change in size (area and volume) of the wound over time and wound-related complications. Adequacy of the randomization was evaluated by comparing patient’s demographic and clinical characteristics. Linear regression was used to adjust for any remaining covariate imbalance between the two groups.

Results: A total of 70 consecutive patients were enrolled between June 2013 and December 2016 and 44 met study eligibility. Of the 44, 24 patients (54.5%) were randomized to the thrice group. There were no significant demographic and clinical differences between the two treatment arms except for the distribution of admission serum albumin, patient type (general surgery vs trauma), tube feeding, and pre-existing conditions. Patients randomized to thrice group had higher serum albumin levels at admission (p = 0.0564) and were more likely to be administered tube feeds (p = 0.0304), while patients in the once group had a higher prevalence of pre-existing conditions (63.2% vs 37.5%, p = 0.0946) and a disproportionately higher number of general surgery patients (70% vs 46%, p = 0.1071). Unadjusted comparisons of the
outcomes suggested no difference in NPWT duration for both groups (37.1 vs 34.7 days for the once and thrice groups respectively, \( p = 0.7324 \)) and no difference in initial wound size and reduction (mean absolute reduction volume of 351 cm\(^3\) and 360 cm\(^3\) for the once and thrice weekly groups respectively, \( p = 0.9610 \)). The wound complication profile was also similar for both groups (52.6% in the once group and 41.7% in the thrice group, \( p = 0.4741 \)).

**Conclusion:** In open midline laparotomy wounds treated with NPWT, there is no difference in time to wound closure or wound-related complications with dressing changes once a week compared to the standard three times a week. A paradigm shift in treatment modality in these wounds would reduce patient discomfort/pain, increase healthcare worker time and patient satisfaction, and decrease hospital charges/costs. Further studies are likely to corroborate these findings for other anatomical regions. Future studies should include larger populations, a survey to compare patient satisfaction across groups, and an in-depth cost analysis.
17. DECREASING FAILED EXTUBATIONS WITH THE IMPLEMENTATION OF AN EXTUBATION CHECKLIST
MK Bobbs, MD Trus, S Ali, I Tabas, PG Teixeira, J Aydelotte, TB Coopwood, CVR Brown
The University of Texas at Austin

Background: Failed extubation has been shown to increase ICU stay, transfers to rehabilitation facilities, and mortality. Few studies have established scoring models that provide clear criteria for extubation. The purpose of this study was to assess the differences in rates of failed extubation before and after implementation of an extubation checklist. We hypothesize that an extubation checklist will decrease rates of extubation failure in trauma patients.

Methods: We performed a retrospective study from January 2013 - April 2017 on adult trauma patients (age 18-89) who were admitted to the ICU and required mechanical ventilation. During this time frame, patients grouped before and after implementation of an extubation checklist were compared. Failed extubation was defined as any patient reintubated within 48 hours after extubation. The extubation checklist included the following: passed trial of spontaneous breathing, mental status of Glasgow Coma Scale (GCS) ≥ 11T, oxygen saturation ≥ 95%, tracheal suction ≤ q2 hours, minimal oral secretions, spontaneous cough, and the presence of an endotracheal tube cuff leak. The primary outcome was rate of reintubation. Secondary outcomes included mortality, ventilation days, and ICU and hospital length of stay (LOS).

Results: A total of 993 patients were included in this study, with 375 (38%) after the implementation of the extubation checklist. There was no statistically significant difference in admission demographics or injury severity score between the two groups. After checklist implementation, significantly fewer patients required reintubation compared to those prior to checklist (7% vs 3%, p=0.005). There was no difference in mortality (20% vs 21%, p=0.54). Patients extubated after implementation of our checklist had longer ICU stays (9 days vs 7 days, p=0.0002), however there was no difference in hospital length of stay between the two groups (16 days vs 15 days, p=0.16).

Conclusion: Our study reveals that implementing an extubation checklist is associated with fewer failed extubations. Although implementation an extubation checklist is associated with a longer ICU course, it does not increase hospital length of stay or mortality.
18. CONTINUOUS RENAL REPLACEMENT THERAPY EQUALLY BENEFITS THE ELDERLY CRITICALLY ILL SURGICAL PATIENT
C Colovos MD PhD, NK Dhillon MD, NT Linaval, KA Patel, N Melo MD, DR Margulies MD, G Barmparas MD
Cedars Sinai Medical Center

Background: Despite the absence of a clear survival benefit, continuous renal replacement therapy (CRRT) is increasingly utilized in critically ill surgical patients with acute kidney injury, especially in the setting of hemodynamic instability. Initiation of CRRT is resource intensive and costly and identification of the subgroup of patients that benefits the least from this modality may lead to better resource utilization. We herein examine the association between the use of CRRT in elderly patients and mortality. We hypothesized that elderly patients requiring CRRT are at a significantly higher risk for mortality compared to younger patients, potentially putting into question the decision to initiate this modality on this subgroup of surgical patients.

Methods: Patients admitted to a surgical intensive care unit (SICU) at an urban tertiary medical center from July, 2012 to January 2016 and requiring CRRT were identified. Demographics and clinical data including indication for SICU admission, admission APACHE IV scores, use of vasopressors, days on CRRT, ventilator days and SICU days were collected. The presence of chronic kidney disease (CKD) and history of hemodialysis (HD) were also recorded. Patients were divided into two groups: > 65 (elderly) and ≤65 years (non-elderly). Standard statistical tools were utilized for the comparison of the two cohorts. The primary outcome was in-hospital mortality. A Kaplan-Meier survival curve analysis was performed, in addition to a Cox proportional regression model to account for confounding factors and to calculate the adjusted hazard ratio (AHR).

Results: A total of 108 patients were admitted to the SICU during the study period and required CRRT. The median age was 61 years and 60% were male. The median APACHE IV score was 35. Most patients were being evaluated for a liver transplant or underwent transplant (57%). Forty-two (39%) were elderly. Compared to the non-elderly, elderly patients were similar in regards to gender (male: 61% vs. 60%, p=0.911) and were equally likely to have a history of CKD (26% vs. 33%, p=0.40) and HD (21% vs. 33%, p=0.16). In addition, they were equally likely to have an APACHE IV score > 25 (67% vs. 52%, p=0.11) and require
mechanical ventilation (95% vs. 94%, p=0.77). However, elderly patients were more likely to require vasopressors (93% vs. 74%, p=0.02). The overall mortality was 55%: 59% for elderly and 53% for the non-elderly. A Cox proportional regression model demonstrated no significant difference in mortality between elderly and non-elderly patients (AHR: 1.09; p=0.74). Similar finding was observed in the subgroup of patients that was being evaluated for a liver transplant (AHR: 0.87; p=0.73) and in those requiring vasopressors (AHR: 1.06; p=0.84).

**Conclusion:** The use of CRRT in elderly critically ill surgical patients was not associated with increased mortality risk, independent of the indication for SICU admission and/or the use of vasopressors. This finding likely indicates appropriate utilization of this modality in elderly patients based solely on clinical assessment by the rounding intensivists. Therefore, age should not be the only factor accounted for in the decision to initiate CRRT in the SICU.
19. ACUTE HYPERGLYCEMIA INCREASES SEPSIS RELATED GLYCOCALYX DEGRADATION AND ENDOTHELIAL CELLULAR INJURY: A MICROFLUIDIC STUDY
LN Diebel MD, JV Martin MD, DM Liberati MS
Wayne State University

Background: Endothelial damage contributes to organ failure and mortality in sepsis. Stress hyperglycemia is common in critically ill and septic patients. Hyperglycemia promotes vascular inflammation; however its effect on endothelial dysfunction in sepsis is unknown. Microfluidic devices (MFD) are particularly useful for the study of endothelial biology as they may closely mimic the in vivo endothelial cell microenvironment. We hypothesized that stress glucose concentrations would increase sepsis related endothelial injury/activation. This was studied in vitro using MFD technology.

Methods: Human umbilical vein endothelial cell (HUVEC) monolayers were established in microfluidic channels and perfused overnight. TNF (50ng/ml) was added to the inlet of the microfluidic channels followed by glucose (80 or 200 mg/dl) after 60 minutes. Endothelial glycocalyx (EG) integrity was indexed by shedding of the EG components syndecan-1 (syn-1) and hyaluronic acid (HLA) as well as thickness (FITC-wheat germ agglutinin). Endothelial cell (EC) injury/activation was indexed by soluble thrombomodulin (sTM), angiopoietin 1 (Ang-1), angiopoietin 2 (Ang-2) and their ratio. Intracellular reactive oxygen species (ROS) was measured using a fluorescent technique.

Results: Treatment with TNF alone increased glycocalyx shedding and decreased EG thickness vs. control. This was associated with an increase in parameters of EC injury (sTM and Ang-2/1 ratio, p<0.05 vs. control). Shedding of EG components was further increased by hyperglycemia after TNF treatment (syn-1 45.6 ± 3.2 - 93.6 ± 4.5; HLA 51.0 ± 3.1 - 105.2 ± 6.8 ng/ml, p<0.05). Glycocalyx thickness was also further diminished by subsequent hyperglycemic conditions (147.5 ± 10.6 - 116.7 ± 14.2, relative fluorescent intensity; p<0.05). EC injury was increased by TNF and high glucose exposure (sTM 51.8 ± 3.1 - 89.9 ± 6.3 pg/ml; Ang-2/1 ratio 0.69 ± 0.07 - 1.91 ± 0.4, p<0.05). ROS production increased from 24.5 ± 0.8 in control groups to 53.7 ± 1.6 following TNF alone and 80.8 ± 2.4 following TNF and hyperglycemia (relative fluorescent intensity, p<0.05 between all groups).

Conclusion: TNF-related EG degradation and EC injury were aggravated by stress concentrations of glucose. This was associated with increased production of ROS. Early glycemic control may help protect the endothelial vascular barrier dysfunction in sepsis.
20. MUPIROCIN SURGICAL SITE DRESSINGS AND ITS EFFECT ON POSTOPERATIVE SURGICAL SITE INFECTIONS IN ELECTIVE COLORECTAL SURGERY: A PROSPECTIVE, RANDOMIZED CONTROLLED TRIAL
HF Ahmad MD, KJ Kallies MS, SB Shapiro MD
Gundersen Health System

**Background:** Surgical site infections (SSIs) are the most common nosocomial infection among surgical patients. Although all patients undergoing surgical procedures are at risk for developing SSIs, colorectal surgery (CRS) has consistently had high rates of surgical site infections, ranging from 3-45%. Numerous studies have shown the adverse effects of SSIs, including increased length of hospital stay, morbidity, mortality, readmissions, and increased cost by over $20,000 per occurrence. Mupirocin ointment over surgical wounds has been reported in a single European trial with open colorectal cancer surgery. We hypothesized that mupirocin ointment would decrease SSI rates compared to standard surgical dressings in patients undergoing both elective open and minimally invasive colorectal surgery at a community teaching hospital.

**Methods:** A prospective randomized controlled trial was initiated after IRB approval. The electronic medical records were reviewed for each enrolled patient. Study participants underwent elective CRS from November 2015 through September 2017 at a single institution. Patients were randomized 1:1 to receive either standard gauze island dressings for 2 days or mupirocin ointment (2%) and an island dressing for 5 days on the extrication site. All patients underwent Enhanced Recovery After Surgery pathway. SSI occurrence was determined by the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) criteria within 30 days postoperative. Based on historical SSI rates, 75 patients per arm were required to detect a 15% difference in SSI rates with 80% statistical power.

**Results:** A total of 160 patients were enrolled; 124 underwent randomization at interval analysis: 58 to the mupirocin arm, and 66 to standard gauze wound dressings. Exclusions involved not proceeding to surgery or protocol violations. Three SSIs occurred; one (2%) in the mupirocin group (1 superficial SSI after laparoscopic surgery), and two in the standard gauze group (2 organ space infections, both after laparoscopic surgery) (P=0.999). Patient demographics were similar for those in the mupirocin vs. standard gauze dressing for age (67.7±11.7 vs. 62.4±15.4 years; P=0.035), BMI (31.6±5.8 vs. 29.5±6.4 kg/m2;
P=0.059), sex (52% vs. 48% female; P=0.857), and approach (83% vs. 88% laparoscopic/robotic; P=0.454). Indications for surgery in the mupirocin vs. standard dressing group included cancer (34% vs. 38%; P=0.713), diverticulitis (26% vs. 30%; P=0.690), adenoma/mass (36% vs. 21%; P=0.074), and other (3% vs. 11%; P=0.172). Mean length of stay was 5.6±6.3 days in the mupirocin and 4.6±2.8 in the standard dressing groups (P=0.858). During the study period, our institution initiated SSI reduction pathways for surgical patients which resulted in significant reduction in SSI occurrences. This impacted our initial sample size/power calculations and resulted in underpowering of the study. There were no adverse outcomes attributed to mupirocin.

**Conclusion:** Mupirocin (2%) ointment failed to show a benefit in a prospective randomized trial compared to standard dressings for postoperative SSI. This study included multiple surgeons and a variety of disease processes and surgical techniques in order to accurately reflect clinical practice with a validated outcome instrument (NSQIP) and standardized perioperative pathway (ERAS).
21. REDUCTION OF SURGICAL SITE INFECTIONS IN COLORECTAL SURGERY: A 10-YEAR EXPERIENCE FROM AN INDEPENDENT ACADEMIC MEDICAL CENTER

NJ Rudder DO, AJ Borgert PhD, KJ Kallies MS, TJ Smith MD, SB Shapiro MD
Gundersen Health System

Background: Surgical site infections (SSI) are a source of significant patient morbidity and increased cost. In 2007, our organization began participating in the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) and discovered an SSI rate of 18% after colorectal surgery (CRS); this corresponded to a high outlier for SSI when benchmarked against similar institutions. This new awareness prompted a cascade of improvement cycles aimed at SSI reduction at our medical center. These actions are associated with a NSQIP exemplary performance in the top ten percentile benchmarked performance in 2016 and 58% decrease in SSI rates. The objective of this study was to share our multidisciplinary journey with specific steps towards SSI reduction in patients undergoing CRS over a 10-year period.

Methods: From 2007-2016, surgeons led a stepwise improvement pathway for CRS SSI reduction using plan, do, study, and act (PDSA) principles. This was a multidisciplinary collaboration involving stakeholders from anesthesia, nursing, pharmacy, as well as our patients. NSQIP was used to track our infection rates. Estimated cost savings were evaluated using NSQIP SSI costs estimates. All operations were performed at a single institution by general surgeons.

Results: From 2007-2016, 1,508 patients underwent CRS. In 2007 the NSQIP SSI rate was 18% and averaged 16% from the timeframe between 2007-2010. Key interventions implemented during this time included a pre-optimization clinic for high risk patients, encouragement for minimally invasive surgery, along with leaving class 4 wounds open with encouragement to keep high-risk class 2 and 3 wounds open. From 2011-2013, the NSQIP SSI rate averaged 16%. Interventions during this period included standardized surgical checklist during briefing, standardized mechanical bowel preparation with preoperative antibiotics, use of wound protectors and closing trays, adherence to ERAS protocol (early initiation of diet, ambulation, fluid restriction), and a restricted red blood cell transfusion protocol. From 2014-2016, the NSQIP SSI rate averaged 11% with a final SSI rate of 7% in 2016. Improvements during this timeframe included preoperative and postoperative...
nutritional supplements, standardized skin prep agent applied at home (chlorohexidine wipes) by the patient and chlorohexidine/alcohol operative skin prep), focus on intraoperative normothermia and glycemic control, and patient education videos. Timers were placed by scrub sinks to guide proper duration of surgical personnel hand wash. Patient groups remained similar over the ten year period, as we observed no statistically significant differences in terms of wound class, procedure type, or patient comorbidities. The estimated expense of SSI reduction implementation was $180,000, whereas the cost savings was estimated at $1.3 million from prevention of SSIs. An estimated 54 patients avoided the morbidity of postoperative infections.

**Conclusion:** Our surgeon-led approach to SSI reduction in CRS used a series of PDSA cycles resulted in a 58% overall reduction of SSI rates as measured by NSQIP. Using these interventions, our institution observed a significant morbidity reduction and cost savings. The specific steps of our implementation strategy could be adopted within other medical centers focused on CRS SSI improvement.
22. IMAGING UTILIZATION AND NEGATIVE APPENDECTOMY RATES IN APPENDICITIS:
AN ACS-NSQIP STUDY
J Tseng MD, T Cohen PhD, N Melo MD, RF Alban MD
Cedars Sinai Medical Center

**Background:** Historically, negative appendectomy rates (NAR) ranged from 15-20%; however, with the universal adoption of risk stratification formulas such as the Alvarado score and advanced imaging modalities, negative appendectomy rates have significantly decreased. We performed an analysis of the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database to examine utilization patterns of imaging studies and their relation to negative appendectomy rates in the modern era.

**Methods:** Using the 2016 ACS-NSQIP Procedure-Targeted Appendectomy database, we identified patients who underwent appendectomies based on specific CPT codes. Variables such as patient demographics, comorbidities, preoperative labs, imaging studies, pathology results, hospital course, and postoperative outcomes were obtained. Imaging studies consistent with appendicitis were defined as “positive”, while results not consistent with appendicitis were defined as “negative”. Descriptive statistics were provided in terms of mean and standard deviation for continuous variables, and percentages for categorical variables. Patients with appendicitis and patients without appendicitis on pathology were compared using the student’s t-test and Pearson’s chi-squared test where appropriate. Negative appendectomy rates, defined as the number of patients with negative pathology divided by the total number of patients in each cohort, were calculated. Multivariable logistic regression was done to identify independent predictors of negative appendectomies.

**Results:** A total of 11,841 patients underwent appendectomies, with a total NAR of 4.5%. The majority of patients had an imaging study done (93.9%) versus none (6.1%). 86.1% of patients had a CT, compared to ultrasound (14.9%) and MRI (1.1%). 7.3% of patients had both an US and a CT done. Patients with negative appendectomies were more likely to be female (64.9% vs 47.6%, p<.001), received no imaging (26.2% vs 5.1%, p<.001), or an indeterminate/negative imaging result (55.2% vs 10.4%, p<.001). Patients with appendicitis were more likely to have preoperative SIRS and sepsis (20.8% vs 12.5% and 11.9% vs 2.5% respectively, p<.001), and had higher WBC counts (12.91 vs 9.45,
p<.001). NAR’s of US, CT, and MRI studies with positive results were 4.0%, 1.3%, and 2.3%, respectively. Patients who had both a positive US and a positive CT had a NAR of 1.1%, compared to 4% in patients with a positive US alone (p=.049). Patients who proceeded to surgery with a single indeterminate imaging study had a NAR of 24.7%, compared to those who had two studies with at least one indeterminate result (8.9%). Independent predictors of negative appendectomies include female gender (OR 1.93, CI 1.58-2.34), lack of any imaging (4.94, 3.25-7.50), normal WBC (2.97, 2.41-3.66), and lack of SIRS/sepsis (1.48, 1.13-1.93).

**Conclusion:** The negative appendectomy rate in the 2016 ACS-NSQIP population is 4.5%. CTs are the most frequently used imaging modality and have lower negative appendectomy rates than average. Predictors of negative appendectomies include female gender, lack of imaging studies, normal WBC count, and no evidence of SIRS or sepsis. There may be utility in obtaining multiple imaging studies if one study is indeterminate, as it is associated with a lower negative appendectomy rate.
23. EVALUATION OF WHITE BLOOD CELL COUNT AT TIME OF DISCHARGE IS ASSOCIATED WITH LIMITED ORAL ANTIBIOTIC THERAPY IN CHILDREN WITH COMPLICATED APPENDICITIS.

PC Bonasso MD, MS Dassinger MD, DL Wyrick MD, SD Smith MD, JM Burford MD

University of Arkansas for Medical Sciences

Background: Complicated appendicitis is common in children, yet variation exists for administration of postoperative antibiotics. Some studies support a defined length of antibiotic treatment whereas others follow institutional clinical practice guidelines. This study investigates the impact of white blood count (WBC) at discharge on oral antibiotic therapy, abscess rate, and readmission rate.

Methods: We conducted a two year retrospective review of children with complicated appendicitis clinically defined as perforated or gangrenous at time of appendectomy. Two sequential groups were compared from 2014 to 2016. All children received intravenous ceftriaxone and metronidazole while inpatient. The post-operative perforated appendicitis protocol changed in 2015 to include evaluation of a WBC once the patient met discharge criteria. In the pre-protocol group, total antibiotic therapy was ten days (IV and oral) and children were discharged home with oral antibiotics. In the post-protocol group, children with leukocytosis were prescribed oral antibiotics to complete seven days of total antibiotic therapy and children without leukocytosis were not prescribed oral home antibiotics. Comparisons between pre- and post-protocol groups were made using t-tests for continuous variables and chi-square tests for categorical variables.

Results: A total of 520 children with appendicitis underwent appendectomy, 179 (34.4%) had complicated appendicitis. 82 (46%) children were in the pre-protocol group and 97 (54%) children were in the post-protocol group. Comparing the pre- and post-protocol groups, there was no difference between mean days of hospitalization after operation (3.52 vs. 3.24, p=0.5111), means days of inpatient intravenous antibiotics (3.13 vs. 2.58, p=0.5438), post-operative abscess rates (20.7% vs. 19.6%, p=0.9975), or readmission rate (13.4% vs. 12.4%, p=1.000). Children in the post-protocol group had a shorter average duration of total antibiotic therapy (4.24 vs. 9.52 days, p<0.001) and were more likely to be discharged without oral antibiotics compared to the pre-protocol group (71.1% vs 8.5%, p<0.001). Of the children discharged
with antibiotics, the post-protocol children had a shorter duration of oral antibiotic therapy (5.75 vs 7.50 days, p=0.001).

**Conclusion:** Limiting home antibiotics to children with leukocytosis at discharge significantly decreases home antibiotic use without increasing abscess or readmission rates.
24. ASSESSING OUTCOMES AND COSTS OF APPENDECTOMIES PERFORMED AT RURAL HOSPITALS
CM Tom MD, RP Won MD, EC Howell MD, S Friedlander MPH, C de Virgilio MD, SL Lee MD
Harbor-UCLA Medical Center

Background: Limited access to care is associated with poor outcomes following appendectomy. Rural surgeons in critical access hospitals serve populations with social and geographic barriers that may delay presentation and affect morbidity and cost. The purpose of this study was to assess the differences in outcomes and costs of appendectomies performed at rural and urban hospitals.

Methods: A retrospective cohort analysis was performed on appendectomy patients (n=2,268,166) at urban and rural hospitals from the Nationwide Inpatient Sample (NIS) database between 2002-2012. The primary outcomes (disease severity, rate of negative appendectomy, laparoscopy, length of stay (LOS), morbidity, and cost) were analyzed with survey weighted bivariate and multivariable regression analyses.

Results: Overall, rural hospitals cared for a higher proportion of Medicaid and uninsured patients (35.5% vs. 29.5%, p<0.01) and a lower proportion of minorities (7.6% vs. 21.6%, p<0.01). Multivariate analysis revealed that patients in rural hospitals were associated with higher negative appendectomy rates (OR 1.26, 95% CI 1.18-1.34, p < 0.01), but no difference in appendiceal perforation rates. Rural hospitals were associated with decreased laparoscopy use (OR 0.65, 95% CI 0.58-0.72, p ≤ 0.01), increased complications (OR 1.10, 95% CI 1.03-1.16, p < 0.01), and slightly increased costs (OR log 0.01, 95% CI 0.01-0.02, p < 0.01) while having slightly shorter LOS (OR 0.98, 95% CI 0.97-0.99, p < 0.01). However, yearly trends showed improvement in negative appendectomy rates, laparoscopy use, and complication rates in more recent years.

Conclusion: Appendectomies performed at rural hospitals were associated with increased negative appendectomy rates and increased post-operative morbidity with higher costs despite having no difference in disease severity. Though recent trends showed improvement in these outcomes, this disparity in care is deeply troubling, and it is imperative that we identify patient and hospital factors to target interventions to improve the quality of surgical care in rural America.
PAPER ABSTRACTS (continued)

25. DOES HISTOLOGY INFLUENCE THE EFFICACY OF SURGERY AND CHEMOTHERAPY IN STAGE IV APPENDICEAL CANCER?
CS Velazco MD MS, YH Chang PhD, RJ Gray MD, BA Pockaj, CH Stucky MD, N Wasif MD
Mayo Clinic Arizona

Background: Appendiceal cancer is a heterogeneous disease which often presents with peritoneal metastases. Although multimodality therapy is used for treatment, the efficacy of therapy is variable. Our hypothesis is that the effectiveness of treatment for Stage IV appendiceal adenocarcinoma cancer depends on underlying histology.

Methods: Patients with Stage IV appendiceal cancer diagnosed from 1998-2012 were identified from the National Cancer Database. Treatment was categorized into surgery of the primary, distant site surgery (debulking) and chemotherapy. Patient survival was analyzed using Kaplan Meier curves and log rank tests. Histology-specific Cox regression analysis was used to look at the association of treatment with survival, while controlling for gender, race, lymph node status, T stage, and grade.

Results: 6337 patients were included, of whom 61.4% were female and median age was 58 years (48 – 67 years). The most common histology was mucinous adenocarcinoma (56.7%) followed by nonmucinous adenocarcinoma (21%), signet cell (14.5%), and goblet cell (7.8%). Overall, 68.2% received chemotherapy, 3953 (62.4%) received surgery and chemotherapy, 1609 (25.4%) received surgery only, 549 (8.7%) received chemotherapy only, and 226 (3.6%) received no further treatment. Primary site surgical resection (local excision, appendectomy/ileocecectomy, colectomy/proctocolectomy or en bloc resection) showed significantly increased survival time as compared to no surgery (p<0.001) for stage IV appendiceal cancer. Median survival for no surgery was 15.5 months, compared with 45.5 months for local excision, 33.2 months for appendectomy or ileocecectomy, 30.9 months for colectomy or proctocolectomy and 36.9 months for en bloc resection, respectively. Irrespective of type of primary surgery, survival was only improved for mucinous (p<0.001) and non-mucinous (p<0.001) appendiceal adenocarcinoma, compared to no surgery. Surgical debulking of distant site metastases was associated with improved survival for mucinous (HR: 0.9, 95% CI: 0.81-0.99) and non-mucinous (HR: 0.82, 95% CI: 0.72-0.94) carcinomas. Finally, chemotherapy was associated with increased
survival in mucinous (HR: 0.81, 95% CI: 0.73-0.9), non-mucinous adenocarcinoma (HR: 0.55, 95% CI: 0.47-0.63) and signet cell (HR: 0.55, 95% CI: 0.45-0.66) histologies. No treatment modality showed improved survival for goblet cell carcinoma. The best long-term survival following multi-modality treatment for Stage IV appendiceal cancer was seen for mucinous adenocarcinoma.

**Conclusion:** Efficacy of multi-modality treatment for Stage IV appendiceal cancer depends on underlying histology. Patients with mucinous and non-mucinous adenocarcinoma benefit from primary resection, additional surgical debulking of disease, and chemotherapy. For signet cell tumors treatment should be focused on chemotherapy with no clear benefit for surgery. Currently, no treatment modality significantly improves survival for Stage IV goblet cell appendiceal tumors.
26. THE IMPACT OF ADVANCED PRACTICE PROVIDERS ON THE SURGICAL RESIDENT EXPERIENCE: AGREE TO DISAGREE?

B Eaton CRNP, L Hessler MD, L O’Meara CRNP, A Herrera MS, B Bruns MD, J Diaz MD
University of Maryland Medical Center

Background: The integration of Nurse Practitioners and Physician Assistants (collectively referred to as Advanced Practice Providers or APPs) into surgical subspecialty teams is no longer novel. Once considered a requisite to ease the workload of residents and promote compliance with ACGME 80-hour work-week restrictions, APPs are now recognized as a vital member of the healthcare team. The contributions of the APP have evolved to include decreased length of stay, continuity of care and adherence to practice standards. The aim of the current survey was to compare APP versus surgical resident perceptions of the role of APPs in surgical subspecialty teams.

Methods: An anonymous, electronic survey was distributed to all surgical residents/first year surgical critical care fellows (n= 57) and inpatient service-specific APPs (n = 24) at an urban tertiary referral center. The survey was distributed at the completion of academic year 2016. Using a Likert scale, the survey examined perceptions about the APP-resident relationship in regard to education, continuity of care, communication, collaboration, role transparency and hierarchy. Statistical analysis compared resident and APP responses using a Person chi-square test.

Results: Thirty-two residents (56%) and 10 APPs (41%) responded. Residents and APPs did not disagree that having an APP on service decreases workload (72.4% and 100%, respectively, p=0.12), contributes to continuity of care (82.8% and 100%, p=0.18) and enhances resident-patient coordination education (77.8% and 89.7%, p=0.36). A majority of residents and APPs also felt that there was clear communication (60.7% and 77.8%, p=0.35) and adequate collaboration (70.4% and 66.7%, p=0.83) between house staff and APPs regarding patient care. Fellows and APPs also felt that there was clear communication (61.1% and 88.9%, p=0.14) and adequate collaboration (61.9% and 66.7%, p=0.80) between groups. However, only 31% of residents felt that APPs contributed to resident clinical education, compared to 77.8% of APPs (p=0.01). Significantly more APPs than residents felt that APP roles were well-defined (100% vs. 34.5%, p=0.01) or that the “chain of command”
was well-established (77.8% vs. 34.5%, p=0.02). The majority of residents felt that APPs function at a PGY2 level (51.7%) compared to APPs, who felt that they functioned at a PGY4/5 (22%) or Fellow (44%) level.

**Conclusion:** The current study illustrates agreement between APPs and residents in relation to resident workload, continuity of care and patient-coordination education. However, the survey also highlights potential areas of improvement in the APPs role in resident education, as well as the APPs position in the traditional surgical hierarchy. In order to strengthen the modern multidisciplinary healthcare team, more communication is needed between residents and APPs regarding individual roles, responsibilities and skill levels.
PAPER ABSTRACTS (continued)

27. SAFETY OF IMPLEMENTING A SLEEP PROTOCOL IN HOSPITALIZED PATIENTS
MM Patterson MSN, CL Scaife MD
University of Utah School of Medicine

Background: While healthcare providers focus on best practices to improve outcomes for patients, an often overlooked area is adequate sleep. The idea of allowing patients to sleep is not new, Redeker et al, showed that interrupted sleep leads to increased stress, negative outcomes, and that improved sleep needs more interventional-based research. The goal of this project was to evaluate interventions to help promote sleep in post-operative patients, while maintaining quality patient centered care. The specific aims were to: 1) examine the safety of an intervention to reduce sleep disturbances at night following surgery and 2) examine why patients might elect not to participate in this type of intervention.

Methods: A randomized prospective trial of the sleep intervention was conducted with stable post-operative oncology patients. Patients were randomized to a control group who received nursing care as usual or an intervention group who received a sleep intervention consisting of a sleep mask, earplugs and a goal to reduce interruptions between 2200 and 0500 by controlling the timing of vitals, medications, laboratory draws and other tests. Patient monitoring was maintained with pulse oximetry connected to the call light system. Eligible participants were post-surgical patients at a comprehensive cancer center, with 3 or more serial stable vital signs. Patients were excluded for complex surgeries; patients on PCA’s, ketamine drips, or epidurals; patients requiring frequent neurovascular checks; or those requiring close observation for confusion or CIWA protocols. The sleep intervention protocol was approved by 15 surgical teams comprised of 37 surgeons.

Results: 454 patients were screened in a ten month period. 210 patients met the inclusion criteria. Based on availability of research personnel for consenting; 144 (67%) were invited to participate. Of those, 117 (81%) patients consented, while 27 (19%) patients declined to participate. The primary reason for non-enrollment was patient or family insecurity, and wanting to be monitored or “checked on” through the night for safety or pain concerns (n=21 78%). The remaining 6 (22%) listed “other” as the reason they did not want to participate. Among the 117 patients enrolled in the study, for a range of one to five nights, there were no adverse events; and therefore no difference in medical outcomes between the control versus intervention groups. Additionally, patients’
reported perceptions of pain and nausea control between the groups were statistically equivalent.

**Conclusion:** This pilot prospective randomized trial shows that an intervention to decrease interruptions of sleep can be safely executed in a post-operative population with careful screening or inclusion criteria, while maintaining optimal symptom management. Interestingly, nearly 20% of patients were concerned about being allowed to sleep without interruptions while in the hospital, but no adverse outcomes were a result of the intervention. Further studies are necessary to evaluate whether sleep improvement may impact post-operative outcomes. Additionally, opportunities exist for changing expectations and perceptions of quality care by better educating patients to the post-operative course, including sleep options and strategies for managing symptoms while allowing restorative sleep.
28. THE OPIOID CRISIS AND SURGEO NS: NATIONAL SURVEY OF PRESCRIBING PATTERNS AND THE INFLUENCE OF MOTIVATORS, EXPERIENCE, AND GENDER.
ME Linnaus MD, W Sheaffer MD, M Ali-Mucheru MD, CS Velazco MD, M Neville, RJ Gray MD
Mayo Clinic Arizona

Background: Surgical providers are the fifth largest prescribers of opioid pain medications in the United States. Few studies exist to describe surgeon pain medication prescribing practices.

Methods: An anonymous survey was conducted of surgical providers at all ACGME-accredited surgical residency programs. Comparisons between groups were made using chi-square or Kruskal-Wallis tests as appropriate.

Results: A total of 114 providers from 21 different states responded; 58% were male and 57% were resident surgeons. Responding attending surgeons were more likely to be male (78%) than non-attending providers (47%, p=0.002). Among all respondents, 8% reported ever being told they were over-prescribing opioids. Over one-third (38%) reported prescribing more opioids to those who complain during hospitalization or because of the inability to call in another prescription if needed (41%), while 42% considered not wanting to receive a patient call about pain when prescribing. Over half (56%) reported giving fewer opioids to elderly patients, 60% reported considering that the patient may give their opioids to someone else, and 86% reported considering possible misuse of opioids when prescribing. Twenty-six percent have had a patient report giving their prescription to someone else. Oxycodone or oxycodone-acetaminophen combinations were most commonly prescribed (49%). The median number of opioids reportedly prescribed by survey respondents exceeded Centers for Disease Control guidelines for acute pain management for every procedure queried except laparoscopic appendectomy/cholecystectomy, breast lumpectomy and laparoscopic inguinal hernia repair. There were no significant differences in number of opioids prescribed by male vs. female surgeons. Male surgeons more commonly reported not wanting their patients to be in pain (96.5% vs. 81%, p=0.011). When comparing attending surgeons versus non-attending providers, attending surgeons more often reported giving no opioids after laparoscopic appendectomy/cholecystectomy (9% vs 0%; p=0.012), were more likely to report patient attempts to return opioids to them (33% vs 16%; p=0.04), were less likely to give fewer opioids...
to patients ages 19-26 years (3% vs. 20%, p=0.013), and were less likely to consider if patients will give their opioid pills to someone else when prescribing (39% vs. 74%, p<0.001). PGY 1-2 residents reported prescribing fewer opioids than advanced residents, NP/PAs, fellows, and attending providers for patients undergoing simple mastectomy (p=0.04), exploratory laparotomy (p=0.05), and thoracotomy (p=0.03). Surgeons who have undergone surgery themselves reported prescribing more opioids for patients undergoing laparoscopic inguinal hernia repair (p=0.01), were more likely to consider inability to call in a refill when deciding on an opioid prescription (p=0.001), and were more likely to consult prescription drug monitoring databases to determine a patient’s opioid history (57% vs. 34%, p=0.026).

**Conclusion**: Surgeons vary significantly in their opioid prescriptions, even for the same operation. This is related to several important underlying motivators that must be considered in changing these patterns. There are few differences by gender but some important differences by level of experience.
29. TRENDS IN PHYSICIAN WELLNESS (TAKE A SAD SONG AND MAKE IT BETTER): A COMPARISON OF SURGICAL RESIDENTS, FELLOWS AND ATTENDINGS
TN Jackson MD, J Morgan, DL Jackson DVM, T Cook, K McLean, V Agrawal PhD, KE Taubman MD, MS Truitt MD
University of Oklahoma College of Medicine - Tulsa

**Background:** The prevalence of Posttraumatic Stress Disorder (PTSD) among surgical residents and practicing physicians has been demonstrated to be significantly higher than the general population. Among the surgical community, physician burnout (PBO) and physician wellness have received much attention. We aim to evaluate the prevalence of PTSD, PBO, and work-life balance (WLB) among surgical residents, fellows, and attendings, as a means to illustrate the trends of surgeon wellness.

**Methods:** A cross-sectional national survey of surgical residents, fellows, and attendings was conducted between September 2016 and May 2017. Demographic and occupational characteristics were examined. Respondents were screened for PTSD, PBO, and WLB. Causative traumatic stressors associated with a positive PTSD screen were identified. Surgical residents were grouped into lower level residents (PGY 1-2) and upper level residents (PGY 3+). Surgical attendings were grouped based on years of experience (0-10 years, 11-20 years, 21+ years). A chi-square or Fisher’s exact test were employed for statistical analysis in large or small sample sizes, respectively.

**Results:** Respondents included 809 surgical residents, 60 surgical fellows, and 1015 surgical attendings. As expected, demographic and occupational differences exist between the groups. A positive PTSD screen was found in 22% of residents, 18% of fellows, and 16% of attendings. The most common traumatic stressor among residents was bullying, for fellows it was care of the critically injured, and among attendings it was overwhelming work responsibilities. Thirty-five percent of residents, 13% of fellows, and 27% of attendings screened high risk for PBO, and an unhealthy WLB screen was noted in 46% of residents, 38% of fellows, and 32% of attendings. The prevalence of screening positive for PTSD diminished as years of experience in practice increased (p<0.001). The prevalence of burnout was significantly lower among attendings and fellows compared to residents (p<0.001). Similarly, work-life balance improved for fellows and attendings (p<0.001).
PAPER ABSTRACTS (continued)

**Conclusion:** The prevalence of PTSD among surgical residents, fellows, and attendings was found to be two to three times that of the general population. Similar trends for prevalence of PTSD, PBO, and WLB were displayed. Overall, wellness improved among attendings with increasing level of experience. Physician wellness remains a complex and multifaceted topic that has implications for patient care, and should be a focus for healthcare reform.
30. CHALLENGING DOGMA: ROUTINE COMPLETION ANGIOGRAPHY IS NOT WARRANTED FOLLOWING LOWER EXTREMITY TRAUMATIC ARTERIAL REPAIRS

AF Khouqeer MD, T Musonza MD, M Long MD, J Suliburk MD, C Wilson MD, AM Davis MD, S Gordy MD, RM Vera MD, J Ward MD, M Hoffman MD, BG Scott MD, R Gilani MD, SR Todd MD
Baylor College of Medicine

**Background:** Routine completion angiography is recommended following lower extremity traumatic arterial injury repair. Data as to whether or not this is warranted is lacking. The objective of this study was to examine the utility of completion angiography in this population. We hypothesized that completion angiography is not associated with acute intervention following lower extremity traumatic arterial injury repair.

**Methods:** This is a retrospective review of all patients presenting with extremity traumatic arterial injuries to a large urban Level I Trauma Center between January 1, 2012 and December 31, 2016. Three hundred and ninety-four patients were identified. Of these, 52 patients sustained injuries to the common femoral artery (CFA), femoral artery (FA), and popliteal artery (PA). Forty-six of these patients underwent an open repair and served as our study cohort. The Trauma Registry and electronic medical records were queried for patient demographics, arterial injury details, operative details, and outcomes. A p value < 0.05 was considered significant.

**Results:** Of the 46 patients in our study cohort, the anatomic distribution of injuries were: CFA 13% (n=6); FA 49% (n=23); and PA 38% (n=18). One patient sustained bilateral PA injuries for a total of 47 injuries evaluated. Our two study groups were comprised of 33 injuries that underwent completion angiography (CA group), and 14 that did not undergo completion angiography (NCA group). There was no difference in age, gender, ethnicity, mechanism of injury, extremity abbreviated injury scale, or injury severity score. From an initial operative perspective, there was no difference in Vascular Surgery involvement, temporary shunt utilization, type of repair done, choice of graft when utilized, need for an immediate fasciotomy, or need for amputation. Upon completion of the vascular repair and prior to the angiography, there was no difference in the presence of pulses (94% [CA] versus 100% [NCA], p=1). Furthermore, there was no difference in the need for an acute intervention post-vascular repair and angiography (9% [CA] versus...
PAPER ABSTRACTS (continued)

0% [NCA], p=0.5). Upon completion of the surgical procedure, there was no difference in the need for a fasciotomy within 24 hours of surgery (6% [CA] versus 0% [NCA], p=0.5), a delayed fasciotomy greater than 24 hours after surgery (3% [CA] versus 0% [NCA], p=1), an amputation (n=0 for both groups), a take-back for a vascular intervention (6% [CA] versus 0% [NCA], p=0.5), or mortality (n=0 for both groups). Notably, there was an increase ICU length of stay (3 [1-5] days [CA] versus 1 [1-2] days [NCA], p=0.02) as well as hospital length of stay (22.5 [7.5-30] days [CA] versus 9 [4-13] days [NCA], p=0.02).

Conclusion: Following lower extremity traumatic arterial injury repair, completion angiography is not associated with the need for acute re-intervention post repair. A large prospective trial comparing outcomes may offer additional insights into which predictors determine the need for a completion angiography requiring an acute intervention.
31. AGE IS JUST A NUMBER: A LOOK AT “ELDERLY” SPORT-RELATED TRAUMATIC INJURIES AT A LEVEL I TRAUMA CENTER
S Majercik MD, TW White MD, EL Wilson MS, A Kay PA-C
Intermountain Medical Center

**Background:** More “elderly” people are remaining active in recreational activities well past traditional retirement age. Few data exist describing the natural history of sport-related injuries in this population. The purpose of this study was to describe elderly engagement in recreational activities, their preinjury risks, injury patterns, and outcomes.

**Methods:** We performed a 16-year retrospective trauma registry review from January 2000 through March 2017. All trauma patients <u>></u> 65 years old admitted to our Level I trauma center after injury while participating in sports (SP) were compared to a non-sport (NS) cohort of elderly trauma patients. SP was defined as recreational activity demanding physical strength and movement, and included: skiing, bicycling, equestrian riding, farm animal management, recreational ATV or snowmobile use, ball sports, hiking and jogging. Groups were compared using t-tests and Chi-squared test for proportions as appropriate. P<0.05 was considered significant.

**Results:** During the study period, 9,697 admissions age <u>></u> 65 were identified. 526 (5%) were sport-related. Over time, the annual number of SP admissions increased 5-fold (13 in 2000 vs 67 in 2016). Compared to the NS group, the SP cohort was younger (mean age 72 vs 79, p<0.001), had fewer medical comorbidities, and was more severely injured (mean ISS 11.6 vs 10.6, p = 0.007). Women constituted the minority of SP admissions (24%) but the majority of NS admissions (62%, p<0.001). Alpine skiing was the most common mechanism of injury (36%), followed by ATV/snowmobile (21%), and bicycle accidents (16%). The most common injury patterns in the SP group, assessed by the abbreviated injury scale (AIS) score, were leg (37%), chest (33%), head (32%) and arm (24%). When comparing injury patterns between the two cohorts, SP patients had a higher incidence and severity of cervical spine (12% vs 9%, p=0.01; mean AIS 2.8 vs 2.4, p=0.007) and chest injuries (33% vs 16%, p<0.001; mean AIS 2.8 vs 2.6, p=0.004). Head injury was equally common between SP and NS (32% vs 31%, p=0.75), but more severe in NS (mean AIS 2.8 vs 3.2, p<0.001). Preinjury anticoagulant use was less prevalent in the SP group (12% vs 23%, p<0.001). Within the SP group, preinjury anticoagulation was not associated with worse outcomes,
including hospital or ICU length of stay (LOS), discharge disposition, or hospital mortality. Incidence of surgical procedures was similar for SP and NS groups (47% vs 44%, p=0.11). Regarding disposition, SP patients were more often discharged home than NS patients (73% vs 36%, p<0.001), with 47% of NS requiring ECF placement versus 14% of SP patients (p<0.001). There was no difference in ICU or hospital LOS. The hospital mortality rate was 3% in SP and 5% in NS patients (p=0.06).

**Conclusion:** Aging recreational enthusiasts are on the rise, and the result is a greater number of “elderly” sport-related trauma patients. Understanding common mechanisms, preinjury risks and injury patterns may help providers better anticipate their care. Importantly, our data suggest that active patients, despite being more severely injured, have similar LOS, are more likely to be discharged home, and trend toward a lower hospital mortality rate than their NS peers.
32. A COMPARISON OF OUTCOMES IN PATIENTS WHO UNDERWENT RIB FIXATION USING MUSCLE SPARING MINIMALLY INVASIVE THORACOTOMY: DO GERIATRIC PATIENTS EXPERIENCE THE SAME BENEFITS?
FR Ali-Osman MD, AJ Mangram MD, GR Shirah MD, JS Sucher MD, VA Johnson MD, A Abidali DO, JF Barletta PharmD, JK Dzandu PhD
HonorHealth John C. Lincoln Medical Center

Background: Surgical fixation of rib fractures is increasingly being used at American College of Surgeon (ACS-verified) trauma centers as a management strategy. However, the benefits of rib fixation in the geriatric (G60) trauma patient have not been elucidated. We hypothesize that G60 trauma patients benefit equally following muscle sparing minimally invasive thoracotomy operative rib fixation (MSMIT-ORF) compared to non-G60 counterparts.

Methods: A retrospective review of consecutive patients who underwent MSMIT-ORF from May 2014 through November 2017 was completed. Patients were divided into 2 groups: patients ≥ 60 years (G60 study group) and patients < 60 years (Non-G60 control group). Study variables were demographics, mechanisms of injury, operative and clinical variables. The outcome measures were: number of ribs fixed, ICU admission and length of stay, hospital length of stay, pneumonia, wound infection, tracheostomy, percentage change in FEV1 and FVC (from baseline) and death.

Results: One hundred G60 trauma patients (mean age = 70 ± 8 years) and 142 non-G60 trauma patients (mean age = 45 ± 12 years, p = 0.001) underwent MSMIT-ORF. Falls were more prevalent among G60 patients (39% vs. 12%, p<0.001). There was no difference in the number of ribs fractured (7.0 ± 2.8 vs. 7.5 ±3.7, p = 0.803), bilateral fracture prevalence (16% vs. 19.1%, p=0.445), flail chest (44% vs. 41.8%, p=0.739) or the number of ribs fixed (4.4 ± 1.7 vs. 4.3 ±1.7, p=0.436) between G60 and non-G60 patients, respectively. Preoperative chest tube placement was less common in the G60 group (11% vs. 35%, p=0.001) concomitant with lower prevalence of preoperative pneumothorax (48% vs. 68.3%, p=0.002). Also, there were no differences in the length of operation (2.1 ± 1 vs. 2.2 ± 1 hours, p=0.403), ICU admission (95% vs. 88%, p=0.063) or ICU length of stay (median, IQR= 5 [3 – 10] vs. 4 [2 – 7.8] days, p=1.00), wound infection (3% vs. 1.4%, p=.652) or death rate (1% vs. 0.7%, p=1.00 ) for the G60 and non-G60 patients, respectively. G60 and non-G60 patients both showed statistically significant increases in FEV1
from baseline (G60, relative increase= 13.2%, p<.001) and non-G60, 16.6%, p<.001) and FVC (G60, 14.4%, p<.001 and non-G60, 16.1%, p<.001). There was no difference in the magnitude of change in FEV1 (13.2 ± 14.7 vs. 16.6 ± 14.3, p=.11) or FVC (14.4 ± 16.6 vs. 16.1 ± 14.2, p=.441) between G60 and non-G60 patients.

**Conclusion:** Geriatric-G60 trauma patients with rib fractures benefit equally from rib fixation compared to their younger counterparts. Rib fixation is safe and associated with improved outcomes regardless of age.
33. EXCLUSIVE CLINICAL EXPERIENCE WITH A LOWER PROFILE DEVICE FOR RESUSCITATIVE ENDOVASCULAR BALLOON OCCLUSION OF THE AORTA (REBOA)
LJ Moore MD, W Teeter MD MS, P Hu PhD, S Yang, P Wasicek MD, J Pasley DO, J Taylor MD, J Harvin MD, D Stein MD, T Scalea MD
University of Maryland Medical Center

Background: A lower profile balloon catheter was FDA approved in October 2015. No data regarding the exclusive use of this device exists in the literature. Our objective is to describe clinical experience, including outcomes and complications, from the two earliest adopting and high volume REBOA centers.

Methods: Patients who underwent aortic occlusion (AO) with the ER-REBOA catheter from February 2016 to February 2017 at 2 tertiary care centers were enrolled. Procedural timings metrics were obtained from direct observation by research staff. Demographics, physiologic response, outcomes, and complications were collected prospectively.

Results: 60 consecutive patients were included; 44 (73.3%) following blunt trauma. 52 (88.1%) were male; mean age 40±18 years. 49 REBOAs placed in the distal thoracic aorta (Zone 1),11 in distal abdominal aorta (Zone 3). Percutaneous cannulation occurred in 41 patients including 14 in arrest (45.2%); all others cannulated via surgical exposure. 67.7% of patients in arrest achieved return of spontaneous circulation (ROSC). Mean time to cannulation was 315±356 sec, with percutaneous access (251.6±306.9) faster than surgical exposure (423.7±422.9 sec, p = 0.016). Mean time for AO was 435±299 sec for both methods, with percutaneous more rapid than open (382.1±306 vs 527.9±279.0 sec, p < 0.009). Systolic blood pressure increased significantly from 48.1±39.2 to 103.3±59.7mmHg after AO (p<0.0001). Overall in-hospital survival was 43%; 19% for patients in arrest, 69% for the remainder. In-hospital survival for patients in arrest following blunt trauma was 9.5%, and 40% for patients in arrest following penetrating non-thoracic trauma. Complications included iliac intimal injury(1), common femoral artery (CFA) injury (1), and balloon rupture (3).

Conclusion: Smaller introducers for REBOA are safe but do not eliminate the need for surgical CFA access. Complications still occur despite the smaller profile of this device, including a higher rate of balloon rupture not reported with previously used balloon catheters. Patients who arrive in extremis, including in arrest with ongoing CPR, may benefit from REBOA with acceptable rates of ROSC and survival.
34. SHOCK INDEX PREDICTS EMERGENCY SURGICAL INTERVENTION IN TRAUMA PATIENTS WHO OTHERWISE DO NOT MEET AMERICAN COLLEGE OF SURGEONS HIGHEST LEVEL TRAUMA RESPONSE CRITERIA
RA Lawless MD, M Semwal BS, J Haukoos MD, E Lavonas MD, D Bensard MD, E Campion MD, M Cohen MD, C Cothren Burlew MD, CJ Fox MD, EE Moore MD, B Platnick MD, F Pieracci MD
Denver Health Medical Center

**Background:** The ACS mandates criteria for the highest level trauma team response. These criteria may fail to capture a sub-population requiring emergency surgical intervention (ESI). Prehospital shock index (HR/SBP) improves under-triage rates and is an early predictor of massive transfusion necessity. We hypothesized that SI would predict ESI in mid-range trauma response patients who did not meet highest response criteria.

**Methods:** A 1-year (1/1/16-12/31/16) analysis of all trauma patients at an urban level-1 trauma center was performed. Patients were triaged by prehospital metrics as highest, mid-range, and lowest level trauma response. The study population was all mid-range trauma responses patients. Incomplete records or patients < 15 years of age were excluded. Our primary outcome, ESI, was defined as an OR procedure, chest tube, surgical airway, or blood transfusion within 1 hour of arrival. Local wound exploration, intubation, invasive catheters, laceration repair, and canthotomy were excluded. Sensitivity, specificity, and ROC area under the curve for SI were calculated.

**Results:** During the study period, 2,600 trauma patients were treated. 403 (15.6%) met inclusion criteria. Of these, 35 (8.7%) required ESI; 15 (3.7%) OR procedure, 15 (3.7%) chest tubes, and 8 (2.0%) received blood within 1 hour. The area under the ROC curve was 0.83 for ESI and 0.79 for OR procedures. For a SI threshold of ≥ 0.9, the sensitivity and specificity were 71.4% and 82.6% respectively. Using 2016 data, adding SI ≥ 0.9 to triage criteria would increase highest level trauma team response 14.7% annually.

**Conclusion:** Shock index is easily calculated and can predict the need for ESI. In severely injured patients not already meeting ACS criteria for highest level of trauma response, SI is both sensitive and specific for ESI. The presence of SI ≥ 0.9 and mid-range trauma alert criteria should elevate that patient to the highest level trauma response.
QS 1. SIZE MATTERS: COMPUTED TOMOGRAPHIC MEASUREMENTS OF THE APPENDIX IN EMERGENCY DEPARTMENT SCANS
E Moskowitz MD, A Khan MD, C Cribari MD, T Schroeppe MD
University of Colorado School of Medicine

Background: Acute appendicitis is a common cause of acute abdominal pain and a frequent indication for emergent surgery. Improvements in CT technology have augmented the ability to accurately diagnose appendicitis radiographically with a reported sensitivity and specificity of >90% in recent years. Radiologists use a size cutoff in the diameter of the appendix to assist in the diagnosis of appendicitis. While there is agreement regarding the size of a normal pediatric appendix, there is no consensus as to the true size of a normal adult appendix. The purpose of this study is to evaluate appendiceal diameter on CT in adult patients both with and without appendicitis.

Methods: A retrospective review of adult patients who underwent abdominal CT from 5/1/2017-7/30/2017 was performed at a busy urban emergency room. Variables collected include age, sex, WBC count at presentation, diameter of appendix (mm), and the presence of fat stranding, a fecalith, and/or free fluid.

Results: During the 3-month study period, 372 patients who were ≥18 years old underwent abdominal CT. 187/372 (50.2%) underwent CT for “right lower quadrant pain,” 17/372 (4.5%) underwent CT due to “right sided pain” or “right sided abdominal pain,” and the remainder of patients underwent CT scan to evaluate “abdominal pain,” “pain,” “nausea,” or other indications. The appendix was easily visualized on a majority (302/372) of CT scans, however 70 patients were excluded due to a non-visualized or surgically absent appendix. One patient was excluded due to intraoperative findings of an appendiceal mucinous neoplasm with peritoneal carcinomatosis. Overall, the median age was 33.0 and a majority of the patients were female (68.4%). The median appendix diameter for all patients was 6.6mm (IQR 5.3-7.8mm). The groups were well matched with no significant difference in demographics. The median diameter of the appendix was larger in patients with appendicitis (6.6 vs. 10.5mm; p<0.0001). The incidence of appendectomy in all patients undergoing CT scan was 6.9%. Twenty-one of the 301 patients had a radiologic diagnosis of acute appendicitis for which they underwent appendectomy. Nineteen of those 21 had subsequent pathologically confirmed appendicitis resulting in a positive predictive
value of 90% for CT scan. Radiographic findings of fat stranding (3.9% vs. 90%; p<0.0001) and free fluid (2.5% vs. 25%; p <0.0001) were more likely in the CT positive group.

**Conclusion**: While appendiceal diameter was significantly larger in patients with appendicitis, >25% of patients without appendicitis had an appendiceal diameter greater than 7 mm. Relying only on appendiceal diameter for the diagnosis of acute appendicitis may lead to an increased rate of negative appendectomies. Other radiographic findings, such as the presence of fat stranding or free fluid, are important considerations in the radiographic diagnosis of appendicitis.
**QS 2. DISPARATE OUTCOMES IN EMERGENCY APPENDECTOMY: EXAMINING THE EFFECT OF RACE/ETHNICITY USING ACS-NSQIP**

EA Alore MD, CT Wilson MD, SD Gordy MD, SR Todd MD, JW Suliburk MD
Baylor College of Medicine

**Background:** Health disparities amongst racial/ethnic minorities continue to exist despite attempts at improvement in access to quality care. The goal of this study was to examine outcomes of the most common emergency general surgery procedure, appendectomy, using population level data from the American College of Surgery National Surgical Quality Improvement Project (ACS-NSQIP). We hypothesized that racial/ethnic minorities have higher rates of major morbidity and mortality following appendectomy for acute appendicitis.

**Methods:** The ACS-NSQIP database was queried for all patients undergoing appendectomy from 2012-2015 with a postoperative diagnosis of appendicitis. Race/ethnicity was divided into non-Hispanic White, non-Hispanic Black, Hispanic, and non-Hispanic other. Pearson’s chi square, Fisher’s exact, Kruskal-Wallis test and logistic regression were performed utilizing an alpha level of 0.05.

**Results:** A total of 99,061 patients underwent appendectomy of which 68% were White, 8% Black, 17% Hispanic and 7% other. Black patients had higher rates of comorbid conditions (27%) as compared to Whites (22%), Hispanics (14%) and others (19%; p<0.001) despite similar median age at presentation (35 years vs White-38 years, Hispanic-33 years, other-37 years). Laparoscopic appendectomy accounted for 92% of operations in Whites, 91% in Blacks, 93% in Hispanics and 93% in other (p<0.001). 26% of Black patients experienced a delay in operation past the first day of admission in comparison to 21% of Whites, 24% of Hispanics and 22% of others. (p<0.001). Surgical residents were more likely to be involved in operations for Black (74%) and Hispanic (74%) patients in comparison to White patients (57%) or others (64%; p<0.001). Overall, Black patients had the highest rates of major postoperative complications (6.1%) and mortality (0.12%) in comparison to Whites (4.8%, 0.11%), Hispanics (3.8%, 0.02%) and other (4.2% p<0.001; 0.07% p=0.01). On logistic regression adjusting for patient characteristics and premorbid conditions, Black patients had a 1.3 greater odds of a major postoperative complication following appendectomy in comparison to Whites (p<0.001). To control for significantly higher
comorbidities in the black population we performed subgroup analysis on only ASA 1 and 2 patients. Black patients still had statistically significant higher rates of major complications (4.6% vs 4.0%, p<0.001), suffering from any postoperative complication (6.3% vs 5.4%; p<0.001), and delay in surgical intervention (25% vs 20%; p<0.001) in comparison to Whites.

**Conclusion**: Population level data from ACS-NSQIP demonstrates continued disparities in surgical outcomes for the Black community. Although rates of laparoscopic surgery are now similar among racial/ethnic groups, Black patients still experience higher morbidity and mortality after appendectomy, even among the healthiest cohort of patients. While the disparity in outcomes observed in this study may be related to differences in disease presentation in Black patients, the data above suggest that disparity in timely access to surgical care, delay in operation, and/or training institution status may play role in the poorer outcomes observed for this patient population.
QS 3. USE OF WATER-SOLUBLE CONTRAST CHALLENGE IN SMALL BOWEL OBSTRUCTION MANAGEMENT

E Moskowitz MD, E M Campion MD, ED Pelz MD, C Burlew MD, LJ Helmkamp MD, BL Gansar MD, RC McIntyre MD
University of Colorado School of Medicine

Background: Differentiation between small bowel obstructions (SBO) that will resolve with supportive measures and those that will require surgery remains challenging. Early administration of water-soluble contrast has been suggested to be both diagnostic and therapeutic for this determination. The purpose of this study was to evaluate our institutions’ use of a SBO protocol using a water-soluble contrast challenge.

Methods: A standardized protocol was implemented at two tertiary care centers in July 2016. Patients admitted to the surgical service with SBO between July 1, 2016-June 30, 2017 were identified. Patients were taken to the operating room immediately if they demonstrated peritonitis on initial exam or had imaging suggestive of bowel compromise. Demographics, prior surgical history, time to operation, postoperative complications, and hospital length of stay were analyzed.

Results: One-hundred and eight patients were admitted with a SBO; 14% (n=15) underwent immediate laparotomy because of concern for bowel compromise. The remaining 91 patients received a contrast challenge per protocol; mean age was 55 and the majority (52.7%) were men. 2 patients did not follow the protocol. Of the 91 patients who followed the protocol, 74% (n=67) had passage of contrast to the colon and were treated with non-operative management. Twenty-four patients (26%) had failure of contrast to progress to the colon within 24 hours and underwent surgery; 48% (n=11) had adhesiolysis and 52% (n=12) required SBR. Of the 48 patients who received a water soluble contrast challenge and contrast passed to the colon within 12 hours, median LOS was 2 days. Complication rate was 4.2%. Of the 22 patients who received the contrast challenge and contrast passed to the colon within 24 hours, median LOS was 4.5 days. Complication rate was 4.6%. Of the 24 patients who failed water soluble contrast challenge and subsequently underwent surgery, median LOS was 8 days. Complication rate was 38.1%. Patients needing immediate surgery had a median LOS was 9 days. Complication rate was 46.7%. There was no mortality in the 108 patients admitted to Surgery.

Conclusion: Implementation of a water-soluble contrast protocol facilitates early recognition of partial from complete obstruction and may decrease hospital length of stay. Our preliminary findings based on an observational study warrant further evaluation with a multicenter trial.
QS 4. PROGNOSTIC VALUE OF FECALIZATION SIGN FOR SURGERY AND ISCHEMIA IN PATIENTS WITH SMALL BOWEL OBSTRUCTION

C Liu BS, M Uffenheimer BS, A Artinyan MD, A Wachsman MD, DR Margulies MD, B Dorfman BS, J Cohen, MD, Y Nasseri MD Cedars Sinai Medical Center

Background: Small bowel obstruction (SBO) accounts for 12-16% of surgical admissions in the United States with high mortality in those with associated bowel ischemia and delay in surgery. Computed Tomography (CT) findings are highly relied upon to guide decision to operate. Of interest to us is one such CT finding, fecalization defined as presence of stool or particulate matter within lumen of dilated bowel segment.

Methods: We retrospectively studied pts with clinical and CT diagnoses of SBO with or without fecalization. Other CT findings evaluated were: degree of obstruction (partial or high grade), bowel wall thickening, mesenteric stranding, diameter of maximally dilated bowel, free fluid (mild, moderate or severe) and transition point. We analyzed association of demographics, vitals, surgical history and CT findings with outcomes of surgical intervention and bowel ischemia. Univariate analysis with student’s t-test and one-way analysis of variance (ANOVA) for continuous variables and chi-square test for categorical variables and multivariate logistic regression was performed. P<0.05 was considered statistically significant.

Results: Total of 168 patients with SBO (86 with fecalization and 82 without) were studied. While pts with fecalization were significantly younger (58.9 vs 66.6, p=0.006), they were comparable to pts without fecalization in regards to sex, body mass index and relevant surgical history. Of 55 pts needing surgery, 33(60%) had fecalization and of 11 pts with ischemia, 10 (90.9%) had fecalization. On both univariate and multivariate analysis, high grade obstruction was the only predictor for surgical intervention (p<0.001). While multivariate analysis was not performed with ischemia as outcome due to small sample size, Univariate analysis found degree of obstruction (p<0.001), degree of free fluid (p=0.044) and fecalization (p=0.006) to be significant predictors of ischemia. A scoring system was developed using these three CT signs and found the presence of all 3 signs (found in 9/11 pts with ischemia) had a sensitivity of 81.8% and a positive predictive value of 20.5% for ischemia.

Conclusion: While fecalization along with high grade obstruction and free fluid are predictive of ischemia, it is not predictive of surgical need in pts with SBO. High grade obstruction is the only predictor for surgical intervention.
QS 5. CHARACTERIZATION OF PEDIATRIC SMALL BOWEL OBSTRUCTION IN THE VIRGIN ABDOMEN

LC Dewberry MD, H Madsen BS, AM Kulungowski MD, S Somme MD, DD Bensard MD
University of Colorado School of Medicine

Background: There is a paucity of literature regarding small bowel obstruction (SBO) in the virgin abdomen in the pediatric population. Adult studies have demonstrated that SBO in the virgin abdomen does not mandate surgical exploration. The most common finding at operative exploration in adults is adhesive disease. Dissimilar to adults, we hypothesize that small bowel obstruction in the pediatric population, especially neonates, requires surgical exploration.

Methods: A retrospective review was performed of patients admitted to a tertiary care children’s hospital with signs and symptoms of SBO from 2007-2017. Patients were excluded if they had a history of previous abdominal surgery. Patients were divided into three groups based upon age: < 1 year of age, between 1 and 5 years of age, and > 5 years of age.

Results: Virgin SBO was identified in 126 patients with a median age at presentation of 4.5 years (IQR 0-13). Patients groups included: 39(30.9%) < 1 year of age, 26(20.6%) ages 1 to 5, and 61(48.4%) > 5 years of age. Imaging modality varied by age. In patients less than a year of age, 74%(n = 29) had an abdominal radiograph, 41%(n = 16) had a contrast enema, and 31%(n = 12) had an upper gastrointestinal series (UGI). For patients 1 to 5 years of age, 48.1%(n = 13) had a CT scan, 25.9%(n = 7) had an abdominal radiograph, 14.8%(n = 4) had both, and 11.1%(n=3) had neither. For patients greater than 5 years of age, 55.7%(n = 34) had a CT scan, 3.3%(n = 2) had an abdominal radiograph, 26.2% (n=16) had both, and 14.8%(n=9) had neither. Small bowel obstruction characterization differed amongst age groups. In patients less than a year of age, all (100%, n = 39) required surgical exploration. The most common causes of intestinal obstruction included: intestinal atresias (28.2%, n = 11), adhesions (15.3%, n = 6), necrotizing enterocolitis (NEC) (12.8%, n = 5), malrotation (10.3%, n = 4), mass (10.3%, n = 4), Meckel's diverticulum (7.7%, n = 3), and meconium ileus (7.7%, n = 3). Small bowel obstruction in the virgin abdomen necessitated an operative intervention in 73.1% of patients (n=19) between 1 and 5 years of age. The most common causes of obstruction were Meckel's diverticulum (22%, n = 6), intussusception (18.5%, n = 5), mass (14.8%, n = 4), appendicitis (11.1%, n = 3), internal hernia (11.1%, n = 3), adhesions (7.4%, n = 2), and foreign body.
Surgical exploration was performed in 76% (n=46) of patients greater than 5 years of age for various obstructions related to inflammatory bowel disease (31.1%, n = 19), adhesions (16.6%, n = 10), Meckel’s diverticulum (9.8%, n = 6) and foreign body (9.8%, n = 6).

**Conclusion**: In the pediatric age group, the cause of small bowel obstruction in the virgin abdomen is variable and dependent upon age of the patient. Most patients will require surgical exploration for treatment of the small bowel obstruction, especially if less than a year of age.
QS 6. DELAYED TOTAL ABDOMINAL COLECTOMY FOR SEVERE CLOSTRIDIUM DIFFICILE INFECTION IS ASSOCIATED WITH INCREASED MORTALITY, POSTOPERATIVE COMPLICATIONS, AND COST
BR Hall MD, PR Armijo MD, JA Leinicke MD, SJ Langenfeld MD, D Oleynikov MD
University of Nebraska Medical Center

Background: Total abdominal colectomy and end ileostomy (TAC) in the setting of fulminant clostridium difficile infection (CDI) has high morbidity and mortality. There is little evidence to help surgeons determine when to perform surgery for CDI. The aim of this study is to investigate the effects of delaying surgery on outcomes and cost in patients admitted with severe CDI.

Methods: The Vizient database was queried for patients with intestinal CDI, who underwent open TAC from October 2008 to October 2015. High-risk patients with severe CDI on admission were included. Patient demographics, number of days from admission to operation (DATO), postoperative outcomes, and direct cost were analyzed. Patients with length of stay and DATO above the 95th percentile were excluded as were patients operated on the day of admission. Logistic regression was performed for each postoperative outcome. For cost analysis, patients were grouped by DATO quartile including Q1 (DATO=1), Q2 (DATO 2-4), Q3 (DATO >4-9), and Q4 (DATO >9). Descriptive analyses, Kruskal-Wallis one-way ANOVA, and logistic regression were performed using IBM SPSS v.23.0.0, with α=0.05.

Results: A total of 1,059 patients were included; of these, 565 (53.4%) were Female, and 494 (46.6%) were Male. Median age for all patients was 63 years. The majority of patients were Caucasian (n=796, 75.2%) with the remainder being African-American (n=143, 13.5%), or Other (n=120, 11.3%). Logistic regression analyses demonstrated that an increase in DATO was associated with significantly increased 30-day mortality (OR 1.022, 95% CI 1.001-1.044, p<0.001), overall complications (OR 1.059, 95% CI 1.038-1.080, p<0.001), gastrointestinal hemorrhage (OR 1.105, 95% CI 1.030-1.185, p=0.005), and sepsis (OR 1.026, 1.015-1.037, p<0.001). To a lesser extent, older age was associated with increased 30-day mortality (OR 1.016, 95% CI 1.007, 1.025, p=0.001), overall complications (OR 1.013, 95% CI 1.005-1.021, p=0.002), and sepsis (OR 1.026, 95% CI 1.015-1.037, p<0.001). For all patients, rates of 30-day mortality, overall complications, gastrointestinal hemorrhage, and sepsis...
were 29.2%, 44.5%, 1.0%, and 19.5%, respectively. Direct cost increased for each successive DATO quartile and significant differences (p<0.01) were found between all quartiles except for Q1 versus Q2 (p=1.00). Median direct costs for Q1, Q2, Q3, and Q4 were $32,810, $33,716, $40,670, and $66,802, respectively.

**Conclusion**: Our data demonstrates that delayed surgical intervention in patients with severe CDI is associated with increased morbidity, mortality, and cost. Early surgical intervention in appropriately selected patients should be recommended when there is a high suspicion for prolonged nonoperative treatment.
QS 7. TRANSITIONAL CARE COORDINATION: CAN WE REDUCE READMISSION IN HIGH RISK EMERGENCY GENERAL SURGERY PATIENTS?
L O’Meara CRNP, J Gregory RN, B Eaton CRNP, R Tyrell RN, A Zanger BA, B Bruns MD, J Diaz MD, R Tesoriero MD
University of Maryland Medical Center

Background: Readmission rates are a focus for improving quality of care and decreasing cost. Transitional Care Coordination (TCC) programs have been associated with reductions in 30-day readmission rates in trauma, oncologic, and geriatric populations. A dedicated Emergency General Surgery (EGS) TCC program (EGSTCC) was developed at our institution to improve post-discharge care coordination in an at risk EGS patient population. The aim of the current study was to evaluate the EGSTCC program’s impact on readmission rates amongst the highest severity of illness (SOI) patients.

Methods: EGS patients with major and extreme SOI scores at high risk for 30-day readmission, and who were enrolled in the EGSTCC program, were identified and compared to EGS patients with similar SOI scores discharged during the same time period and in a comparable period immediately prior to implementation of the program. EGSTCC is a nurse-driven program that assists in after discharge coordination and performs services such as medication reconciliation, follow-up phone calls within 72-hours of discharge, coordination of appointments and home nursing care, and assists uninsured patients in securing medical insurance. Patient identification numbers were matched to the Health Services Cost Review Commission (HSCRC) database and statewide 30-day unplanned readmissions were tracked. Severity of illness and case mix index (CMI) scores were collected.

Results: 54 patients with major and extreme SOI scores at high risk for readmission were enrolled in the EGSTCC program between January 2016 and July 2017. Of the 54 patients, 18.5% (n=10) were readmitted within 30-days. During that same time, those with major and extreme SOI scores who were not enrolled in the EGSTCC program (n=308) had a 23% (n=71) readmission rate. In the immediate preceding period, from July 2014 through December 2015, there were 362 patients with major and extreme SOI scores at risk for re-admission, and 24.6% (n=89) were readmitted within 30-days. The average CMI for the period of enrollment was increased at 1.87 compared to 1.44 in the immediately preceding period.

Conclusion: Implementation of a dedicated EGSTCC program was temporally associated with reduction in 30-day readmission rates by 20-25% for those enrolled with a major or extreme SOI score. As the program continues to mature we expect to see further decline in readmission rates and expansion to include more at risk patients.
QS 8. OUTCOMES OF EMERGENCY GASTROINTESTINAL SURGERY IN IMMUNOSUPPRESSED PATIENTS
MA Gomez Ibarra MD, CA Thiels DO, PE Skaran, J Bingener MD
Mayo Clinic Rochester

Background: <b>Introduction:</b> Immune suppression is a common complication in chemotherapy and immune modulating treatments. Data on outcomes after emergent gastrointestinal surgery in the immune suppressed setting are sparse, ranging in 1 year mortality between 16% and 59%. This review aims to review the outcomes associated with emergent intestinal surgery in immune suppressed patients at a large referral center.

Methods: <b>Methods:</b> We retrospectively reviewed medical records of patients undergoing emergent intestinal surgery due to bowel perforation and/or obstruction between January 2006 to August 2017 diagnosed pre-operatively with immune suppression. We gathered patient demographics, ASA scores, prior use of chemotherapy and immunosuppressive therapy, and 30 day outcomes categorized by the Clavien-Dindo classification. One year-survival was assessed using the Kaplan-Meier method.

Results: <b>Results:</b> We identified 197 patients who had emergent bowel surgery; 80 men (41%); mean age was 58 +/- 14 years, mean ASA score was 3, 29 patients (15%) were on active chemotherapy, and 84 (43%) had received prior chemotherapy. Fifty-three patients (29%) received immunosuppressive therapy pre-operatively of which 31 (52%) were receiving steroids. Thirty-five patients (18%) underwent surgery due to perforation. Most common causes of perforation were lymphoma (20%, n=8), colon cancer (14%, n=5), diverticulitis (14%, n=5), and Crohn’s disease (14%, n=5). In addition, 78 (40%) were due to obstruction with the most common causes being ovarian cancer (24%, n=19), colon cancer (23%, n=18), and lymphoma with (10%, n=8). Lastly, 43% (n=84) were due to other causes such as inflammatory bowel disease and other reasons. Major morbidity (grade 3 or 4) occurred in 55 patients (28%), 6 (3%) patients died within 30 days. One year survival was 61% after perforation, 83% after obstruction, and 91% patients for other causes. For the three groups the 1 year survival was 83%.

Conclusion: <b>Conclusion:</b> In this study, emergency surgery for bowel obstruction carried a better outcome than emergency surgery for intestinal perforation in immune suppressed patients.
QS 9. OUTCOMES AFTER EMERGENCY PALLIATIVE SURGERY IN PATIENTS WITH STAGE IV MALIGNANCIES.
LO Marcia BS, ZW Ashman MD, EB Pillado BS, CP Hines BS, DY Kim MD, DS Plurad MD
Harbor-UCLA Medical Center

Background: Acute Care Surgery consultation in patients with metastatic cancer is common. While none of these patients are candidates for curative surgery, some will benefit from palliative procedures to improve quality of life. Unfortunately, balancing the costs and benefits of surgery is difficult in this high-risk, terminally ill patient population.

Objective: To describe the hospital course and outcomes of advanced cancer patients following consultation by the Trauma / Acute Care Surgery (ACS) service.

Methods: Single institution retrospective review of all ACS consultations over an 8-year period in patients with stage IV cancer. Patients were categorized in 3 groups by intervention: exploratory laparotomy (n = 50), other-surgery (n = 26), and no-surgery (n = 127). The Charlson Comorbidity Index was calculated to quantify chronic comorbidities. For statistical comparison, the p values for categorical variables were obtained from chi- square tests and for continuous variables, ANOVA was used followed by post hoc Bonferroni adjustment.

Results: Two hundred three patients were identified; mean age was 55.3 ± 11.4 years old, 48.8% were male. The most common primary cancer diagnoses were colorectal (38.1%), gastric (12.9%) and lung cancer (8.4%). The most common admission diagnoses were small bowel obstruction (20.8%), large bowel obstruction (6.6%) and perforation (7.1%). Fifty (24.6%) patients underwent exploratory laparotomy for gastrointestinal obstruction and/or perforation. Twenty-six (12.8%) underwent other types of surgery; of which, the most common were tracheostomy (n = 6), gastrostomy tube placement (n = 10) and abscess incision-and-drainage (n = 6). On average, length-of-stay (LOS) was similar and prolonged in the exploratory laparotomy and other-surgery groups (21.2 and 19.0 days, respectively) when compared to the no-surgery group (7.69 days; p < 0.0001) groups. Exploratory laparotomy was associated with significantly longer ICU LOS (8.8 days) compared to the other-surgery group (3.4 days) and the no-surgery group (0.9 days, p < 0.0001). Rates of serious postoperative complications was higher in the exploratory laparotomy (n = 22, 44%) when compared to the other-surgery group (n = 6, 23.1%), but did not reach statistical significance (p
= 0.073). The no-surgery group experienced a high rate of similar serious complications during hospitalization (n = 57, 44.9%). No significant differences were observed for in-hospital mortality (n = 28, 13.8%), 30-day mortality (n = 37, 18.2%), 30-day readmission rate (n = 45, 22.2%), or the Charlson comorbidity score (7.71±1.47) between the groups.

**Conclusion:** There was no survival difference between the palliative surgery and the no-surgery groups. This lack of difference obscures a survival benefit in the emergency exploratory laparotomy group assuming immediate mortality without surgery. The exploratory laparotomy group experienced a significantly longer general and ICU length-of-stay. These findings support nuanced, preoperative surgeon-patient discussions regarding the potential benefits of modest increased life expectancy in the setting of a terminal illness, and the certain burdens of prolonged hospitalization. This is important as it impacts the quality of life and death of our patients.
QS 10. PREVENTION OF PULMONARY EMBOLISM IN PATIENTS UNDERGOING OPERATION FOR PELVIC FRACTURE: EFFICACY OF AN INSTITUTIONAL CLINICAL PATHWAY

TP Smith, JA Weinberg MD, PW Goslar PhD, JV Jacobs MD, TL Gillespie MD, MA Sochacki MD, N Attias MD, TM Thompson MA, SR Petersen MD
St. Joseph’s Hospital and Medical Center

Background: Venous thromboembolism (VTE) is the most common source of morbidity and mortality in trauma patients with pelvic and/or acetabular fractures who survive the first 24 hours, and pulmonary embolism (PE) is the most preventable cause of in-hospital death. Operative cases are at relatively higher risk secondary to the relative contraindication for perioperative anticoagulation, along with the pelvic manipulation that occurs during surgery. Unfortunately, the optimal approach to PE prevention in this population remains unknown. At our institution, a clinical pathway based on pre-operative duplex ultrasound screening (DUS) and selective placement of IVC filters was developed. The purpose of this study was to review the efficacy of this pathway.

Methods: Operative pelvic and acetabular fractures with hospital survival > 48 hours were identified from the registry of a level 1 trauma center between January 2014 and October 2017. Over this time period, patients were managed according to a clinical pathway: prior to operation, DUS was performed, and a pre-operative IVC filter was placed if DUS was positive for venous thrombosis (DVT). Patients that underwent pelvic operation within 48 hours of hospitalization or already had an indwelling IVC filter did not require DUS. Patient clinical characteristics, adherence to the pathway, and outcomes were reviewed.

Results: 92 patients met study inclusion criteria. Mean age was 40 years, 21% percent were female, and median ISS was 14. Adherence to the clinical pathway was observed in 84 patients (91%). Among those patients managed according to the pathway, 8 (10%) were identified to have DVT prior to operation and received IVC filters. No patient managed by the pathway developed postoperative PE. Among 8 patients not managed according to the pathway, there was one postoperative PE (12.5%).

Conclusion: Adherence to an institutional operative pelvic trauma VTE pathway resulted in a zero incidence of postoperative PE. Selective utilization of pre-operative IVC filter as determined by DUS is an efficacious approach to VTE prophylaxis in this patient population, mitigating the risk of both the overutilization of filters and postoperative PE.
QS 11. PEDIATRIC FALLS: WHICH FALL VARIABLES MATTER IN TRIAGE?
M Baalmann MD, A Rueschhoff MD, K Lu MS, K Lightwine MPH, E Ablah MPH PhD, JM Haan MD
University of Kansas School of Medicine - Wichita

Background: It is difficult to assess severity and appropriately triage pediatric falls because many variables must be considered, including the height and type of fall, landing position and surface, and patient age. These variables have not been adequately translated into a pediatric trauma triage protocol for use among first responders. The purpose of this study was to determine what variables are potential indicators of severity for pediatric falls.

Methods: A retrospective review was conducted of patients aged 18 or younger who sustained fall-related injuries at a single American College of Surgeons-verified level I trauma center between January 1, 2006 and December 31, 2015. Data collected included demographics, injury characteristics, fall details, hospital outcomes, and disposition.

Results: Of the 905 patients included, most were Caucasian (72%, n=650), and male (64%, n=582) with an average Glasgow Coma Scale score of 14 ± 1.9 and average Injury Severity Score (ISS) of 5.7 ± 4.8. Approximately one-third of patients (n=299) were aged 1-4 years, and 19.5% (n=176) were between the ages of 5 and 8. Nearly half of all patients suffered a traumatic brain injury (41.4%, n=375) with 11.2% (n=101) sustaining a skull fracture. Falls were most likely to occur from a height of 3 to 6 feet (42%, n=76), involve a concrete landing surface (29%, n=42), and involve the child hitting his/her head (57%, n=129). Those involved in a skateboard related-fall had the highest ISS (p=0.02) and more ICU and mechanical ventilation days (p < 0.05) than those involved in other mechanisms of injury. Those who fell down stairs had the lowest ISS. There were five deaths, and ten children were permanently disabled.

Conclusion: Age and type of accident, together, are strong predictors of injury severity among pediatric falls. Among the different types of accidents, skateboarding falls demonstrated higher ISS, longer length of ICU stay, and longer time on ventilators. Height was not correlated with ISS.
QS 12. PNEUMOMEDIASTINUM IN BLUNT TRAUMA: IF AERODIGESTIVE INJURY IS NOT SEEN ON CT, INVASIVE WORKUP IS NOT INDICATED
NG Matthees MD, JA Mankin MD, JA Weinberg MD, JL Dameworth MD, SR Petersen MD
St. Joseph’s Hospital and Medical Center

Background: Pneumomediastinum following blunt trauma is often observed on CT imaging, but an underlying associated aerodigestive injury is quite rare. Nonetheless, concern for missing an injury often prompts a more invasive work up including endoscopy and fluoroscopy. In recent years, adoption of multi-detector CT technology has resulted in high resolution images that may clearly identify aerodigestive injuries. The purpose of this study was to evaluate the utility of multi-slice CT in the identification of blunt aerodigestive injuries.

Methods: Between Jan 2013 – Aug 2017, patients with pneumomediastinum following blunt trauma were identified from the registry of a level 1 trauma center. All CT imaging of trauma patients during this time period was accomplished with 64-slice scanners. Review of both medical records and CT imaging was performed to record injuries identified and procedures performed.

Results: 127 patients with blunt traumatic pneumomediastinum were identified. 37 (29%) were female, and age range of patients was 17-85 years old with a mean of 38.5. The most common associated injuries included pneumothorax (96 patients, 76%) and rib fractures (95 patients, 75%). Forty (31%) of patients underwent tracheobronchoscopy and 13 (10%) of patients underwent esophagoscopy. Four (3%) patients had contrast fluoroscopy. 7 (5%) laryngeotracheal injuries were identified, and all injuries were evident on CT imaging. No patient was found to have airway injury by endoscopy that was not evident on CT. No patient had an esophageal injury.

Conclusion: Contemporary CT imaging (64 slice) identifies aerodigestive injuries associated with pneumomediastinum following blunt trauma. Although pneumomediastinum is observed with relative frequency, the absence of a recognizable aerodigestive injury by CT effectively rules out the presence of such injury. Endoscopy and contrast fluoroscopy to further rule out an underlying injury are not warranted.
**QS 13. NATIONAL TRAUMA DATABASE RISK FACTORS FOR BLUNT CARDIAC INJURY: HEMOPNEUMOTHORAX IS THE STRONGEST PREDICTOR.**

A Grigorian MD, J Milliken MD, J Livingston BS, D Spencer BS, V Gabriel MD, S Schubl MD, A Kong MD, C Barrios MD, V Joe MD, J Nahmias MD

*University of California Irvine Medical Center*

**Background:** The incidence of blunt cardiac injury (BCI) after blunt chest trauma ranges between 20-76%. In a large multicenter retrospective study, the strongest independent risk factor for BCI was sternal fracture (SF). In other studies, SF was not shown to be associated with BCI. While SF would imply significant direct force overlying the myocardium we hypothesized that injuries that demonstrate a higher transmission of force to the thorax such as thoracic aortic injury (TAI) would have a higher association with BCI.

**Methods:** This was a retrospective analysis using the National Trauma Data Bank (NTDB). We included all patients <18 years of age with a blunt mechanism of injury and grouped them by presence of BCI and SF. We determined risk factors for BCI using a univariate regression analysis. Covariables used in our multivariate analysis included history of myocardial infarction or angina, scapula fracture, clavicle fracture, pneumothorax, rib fracture, pulmonary contusion, hemothorax, sternal fracture, esophagus injury, TAI and hemopneumothorax.

**Results:** A total of 15,976 cases of BCI occurred in adult patients with blunt trauma in the NTDB between 2007-2015 (0.3%). Patients with BCI had a mean age of 48.8, most were male (67.9%) and had a median injury severity score of 19. The most commonly associated injury was rib fracture (57.1%) followed by pulmonary contusion (41.2%). SF had a higher association with BCI (adjusted odds ratio [OR]=5.52, confidence intervals [CI]=5.32-5.73, p<0.001) compared to TAI (OR=4.82, CI=4.50-5.17, p<0.001). Open SF had a higher association with BCI compared to closed SF (OR=1.98, CI=1.35-2.92, p<0.05). However, the strongest independent risk factor for BCI was hemopneumothorax (OR=9.53, CI=7.80-11.65, p<0.001).

**Conclusion:** In a large national database study of blunt trauma victims, SF is more strongly associated with BCI compared to TAI; however, hemopneumothorax is the strongest predictor of BCI. Patients with any of these injuries should be suspected of having BCI and receive appropriate screening.
QS 14. CONCOMITANT CHEST TRAUMA AND TRAUMATIC BRAIN INJURY: BIOMarkERS PREDICT A CORRELATION WITH WORSE OUTCOMES
AM Crawford MD, S Yang PhD, P Hu PhD, Y Li PhD, TM Scalea MD, DM Stein MD
University of Maryland Medical Center

Background: Analysis of biomarkers may provide insight into the local and systemic effects of Traumatic Brain Injury (TBI) with thoracic trauma. Clinical data is lacking on the influence of chest trauma on the secondary injury process after TBI, with some data suggesting evidence that multitrauma may lead to systemic inflammation that affects the neuroinflammatory response of TBI and worsens brain injury. The clinical course and outcomes of polytrauma patients is largely determined by the severity and pattern of injuries sustained. Blunt chest trauma and TBI represent the two major single injury entities with the highest risk of complications and are potential biomarker targets in the systemic response to multitrauma.

Methods: Adult admit trauma patients with severe TBI were enrolled. 15 Biomarker levels were obtained every 6 hours for 72 hours. Baseline, 6 and 24 hours CT scans were obtained. Neurological worsening included increased contusions, ischemia, compression of basal cisterns and midline shift. TBI patients with or without chest trauma were compared and analyzed using multivariate logistic regression for predicting neurological worsening with Receiver Operating Characteristic (ROC) reported.

Results: 57 patients included. Mean age was 38.2 years, male 78.9%. Median motor Glasgow Coma Score at admission and 24 hours was 3 and 4, respectively, median Marshall score was 3. 80.7% Intraventricular devices were placed, 12.2% underwent craniotomy in 6 hours, 22.8% in 12 hours. 24.5% had Abbreviated Injury Score of 3 or greater for chest trauma, 73.6% with blunt trauma as mechanism of injury. 80.7% patients intubated, 52.1% in the trauma resuscitation unit, 47.8% in the field, mean days of mechanical ventilation 9.1. Comparing TBI patients revealed elevated mean biomarker levels of IL-4, IL-5, IL-8, and S100b and decreased IFN-γ and IL-7 mean biomarker levels in chest injury. Neurological worsening within 24 hours was seen in 38.7% of patients and 42% with concomitant chest trauma. IL-7 levels adjusted for chest injury, AUROC of 0.6 (p-value = 0.011), for predicting neurological worsening. In-hospital mortality rate was 21%, 15.7% with chest trauma. IL-4 and NSE Biomarker levels predicted, AUROC of 0.67 and 0.63.
(p-value = 0.0001, 0.003), respectfully for mortality.

**Conclusion**: Multitrauma may lead to systemic inflammatory and biomarker changes that could potentially affect the neuroinflammatory response of TBI. Utilizing biomarkers in chest trauma has the capability of modifying outcomes, treatment options, therapeutic implications and timing of care in the subset of TBI patients.
QUICK SHOT ABSTRACTS (continued)

QS 15. HEPARIN ADMINISTRATION AFTER SEVERE TRAUMATIC BRAIN INJURY: CAN IT IMPROVE OUTCOMES?
KD Kinnamon, TJ McDonald RN MSN, S Glorsky MD, S Berry MD, J Howard MD, A Bennett MD, JL Green MD PhD, RD Winfield MD
University of Kansas School of Medicine

Background: Approximately 1.7 million people suffer traumatic brain injuries (TBI) on an annual basis. Once a patient has sustained a TBI, the mainstays of therapy are designed to prevent the development of secondary injury through maintenance of cerebral perfusion and prevention of hypoxia. A number of therapies have been proposed in pursuit of these goals; however, none have been shown to be effective in improving outcomes. Recently, basic investigations have been conducted in animals that suggest that the use of heparin is associated with anti-inflammatory effects and a reduction in cerebral edema via leukocyte recruitment blockade; however, this has not been studied in humans. We hypothesized that the use of heparin in trauma patients will not be associated with an improvement in function following severe traumatic brain injury.

Methods: We performed a retrospective review of patients presenting to our Level I Trauma Center between 1/1/2011 and 12/31/2016. Patients with severe TBI were identified by head AIS score ≥ 3. Medical records were reviewed for the use of a heparin product, type of heparinoid utilized (unfractionated [UFH] or low molecular weight heparin [LMWH]) and the timing of administration. Follow up assessments performed at rehabilitation centers and neurosurgical clinic visits were used to determine long-term outcome with Functional Independence Measure (FIM) Scores being used as an objective measurement. Outcome comparisons were performed between patients receiving or not receiving heparin products, patients receiving unfractionated vs. low-molecular weight heparin, and patients receiving early (<72 hours) vs. late (>72 hours) heparinoid dosing.

Results: There were 1,301 patients admitted with severe TBI during the time period studied. Of these, 58 patients had complete information for study. When comparing patients on the basis of administration of heparinoids, there were 12 patients who received LMWH, 39 who received UFH, and 6 who did not receive a heparinoid. These groups did not differ significantly in terms of age or injury severity. When admission total, motor, and cognitive FIM scores were compared to those at discharge, patients receiving LMWH showed the greatest improvement.
followed by patients receiving UFH and none; however, these differences were not significant. When considering the timing of heparinoid administration, there were 28 patients receiving early heparinoids and 24 receiving late heparinoids. These groups were similar in terms of age and injury severity. Early recipients showed the greatest changes in total, motor, and cognitive FIM followed by patients receiving late heparinoids and those receiving none. While the difference in cognitive FIM approached significance (p=0.067), none met threshold.

**Conclusion**: To our knowledge, this is the first attempt to correlate functional outcome following severe TBI with the type and timing of heparinoid administration. We found that patients receiving LMWH showed greater increases in FIM scores than patients receiving UFH or no heparin. Likewise, we found that patients receiving early dosing of heparinoids showed greater increases in FIM scores than patients receiving late or no heparinoids. While our series lacks adequate power to draw significant conclusions, it mirrors existing studies in animals and should be explored in a larger patient population.
QUICK SHOT ABSTRACTS (continued)

QS 16. CEREBRAL CROSS SECTIONAL AREA ON HEAD CT MAY PREDICT FRAILTY AND MORTALITY IN FALLING OCTOGENARIANS
CM Hall MD, Y Munoz-Maldonado PhD, JL Regner MD
Baylor Scott and White Healthcare

Background: Frailty is a well-established predictor of mortality in geriatric trauma patients; however, utilization of frailty assessment models at time of trauma presentation is difficult due to the lack of available objective data. We hypothesized that cerebral mass, as quantified from a cross-sectional slice of the initial head CT, could be utilized as a surrogate marker of frailty and to predict mortality in octogenarians following the index fall.

Methods: A retrospective review of all octogenarians presenting as a ground level fall from January 2014 to January 2016 an American College of Surgeons certified Level I trauma center was performed. Only patients with malignancies or lack of head CT were excluded. Frailty was assessed using the Rockwood Frailty Score, a seven-point scale that defines frailty based on a patient’s independence with activities of daily living. Cerebral area was estimated using a single axial CT slice through the lateral ventricles. Total intracranial pixels and parenchymal pixels were quantified using imaging software. The average cerebral cross sectional area (CCSA) was defined as a ratio of parenchymal pixels to total intracranial pixels.

Results: 173 octogenarians suffered a ground level fall and had a head CT performed at the index visit. Twenty-three patients had an intracranial hemorrhage at the time of presentation (13%). Of the 150 patients with a negative head CT, mortality at 30 days, 6 and 12 months after the sentinel fall was 10, 25, and 31%, respectively. The average CCSA was 0.51 0.07 (range 0.30-0.65). Patients alive 12 months after their fall had an average CCSA of 0.52 compared to 0.49 in patients who died within 12 months of the fall (p=0.09). Moderate to severe frailty was present in 53 patients (35%) at the time of the fall. Overall, there was a significant reduction of CCSA as the Rockwood Score increased (p<0.01). The average CCSA was 0.48 in patients with a Rockwood Score of 6 or 7, compared to 0.52 in patients with a Rockwood Score ≤5 (p<0.01).

Conclusion: Cerebral cross sectional area is a novel objective measurement that may be used as a marker of frailty in geriatric trauma patients. This CSSA may be incorporated into other frailty assessments to predict mortality in geriatric trauma patients that have suffered a fall but do not have a significant traumatic burden.
QUICK SHOT ABSTRACTS (continued)

QS 17. TRENDS, PRESENTATIONS, RISK FACTORS AND OUTCOMES OF FALLS FROM HEIGHT AMONG ELDERLY: GENDER MATTERS
R Latifi MD, E Tilley PhD, K Aronow RN, A El-Menyar MD
Westchester Medical Center

Background: Falls from height are associated with increased morbidity and long-term disability. Fall-related injury is much more severe in the elderly. Furthermore, it is the second cause of mortality in trauma. We aimed to evaluate the trends, risk factors, clinical presentation and outcomes of falls from height among the elderly of both genders.

Methods: A retrospective analysis was conducted for patients ≥60 years old who were presented to a Level 1 Trauma center after sustaining fall from height between January 2012 and December 2016. Patients were categorized into 4 groups based on their age: Group-I: 18-59 (control Group), Group-II: 60-69, Group-III: 70-79 and Group-IV: ≥80 years old. Data were analyzed and compared using Chi-square and ANOVA tests.

Results: Across the study period, there were 8528 injured subjects, of them 3665 (43%) subjects sustained fall from height (59% males and 41% females). Among subjects with falls, there were 2181(59.5%) subjects of age ≥60 years (Group-II=584, Group-III=570 and Group-IV=1027) in comparison to 1484 (40.5%) subjects in Group-I. The trend for fall was increasing with advancing the age among female groups (25.5%, 40.8%, 45.9% and 61.8%, respectively, p=0.001). On the other hand, the trend for fall was decreasing among males (74.5%, 59.2%, 54.6%, and 38.2%, respectively, p=0.001). The trend for falls was increasing in Whites (63.3%, 77%, 80% and 89.6%, respectively=0.001), whereas it was decreasing significantly in Blacks and Hispanics. Alcohol consumption was reported in a decreasing fashion among the 4 groups. Diabetes mellitus was more likely found in the older groups (p=0.001). Ribs and lower extremities fractures significantly occurred in the older groups (p=0.001). The mean New Injury Severity Scoring (NISS) and Injury Severity Scoring (ISS) were stepwise increasing significantly from Group-I to Group-IV. In regards to the location of injury, the public areas were the more frequently places of falls in the younger groups whereas, falls were mainly at home/residency in the older groups (p=0.001). The Trauma and Injury Severity Score (TRISS) was significantly lower in Group III and IV in comparison to the younger groups. The need for blood transfusion and hospital length of stay were greater in the older
groups (p=0.001). The overall mortality was significantly higher in the older groups post-falls (2%, 3.3%, 8.9% and 10.9%, respectively). The trend for death was increasing with age in both genders but it was much higher in males (2.2%, 4.6%, 12.9%, and 17.3% respectively) in comparison to females (1.6%, 1.3%, 4.2% and 6.9%, respectively).

**Conclusion:** Fall from height is increasing with age particularly among females. However, outcomes are worse in males. Preventive measures for falls in the home among the elderly warrant more attention.
QS 18. DRIVING ONE INSANE: THE SOCIOECONOMIC CHALLENGES WITH PEDESTRIAN TRAUMA
MK Lindemuth MD, T Zander, MR Butler, CK McCarthy MD, R Albrecht MD, J Lees MD, A Scifres MD, A Cross, MD
University of Oklahoma Health Sciences Center

**Background:** Psychiatric illness and substance use disorders are common among trauma patients. Pedestrian (PEDS) associated injuries make up a distinct subset of the trauma population. We hypothesize that patients with pedestrian injuries are more likely to have a lower socioeconomic status and have higher incidence of psychiatric illness, alcohol (AUD) and substance use disorders (SUD) as compared to other patients with blunt trauma injury.

**Methods:** A retrospective study was performed on patients presenting after blunt trauma to a Level 1 trauma center between January and December of 2016. Demographic data including age, gender, race, psychiatric illness, AUD, SUD, housing, and insurance status were analyzed.

**Results:** Of 3299 patients with blunt trauma injury, 214 were pedestrian related. When compared to other blunt trauma, PEDS are younger (45 vs. 49), more likely to be male (70% vs. 63%), have a higher ISS (13 vs. 11), and be non-caucasian (36% vs. 26%; p<0.0009). PEDS are more likely to have AUD (15% vs. 7%; p<0.0001) and have at least one psychiatric, AUD, or SUD (25% vs. 16%; p<0.001). PEDS are more likely to be homeless (2% vs. 0.2%) and uninsured (39% vs. 23%; p<0.001).

**Conclusion:** PEDS trauma patients have a higher incidence of AUD and at least one psychiatric, AUD, or SUD when compared to other blunt trauma patients. In addition, they are more likely to have significant socioeconomic issues that may limit placement. Earlier identification and a multidisciplinary management strategy, including psychiatric and social services, could optimize care and resources for this fragile subset of the trauma population. In the future, a prospective trial should investigate these associations further and resources should be allocated towards quality improvement.
QS 19. LONG-TERM OUTCOMES OF LAPAROSCOPIC PARAESOPHAGEAL HERNIA REPAIR IN THE ELDERLY
J Otero MD, AM Kao MD, J Marx, KA Schlosser MD, MR Arnold MD, T Prasad MS, AE Lincourt PhD, BT Heniford MD, PD Colavita MD
Carolinas Medical Center

Background: Paraesophageal hernias are common among the elderly, as incidence increases with age. Comorbidities of the elderly may increase risk of poorer outcomes. The purpose of this study is to assess long-term outcomes of laparoscopic paraesophageal hernia repair (LPEHR) in the elderly and evaluate potential risk factors for recurrence.

Methods: A prospectively collected institutional database was queried for patients who underwent LPEHR from 2006-2017. Patients were grouped by age into those ≥75 years-old and <75 years-old. Patients were followed for recurrence, need for reoperation, and return of symptoms postoperatively.

Results: A total of 238 patients underwent LPEHR, with 180 patients (75.6%) <75 years and 58 (24.4%) ≥75 years. Both groups were matched in prevalence of major comorbidities, except elderly had a lower BMI (26.9kg/cm² vs 30.2kg/cm², p<0.001) and an increased rate of hypertension (77.6% vs 60.9%, p=0.0028). Older patients were less likely to complain of preoperative reflux (p=0.025), but more likely to suffer nausea (44.8% vs 29.4%, p=0.0305). Rates of gastropexy did not differ between age groups (56.9% vs 49.4%, p=0.3234). Overall postoperative complications did not differ between groups (41.4% vs 33.7%, p=0.2893), however elderly patients had longer length of stay (4.0±2.5 vs 3.1±1.9, p=0.0032). With mean follow-up of 35.2 months, no difference in the rates of postoperative symptoms of reflux, dysphagia, pain, regurgitation, nausea, early satiety, or respiratory symptoms were noted between the two groups at 1 month, 6 months, or ≥12 months (all p-values >0.05). No difference in rate of reoperation for recurrence was noted (0% vs 4.4%, p=0.2046). Overall rate of hernia recurrence as well as rate of symptomatic hernia recurrence did not differ between elderly and young groups (8.6% vs 16.1% overall, 22.7% vs 39.7% of symptomatic patients, p=0.2636). Elderly patients were noted to have decreased return of nausea postoperatively (0% vs 6.7%, p=0.0216). When evaluating for differences in operative technique, the addition of a posterior gastropexy did not affect the overall or symptomatic recurrence rate in either age group (elderly: 7.7% vs 4.6% overall p=1.0000, 25% vs 10% symptomatic patients p=0.5055; young: 16.1% vs 12.7 overall...
p=0.5822, 53.9% vs 36.8% symptomatic patients p=0.2822).

**Conclusion:** LPEHR is safe in elderly patients. Symptomatic recurrence, reoperation, and postop symptoms do not differ to those in younger populations. Furthermore, elderly patients have decreased rates of return of postoperative nausea. The addition of posterior gastropexy does not affect rates of recurrences.
QS 20. UNPLANNED REOPERATIONS FOLLOWING LAPAROSCOPIC BARIATRIC SURGERY: A MBSAQIP ANALYSIS
R Fazl Alizadeh MD, S Li MD PhD, C Inaba MD, MW Hinojosa MD, BR Smith MD, MJ Stamos MD, NT Nguyen MD
University of California Irvine Medical Center

Background: Unplanned reoperation following laparoscopic bariatric surgery is a serious and devastating complication. We aimed to evaluate the risk factors and outcomes of reoperation following laparoscopic sleeve gastrectomy (LSG) and laparoscopic Roux-en-Y gastric bypass (LRYGB).

Methods: Using the 2015 MBSAQIP database, patients underwent LSG or LRYGB and had an unplanned reoperation (related to bariatric index surgery) were identified. Emergent, revisional and converted cases were excluded. Multivariate logistic regression model was performed.

Results: A total of 133,306 patients were identified including 69.3% LSG and 30.7% LRYGB. Overall reoperation rate was 0.8% (N=1092). Compared to patients without a reoperation, patients requiring reoperation had significantly longer mean operative time (108±55 vs. 87±46 min) and longer mean length of stay (4±6 vs. 2±2 days). Preoperative deep vein thrombosis (AOR:1.68; 95% CI, 1.15-2.46, p<0.05), gastroesophageal reflux disease (AOR 1.43; 95% CI, 1.26-1.63, p<0.05), and male sex (AOR 1.17; 95% CI, 1.0-1.36, p<0.05) were significant risk factors for reoperation. Patients requiring a reoperation had significantly higher serious morbidity (22.9% vs. 0.9%, AOR: 28.59) and in-hospital mortality (0.50% vs 0.02%). Also, risk of reoperation in patients who underwent LSG was one-third of LRYGB (AOR 0.32; 95% CI, 0.28-0.37, p<0.05). Most common reasons for reoperation were bleeding (32.9%) followed by intestinal obstruction (15.8%) and anastomotic leak (14.2%).

Conclusion: Despite the low rate of reoperation following bariatric surgery, patients who required a reoperation had longer operative time and length of stay and a significantly higher 30-day risk-adjusted serious morbidity and mortality. Compared to LRYGB, utilization of LSG significantly reduce the risk for reoperations.
QS 21. AFTERNOON VERSUS MORNING ROBOTIC COLORECTAL PROCEDURES: IS THERE A DIFFERENCE?
A Lee BS, A Alizadeh BS, J Cohen MD, JDI Ellenhorn MD, Y Nasseri MD
The Surgery Group of Los Angeles

Background: Robotic colorectal operations are made possible by the successful collaboration of skilled surgical, anesthesia and nursing staff and utilization of both laparoscopic and highly technical robotic instrumentation. Given the complexity, we suspected a potential decline in performance and outcome in afternoon procedures compared to those performed in the morning.

Methods: We conducted a retrospective review of a prospective database of robotic colorectal surgery between January 2014 and September 2017. We categorized them into afternoon (after 12 pm) versus morning (before 12pm) cases. Preoperative comorbidities were assessed using American Society of Anesthesiologists (ASA) score and conglomerate of relevant risk factors: obesity, diabetes, renal failure, pulmonary, and cardiac diseases. Intraoperative variables evaluated included operative time, time on the console, estimated blood loss (EBL) and complications including anastomotic leak. Postoperative outcomes compared were overall and gastrointestinal (GI) specific complications (superficial or deep wound infection, abdominal/pelvic abscess, anastomotic leak, small bowel obstruction), length of stay (LOS), and 30-day readmission rate. Two sample t-test was used and p< 0.05 was considered statistically significant.

Results: Twenty-seven afternoon cases (mean start time 1:15pm) were compared with 43 morning cases (mean start time 8:45am). Afternoon patients had a higher male:female ratio (1.25 vs 1.05), but no significant difference in mean age (66.5 vs 61.5, p = 0.23), mean BMI (27.2 vs 27.3, p = 0.95), mean ASA score (2.4 vs 2.6, p = 0.33), or mean number of risk factors (0.89 vs 0.95, p = 0.8). Despite no difference in operative time (223 vs 227 minutes, p = 0.81), mean console time (145 vs 142 minutes, p = 0.84), and mean EBL (94 vs 117 ml, p = 0.27), afternoon cases had significantly higher intraoperative anastomotic leak rate (11.1% vs 0%, p = 0.03). Postoperatively, afternoon cases had a higher 30-day readmission rate (25.9% vs 4.7%, p = 0.01). Although not statistically significant, there was a trend towards a higher overall complication rate (51.9% vs 34.7%, p = 0.16) and GI complication rate (37.0% vs 27.9%, p = 0.42) with afternoon cases. There was no difference in median LOS (5 vs 5 days).
Conclusion: In our experience, afternoon robotic colorectal cases had higher rates of intraoperative anastomotic leak and 30-day readmission compared to morning cases. This limited series raises concerns about the performance of highly technical procedures later in the day. If these conclusions are validated, future studies will need to focus on improving quality measures for afternoon cases.
QS 22. MINIMALLY INVASIVE REPAIR OF PECTUS EXCAVATUM IN ADULTS: A TECHNICALLY DEMANDING OPERATION
RN Vuille-dit-Bille MD PhD, CR McCall MD, SN Acker MD, DA Partrick MD
University of Colorado School of Medicine

Background: Pectus excavatum is typically repaired in adolescents and teenagers by placing a presternal bar (Nuss bar) under thoracoscopic visualization. As this procedure has become standard practice in children, more older patients are also undergoing treatment with Nuss bar placement. This technique has not been well studied in adult patients, and there are concerns of increased complications and a more difficult recovery. We report our experience utilizing thoracoscopic Nuss bar placement in an adult population.

Methods: A retrospective data analysis including all patients aged 18 years and older undergoing Nuss bar placement for correction of pectus excavatum was performed between 2000 and 2009.

Results: Twenty-seven patients undergoing primary Nuss bar placement were reviewed. Mean age was 22 (SD 3.9 years) ranging from 18 to 32 years. Mean Haller index was 4.5 (SD 1.5, ranging from 2.2 to 8.8). All patients had preoperative symptoms including shortness of breath (84%) and/or chest pain with exertion (56%). Left thoracoscopic visualization was performed with no cardiac, pulmonary, or vascular injuries. Fifty-six percent of patients had two bars placed, 44% had only one bar placed. Mean operation time was 220min (SD 97min), and mean length of hospital stay was 5.3 days, ranging from 4 to 8 days. Four patients underwent reoperation due to a dislocated or twisted bar, and two patients required chest tube placement. The nuss bar remained in place for 2.8 years on average prior to outpatient removal. In comparison, only 16% of our pediatric patients (mean age 14.7 years, mean Haller index 4.8) required two bars, mean OR time was 145.5 min (p=0.0002), and mean length of stay was 4.9 days.

Conclusion: Nuss bar placement in adults is a safe and effective procedure for correction of pectus excavatum. However, this is more technically demanding compared to the same procedure in children. More adults require the placement of two bars for optimal and stable correction, and their hospital stay and recovery are longer. Adult patients require different preoperative counseling prior to Nuss bar placement in order to understand the associated risks and benefits, and to have appropriate expectations of their recovery.
QS 23. A RETROSPECTIVE CHART REVIEW OF HERNIA RECURRENCE AFTER NOVEL BIOSYNTHETIC Poly-4-HYDROXYBUTYRATE (P4HB, PHASIXTM) MESH REPAIR OF INCISIONAL HERNIA

ME Wright MD, M McCain BS, S Wood BS, AG Thorson MD, GJ Blatchford MD, M Shashidharan MD, JS Beaty MD, CA Ternent MD
Creighton University

Background: Abdominal hernia repairs have high infection rates and hernia recurrence. Recurrence rates increase in the setting of wound contamination and infection. Biologic mesh is selected for use with hernias in the setting of contamination. Although biologic mesh resists infection, its absorbable characteristic predisposes to hernia recurrence as compared to synthetic mesh. The novel poly-4-hydroxybutyrate (P4HB) mesh may provide improved strength while resisting infection.

Methods: All cases of incisional hernia repair with monofilament poly-4-hydroxybutyrate (P4HB) mesh from May 2013 to September 2017 were retrospectively analyzed to assess short-term clinical outcomes. Each case was assigned a hernia grade according to the Ventral Hernia Working Group system, a surgical wound class according to the Center for Disease Control guideline for prevention of surgical site infections, and a preoperative physical status according to the American Society of Anesthesiologists (ASA). We also analyzed our dataset for comorbidities and postoperative complications. Patients who did not have recent follow-up were called and asked a brief survey to determine the likelihood of hernia recurrence as part of a quality improvement program. Patients who did not have follow-up within the last six months were excluded. Univariate and multivariate analysis was performed.

Results: Seventy patients were reviewed with a total of 85 hernia defects. Sixty-seven hernia defects remained after excluding for loss to follow-up. Mean follow up was 19 months from the time of surgery. The majority of our cases were ventral-incisional hernia repairs (56.7%), with a mean age at surgery of 66 years. Eighty-two percent were classified as hernia grade 3 or 4 (potentially contaminated/infected). Defects were further classified as surgical wound class 2 (43.2%), and preoperative ASA physical status 3 (44.7%). The 30-day complication rate was 22.3% and overall hernia recurrence rate was 26.8%, 38.8% of which were in perineal or peristomal hernias. The recurrence rate for all midline defects was 16.4%. On univariate analysis, comparing those with recurrence against
those without, surgical site infection was associated with increased risk for recurrence (p=0.003), but this did not continue to be significant in multivariate analysis.

**Conclusion:** P4HB can be used in hernias with a high risk for failure with reasonable success. Further studies are warranted to better determine whether factors aside from postoperative wound infection play a role in hernia recurrence.
QS 24. REGIONALIZATION OF COMPONENT SEPARATION TECHNIQUE IN OPEN VENTRAL HERNIA REPAIR, A 9 YEAR ANALYSIS OF THE NATIONAL INPATIENT SAMPLE
J Otero MD, KA Schlosser MD, MR Arnold MD, AM Kao MD, T Prasad MA, RF Sing DO, NJ Smart MD, PD Colavita MD, BT Heniford MD
Carolinas Medical Center

Background: The procedures involving of component separation technique (CST) in open ventral hernia repair (OVHR) has increased and associated techniques have evolved. As reimbursements are increasingly tied to quality and outcomes, an increasing consideration of centers of excellence have been advocated. We sought to investigate outcomes and trends between high- (HVC) and low-volumes centers (LVC) performing CST.

Methods: The National Inpatient Sample data was analyzed from 2003-2011 for all OVHR and CST. Cases of gastrointestinal resection were excluded. Hospitals were stratified into LVC and HVC at the 33rd and 95th percentile respectively providing clinical cutoffs of ≤2 and ≥6 CST annually. Demographic, comorbidity, and clinical outcomes were tracked yearly and compared. Multivariate analysis was performed controlling for confounding variables.

Results: OVHR decreased in prevalence from 10,432 in 2003 to 6,446 in 2011. The rate of CST in OVHR increased from 1% to 6.6% in 2011 (p<0.0001). The proportion of cases performed in HVC increased from 34.9% in 2003 to 68.2% in 2011, whereas LVC volume decreased from 65.1% to 31.8% (p<0.0001). Patient’s ages were similar between LVC and HVC (54.4±13.5 vs 55±13.5, p=0.2778) as were rates of Caucasians (79.8% vs 83.2%, p=0.1482). In both LVC and HVC patients were more commonly female (54.7% vs 54.9%, p=0.9373). Charlson Comorbidity Index scores were similar between LVC and HVC (0.9±1.6 vs 0.9±1.5, p=0.9989). Private insurance comprised the most frequent primary payer in both volume centers (51.2% vs 51.9%). 91.4% and 53% of CST occurred in an urban teaching hospital for HVC and LVC respectively. Conversely urban non-teaching and rural hospitals accounted for 8.6% and 0% of CST in HVC but 40.9% and 6.1% in LVC (p<0.0001). Significantly less patients from the wealthiest quartile per zip code were cared for in LVC (23.1% vs 31.7%, p=0.0008). More patients from the poorer zip codes were seen in LVC (23.1% vs 20.1% bottom quartile; 26.8% vs 22.2% 2nd quartile, p=0.0069). Length of stay was similar...
between LVC and HVC (6.8±7.6 vs 6.4±4.8, p=0.0860). Discharge to home and inpatient mortality did not vary between volume centers (70% vs 73.2%, p=0.2156; 0.7% vs 0.6%, p=0.8321). Total hospital charges in LVC were $6,000 less than in HVC ($57,279 vs $62,350, p<0.0001). Overall complication rates were 36.1% at LVC and 33.3% at HVC (p=0.3183). Wound events and postoperative infections were increased at LVC (14.4% vs 8.8%, p=0.0021 and 7.5% vs 3.6%, p=0.0032). There were no differences in urinary, pulmonary, gastrointestinal, cardiac, or septic complications between the two volume centers (p>0.05 in all categories). In multivariate logistic regression models controlled for demographic and socioeconomic factors, HVC CST were associated with decreased rates of wound events (OR0.571, CI0.381-0.855) and postoperative infection (OR0.448, CI0.252-0.797) as well as had no change in operative charges (p=0.2175).

**Conclusion**: Regionalization of CST occurred as HVC experienced an increased proportion of CST across time. Outcomes were improved in HVC as noted by decreased wound events and postoperative infection.
QS 25. ROUTINE OPEN INGUINAL HERNIA SAC PATHOLOGIC ANALYSIS: IS IT NECESSARY?
MR Wampler MD, R Babayeuski MD, DR Merrill BS, CM Bishop MS, CA Jones BS, HE Dao MD, DD Mais MD, JW Kempenich MD
University of Texas Health Science Center at San Antonio

Background: In the current environment of perpetually increasing healthcare expenditures, hospitals and physicians must analyze cost versus benefit for certain practices and procedures. The policy of many hospitals, including our institution, is to send any excised tissue from surgical procedures for pathological processing. For hernia sac analysis, this practice results in costs to not only the patient, but also to the hospital. We endeavored to quantify the utility of routine pathologic examination of the hernia sac for open inguinal hernia repairs.

Methods: A retrospective chart review was conducted of 1154 adult patients who underwent open inguinal hernia repair as the primary procedure at a single institution over a nine year period, from 2008 to 2016. CPT codes included patients who underwent repair for initial or recurrent inguinal hernia. Operative and pathology reports were reviewed for clinical and histologic findings.

Results: After chart review, we excluded 218 patients missing an operative or pathology report in the medical record, or if inguinal hernia repair was not the primary procedure. Of the remaining 936 patients, 881 (94%) were male and 55 (6%) were female. Patients ranged in age from 18-89 years old. The majority of surgeries, 934 (99%), were performed as outpatient procedures, with only 2 surgeries performed on inpatients. Most patients, 734 (78%), underwent repair of an initial reducible inguinal hernia. The second most common procedure performed was repair of an initial incarcerated or strangulated inguinal hernia. In 902 patients (95%) the pathology results were grossly normal with tissue findings consistent with excised hernia sac. Of the 34 patients with “abnormal” pathology, findings consisted primarily of benign fibrovascular or adipose tissue, nerve excision, lymph node, and hernia sac with inflammatory or reactive changes. No patients were found to have a malignancy after pathological analysis. In 3 patients, an orchiectomy was performed at the time of hernia repair secondary to findings of abnormal nodules or the testis appearing nonviable. In all 3 patients, no malignancy was found on subsequent pathologic analysis.

Conclusion: Our series is the largest reported to date and the results are
consistent with previous reports. The overwhelming majority of inguinal hernia sacs sent for pathologic examination result in benign findings. The “abnormal” findings in our series were predominantly known prior to the operation or were sent because the surgeon was concerned about the texture or appearance of the tissue intraoperatively. Pathology consults for tissue from outpatient open inguinal hernia repairs should be left to the discretion of the operating surgeon and institutional policies should be amended to prevent unnecessary healthcare expenditures.
QS 26. THIRTY-DAY OUTCOMES OF COMBINED GROIN HERNIA REPAIR AND HYDROCELECTOMY: A RETROSPECTIVE REVIEW OF THE NATIONAL SURGICAL QUALITY IMPROVEMENT PROGRAM DATABASE
ED Dubina MD, CM Tom MD, K Gollapudi MD, JM Blumberg MD, C de Virgilio MD, A Moazzez MD
Harbor-UCLA Medical Center

Background: Groin hernia repairs (GH) and hydrocelectomy (HC) are both commonly performed procedures in men worldwide, as they both have a high prevalence. Historically, these procedures have been performed separately on an elective basis, given concerns for increased risk of surgical site infections if performed concurrently, requiring two separate trips to the operating room. The role of a combined procedure (HH) with simultaneous groin hernia repair and hydrocelectomy, which could mitigate the need for multiple exposures to anesthesia and unnecessary operating room costs, has not been previously studied. Our goal was to compare 30-day outcomes of HH with GH and HC alone, with the hypothesis that the combined procedure can be safely performed with no worse outcomes at 30 days.

Methods: 702 male patients undergoing simultaneous open groin hernia repair and hydrocelectomy (HH) were identified in the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) databases from 2005 to 2014. In addition to aggregate cohort analysis, Coarsened Exact Matching was used to perfectly match 664 and 544 patients undergoing HH with the same number undergoing GH and HC alone, respectively, based on their preoperative characteristics, as there were notable differences in the co-morbidities of the HH and GH groups (BMI, ASA class, pre-operative steroid use, ascites, diabetes mellitus (DM), hypertension and dialysis) and between the HH and HC groups (BMI, ascites, DM, weight loss, and bleeding disorders). The 30-day outcomes were then compared.

Results: In the matched cohort analysis, the only difference between HH and GH or HC alone was an increased operative time of 21 minutes for GH (p<0.001) and 39 minutes for HC (p<0.001). There were no significant differences between overall morbidity, readmission, reoperation, or surgical site infection (SSI) (superficial, deep, or organ space) rates for either group in the matched cohort analysis. In the aggregate cohort analysis, HH patients compared to GH patients had higher rates of overall morbidity (2.4% vs. 1.3%, p=0.011), readmission
(3.8% vs. 1.9%, p=0.004), and reoperation (2.3% vs. 0.7%, p<0.001). Operative time was 20 minutes longer (p <0.001) for the HH group compared to GH alone. There were no significant differences in surgical site infection (SSI) and length of stay (LOS). Compared to HC alone, HH demonstrated no differences in mortality, overall morbidity, SSI, and LOS, however the rate of reoperation was higher (2.3% vs. 1.2%, p=0.020) and operative time was 41 minutes longer (p<0.001).

**Conclusion:** In hospitals participating in NSQIP, while HH demonstrated some differences in 30-day outcomes between the unmatched groups, within the matched groups there was no increased risk when compared to GH or HC alone for mortality, overall morbidity, SSI, or need for readmission or reoperation. We can therefore conclude that hydrocelectomy and groin hernia repair can be safely combined without increasing SSI risk, potentially eliminating the need for multiple operations.
QS 27. BONE ANCHOR FIXATION IN ABDOMINAL WALL RECONSTRUCTION
KA Schlosser MD, A Kao MD, J Kneisl MD, RF Sing DO, VA Augenstein MD, AE Lincourt PhD, T Prasad MA, PD Colavita MD, BT Heniford MD
Carolinas Medical Center

Background: Repair of suprapubic and iliac hernias is challenging due to reduced mesh overlap and/or lack of suture fixation points. Bone anchors (BA) allow for strong fixation of mesh materials to bony surfaces. We utilized BA to provide mesh fixation to pubic rami or iliac crest for abdominal wall reconstruction (AWR) when adequate fascial fixation was not possible.

Methods: A prospective, single-center, hernia-specific database was queried for AWR utilizing BA from 2012 to 2017. Demographics, operative characteristics, and outcomes were evaluated using univariate Chi-square and Wilcoxon two sample tests. Preoperative CT scans were reviewed using three-dimensional imaging software.

Results: Fifty-eight AWR were performed utilizing BA mesh fixation. Mean age was 59.2±12.5yr, BMI 30.1±5.0kg/m2, 39.7% male. Patients had a mean of 5.8 previous abdominal surgeries, and 69% had prior hernia repairs (2.5±1.8 previous repairs). 27% of patients had prior component separations. Preoperative CT scans demonstrated large defects (mean: 365.0±980.0cm2) with a mean hernia volume of 1068±1241.5cm3. 79% of hernia repairs were ventral, and 21% were flank. 67% of flank hernias were secondary to blunt trauma. Mean operative time was 221.2±74.2min, mean mesh size 953.2±299.9cm2. An average of 3.8±1.8 BA were used, 96% of which were Biomet JuggerKnot 2.9mm anchors. Component separation was utilized in 57% of patients, 86% achieved fascial closure, 24% had advancement flaps, and 50% had advancement flap with concomitant panniculectomy. Six patients had a history of full thickness abdominal wall resection for malignancy or infection, and therefore had no abdominal wall to close. Overall postoperative major complication (Clavien-Dindo grade ≥ 3) was 34.5% (24.2% grade 3a, 10.3% grade 3b), with a surgical site occurrence rate of 44%. 30-day re-admission rate was 10.3%, reoperation rate 9%, wound infection rate 10.3%. One patient developed MSSA wound infection requiring BA removal. There were five recurrences (8.6%) with an average follow-up of 13.3±15.8months; patients who recurred had an average of 6 prior hernia repairs, and one had a connective tissue disorder. Patients
with defects greater than 10cm wide on preoperative CT had longer operative time (221.2±74.2min vs 198.8±61.8min) and no significant difference in incidence of postoperative pain, surgical site occurrence, reoperation, or other complications.

**Conclusion**: Pelvic and iliac BA can be effectively utilized for mesh fixation in AWR when there is limited fascial overlap and/or availability of suture fixation. Mesh fixation with BA provides a lasting mesh fixation solution during complex AWR, especially in patients with large and recurrent hernias.
QS 28. PROSPECTIVE VALIDATION OF THE SAFETY AND EFFICACY OF A GENERAL SURGERY RESIDENCY TRAINING PROGRAM
TD Madni MD, E Barrios BS, JB Imran MD, AT Clark MD, L Taveras MD, A Christie MS, S Luk MD, HA Phelan MD, MW Cripps MD
University of Texas Southwestern Medical Center

Background: Surgical training is under constant scrutiny for the effects increased resident autonomy may have on patient outcomes. At our institution, we perform over 1000 laparoscopic cholecystectomies (LCs) per year. The general training pathway consists of attending physicians taking interns through easier outpatient LCs while the more difficult inpatient LCs are performed by third year residents supervised by both a chief resident and an attending physician. We hypothesize that as LC difficulty increases at our institution, there will be increased involvement by both elevated PGY levels and attending physicians with no differences in post-operative outcomes.

Methods: Eleven Acute Care Surgeons were asked to fill out a post-operative questionnaire after every LC between 11/9/2016 and 3/30/2017. Primary outcome was difficulty of surgery, rated between 1 (least difficult) and 5 (most difficult). Either the Jonckheere-Terpstra test, Mantel-Haenzel Chi-Square test, or ANOVA was used to test for association between peri-operative data and gallbladder difficulty. Multinomial logistic regression was used to analyze the odds of attending intervention and length of operation for each level of difficulty. All tests were performed at the two-sided 0.05 significance level with Bonferroni-adjusted p-values.

Results: A total of 455 LCs were performed, with a survey response rate of 42% (190). PGY-3 residents performed 155/190 (82%) of the cases. Regarding difficulty of surgery, there were 44 level 1 GBs (23%), 66 level 2 (35%), 37 level 3 (20%), 30 level 4 (16%), and 13 level 5 (7%). Frequency of case percent which required attending intervention/involvement are: 0-25% of the case (84%), 25-50% (6%), 50-75% (7%), 75-100% (3%). PGY level, percent of case with attending involvement, partial cholecystectomy rate, and length of operation all significantly increased with increasing level of difficulty (p<0.001). No significant differences were seen in 60-day emergency room bounce backs, readmission rates, or complication rates and increasing level of difficulty. Increased odds of attending intervention and length of surgery were
found between each level of increasing difficulty on multinomial logistic regression (p<0.0001).

**Conclusion**: We found that as LC difficulty increases, so does attending and/or chief resident involvement without increased complication rates, emergency room bounce backs, or readmission rates. This study validates the safety of our training pathway of incremental autonomy. In addition, given that only 16% of LCs required greater attending involvement, this study demonstrates that our mid-level residents are capable of performing the majority of LC in a highly autonomous fashion.
QS 29. DEVELOPMENT OF A TECHNICAL, SKILL-FOCUSED CLINICAL ROTATION TO ADDRESS ACGME MANDATED INCREASES IN CASE VOLUME FOR SURGICAL TRAINEES
Nicole T Christian MD MSCS, Daniel Valentino MD, Abid Khan MD, Tiffany Willard MD, Claire Travis MBA, Mark Nehler MD
University of Colorado School of Medicine

Background: Recent concerns regarding resident competency at the end of training have led to increases in the defined category minimums for surgical residents. The ACGME mandates that PGY2 residents complete 250 cases, and PGY5 residents complete 850. There is a need for innovation in surgical education to balance administration-driven decreases in resident autonomy with improvements in clinical training while meeting increases in surgical case requirements. Our large academic residency program (10 categorical residents per year) is a part of a hospital system that recently expanded to include a community hospital 1.5 hours away from our primary site. The goal of this curriculum was to design a rotation that would address the needs for increased technical skill training and heightened ACGME requirements with community partners.

Methods: A curriculum was designed in partnership between the program director and community surgical group. The goals of the newly designed rotation were to focus on resident intraoperative education and technical skills. Fisher’s chi square analysis was used to compare cases per rotation for individual residents using ACGME case logs. Subgroup analysis by year of training was performed to assess both the PGY2 and PGY5 ACGME standards.

Results: A surgical rotation emphasizing technical skills was established at a community hospital partner composed of two PGY1s, one PGY4, and one PGY5. Case volume as “Surgeon Junior” or “Surgeon Chief” were assessed across all rotations. Residents performed more cases at the new site per rotation than at the primary hospital, regardless of PGY year. Overall, residents performed 18.4 +/-12.2 cases/rotation at the primary site vs. 49.2 +/-29.5 cases/rotation at the community site; P<0.005. This difference was more pronounced at the intern level (9.9 +/-4.6 cases/rotation at primary site vs. 38.4 +/-23.5 at community site; P<0.005) than the chief level (30.2 +/-9.1 cases/rotation at primary site vs. 64.5 +/-30.9 at community site; P<0.005). This accounts for an average of 15% of the cases required by the end of PGY2 year (38.4 cases/250 required cases) at
the intern level, and 7.5% of all cases required by the end of training at the chief level.

**Conclusion:** A high-intensity, technical-skill based, rotation with cooperation between an academic program, community partners, and residents can result in significantly improved case volume to meet ACGME requirements. Residents had a case volume 4X higher than was experienced at the main academic hospital, a difference that was more pronounced at the intern level. The next steps include the development of objective skill evaluation before and after the new rotation and evaluation for further changes to target specific weaknesses in defined category areas.
QUICK SHOT ABSTRACTS (continued)

QS 30. USING A REGIONAL CONFERENCE TO COLLABORATE ON EDUCATIONAL QUALITY IMPROVEMENT
RE Willis PhD, JW Kempenich MD, MJ Al Fayyadh MD, BJ Eastridge MD, DL Dent MD
University of Texas Health Science Center at San Antonio

Background: Two projects were introduced at the Southwest Surgical Congress meeting in 2017: Mock Orals and Program Report Card. The goal of the mock orals project was to give residents the ability to practice oral examination skills outside their home institution. The goal of the Program Report Card project was to compile data from several programs such that Program Directors (PDs) could make comparisons regarding the educational quality of their programs.

Methods: <u>Mock Orals Project</u>: Participants included 16 examinees from nine programs, one PD from each program, and 32 examiners from 20 programs. Each resident rotated through three testing stations. Examiners entered feedback into an online system. Each resident was given a report which showed exam score, pass/fail status, comparative data (e.g., rank), and comments for each exam question. Each program director was given a report that showed performance of his/her residents compared to all examinees. Performance data were color-coded such that recipients could easily visualize areas of strength and weakness.

<u>Program Report Card Project</u>: Twelve programs participated and entered the following data for each resident who graduated between 2011 and 2016: American Board of Surgery (ABS) Qualifying Examination (QE), Certifying Examination (CE), and combined exam performance, ABS QE topic performance, and cases logged. The data were used to generate color-coded reports that enabled each PD to compare his/her residents’ performance to (a) residents across the nation and (b) residents at other participating programs.

Results: <u>Mock Orals Project</u>: Response rates for examinees, PDs, and examiners were 68.8%, 88.9%, and 65.6%, respectively. The vast majority of examinees (100%), PDs (87.5%), and examiners (95.3%) supported the inclusion of a practice oral exam at a regional meeting and believed the SWSC should strive to increase participation (90.0%, 87.5%, 95.3%, respectively). All examinees (100%) found the report helpful and would use the feedback to work on areas of weakness. Among PDs, only 37.5% would make changes to their programs based on the feedback. However, 75% would make programmatic changes if more residents participated. The majority of examiners reported that the online grading
system was easy to use, would like to use it in the future, and would like to implement the system at their home institutions. <u>Program Report Card Project</u>: Response rate was 83.3%. The majority (70%) of PDs said the data entry time investment was worthwhile given the detailed report they received. The majority of PDs agreed that having reports comparing their data to national and participating programs for ABS exams (70% and 80%, respectively) and case logs (80% and 90%, respectively) was useful. All PDs (100%) said the color-coding schema was helpful in quickly identifying areas for improvement. Seventy percent said they would use the results to make programmatic changes.

**Conclusion**: A regional meeting is useful in creating a residency education quality improvement collaborative.
QS 31. ASSESSING AMERICAN BOARD OF SURGERY IN-TRAINING EXAMINATION PERFORMANCE AFTER USE OF TRUELEARN QUESTION BANK
JB Imran MD, TD Madni MD, C Ritchie BS, AT Clark MD, LR Taveras MD, A Christie MS, D Farr MD
University of Texas Southwestern Medical Center

Background: The American Board of Surgery (ABS) In-Training Examination (ABSITE) is administered each year to general surgery residents to assess their depth of medical knowledge and may predict performance on the ABS Qualifying Examination. Our current surgical curriculum consists of assigned readings, completing practice questions, and attending weekly conferences. Many of these have been shown to improve ABSITE performance; however, data regarding the benefit of medical exam question banks is scarce. Recently, our surgery department provided the TrueLearn (TL) question bank for all residents to help prepare for the 2017 ABSITE. We conducted a study to determine if the use of the TL had an impact on resident ABSITE performance.

Methods: We performed a retrospective review of 2016 and 2017 ABSITE scores for categorical general surgery residents at our institution. TL data, including number of questions completed and the percentage of questions correctly answered were obtained for each resident from the stored data in the TL online question bank. All postgraduate year (PGY) 2-5 residents were also surveyed to determine their study habits in 2016 and 2017, including the use of TL prior to the departmental purchase. First-year residents were excluded as they only had data from 2017. Linear regression and a multivariate linear regression model were used to determine the association of TL parameters with the percent of correct answers, the PGY percentile on the 2017 ABSITE, and the change in percentage and percentile from 2016 to 2017 on the ABSITE.

Results: TL data from 44 PGY 2-5 general surgery residents were included in the analysis. Of the 44 residents who were surveyed, 33 (75%) responded. In a multivariate model, the total number of TL questions completed in 2017 was significantly associated with the percentage of questions answered correctly (p = 0.02) and the overall percentile score (p ≤ 0.01) on the 2017 ABSITE. For every TL question completed in 2017, the overall percentage correct and percentile score on the ABSITE was estimated to increase by 0.003 and 0.02, respectively, after controlling for PGY level, percentile/percent correct on the 2016 ABSITE, and percentage of TL questions answered correctly in 2017.
When evaluating the change in ABSITE percentile and percent correct from 2016 to 2017 on multivariate analysis, the number of TL questions answered in 2017 was significantly associated with a change in PGY percentile (p ≤ 0.01) and percent correct (p = 0.02) from the 2016 to 2017 ABSITE. Interestingly, on univariate analysis, residents who did not use TL in 2016 had a mean increase in their ABSITE percentile compared to those who had used it prior (11.6 +/- 20.0 vs. -9.3 +/- 29.2, R² = .12, p = 0.04); however this was not significant on multivariate analysis. Moreover, the percentage of questions correct on TL or the amount of time spent using TL was not associated with a significant change in ABSITE percentile or percent correct.

**Conclusion**: The use of the TL question bank is associated with an improved ABSITE percentage correct and overall percentile score. The benefit may be more pronounced in first-time users.
QUICK SHOT ABSTRACTS (continued)

QS 32. ARE RURAL GENERAL SURGEONS PREPARED TO PERFORM SPECIALTY PROCEDURES IN PRACTICE?
R Stiles MD, J Reyes MEd, SD Helmer PhD, K Vincent MD
University of Kansas School of Medicine - Wichita

Background: To fulfill a need, rural physicians are performing a broad range of operations including some typically performed by specialty surgeons for emergent purposes or in cases where patient access is poor. A push for regionalization of high-risk operations may be impractical in rural states. Exposure to these operations in residency may influence how prepared surgeons are to practice in rural areas. This is especially pertinent in an era where resident preparedness is questioned. The purpose of this study was to evaluate the types of specialty procedures performed by general surgeons operating in a largely rural state and how well prepared they felt starting their rural practice after residency.

Methods: A survey was sent to all rural surgeons actively practicing in the state, with the exclusion of locum tenens surgeons. The survey included questions regarding age, number of years in practice, their perception of preparedness for rural practice, and specialty procedures performed during their rural practice. Procedures were grouped into the following categories: obstetrics/gynecology, urology, otolaryngology, orthopedics, vascular, cardio-thoracic, pediatrics, plastics, hepatobiliary, and minimally invasive surgery.

Results: Forty-three surgeons responded to the survey (65.2% response rate). The median age of respondents was 49, and over half (51.2%, n=22) of respondents attended residency training in the region. Obstetrics/gynecologic procedures were performed by 67.4% of respondents, with oophorectomies (76.7%) and hysterectomies (71.0%) being the most common procedures reported. Vaginal repair was written in by 5 surgeons. Urological procedures were reported by 69.8% of respondents, with vasectomies (77.4%) and hydrocelectomies (74.2%) being the most common. Nephrectomies and ileoconduits were written in by 2 surgeons. Otolaryngology procedures were performed by 92.9% with 89.7% of those surgeons performing thyroid surgery and 68.4% of those surgeons performing parathyroid surgery. Orthopedic procedures were reported by 69.8% of respondents most commonly performing amputations (96.7%) with carpal tunnel release written in by 6 surgeons. Vascular procedures were performed by 86.0% including CEA’s by 13.9% and elective and emergent AAA repair by both endovascular and open technique written in by 1 surgeon. Cardio-thoracic procedures were performed by 83.7%
of respondents, which included Vats (44.4%) and lobectomies (27.8%). All respondents reported pediatric procedures (100%) including pediatric appendectomies (100%), hernias (93%), and pyloromyotomies (39.5%). Plastic surgery procedures were performed by 88.4% of surgeons, mostly consisting of skin grafts (92.3%) and flaps. Hepatobiliary procedures were reported by 62.8% of respondents with write-in procedures that included Whipples (3), liver resections (2), choledocojejunostomies (3), and hepaticojejunostomies (2). Minimally invasive surgery was reported by 88.1% including bariatrics (28.9%), with colon resections (12) and Nissen fundoplications (15) written in. Overall, rural surgeons felt well-prepared for practice after leaving residency with a mean score of 4.6±0.8 on a Likert scale of 1 to 5, with 5 being “well prepared.”

**Conclusion:** Results of the survey study confirm that rural general surgeons perform a variety of operations including major high-risk operations usually performed in specialty surgical fields. While subjectively these surgeons are well-prepared for these operations out of residency, it is unclear how their preparation compares to surgeons practicing in high-volume centers.
QS 33. THE IMPACT OF ELECTRONIC MEDICAL RECORD SCRIBES ON RESIDENT AND ATTENDING EXPERIENCE IN THE OUTPATIENT SURGERY CLINICS OF AN ACADEMIC MEDICAL CENTER
SL Chen MD, RM Fujitani MD, MD Whealon MD, IJ Kuo MD, T Saba MS, L Borda MBA, MJ Stamos MD
University of California Irvine Medical Center

Background: Employment of electronic medical record (EMR) scribes in the emergency room has been shown to decrease the administrative burden and improve job satisfaction among emergency physicians. Our Department of Surgery began employing EMR scribes in the outpatient clinics of multiple surgical subspecialty providers in December 2015. We aimed to determine the impact of these EMR scribes on the experience of attending surgeons and surgical residents in the outpatient clinics at an academic medical center.

Methods: A prospectively-designed numerical survey grading documentation difficulty, quantifiable time spent outside clinic hours on documentation, degree of interference clinic documentation had on patient care, overall clinic satisfaction, and belief in the positive impact of scribes were collected from both attending surgeons and surgical residents, rated on a four-point scale. Data was collected at two time points: one month prior to the initiation of the EMR scribes program and two months following program initiation. Mean scores for attending surgeons and surgical residents were compared for each question before and after scribe implementation.

Results: Seven attending surgeons completed surveys before and after scribe implementation. Attending surgeons reported decreases in documentation difficulty, documentation time outside of clinic hours, interference of documentation on physician-patient interaction and an overall improved clinic experience (all P < .05). Seven residents completed seventeen pre-scribe-implementation surveys and nine residents completed thirteen post-scribe surveys. Surgical residents similarly reported decreased documentation difficulty, decreased documentation interference with physician-patient interaction and an improved overall clinic experience with scribes employed (all P < .01). There was no difference in documentation time needed outside of clinic hours for residents after employment of scribes (P > .05).

Conclusion: For both attending surgeons and residents, employment of scribes improved the overall clinic experience and physician-patient interaction. Difficulty of documentation and overall clinic experience demonstrated the most dramatic improvements among surveyees. This represents the first report on an EMR scribes program applied to an academic Department of Surgery.
QS 34. PREOPERATIVE LABORATORY TEST UTILIZATION IN YOUNG, HEALTHY PATIENTS UNDERGOING OUTPATIENT LOW-RISK SURGERY
J Tseng MD, T Cohen PhD, D Margulies MD, RF Alban MD
Cedars Sinai Medical Center

Background: The utility of preoperative laboratory (lab) testing in low-risk surgeries is widely questioned. Both the American Society of Anesthesiologists and National Institute of Health and Care Guidance in the UK recommend against routine preoperative tests for outpatient elective surgeries in patients with ASA class 1 or 2. We analyzed the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database to assess utilization rates of preoperative lab testing in this population for common elective, outpatient surgical procedures such as initial hernia repairs, breast mass excisions, and knee or shoulder arthroscopies.

Methods: Using the 2015 ACS-NSQIP database, we identified all patients from ages 16-50 who underwent an elective, outpatient surgery with ASA class 1 or 2. Patients undergoing initial hernia repairs, breast mass excisions, and arthroscopies were selected via specific CPT codes. Variables obtained include patient demographics, comorbidities, preoperative lab results, and complication rates. The number of comorbidities in each patient was tabulated. Descriptive statistics were provided in terms of mean and standard deviation for normally distributed continuous variables, and percentages for categorical variables. Comparisons between patients with preoperative labs and no preoperative labs were made with the student’s t-test and Pearson’s chi-squared test.

Results: A total of 38,157 patients undergoing elective, outpatient surgery were included in the study, with 16,525 undergoing hernia repair, 14,029 undergoing arthroscopy, and 7,603 undergoing breast mass excision. The majority of patients had no comorbidities (70.9%), while 25.4% had one, and 3.7% had two or more. Overall utilization rates of CBC’s, BMP’s, and coagulation panels were 43.9%, 38.6%, and 8.9%, respectively. Preoperative labs were obtained in 54.4% of hernia repairs, 35.3% of arthroscopies, and 53.6% of breast mass excisions. Patients with preoperative labs were more likely to have comorbidities (35.1% vs 21.9%, p < .001), and the rates of preoperative lab testing increased in relation to the number of comorbidities. Overall complication rate was 1.1%; of these complications, 64.0% were related to wound complications.
Patients with preoperative labs had higher rates of superficial surgical site infections and wound disruptions (0.7% vs 0.3%, \(p<.001\), 0.1% vs 0.0%, \(p=0.009\), respectively). There was no difference in terms of postoperative bleeding or transfusions (0.1% vs 0.0%, \(p=0.154\)).

**Conclusion:** Despite recommendations against routine preoperative tests in this population by multiple organizations, preoperative lab utilization rates for elective, outpatient, low-risk surgery in young, healthy patients remain high. Overall complication rates are low and mainly secondary to wound complications. Adhering to current recommendations and guidelines for pre-op lab testing may lead to significant cost savings without affecting outcomes.
QUICK SHOT ABSTRACTS (continued)

QS 35. SURGICAL FIRES: THE EFFECTS OF PREPPING AND DRAPING
DG VanDerPloeg MD, PM Einersen MD, JM Samuels MD, TN Robinson MD, DM Overbey MD, TR Arcomano MD, TS Jones MD, JT Moore MD, EL Jones MD
University of Colorado School of Medicine

Background: Surgical fires are a devastating and under-reported intraoperative complication. Alcohol-based skin preps are ubiquitous and well known to be a fuel source of operating room fires. Manufacturers recommend waiting at least three minutes after application of an alcohol based skin prep to minimize the risk of fire. Placement of surgical drapes often minimize the airflow over prepped dermis; particularly when draping in a crevice such as the axilla or groin. The purpose of this study was to quantify the risk of surgical fire associated with alcohol-based skin preps (1) immediately and at three minutes after skin prep and (2) with and without surgical drapes.

Methods: A standardized, ex vivo model was created with a 15x15cm section of clipped, porcine dermis. The heat (ignition) source was a hand-held “Bovie” pencil activated for 3 seconds on 30W coag mode with room air (21%) oxygen (oxidizer). Alcohol based surgical preps studied were: 70% isopropyl alcohol with 2% chlorhexidine gluconate (ChloraPrep), and 74% isopropyl alcohol with 0.7% iodine (DuraPrep). Skin was prepped per manufacturer instructions. Skin preps were performed on exposed dermis and in a sheltered 5cm keyhole shaped drape covering the dermis. Preps were then tested either immediately after application (0 minutes) or after a 3 minute delay. Flames were confirmed with thermal imaging. Experiments were repeated 20 times based upon a pre-test probability of 35% difference. Fisher’s exact test was used to compare categorical variables.

Results: Chlorhexidine IPA created 9/20 (45%) fires on immediate testing without drapes, and 6/20 (30%) fires after a 3 minute delay (p=0.51). With drapes applied, Chlorhexidine IPA created 16/20 (80%) fires immediately and 14/20 (70%) fires after 3 minutes of dry time (p=0.72). With drapes present, more fires were created both immediately (9/20 vs. 16/20, p=0.48) and after 3 minutes (6/20 vs. 14/20, p=0.026). Iodine IPA created 7/20 (35%) fires with immediate testing without drapes, and 8/20 (40%) fires when waiting three minutes (p=1.0). With draping, Iodine IPA created 12/20 (60%) fires immediately and 5/20 (25%) fires after 3 minutes of dry time (p=0.054). With drapes present,
there was no difference on immediate testing (7/20 vs. 12/20, p=0.2) or after 3 minutes (8/20 vs. 5/20, p=0.5).

**Conclusion:** Alcohol-based skin preps create surgical fires whether or not 3 minutes drying time is observed. The application of surgical drapes nearly doubles the risk of surgical fires with chlorhexidine alcohol prep. Surgeons need to be aware of the increased risk of fire when drapes are placed immediately after prepping.
QS 36. EFFICACY OF INTRAVENOUS ACETAMINOPHEN AS ADJUNCT POST-OPERATIVE ANALGESIC AFTER MEDIAN STERNOTOMY: A RETROSPECTIVE STUDY
OA Almograbi MD, JG Brungardt MD, SD Helmer PhD, J Reyes MEd, BE Grizzell MD
University of Kansas School of Medicine - Wichita

Background: The dose-dependent adverse events associated with post-operative opioid use may be reduced when opioids are used in conjunction with intravenous acetaminophen. The purpose of this study was to compare the length of hospitalization between patients who received intravenous acetaminophen and opioids versus opioids only after median sternotomy surgery.

Methods: We conducted a retrospective chart review of 122 adult patients who underwent median sternotomy from June 2014 through December 2015. Data collected included length of hospital stay, intravenous and oral opioids consumption, intravenous acetaminophen consumption, adverse effects, and time to transition from intravenous to oral pain medication. The control group consisted of patients who received intravenous and oral opioids only. The comparison group consisted of patients who received intravenous acetaminophen in conjunction with intravenous and oral opioids. For the purposes of this study, we only looked at medications administered in the postoperative time period until discharge from the hospital.

Results: The primary outcome was length of hospital stay. Our data did not demonstrate a clinically significant reduced length of hospital stay with use of adjunct intravenous acetaminophen. The median length of stay for the opioid only group was 6 days (IQR= 5-7 days), and the median length of stay for the adjunct intravenous acetaminophen group was 6 days (IQR= 5-8 days). However, there was a significant lower adverse effect with the use of intravenous acetaminophen specifically in atrial fibrillation occurrences (7.0% vs. 24.6%, p= 0.009). Patients who received intravenous acetaminophen had higher rates of urinary retention (15.8% vs. 3.1%, p= 0.014), constipation (50.0% vs. 20.0%, p= 0.001), respiratory depression (7.1% vs. 0.0%, p= 0.043). Intravenous opioids consumption was similar for both groups (median = 14 MME, p= 0.470). The time to transition to oral pain regimen was similar in the opioid only and adjunct intravenous acetaminophen groups (31 hours. vs. 38 hours., respectively, p= 0.399). Both study groups had similar operative procedures, preoperative risk scores, and demographics to avoid
confounding effects.

**Conclusion:** Intravenous acetaminophen reduced other adverse side effects such as atrial fibrillation, nausea and emesis, but not length of hospital stay or intravenous opioid consumption in post-median sternotomy patients. The anti-inflammatory properties of intravenous acetaminophen may play a role in atrial fibrillation prevention. Further studies are needed to support this conclusion.
QS 37. WHAT HAPPENS AFTER A STOP THE BLEED® CLASS? THE CONTRAST BETWEEN THEORY AND PRACTICE.
NK Dhillon MD, BA Dodd RN, H Hotz RN, KA Patel, NT Linaval, DR Margulies MD, EJ Ley MD, G Barmparas MD
Cedars Sinai Medical Center

**Background:** The American College of Surgeons Committee on Trauma recently launched the Stop the Bleed® program, a national campaign intending to teach bystanders how to achieve hemorrhage control prior to the arrival of medical personnel to the scene. Despite the program’s popularity, very little is known about the participants’ attitudes following class attendance. The objective of this study was to determine how likely participants were to apply acquired skills and to subsequently acquire the necessary equipment.

**Methods:** A standardized survey instrument was distributed to all participants after the completion of Stop the Bleed® classes held at a tertiary, Level I trauma center from May 2017 to October 2017. Questions inquired about participant background, reason for attendance, comfort with skills acquired from the class, likeliness of applying the various skills taught, and likeliness of purchasing a tourniquet and/or a Stop the Bleed® kit. A follow-up web-based survey was administered to the same participants at least a month later inquiring whether a tourniquet or a kit was purchased. They were also asked whether they pursued becoming a Stop the Bleed® instructors and whether they had instructed a class.

**Results:** Over the 6-month study period, of 185 who completed a Stop the Bleed® Class, 125 (67.6%) completed the initial and 81 (43.8%) completed the subsequent web-based survey. The majority (67.2%) had no medical background. The most common reasons for attending the class included having a job and/or a hobby in which a participant felt likely to encounter a bleeding situation (42.4%), followed by being influenced by recent events seen in the news and/or media (38.4%). Participants were most likely to hear about the campaign from work and/or school (80.0%). Most individuals (77.6%) reported feeling comfortable applying the skills learned from the class, while 16.8% reported being somewhat comfortable. When asked how likely they would be to pack a wound or apply pressure, 99.2% reported either likely or very likely; 96.8% stated they would either likely or very likely apply a tourniquet. Over three out of four participants stated that they would purchase a Stop the Bleed® kit (77.6%) and a tourniquet (76.8%).
81 individuals who completed the online survey, only 4.9% and 17.3% had purchased the kit and tourniquet, respectively; 39.5% and 23.5% had no intention of purchasing the kit or a tourniquet. Of the 32 eligible instructors who responded to the online survey, 24 (75.0%) registered to become instructors and of those, 10 (41.7% of registered instructors) taught a class.

**Conclusion**: Despite reporting high levels of comfort and likeliness of utilizing hemorrhage control skills upon completion of the Stop the Bleed® class, a very low percentage of participants acquired the materials needed to apply these skills. Further understanding of the barriers in obtaining these supplies and developing strategies to allow for easy access to them may lead to better implementation of the purposes of the program and allow for improved dissemination of its principles within the community.
QS 38. CATHETER DISTANCES AND BALLOON INFLATION VOLUMES FOR THE ER REBOA CATHETER: A PROSPECTIVE ANALYSIS
DE Meyer MD, M Mont BS, JA Harvin MD, LS Kao MD, CE Wade PhD, LJ Moore MD
University of Texas Health Science Center at Houston

Background: Resuscitative endovascular balloon occlusion of the aorta (REBOA) is an adjunctive technique used to temporize uncontrolled bleeding from non-compressible abdominopelvic hemorrhage. Accurate catheter positioning is critical, since malposition could result in failed aortic occlusion or major vascular injury. Currently, no published clinical data exists that describes the average catheter distances or balloon fill volumes necessary to accurately occlude the supraceliac or infrarenal aorta. The purpose of this study was to report average distances of catheter deployment and balloon inflation volumes used in the deployment of REBOA catheters in trauma patients with hemorrhagic shock.

Methods: A prospectively-collected, single-institution REBOA registry was queried for all patients who underwent REBOA with the Prytime ER-REBOA™ catheter. Demographic information, catheter, and hemodynamic data were collected. Since institutional protocol mandates confirmation of catheter position by x-ray prior to balloon inflation, the averages, ranges, and interquartile ranges for catheter distances and balloon volumes could be calculated with respect to zone of deployment. Linear regression analyses were performed to identify variables associated with catheter distances and balloon volumes, including height, weight, body mass index, and ideal body weight.

Results: Fifty-nine patients from the registry met inclusion criteria. In patients who underwent supraceliac (zone 1) REBOA, mean age was 46.3 years and 82% were male. Median height was 178 cm [IQR 172-183], weight 81.8 kg [IQR 72.0-100], BMI 25 kg/m² [IQR 23-31], and IBW 73 kg [IQR 68-78]). Median catheter distance was 45 cm [range 37-58, IQR 42-46] and median balloon volume was 14 mL [range 3-24, IQR 8-19]. Median degree of systolic blood pressure (SBP) augmentation was 50 mmHg [IQR 35-55]. In patients who underwent infrarenal (zone 3) deployment, mean age was 35.2 years and 79% were male. Median height was 178 cm [IQR 173-183], weight 95.5 kg [IQR 65.9-109], BMI 32 kg/m² [IQR 22-33], and IBW 73 kg [IQR 68-78]. Median catheter distance was 28.5 cm [range 21-36, IQR 26.5-32.5]
and median balloon volume was 10 mL [range 4-22, IQR 5-15]. Median degree of SBP augmentation was 55 mmHg [IQR 40-65]. Linear regression analysis comparing patient height to catheter distance did not demonstrate a correlation ($R^2 = 0.008$ for zone 1 and $0.0022$ for zone 3). Linear regression analyses comparing weight, IBW, and BMI to balloon volume also did not demonstrate a correlation ($R^2 = 0.135$, $0.123$, and $0.242$ for zone 1 and $0.00002$, $0.0018$, and $0.000004$ for zone 3). There were no REBOA-related aortic injuries.

**Conclusion:** There is significant variability in the distances and balloon volumes necessary for effective zone 1 and zone 3 occlusion of the aorta. Further, no single patient metric accurately correlated with catheter distance or balloon volume. Given the potential for adverse outcomes due to malposition or inadequate occlusion, REBOA position and effect should continue to be confirmed by plain x-ray and the continuous monitoring of hemodynamic parameters.
**QS 39. RESUSCITATIVE ENDOVASCULAR BALLOON OCCLUSION OF THE AORTA INFLATION TIMES AND ACUTE RENAL FAILURE: DOES TIME MATTER?**
MT Mont BS, JA Harvin MD, DE Meyer MD, CE Wade PhD, LJ Moore MD
*University of Texas Health Science Center at Houston*

**Background:** Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) is an adjunct that improves patient hemodynamics and provides temporary hemorrhage control in patients with non-compressible truncal hemorrhage arising below the diaphragm. The impact of REBOA on the development of acute renal failure (ARF) requiring renal replacement therapy (RRT) has not been evaluated. We hypothesized that patients with longer balloon inflation times would have a higher incidence of acute renal failure requiring dialysis.

**Methods:** Our REBOA database was queried for all patients undergoing REBOA with documented inflation times. Demographics, zone of inflation, duration of inflation, and ARF requiring RRT were collected. Patients were grouped into two time categories based upon total duration of balloon inflation: 60 minutes or less and > 60 minutes. Patients that died within 72 hours of REBOA placement were excluded from the study. Fischer's exact test was used to compare the groups.

**Results:** A total of 29 patients met inclusion criteria. The median patient age was 41 (IQR 30-54) with a median Injury Severity Score of 36 (IQR 24-50)) and overall survival rate of 66%. Twenty-three patients (79%) underwent Zone 1 inflation (thoracic aorta) and six (21%) patients underwent Zone 3 inflation (infra-renal aorta). Inflation duration times ranged from a low of 24 minutes to a high of 372 minutes. There were 18 patients in the 0-60 minute group and 11 patients in the >60 minute group. The overall rate of ARF requiring RRT in the study population was 24%. The rate of ARF requiring RRT by time group was as follows: 0-60 minutes 17% vs. > 60 minutes 36%, p = 0.37. The mortality rate in the patients in the 0-60 minute groups was 11% vs. 45% in the > 60 minute group, p = 0.07.

**Conclusion:** The overall rate of ARF requiring RRT was 24%. Duration of balloon occlusion of the aorta appears to be associated with the development of ARF requiring RRT as occlusion times greater than 60 minutes were associated with a 36% rate of ARF requiring RRT. When occlusion was less than 60 minutes, only 17% of patients required RRT for ARF. While associated with increased need for RRT and a trend towards increased mortality prolonged REBOA is survivable.
QS 40. MAKING THE GOLDEN 10 MINUTES A REALITY: DEVELOPMENT OF A “FLY-BY PROTOCOL” AT A LEVEL 1 TRAUMA CENTER
SE Brooks MD, B Schmitz MD, J Zuber CRNA, S Dissanaike MD
Texas Tech University Health Sciences

Background: Hemorrhage remains the leading cause of preventable trauma mortality, especially in penetrating trauma. 21% of trauma patients requiring emergent laparotomy will die, as will 46% of those who present with a systolic blood pressure below $90_{\text{mmHg}}$. In spite of advances in hemorrhage control (damage control surgery or angioembolization) and resuscitation (massive transfusion protocols), mortality in acutely hemorrhaging patients has not dropped significantly in the past twenty years. Trauma literature emphasizes that time-to-operating room (TTOR) matters. A recent study of torso gunshot wound patients showed that TTOR greater than 10-minutes increases mortality nearly threefold. Texas Tech University Health Sciences Center, a regional Level 1 Trauma Center providing care for a rural 250-mile radius, is challenged by increased patient transport times from remote locations. Herein we describe the development of the “Fly-By Protocol” (FBP) for bypassing the trauma bay and decreasing TTOR for exsanguinating trauma patients, providing a generalizable model for other institutions interested in reducing TTOR.

Methods: Ad hoc surgeon attempts to bypass the ER with unstable penetrating trauma patients demonstrated obstacles that needed to be overcome and the need for a systematic protocol. Trauma surgeons, Anesthesiologists, EMS, Emergency physicians and staff, OR staff, Radiologists, Technicians and Pharmacists formed a collaborative to develop the FBP. Table-top meetings created the first draft protocol and a list of anticipated barriers (both general and those unique to the institution). Individual meetings with external stakeholders reduced barriers. The developed protocol was tested using real-time simulation, an iterative process with debriefing in which all stakeholders qualitatively analyzed and contributed to refine the protocol. The resultant “Fly-By Protocol” was used in actual trauma activations, with quantitative and qualitative feedback for further iterative development into a consensus protocol.

Results: The “Fly-By Protocol” resulted in a time-to-OR of five minutes. Implementation of the protocol involved 18 distinct healthcare provider groups, and eliminated 12 separate steps of the usual trauma
handover process without compromising patient safety, thus increasing efficiency and reducing unnecessary clinician workload. Necessary FBP components which ensured patient safety and optimal outcomes included: Adding “Fly-By” to the trauma activation page, use of code stroke patient registration protocol, assigning CRNA to organize OR while Anesthesiologists travel to ED, employing EMS for direct transport to OR, and implementation of a “trauma pharmacy kit” in the Pyxis medication dispensing machine. Brief EMS report, radiological studies, and changing of the EMS monitors all occurred in the OR just as they would in the trauma bay. Strict noise discipline and concise communication were emphasized and performed.

**Conclusion**: This study provides details of how to create a successful Fly-By Protocol that drastically reduces time-to-OR for unstable penetrating trauma patients and optimizes team efficiency in handovers.
QS 41. ORGANIZING CHAOS: A MODEL FOR DELIVERY OF A MASSIVE TRANSFUSION PROTOCOL BY ADVANCED PRACTICE CLINICIANS AT A LEVEL I TRAUMA CENTER.
BA Gerali PA-C, TW White MD, SD Majercik MD, AS Kay PA-C, DS Morris MD, BJ Morris PA-C, SJ Ilstrup MD
Intermountain Medical Center

Background: Most trauma centers have established massive transfusion protocols (MTPs), which improve delivery of blood products and reduce mortality for the patient in extremis. Resuscitation of such patients, however, is challenging, with multiple personnel and interventions vying for the team leader’s attention and MTP may not be properly or efficiently utilized. Physician assistants and nurse practitioners, collectively called Advanced Practice Clinicians (APCs), are critically important members of our trauma team. At our center, we designate an APC as the MTP team leader to ensure optimal delivery of MTP. The purpose of this study is to describe the development of our institution’s practice model for an APC-directed MTP.

Methods: This process improvement model was implemented at a university-affiliated, ACS-verified Level I trauma center staffed by trauma surgeons and APCs. Our MTP delivers blood products in a 1:1:1.5 (fresh frozen plasma [FFP]:platelets:red blood cells [RBC]) ratio, and is guided by thrombelastography (TEG) when results become available. The MTP-lead APC directs all aspects of the resuscitation including appropriate administration of blood products, assigning support staff roles, ordering adjuncts to transfusion, interpreting and reordering labs, and assessing the need for deviation from protocol based on TEG and clinical factors. The MTP-lead facilitates communication with nursing, the trauma surgeon and, in the operating room, the anesthesiologist to promote a collaborative approach to determine the need for ongoing transfusion. A step-wise checklist, called the Massive Transfusion Organizational Checklist, is utilized to improve protocol adherence and also allows for clinical documentation and data collection. Multi-disciplinary post-MTP debriefing meetings are conducted to provide a platform for performance evaluation and implementation of process changes. Feedback is obtained by surveying the transfusion medical director, trauma surgeons and anesthesiologists throughout the process.

Results: APC-directed MTP was activated 50 times between April 2016 and July 2017. The majority of patients were male (66%) blunt trauma victims (80%) with an overall mortality rate of 36%. Patients
received 4.9 units FFP, 1.4 units platelets, 6.9 units RBC (ratio of 1.7:1:1.4), and tranexamic acid was given to 48% of patients. Debriefing meetings revealed areas for protocol improvements, ranging from minor logistical issues to institutional culture changes. The utilization of APCs as transfusion experts in the operating room was well-received by anesthesiologists. Staff feedback reported general satisfaction with the overall process. The success of the trauma service’s APC-directed MTP was recognized by our institution and resulted in the development of a hospital-wide MTP response team, which is led by a trauma APC and is designed to respond to massive transfusion activations in all clinical settings.

**Conclusion**: Utilization of a trauma APC to direct the MTP process optimizes protocol delivery and adherence, and allows the trauma surgeon and anesthesiologist to concentrate on other critical tasks. The development of a hospital-wide MTP response team, including a designated APC team leader, mitigates the chaos of managing the exsanguinating patient and is a critical component to developing a best practice for MTP delivery.
QS 42. OPERATING ROOM ETCO2 VALUES DO NOT ACCURATELY PREDICT BLOOD CO2 CONCENTRATION IN TRAUMA PATIENTS REQUIRING MASSIVE TRANSFUSION

J Hadley MD, C Cothren Burlew MD, R Lawless MD, C Robinson BS, F Pieracci MD, E Moore MD, M Cohen MD, B Platnick MD, C Fox MD, E Campion MD
University of Colorado School of Medicine

Background: In trauma patients undergoing emergent surgery, intra-operative ventilation is adjusted using end-tidal CO2 levels (EtCO2). To date, no study has evaluated the correlation between EtCO2 and plasma CO2 levels from the arterial blood gas (ABG). We hypothesize EtCO2 readings underestimate the actual plasma CO2 (pCO2) concentration in patients experiencing severe hemorrhagic shock, making EtCO2 an unreliable indicator for ventilator management in the severely injured trauma patient.

Methods: All trauma patients from August 2016 - August 2017 requiring greater than or equal to 10 units of blood products within the initial 24 hours were reviewed. Intraoperative ETCO2 readings were compared to ABG CO2 levels obtained within 15 minutes of each other.

Results: During the study period, 38 trauma patients required massive transfusion and emergent surgery; the majority (84%) were men with a mean age of 33 years. Mechanism of injury included 37% gunshot wounds, 21% motorcycle crash, 16% motor vehicle collision, 13% stab wounds, 8% falls, and 5% auto-pedestrian accident. This was a critically injured cohort who received a mean of 21 units of RBC in the first 12 hours and 11 units of fresh frozen plasma. Overall mortality was 47%. 26% of patients had an initial intraoperative pH reading that was <7 with a median pH of 7.145. When comparing the EtCO2 readings to the concurrent pCO2 readings at the initial intraoperative measurement, 70% of patients had greater than a 10-point difference and 50% of patients had at least an 18-point difference between these values. At this first intraoperative measurement, 34% of patients had a pCO2 of >45. At the second intraoperative measurement, 50% of patients had an absolute difference of 21 or more between EtCO2 and pCO2, and 35% of patients had a pCO2 >45 at the second measurement. At the third intraoperative measurement, the median pCO2 was 37 and only 14% of patients had a pCO2>45. The median difference between values was 11.

Conclusion: There is a significant discrepancy between the operating room EtCO2 values and pCO2 values obtained in trauma patients requiring transfusion, underestimating the goals of resuscitation in hemorrhagic shock. This discrepancy is especially profound early in the resuscitation.
QS 43. EXTRA-PARENCHYMAL SPLENIC ABNORMALITIES NOT VASCULAR INJURIES PREDICT NEED FOR SPLENECTOMY
M Lauerman MD, M Brenner MD, N Simpson BS, K Shanmuganathan MD, D Stein MD, T Scalea MD
R. Adams Shock Trauma Center at The University of Maryland

Background: Splenectomy (SPL) is performed in unstable patients, often without a preoperative diagnosis. Stable patients undergo computerized tomography (CT) for diagnosis. Various CT findings characterize splenic injury (SI): pseudoaneurysms, active extravasation, subcapsular hematomas and lacerations, but CT characteristics that predict need for SPL are unknown.

Methods: A 2-year review of CT-diagnosed SI at a single center was performed. CT images were reviewed de-novo for this study.

Results: 195 patients with SI were included. SPL was performed in 41 patients (21.0%). AAST grade 3, 4, and 5 injuries were more common with SPL (p<0.001). Lacerations (75.6% vs. 92.2%, p=0.009) were not associated with requiring SPL. Subcapsular hematoma (29.3% vs. 6.5%, p<0.001), left upper quadrant hemoperitoneum (95.1% vs. 62.3%, p<0.001), free hemoperitoneum (87.8% vs. 64.3%, p=0.004), and active contrast extravasation (15.0% vs. 4.5%, p=0.03) were associated with need for SPL. Presence of pseudoaneurysm (31.7% vs. 24.7%, p=0.42) and number of pseudoaneurysms (p=0.07) did not predict SPL need. On logistic regression, heart rate (OR 1.026, p=0.01), abdomen AIS (OR 3.785, p<0.001), small bowel injury (OR 3.785, p=0.05), and mesenteric injury (OR 3.917, p=0.04) predicted need for SPL. However, subcapsular hematoma (OR 7.521, p=0.002) and left upper quadrant hemoperitoneum (OR 6.146, p=0.03) much more reliably predicted need for SPL.

Conclusion: Extra-parenchymal pathology (subcapsular hematomas and perisplenic hemoperitoneum) are the highest risk SI for subsequently requiring a SPL. While lacerations and vascular injuries (pseudoaneurysms or active extravasation) are common on CT, they do not predict the need for SPL.
QS 44. OBESITY IS NOT ASSOCIATED WITH HEMORRHAGIC DEATH FOLLOWING MAJOR TRAUMA
JD Ball, B Mitchell, B Donovan, T Nguyen, H Brown, K Kinammon, K Crooker, B Evans, JL Green MD PhD, R Winfield MD
University of Kansas School of Medicine

Background: Trauma is the leading killer of individuals between the ages of 1 and 47 years worldwide and deaths from hemorrhage are a leading potentially preventable cause of death. Severely injured patients are prone to develop abnormalities of coagulation; however obese patients are known to be hypercoagulable at baseline and following injury. It is unknown whether protection from coagulopathy in obese patients leads to a decrease in the risk of hemorrhagic deaths following severe injury. We hypothesized that obesity is protective against death from hemorrhage following severe injury.

Methods: A retrospective review of trauma patients presenting to our Level I Trauma Center between July 1, 2012 and December 31, 2015 was conducted. Severely injured (ISS>15) patients undergoing transfusion during the first 24 hours of admission were stratified according to body mass index (BMI [Nonobese 18.5-29.9 kg/m², Obese ≥ 30 kg/m²]) and compared on the primary outcome of mortality. Patients were excluded for known history of hypercoagulable state, bleeding diathesis, or preadmission anticoagulant medication. Cause of death was determined evaluating hospital and available autopsy records and deemed hemorrhagic or non-hemorrhagic in nature.

Results: During the period studied, we admitted 5998 patients to our center. After applying inclusion and exclusion criteria, the total number of patients in the study was 308. These patients were 60% male, with a median age of 54 years and median ISS of 27. Of these patients, 38% were obese. When comparing rates of hemorrhagic deaths between the two groups, no significant difference was seen, as no nonobese patients died from hemorrhage and only two deaths seen among obese patients (0 vs. 1.70%, p=0.31).

Conclusion: In this series of severely injured patients, we did not identify a difference in the rates of hemorrhagic deaths between obese and nonobese trauma patients. While abundant evidence of hypercoagulability exists in obese patients at baseline and following injury, it may be that this does not confer protection against death from hemorrhage.
QUICK SHOT ABSTRACTS (continued)

QS 45. DOES TEAM COMMUNICATION MATTER: PREDICTORS OF MEDICAL PERFORMANCE DURING TRAUMA ACTIVATIONS
J Parker-Raley PhD, S DeMoor BS, S Abdel-Rehim MD, D Cobb MD, M Johnson MD, JG Myers MD
University of Texas Health Science Center at San Antonio

Background: Ineffective team communication is identified as one of the root causes of medical errors during trauma resuscitations. Therefore, the ability to accurately assess communication effectiveness among trauma team members during resuscitations is paramount. Accordingly, the purpose of this study was to measure the quality of trauma team communication during activations and determine if it may predict team medical performance.

Methods: To evaluate the quality of trauma team communication and medical performance, 70 trauma activations were recorded and uploaded at a Level I trauma center. Video recordings were made possible using cameras fitted in the trauma bay connected to a high definition video capture device. Video recording started when patients were wheeled into the trauma bay and stopped once the activation ended. A communication researcher coded the 70 videotaped trauma activations to assess the quality of team communication using the Trauma Team Communication Assessment (TTCA-24), a recently validated tool that measures non-technical skills like teamwork, situation-awareness and leadership during trauma activations. Three trauma residents independently coded the 70 trauma videos using an adapted version of Holcomb’s human performance assessment tool (2002) to rate team medical performance. Interrater reliability between residents was achieved.

Results: Hierarchical multiple regression was used to examine predictors of effective medical performance during trauma activations. Predictors were entered in three sequential blocks. The first block team leader (surgeon, physician assistant, resident) was nonsignificant. Our results demonstrated a moderate improvement in team communication when the team leader was a trauma surgeon or physician assistant, but the profession of the team leader did not independently predict overall team medical performance. The addition of injury severity (minor, moderate, severe) yielded significant results ($b = .29$, $p = .025$) indicating that severity of injury predicts medical performance. The final model which included team leader ($b = -.09$, n.s.), severity of injury ($b = .34$, $p = .008$), and quality of team communication ($b = .32$, $p = .01$) demonstrated the...
highest overall significant positive change in medical performance.

**Conclusion:** The quality of team communication plays a significant role in medical performance during trauma activations, especially when patients are severely injured. Patients who present with critical injuries require more competent team communication. Our findings suggest the need for trauma team communication training as part of surgery residency to more rapidly improve their ability to lead effective team communication in trauma resuscitations.
QS 46. INSERTION OF INTRABRONCHIAL VALVES FOR TRAUMATIC BRONCHO-PLEURAL FISTULAS
MR Arnold MD, WF Powers MD, PE Fischer MD, JM Green MD, AB Christmas MD, MJ Avery BS, RF Sing DO
Carolinas Medical Center

Background: Broncho-pleural fistulas (BPF) are a pathologic connection between the bronchial system and the pleural space associated with trauma, malignancy, pneumothorax, infection, and complications of thoracic surgery. Severe persistent BPF can be a difficult clinical entity to manage. Mortality in the setting of traumatic BPF is 67%, although it is often a reflection of the underlying lung pathology. A BPF results in a decreased efficacy of ventilation, particularly oxygenation. These have been traditionally managed with decreased PEEP, low tidal volume, and decreased inspiratory time. Additionally, several advanced modes of ventilation and endobronchial interventions have been described as adjuncts in treatment of severe persistent BPFs. One way endobronchial valves are approved for use as an alternative to lung reduction surgery in COPD. These valves have previously been reported to successfully treat BPF.

Methods: 24 year old male involved in a high speed MVC. The patient was admitted to the ICU with extensive thoracic injuries. Persistent hypoxia and continuous right-sided thoracostomy tube air leaks necessitated advanced ventilation with APRV, high-frequency oscillator ventilation, and proning. Interventional Pulmonology was consulted for evaluation and management of a right broncho-pleural fistula.

Results: Seven intrabronchial valves were deployed the right superior segment with near resolution of air leak with resultant improvement of pulmonary mechanics and hypoxemia.

Conclusion: BPF can be a difficult clinical entity to manage and mortality in the setting of traumatic BPF is 67%. Intrabronchial valves can be an effective treatment in patients with traumatic BPF that are at an unacceptably high risk for surgery.
QUICK SHOT ABSTRACTS (continued)

QS 47. CLINICAL OUTCOMES IN SEPTIC PATIENTS AFTER IMPLEMENTING A VISUAL CLINICAL DECISION SUPPORT SYSTEM
J Baker MD, B Jang BS, C Droege PharmD, E Quinones MD, H Radhakrishnan MD, T Pritts MD PhD, JB Holcomb MD, M Goodman MD, V Nomellini MD PhD
University of Cincinnati

Background: Sepsis is a leading cause of death in hospitalized patients. Frequent sepsis screening coupled with early diagnosis and intervention is key to improving outcomes. Electronic health records (EHRs) store vast amounts of data, but accessing and visualizing clinically relevant data can be cumbersome. New clinical decision support tools can automatically screen patients and display visual alerts utilizing data already contained within the EHR, enabling earlier diagnosis and treatment of patients. We hypothesized that implementation of a bedside clinical surveillance visualization system in the intensive care environment would be associated with a decreased mortality of septic patients.

Methods: A commercially available web-based clinical surveillance and decision support dashboard system was implemented in our Neuroscience and Surgical intensive care units (ICU) in December 2016. The system continuously displays the most recent vital signs and laboratory data on a dedicated clinical dashboard visible to all members of the care team at the bedside. Medication administration data were available for the decision support system after April 2017. An automated sepsis screen based on heart rate, body temperature, respiratory rate, and white blood cell count was also initiated in April 2017 and became visible to clinicians on the dashboard starting in June 2017. We measured sepsis incidence and mortality among septic patients before (group 1, April – June 2017) and after (group 2, June – October 2017) implementing the sepsis screen. Patients were retrospectively diagnosed as septic utilizing clinical, laboratory and medication administration data available in the EHR utilizing a validated method, (JAMA, 2017;318(13):1241-1249).

Results: There were 657 patients in group 1 and 1171 in group 2. Age (56 years) and gender (58% male) were the same for both groups. Both groups had a median of 2 positive sepsis screens during their ICU stay. Group 1 patients had a 6.5% rate of sepsis while in group 2 sepsis was 4.8% (p = 0.11). The mortality among septic patients in group 1 was 27.9% while in group 2 it was 16.1% (p = 0.05).
Conclusion: Implementation of an automated bedside clinical surveillance and visual decision support system was associated with trend towards a decreased rate of sepsis and subsequent mortality. Integration of a continuously available decision support system in the ICU setting may help all providers identify sepsis in real time and rapidly initiate treatment to improve quality of care.
QUICK SHOT ABSTRACTS (continued)

QS 48. METAGENOMIC ANALYSIS REVEALS IMPORTANCE OF ANAEROBES IN DEVELOPMENT AND CLINICAL OUTCOME OF NECROTIZING SOFT TISSUE INFECTIONS
HH Zhao-Fleming BS, J Wilkinson PhD, S Dissanaike MD, KP Rumbaugh PhD
Texas Tech University Health Sciences

Background: Skin and soft tissue infections can manifest in a variety of ways, ranging from a self-resolving abscess to a rapidly spreading necrotizing soft tissue infection (NSTI). Based on culture data, the microbiology of both infections are similar, both involving gram positive cocci such as Staphylococcus species. This begs the question – why would different patients start with seemingly similar infections and end with drastically different clinical courses? One factor is the patient’s immune response, but it does not fully account for many NSTIs that occur in otherwise healthy individuals. We hypothesize that obligate anaerobes, which are difficult to detect via culture and thus are under-detected, worsen the infection, favoring the NSTI pathology. Our objective in this study was to better understand the impact of anaerobes in NSTIs.

Methods: We enrolled adult patients that had been diagnosed either with NSTIs or abscesses. We collected samples of their infections via routine skin debridements or incision and drains, respectively. We then extracted DNA from each sample and sequenced the variable regions 1-2 of the 16S rRNA. The sequences were compared against an in house database and for species identification.

Results: From December 2011 to the present, we have sequenced 26 NSTI samples and 19 abscess samples. We found that the NSTI mortalities were the sickest of the groups, followed by the NSTI survivors. Women were more susceptible to death than the males, especially when the wound is in the perineum region. We also found that bacterial composition of the NSTI mortalities were mostly clustered together, where that of the NSTI survivors and SSTI patients was more wide spread. Importantly, we found that obligate anaerobes were most abundant in NSTI mortalities, comprising 88% of the wound. This is in contrast to the abundance of obligate anaerobes in NSTI survivors and SSTI patients (53% and 43%, respectively), where facultative anaerobes comprise a large portion of the wound.

Conclusion: The presence of obligate anaerobes, difficult to detect
via culture, plays a significant role in the development and worsened clinical outcome of NSTIs. Their presence may a determining factor that favors the NSTI pathology over the easily-treated abscess. This should lead to more aggressive and comprehensive anaerobe coverage in NSTIs, especially in culture-negative infections. This also places value in alternate strategies of wound dressing, such as leaving the wound open for the first 48 hours.
QS 49. TIMING OF PREOPERATIVE ANTIBIOTIC PROPHYLAXIS AND POSTOPERATIVE SURGICAL SITE INFECTIONS
MC Morell MD, AJ Borgert PhD, KJ Kallies MS, TJ Kowalski MD, SN Kothari MD
Gundersen Health System

Background: Surgical site infections (SSI) result in significant morbidity and increased costs. As mandated by the Centers for Medicare and Medicaid Services Surgical Care Improvement Project (SCIP), preoperative antibiotic prophylaxis is to be administered within 1 hour of incision to prevent SSI. Compliance with this mandate has become a widely studied quality measure.

Methods: After IRB approval, patients undergoing a general surgical procedure from 2009-2015 were offered enrollment in a prospective, randomized trial in which a nurse evaluated each patient’s incision for signs of infection within 30 days postoperative. Timing of preoperative antibiotic administration was stratified into 15 minute increments to determine the effect on postoperative SSI. Statistical analysis included multivariate regression.

Results: Overall, 1,366 patients were included; 1318/1366 (96%) received antibiotics within 1 hour of incision. The overall SSI rate was 90/1366 (7%). When stratified by 15-minute intervals, SSIs occurred in 18/329 (5%) patients who received antibiotics within 15 minutes, 45/788 (14%) of those infused from 16-30 minutes, 20/175 (6%) of those infused from 31-45 minutes, and 3/26 (1%) of those infused within 46-60 minutes before incision (P=0.048). SSIs occurred in 8% of patients who received antibiotics >60 minutes before incision. When stratified by 30-minute increments, SSI rates were increased for those who received antibiotics >30 vs ≤30 minutes before incision (11% vs 6%, P=0.004); however, timing of antibiotic infusion was strongly associated with the type of surgical procedure, with approximately 30% of patients undergoing foregut or colon/intestinal surgery receiving antibiotics >30 minutes before incision, compared to approximately 10% of patients undergoing other procedures (P<0.0001). After controlling for surgery type, only patients undergoing hepatobiliary procedures (OR=4.5, 95%CI 1.2-16.5) infused >30 minutes before incision were more likely to have an SSI; colon/intestinal (OR=0.6, 95%CI 0.3-1.4), foregut (OR=1.9, 95%CI 0.4-9.0), and hernia/other surgeries (OR=1.7, 95%CI 0.7-4.7) were not independently associated with increased SSI rates when
antibiotics were infused >30 minutes prior to incision (P=0.056).

**Conclusion:** The incidence of SSI was decreased among patients who had received antibiotic prophylaxis within 30 minutes of incision; however, when adjusting for type of surgery, only patients undergoing hepatobiliary surgery were at an increased risk of developing an SSI when antibiotics were administered >30 minutes before incision.
QS 50. VOLUME OF TISSUE DEBRIDED IN NECROTIZING SOFT TISSUE INFECTIONS IS A PREDICTOR OF MORTALITY
JA Keeley MD, A Kaji MD PhD, MR Deane MD, DY Kim MD, AL Neville MD
Harbor-UCLA Medical Center

Background: Necrotizing soft tissue infections (NSTIs) carry significant morbidity and mortality, yet prognostic factors of disease severity vary between studies. We hypothesized patients with an NSTI requiring larger volumes of surgical debridement would have higher mortality than those who did not.

Methods: We conducted a retrospective review of all patients treated for NSTI at our county funded, academic medical center between 2008-2014. Demographics, clinical variables, and severity of illness were collected. Operative data included the number of debridements, amputation status, and the volume of tissue debrided at the first and subsequent resections. To eliminate the confounding effect of a patient’s body habitus on the amount of tissue removed, volume debrided was compared to the patient’s overall weight. The primary outcome was mortality.

Results: Of 160 patients diagnosed with an NSTI between 2008 and 2014, 20 died (12.5%). The majority of patients were male (72.5%) with a median age of 50 (IQR 40-56). Diabetes mellitus was the most common co-morbidity (59%), and the median BMI was 28 (IQR 24.4-34.0). At time of consultation, 34.2% met criteria for sepsis, 43.9% had severe sepsis, and 14.8% were in septic shock. Eighty-two patients (51.3%) underwent a single operation, whereas the remainder returned to the operating room at least once. Twenty-five patients (15.6%) required an amputation. Non-survivors had a larger volume of tissue debrided at the first operation compared to survivors (median 1251 cm$^3$, IQR 424-2940 cm$^3$ versus 288 cm$^3$, IQR 102-840 cm$^3$). The median difference was 837 cm$^3$ (95%CI 175-1498, p=0.003). Patients who died also underwent more debridements (median 2.5 versus 1, p<0.0001), trended toward more amputations (OR 1.7, 95%CI 0.9-7.8, p=0.07), and had a larger total combined volume of tissue debrided across all operations (median 1475 cm$^3$, IQR 682-4795 cm$^3$ versus 349 cm$^3$, IQR 12.8-950 cm$^3$, median difference 1188 cm$^3$, 95% CI 400-1977 cm$^3$, p=0.01). Factoring in patient weight, non-survivors had a higher percentage of
their body weight resected during the first operation (0.018% versus 0.004%, p=0.003) and in all operations combined (0.021% versus 0.005%, p=0.0007). When patients who underwent amputation were excluded, non-survivors still had more volume debrided at their first and overall operations compared to survivors. There was not a minimum amount of tissue debrided at the first operation that predicted mortality. However, after adjusting for other predictors of mortality (WBC, bands, sodium, lactate, and duration of symptoms) the volume debrided at the first operation (p=0.02) and total volume debrided (p=0.03) were independently associated with mortality.

**Conclusion:** Patients with NSTIs who require larger volumes of tissue debridement have a higher mortality. Clinicians should understand the importance of the extent of tissue involvement during the care for this at risk patient population. Further study should be considered to explore a debridement threshold predictive of increased mortality.
QS 51. PREDICTORS AND OUTCOMES OF PROLONGED HOSPITALIZATION FOLLOWING LOWER EXTREMITY REVASCULARIZATION
Z Moghadamyeghanah MD, MJ Stamos MD, W Gaper MD
University of California

Background: This study aims to report risk factors and outcomes of prolonged hospitalization more than 14 days after lower extremity revascularization.

Methods: The NSQIP database was used to examine the clinical data of patients underwent open surgical bypass and endovascular lower extremity revascularization procedures during 2013-2015. Multivariate regression analysis was performed to investigate risk factors and outcomes associated with prolonged hospitalization.

Results: A total of 14,066 patients underwent lower extremity revascularization, with 46.5% of the patients having an endovascular procedure. The overall rate of prolonged hospitalization was 5.4%. Risk factors for prolonged hospitalization included: WIFI clinical stage 4 (AOR: 2.68, P=0.04), preoperative albumin <3.5mg/dL (AOR: 1.56, P=0.04), renal failure on dialysis (AOR: 3.30, P<0.01), preoperative steroid use (AOR: 2.14, P=0.03), and operation length (mean difference 68 min [157 min vs. 225 min], P<0.01) but not revascularization type (AOR: 0.96, P=0.88). Prolonged hospitalization was associated with a significant increase in mortality (8.8% vs. 1.6%, AOR: 8.88, P<0.01), major morbidity (MI, stroke, DVT/PE, respiratory failure, renal failure, etc) (61.8% vs. 19.4%, AOR: 6.49, P<0.01), and major amputations (18.4% vs. 2.3%, AOR: 3.82, P<0.01). Although open revascularization procedures had higher morbidity rates (AOR: 2.24, P<0.01) compared to endovascular procedures, there was no difference in mortality rates (AOR: 2.01, P=0.36).

Conclusion: Prolonged hospitalization, while uncommon after lower extremity revascularization procedures, is associated with significantly higher mortality, morbidity, and major amputation rates. In the short term, the risk of prolonged hospitalization appears to be driven by patient and foot-level factors rather than revascularization type.
QS 52. THE IMPACT OF FRAILTY ON MORBIDITY AND MORTALITY FOLLOWING VENTRAL HERNIA REPAIRS (VHR)
AM Kao MD, KA Schlosser MD, MR Arnold MD, RF Sing DO, NJ Smart MD, T Prasad MA, PD Colavita MD, BT Heniford MD
Carolinas Medical Center

Background: Frailty is a measure of decreased physiologic reserve and may increase vulnerability to morbidity and mortality. The association between frailty and postoperative outcomes has not yet been described in VHR.

Methods: The National Surgical Quality Improvement Program (NSQIP) database was queried for patients ≥ 60 years old who underwent a VHR. A modified frailty index (mFI) score summed from 11 clinical variables was used to quantify frailty. Univariate and multivariate logistic regression analysis were used to determine the relationship between frailty and postoperative complications and mortality.

Results: A total of 42,868 patients ≥ 60 years old (55.9% female, mean age of 69.8 years ±7.2 years) underwent ventral hernia repairs between 2009-2015. Surgical approach included 72.8% open (O)VHR and 27.2% laparoscopic (L)VHR. The overall complication rate was 13.5%, and complications with Clavien-Dindo Grade ≥3 was 1.4%. 7.5% of patients were discharged to destination other than home. 30-day readmission was 8.6%, and mortality rate was 1.1%. The majority of patients had at least one clinical frailty variable, with 12.4% patients with mFI ≥3 (mFI=0: 23%, mFI=1: 39.4%, mFI=2: 25.1%). Patients with mFI ≥3 had increased risk of Clavien-Dindo Grade ≥3 complications (4.4%) compared to those with mFI of 0, 1, and 2 (0.9%, 1.0%, 2.0%, p<0.0001). Multivariate analysis yielded an odds ratio (OR) of 2.5 for mFI ≥3 having Clavien-Dindo Grade ≥3 complications and OR of 2.0 for overall complications. A mFI score ≥3 was associated with increased rates of readmission versus all other groups (6.6%, 7.1%, 10.3%, 14.9%, p<0.0001, OR 1.8), as well as non-home discharge disposition (3.1%, 4.4%, 9.4%, 17.1%, p<0.0001, OR 3.0) and 30-day mortality (0.4%, 0.6%, 1.3%, 4.0%, p<0.0001, OR 3.7). When stratifying by surgical approach and frailty, patients with mFI ≥3 undergoing OVHR had increased wound complications including superficial SSI 6.1% (vs. 3.1% mFI=0, 3.7% mFI=1, 5.0% mFI=2, p<0.0001), deep incisional SSI 2.8% (vs. 1.0% mFI=0, 1.3% mFI=1, 1.8% mFI=2, p<0.0001), organ/space SSI 2.2% (vs. 1.0% mFI=0, 1.2% mFI=1, 1.7% mFI=2, p<0.0001), while no similar difference in
QUICK SHOT ABSTRACTS (continued)

Postoperative SSI was seen in patients undergoing LVHR based on frailty index score. Compared to LVHR, patients with mFI ≥3 who underwent OVHR were older (mean age 71.9 ±7.6 vs 70.8 ±7.2 years, p<0.0001) and more likely to be performed emergently (17.8% vs. 6.3%, p<0.0001) and consequently, also had increased rates of septic shock (4.7% vs. 1.3%, p<0.0001), return to OR (7.1% vs. 3.4%, p<0.0001), discharge to destination other than home (20.3% vs. 8.3%, p<0.003), and mortality (4.8% vs. 1.1%, p<0.0001).

Conclusion: Frailty is associated with increases in perioperative morbidity and mortality after VHR. Using the modified frailty index to quantify frailty can enhance preoperative discussions regarding surgical risks, as patients with mFI ≥3 have significantly higher risk of postoperative complications after both OVHR and LVHR.
QS 53. I’LL TAKE MINE TO GO: A SINGLE CENTER EXPERIENCE WITH OUTPATIENT LOOP ILEOSTOMY REVERSALS
JR Conner MD, A Landmann MD, CS Butler MD, GD Dunn MD
University of Oklahoma Health Sciences Center

Background: Enhanced recovery pathways have been shown to decrease length of stays without significant increase in complication after colorectal surgery. Temporary diverting loop ileostomies are frequently used in colorectal surgery to protect a distal anastomosis. Traditionally, loop ileostomy closure required hospital admission. Observational studies and recent single center retrospective studies have suggested that ostomy reversal under a 23hr observational status is safe and feasible without increase in complications. We hypothesize that loop ileostomy reversal can be performed as an outpatient surgery without increase in complications or readmission.

Methods: Loop ileostomy reversals performed by a single Colorectal surgeon at a tertiary academic center from January 2012 to August 2017 were retrospectively reviewed. Patients were excluded if they had incomplete data or if they had additional procedures performed at the time of ostomy reversal. Before 2015, all patients were admitted until demonstration of return of bowel function after loop ileostomy reversal. In August of 2015, a change in physician practice allowed for patient selection for discharge the same day of surgery. The patients were discharged from the post anesthesia care unit with instructions to advance their diet as tolerated and to remove the gauze packing in the previous ostomy site on post-operative day one. All patients had scheduled 2-week post-operative follow up and emergency numbers to call. Complications, readmission rates, and demographics of the patients discharged on post-operative day zero were compared with the cohort of patients who were admitted until return of bowel function.

Results: Over the study period, there were 65 patients that met inclusion criteria for loop ileostomy closure. These patients had loop ileostomy placed after partial colectomy for cancer, colectomy for inflammatory bowel disease, and partial colectomy for diverticulitis. Fifty-five patients were admitted after surgery for pain control while awaiting return of bowel function. Ten patients were discharged on post-operative day zero. The two cohorts were similar in age, BMI, EBL, and ASA score. The average length of stay for the admission cohort was 4.64 days. The admission cohort had statistically significantly longer operating times.
QUICK SHOT ABSTRACTS (continued)

(75.2min vs 62.8min, p=0.02). There were 10 (23%) complications in the admission cohort and 1 (10%) in the same day surgery cohort. There was no significant difference in complication rate (P=0.337) or 30-day readmission rates (P=0.936). Complications included surgical site infections, anastomotic leak, ileus, and urinary tract infections.

**Conclusion:** This study suggests that loop ileostomy reversal is safe to perform as a same day surgery, providing the benefit of reducing hospital length of stay and healthcare cost. Larger cohort studies will be needed to identify those patients who would benefit from outpatient surgery after a bowel anastomosis.
QS 54. IDENTIFYING RISK FACTORS FOR DEVELOPMENT OF PERI-OPERATIVE VENOUS THROMBOEMBOLISM IN PATIENTS WITH GASTROINTESTINAL MALIGNANCY
N Bhutiani MD, SA Quinn BS, MK Mercer BA, YK Hong MD, M Stevenson MD, ME Egger MD MPH, P Philips MD, RCG Martin II MD PhD, KM McMasters MD PhD, CR Scoggins MD MBA
University of Louisville

Background: Despite efforts to decrease incidence of clinically significant venous thromboembolism (VTE) among surgical oncology patients (i.e. chemoprophylaxis and enhanced recovery after surgery pathways), rates have largely remained unchanged. This suggests that decreasing VTE incidence may require focus on other peri-operative factors. This study aimed to identify peri-operative risk factors for clinically significant VTE in patients undergoing surgery for gastrointestinal (GI) malignancy.

Methods: A single-institution database was queried for patients undergoing surgical intervention for gastrointestinal malignancy from 2013-2016. Patients were grouped according to whether or not they developed a clinically significant VTE during the peri-operative period. Groups were compared with respect to demographic variables, history of atrial fibrillation or VTE, receipt of pre-operative chemotherapy or radiation, whether they were treated using an enhanced recovery after surgery (ERAS) pathway, and peri-operative details during their index hospitalization to identify factors associated with peri-operative VTE.

Results: Of 377 total patients, 12 (3%) developed peri-operative VTE. Patients who developed VTE were more likely to be male (92% vs. 58%, p=0.03) and have a history of atrial fibrillation (33% vs. 11%, p=0.04). While patients who developed VTE did not differ from those that did not develop VTE with respect to total operating room time (130 vs. 100 minutes, p=0.55), they did experience higher estimated blood loss (200 vs. 100 mL, p=0.008). VTE and no VTE patients did not differ significantly with respect to receipt or type of VTE chemoprophylaxis, treatment along an ERAS pathway, or requirement for mechanical ventilation or ICU admission. Patients developing VTE did not differ from their no VTE counterparts in terms of post-operative complication rate or type. On multivariable analysis, a history of atrial fibrillation was independently associated with development of post-operative VTE (odds ratio = 7.83, 95% confidence interval = 1.27-48.41, p=0.03).
Conclusion: A prior history of atrial fibrillation independently predicts patients at increased risk of developing clinically significant VTE after surgery for GI malignancy. Future studies focused on improving understanding of the underlying pathophysiology of VTE in these high-risk patients can help guide development of effective prevention strategies.
QS 55. EVALUATING THE EARLY IMPACT OF MEDICAID EXPANSION ON TRENDS IN TREATMENT OF BENIGN GALLBLADDER DISEASE IN KENTUCKY

N Bhutiani MD, BG Harbrecht MD, CR Scoggins MD MBA, MC Bozeman MD
University of Louisville

Background: In January 2014, Kentucky expanded Medicaid coverage to include all individuals and families with incomes up to 33% above the federal poverty line. This expansion aimed to improve access to healthcare for many of the commonwealth’s citizens. This study evaluated the early impact of Medicaid expansion on trends in diagnosis and treatment of benign gallbladder disease in Kentucky.

Methods: Administrative Claims Data from the Kentucky Office of Health Policy was queried for all patients undergoing cholecystectomy for benign gallbladder disease between 2011 and 2015. Age, insurance status, hospital setting, indication for surgical intervention, and type of procedure performed (laparoscopic vs. open) were assessed for each year during this interval. To evaluate for an association between Medicaid expansion and changes in these parameters, the above variables from the years 2011-2013 (PRE) and the years 2014-2015 (POST) were compared.

Results: Of a total of 81,962 patients undergoing operative intervention for benign gallbladder disease, 53,297 (65.0%) were treated from 2011-2013 and 28,665 (35.0%) were treated from 2014-2015. The number of patients undergoing operative intervention for benign gallbladder pathology (cholecystitis, cholelithiasis, or biliary dyskinesia) ranged from 13,421 to 18,937 between 2011 and 2015, with a linear decrease in number of operations per year over this period. After Medicaid expansion, patients were more likely to have Medicaid (28.3 % vs. 13.8%) and less likely to be uninsured (0.3% vs. 2.3%) or self payors (1.9% vs. 7.4%) (p<0.001). They were more likely to have their operation performed as an outpatient (68.2 vs. 65.8%, p<0.001) and more likely to have their operation performed laparoscopically (95.4% vs. 94.5%, p<0.001). Among inpatients, a significant trend was noted toward a shorter hospital stay (p<0.001). Finally, with respect to hospital charges, an upward trend was noted after Medicaid expansion for both outpatients (p<0.001) and inpatients (p<0.001).

Conclusion: The expansion of Kentucky Medicaid in 2014 has been associated with an increase in operative intervention on patients on
Quick Shot Abstracts (continued)

Medicaid as well as a decrease in the proportion of open operations and increasing hospital charges. These data indicate a possible shift towards earlier, less invasive intervention in benign gallbladder disease with improved access to healthcare. They also suggest hospital use of surgical procedures as a mechanism to offset costs associated with providing care in general for a larger contingent of patients with access to healthcare. Interstate comparative analyses can further help delineate the contribution of Medicaid expansion to these trends in operative care for benign gallbladder disease.
QUICK SHOT ABSTRACTS (continued)

QS 56. A WAITING GAME: DELAYS TO INPATIENT CHOLECYSTECTOMY
KM Watkins MD, T Garwe PhD, Z Sarwar MS, B Oluborode MS, AM Scifres MD
University of Oklahoma Health Sciences Center

Background: Gallstone disease is a common surgical pathology resulting in emergency room visits and inpatient admissions. The ultimate step in prevention of recurrent pain, infection, and future complications is surgical removal of the gallbladder. Earlier intervention results in decreased morbidity and decreased length of hospital stay. While some patients may require further imaging to confirm diagnosis or need preoperative clearance, others are admitted to the ward and taken to the operating room days later without intervention in the meantime. We hypothesized that unnecessary delays to cholecystectomy result in longer hospital stay, and longer operating room time.

Methods: After IRB approval, a retrospective review was performed for patients ages 18 to 90 who underwent cholecystectomy from July 31, 2013 to August 1, 2016. Exclusion criteria included those not amenable to laparoscopy and those scheduled as an outpatient procedure. Patients were divided into two groups based on the time to intervention from surgical consultation; Group 1 (≤24 hours) and Group 2 (>24 hours). We compared day of week of consult, diagnosis, age and gender between the two groups and outcome variables including length of stay, operating time and conversion from laparoscopic to an open procedure.

Results: A total of 262 patients were included. Of these, 48% (126/262) were in Group 1 (≤24 hours) and 52% (136/262) were in Group 2. Age and gender were similar between the two groups. However, there was a statistically significant higher percentage of women than men who had an operation in the first 24 hours (p = 0.0105). Most interestingly, there was a disproportionately higher number of patients seen by the surgical team during the weekend (Friday to Sunday) whose time to operation was greater than 24 hours (51% in Group 2 vs 33% in Group 1, p = 0.0044). Length of operation was trending towards significance with Group 1 having an average operating time of 93.7 minutes and Group 2 having a mean operative time of 101.1 minutes (p = 0.1536). No statistically significant difference existed between the two groups for conversion to an open procedure. Patients with acute cholecystitis were more likely to be operated on within 24 hours (69% vs 31%, p < 0.0001) while those with a diagnosis of choledocholithiasis and gallstone pancreatitis were more
likely to be operated on after 24 hours. Mean hospital length of stay was 3 days longer in Group 2 (p <0.0001). After excluding patients with a potential reason for delay, such as need for MRCP, ERCP or preoperative clearance, the mean length of stay was still 2.8 days longer in those whose time to intervention was greater than 24 hours (Group 2) (p <.0001).

**Conclusion:** There are delays to gallbladder removal unexplained by the need for further imaging, testing or preoperative medical optimization. These delays are most significant when the consult is received by the surgical team during the weekend. Based on our descriptive study, this delay appears to cause increased total length of hospital stay and may be related to increased operative time.
Quick Shot Abstracts (continued)

QS 57. Early Intervention in Gallstone Pancreatitis—What Represents Early?
A Manning MD, R Frazee MD, S Abernathy MD, C Isbell MD, T Isbell MD, S Kurek DO, J Regner MD, R Smith MD, H Papaconstantinou MD
Baylor Scott and White Healthcare

Background: Early intervention for mild to moderate gallstone pancreatitis during the index hospitalization has replaced the traditional approach of waiting six weeks for resolution of the inflammatory process. Previous studies have targeted intervention at 48-72 hours after admission. Our Acute Care Surgery Service adopted an approach of intervention after initial hydration and stabilization of the patient.

Methods: An observational retrospective study of patients treated by the Acute Care Surgery Service for gallstone pancreatitis from June 2015 through May 2016 was performed. Patient demographics, comorbidities, bilirubin level, elevation of liver function tests, common duct size, interval from admission to initial intervention, length of stay, morbidity and mortality were analyzed. Patients who demonstrated significant organ system dysfunction were excluded.

Results: Seventy-one patients with an average age of 52 years (20-92) were treated for gallstone pancreatitis during the study period. There were 22 men and 49 women. Forty-one (61%) had from 1-5 pre-existing comorbidities. Fifty-one (72%) demonstrated elevated liver enzyme tests; average bilirubin was 2.06 mg/dl; and average common duct size was 6.8 mm. Pancreatic enzymes were obtained, but did not influence timing of intervention. Initial intervention was laparoscopic cholecystectomy with intraoperative cholangiogram in 56 patients and endoscopic ultrasound with endoscopic sphincterotomy as indicated in 15 patients. Average interval to initial intervention was 0.9 days (0-3 days). There were no mortalities and overall morbidity was 13%. Average length of stay was 2.9 days.

Conclusion: Early intervention for mild to moderate gallstone pancreatitis can be defined as post-resuscitation of the acute inflammatory process—in our experience, an average of one day. This approach has comparable morbidity to other series of early intervention for gallstone pancreatitis, and has the potential to decrease hospital stay.
QUICK SHOT ABSTRACTS (continued)

QS 58. A PREDICTIVE GRADING SCALE FOR ACUTE CHOLECYSTITIS
SS Siada DO, DR Jeffcoach MD, JW Davis MD
University of California San Francisco at Fresno

Background: Acute cholecystitis is one of the most common causes of the acute abdomen making laparoscopic cholecystectomy one of the most common surgeries performed worldwide. Gallbladder disease presents in a spectrum of severity, where acute disease may be complicated by severe inflammation, gangrene, and perforation. The goal of this study is to outline an evidence-based grading scale that predicts patient outcomes after laparoscopic cholecystectomy (LC).

Methods: A retrospective review of all patients with a pre-operative diagnosis of acute cholecystitis that underwent LC from August 2011 until June 2015 at a tertiary referral hospital was performed. Patients that underwent elective cholecystectomy, incidental cholecystectomy, a planned open cholecystectomy, had gallstone pancreatitis or choledocholithiasis, and those admitted to a non-surgical service were excluded. Severity of disease was obtained from operative and pathology reports and patients were classified according to the following grading scale: Grade I: asymptomatic cholelithiasis Grade II: acute/chronic cholecystitis Grade III: gangrenous/necrotizing cholecystitis Grade IV: gallbladder perforation or abscess The groups were compared on age, gender, body mass index, severity of gallbladder disease, presence of pre-operative systemic inflammatory response syndrome, hospital length of stay, length of operation, complications within 30 days, conversion to open rate, and cost of hospitalization.

Results: During the study period 1252 patients who underwent laparoscopic cholecystectomy were analyzed; 677 met inclusion criteria. The most common grade was grade II, which was present in 79% of patients, followed by grade III, which was found in 16% of patients. Grade IV cholecystitis occurred in 1.2% of patients. The proposed grading scale demonstrated a positive linear correlation between grade of cholecystitis and hospital length of stay, conversion to open rate, cost of hospitalization, and length of operation. The correlation co-efficients were +0.95, +0.91, +0.85, +1.0 between grade and length of stay, conversion to open, cost of hospitalization, and duration of operation, respectively.

Conclusion: The proposed grading scale is an accurate predictor of duration of operation, conversion to open rate, hospital length of stay, and cost of hospitalization.
QS 59. ABDOMINAL MALIGNANCY, RADIATION, STEM CELL TRANSPLANT, AND NEUTROPENIA ARE ASSOCIATED WITH NON-SURGICAL TREATMENT OF ACUTE CHOLECYSTITIS IN CANCER PATIENTS
DA Santos MD, CR Ledet MD, AR Limmer MSPAS, HM Gibson MSPAS, BD Badgwell MD
University of Texas MD Anderson Cancer Center

Background: Early cholecystectomy (EC) for acute cholecystitis (AC) is standard of care. Cancer patients are often not candidates for EC due to immunocompromised state and prior abdominal pathology. We determined factors associated with non-surgical management and interval cholecystectomy (IC) in a cancer hospital.

Methods: Consults for AC were identified through billing and a prospectively maintained database from January 2001 to December 2016. Patients were included if they presented with clinical signs and symptoms of acute cholecystitis and one positive imaging study. Patients were non-randomized into EC, antibiotics (ABX), or percutaneous cholecystostomy tube (PCT) placement based on surgical evaluation. Endpoint of treatment was resolution of abdominal pain and hospital discharge. Factors associated with non-surgical resolution of AC and progression to IC were evaluated using univariate and multivariate logistic regression.

Results: 206 patients met study criteria; 132 assigned to ABX, 54 to PCT, and 20 to EC. 47% patients had hematologic malignancy, 25% had stem cell transplants (SCT). The resolution rate of ABX vs. PCT was statistically different (80% vs. 94%, p = 0.016). Logistic regression revealed that abdominal malignancy was associated with increased resolution of AC in the PCT group, OR = 4.44, 95%CI 1.27 – 15.5, on univariate and multivariate analysis. In PCT patients, multivariate analysis also revealed that abdominal radiation decreased the odds of resolving AC (OR 0.10, 95%CI 0.02 – 0.52) and the presence of SCT decreased the odds of resolution of AC depending on post stem cell transplant day (OR 0.02, 95%CI 0.001 – 0.68). The median time to IC for ABX patients was 45 days, and 67 days for PCT patients. IC rates were not statistically different (48% vs. 36%, p = 0.10). No factors were strongly associated with IC on univariate analysis, however multivariate analysis revealed that absolute neutrophil count less than 1000 cells per microliter (ANC<1) decreased the odds of IC (OR 0.23, 95%CI 0.07 – 0.75).
**Conclusion:** In a cancer hospital, PCT has a higher success rate than ABX in resolving acute cholecystitis. In PCT patients, the odds of resolving AC are increased with abdominal malignancy, and abdominal radiation decreases the odds of resolving AC as do days post-transplant in SCT patients. The rate of IC is not different between patients managed with PCT or ABX, however ANC<1 decreases the odds of receiving interval cholecystectomy.
Quick Shot Abstracts (continued)

QS 60. Standardization of Common Bile Duct Size Using Ultrasound in Pediatric Patients.
St. Christopher’s Hospital for Children

Background: The incidence of gallbladder disease is increasing in children, some of whom have common bile duct (CBD) stones. Identification of CBD obstruction is dependent on abnormal liver function tests and CBD size. Current guidelines for normal pediatric CBD size are based on adult studies. More accurate estimations of normal pediatric CBD would help guide further diagnostic evaluation such as MRCP and ERCP prior to surgery. We analyzed our patient population to determine the size of a normal pediatric CBD on ultrasound (US) exam.

Methods: A retrospective chart review was conducted for children age <21 years old who underwent US examination of the right upper quadrant from 2012-2017. All studies with CBD measurement were included. Patients with CBD stones, choledochal cyst, or previous cholecystectomy were excluded from this study. Patients were stratified into age groups decided by ANOVA statistical analysis. Demographics, US findings and nature of biliary disease were reviewed.

Results: A total of 778 ultrasounds were reviewed with a mean age of 9.68 years (range 9 days – 21 years). The mean CBD size in this population was 2.39mm (range 0.4mm to 7mm). Patients were divided into three age groups after analysis of data. Group 1 (patients <1 year old) had an average CBD of 1.24±0.54mm, group 2 (age 1-10 years old) had an mean CBD of 1.97±0.71mm, and group 3 (age > 10 years) had a mean CBD of 2.98±1.17mm, p<0.05.

Conclusion: Our review of pediatric CBD measurement by US confirms that pediatric CBD measurement is less than that of a normal adult patient. The mean size depends upon age and can be grouped by <1 year, between 1-10 years and >10 years old. The determination of normal values will aid in determining if a child needs further evaluation for obstruction of the CBD.
Quick Shot Abstracts (continued)

QS 61. DISPARITIES IN CHOLECYSTECTOMY OUTCOMES BETWEEN MINORITIES AND WHITES IN BOTH LOW-BURDEN AND HIGH-BURDEN HOSPITALS
EC Howell MD, CM Tom MD, S Friedlander MPH, C de Virgilio MD, SL Lee MD
Harbor-UCLA Medical Center

Background: High-burden hospitals play a critical role in the healthcare safety net by providing care to Medicaid and the uninsured. Previous studies demonstrated that safety-net hospitals were well equipped to manage patients with cholecystitis. However, little is known whether racial disparities are reduced or worsened within or across different hospital settings. Our aim was to evaluate the effect of hospital type on racial/ethnic disparities in patients with cholecystitis.

Methods: We used the Nationwide Inpatient Sample (NIS) to perform a retrospective cohort analysis of cholecystectomies performed in patients (<69 years) between 2002-2012. Patients were stratified by race and hospital safety-net burden. High-burden hospitals had the highest quartile of Medicaid/uninsured patients and low-burden hospitals had the lowest quartile. The primary outcomes (laparoscopy, complication rates, length of stay (LOS), morbidity, and cost) within and between hospital types were analyzed with multivariate logistic regression.

Results: Overall, high-burden hospitals treated more minorities than low-burden hospitals (62.4% vs 41.0%). Minorities at high-burden hospitals had less laparoscopy (OR 0.75, 95%CI 0.66-0.86, p<0.01), longer LOS (IRR 1.13, 95%CI 1.08-1.17, p<0.01), and increased cost (1.14 times cost, 95%CI 1.11-1.17, p<0.01) compared to whites at low-burden hospitals. This trend held true for whites at high-burden hospitals with less laparoscopy (OR 0.80, 95%CI 0.77-0.83, p<0.01), increased LOS (IRR 1.05, 95%CI 1.04-1.07, p<0.01), and increased cost (1.03 times cost, 95%CI 1.02-1.04, p<0.01) compared to whites at low-burden hospitals. Although minorities in low-burden hospitals also had a longer LOS (IRR 1.04, 95%CI 1.00-1.08, p<0.01) and increased cost (1.10 times cost, 95%CI 1.07-1.13, p=0.04), there was no difference in laparoscopy (OR 0.95, 95%CI 0.82-1.09, p=0.39) compared to whites in similar hospitals. There were no differences in complication rates between whites and minorities in either hospital setting. When comparing minorities to whites at high-burden hospitals, minorities still experienced longer LOS (IRR 1.07, 95%CI 1.03-1.11, p=0.04) and increased cost (1.11 times cost, 95%CI 1.08-1.14, p<0.01), but there were no differences in laparoscopy.
(OR 0.94, 95%CI 0.82-1.08, p=0.44).

**Conclusion:** The greatest disparities observed were between minorities in high-burden hospitals compared to whites at low-burden hospitals in terms of reduced laparoscopy, longer LOS, and increased cost. Disparities existed between whites in high-burden compared to low-burden hospitals, but these differences were not as profound. Although within the same hospital setting there were no differences in laparoscopy, minorities continued to have increased LOS and cost. More research is needed to elucidate the underlying reasons for such stark discrepancies in surgical care for minorities, and significant efforts are needed to reduce these inequalities.
QUICK SHOT ABSTRACTS (continued)

QS 62. BUILDING THE CASE FOR HELMETS FOR MOPED RIDERS: ANALYSIS OF NEVADA STATEWIDE OUTCOMES
J Habashy BS, LK Gryder MA, HA Manlove MA MPH, PJ Chestovich MD, JJ Fildes MD, DA Kuhls MD
University of Nevada Las Vegas

Background: From 2007-2015 there has been an increase in moped-related injuries treated in US emergency departments from 9,820 injuries to 15,613 injuries annually. Mopeds are defined as a motor-driven scooter/cycle with a small engine; moped riders are not currently required to wear a helmet in Nevada. Nearly half of all states, including Nevada, have no legislation requiring helmet use for moped riders. This is in stark contrast to the fact that only a few states do not require helmet use for at least some of the motorcycle riding population. Previous studies have underscored the effectiveness of helmets in preventing injuries from motorcycle crashes; few studies, however, have examined the effectiveness of helmet use in decreasing moped-related injuries. The current study analyzes moped crashes in Nevada with an emphasis on helmet use and its impact on patient hospital outcomes.

Methods: Statewide linked Nevada crash and trauma center data from all four of Nevada’s trauma centers from 2012-2014 were retrospectively analyzed for all patients presenting to a trauma center for moped-related injuries. Moped riders were separated into two groups: unhelmeted and helmeted riders. Fisher’s Exact, X², and Mann Whitney tests were conducted (p<.05).

Results: A total of 273 crashes were analyzed, of which 176 riders were unhelmeted and 97 riders were helmeted. The median age was 31 for unhelmeted riders, and 40 for helmeted riders (p=.017). The majority of riders in both groups were Caucasian (70%) and male (77%). Unhelmeted riders were more likely to require admission to an Intensive Care Unit (ICU) (28.4% vs.17.5%, p=.030), and had fewer hospital free days (30 days) (24.93 vs. 25.95, p=.047), than helmeted riders. The most frequent anatomical area of injury for both groups were the extremities (Unhelmeted=32.9%, Helmeted=35.5%). The second most common area of injury for unhelmeted riders was to the head/neck (Unhelmeted=23.6%, Helmeted=19.1%), whereas for helmeted riders it was the chest (Unhelmeted=18.2%, Helmeted=21.8%). Average hospital charges were $8,120 higher for unhelmeted riders compared to helmeted riders.
Conclusion: During the fuel crisis of the mid-to-late 2000s, moped sales increased by up to 60%. This is likely to continue, with the availability and popularity of electric-powered mopeds. While this trend may be environmentally friendly, consideration should be given to safety and injury. The popularity of mopeds is associated with increased moped crashes and related injuries. This study details the demographics of moped riders, and demonstrates the injury-related benefits of helmet use on moped crash outcomes in Nevada. Helmeted riders were statistically significantly less likely to be admitted to an ICU, and had a greater number of hospital free days compared to unhelmeted riders. These findings, along with others, describe some of the benefits of wearing a helmet at the time of a crash. Other studies from outside the US have shown that compulsory helmet laws for moped riders have been associated with positive outcomes (i.e., reductions in head injuries and traumatic brain injuries). Consideration of helmet laws for moped riders in Nevada, and within the US, is therefore warranted.
QUICK SHOT ABSTRACTS (continued)

QS 63. ANALYSIS AND MAPPING OF GUNSHOT WOUND INJURIES AT A LOS ANGELES LEVEL I TRAUMA CENTER
B Putnam MD, DY Kim MD
David Geffen School of Medicine at UCLA

Background: While the CDC keeps surveillance data on gun injuries and deaths, it has not funded a study aimed at reducing harm from guns since 2001 and there have been no recent studies on the incidence of gun violence in South Los Angeles. To illuminate this public health problem, we studied the health care burden of gunshot wound (GSW) injuries at an urban Level I trauma center.

Methods: We performed a retrospective cohort analysis of patients treated for GSW injuries (including police and self-inflicted) treated at Harbor-UCLA Medical Center over an 18-month period (November 1, 2015 - April 30, 2017). Data collected included patient demographics, anatomical injury location, pre- and in-hospital treatments, mortality and length of hospital stay, using electronic medical record (EMR) data and ICD10 codes. Bivariate and multivariate logistic regression analysis were performed to identify independent predictors of mortality. Zip codes of incident location obtained from the EMR were then used to map geographic distributions.

Results: A total of 540 patients were treated during the observed time period. Of the 540 patients, 88% (n=469) were males the average patient age was 29 ± 11.5 years old. Central nervous system (9% vs. 28%, p<0.0001), major vascular (7% vs. 59%, p<0.0001), and chest injuries (7% vs. 24%, p<0.0001) were less common in GSW survivors. Patients who survived GSW injuries also demonstrated a higher mean Glasgow Coma Scale score (14.6 vs. 6.37, p<0.0001), heart rate (100 bpm vs. 54bpm, p<0.0001), and systolic blood pressure (126 mmHg vs. 58 mmHg, p<0.0001) in the field and upon hospital arrival in the ED (p<0.0001). No significant differences in mortality based on pre-hospital fluids received or patient race were observed (p-values = 0.781 and 0.207, respectively) Of 540 patients, 289 records included incident zip code information that could be used to map geographic distribution.

Conclusion: Gun violence remains a significant public health problem, with escalating human and health costs. Field vitals, injury location, and interventions required are key factors that are indicative of poor outcomes following GSWs. Mapping geographic hotspots where GSWs occur has allowed us to identify neighborhoods where community and policy-based interventions could reduce GSW injuries and fatalities.
QS 64. THE COMMUNITY NEED INDEX (CNI): A SIMPLE TOOL TO PREDICT EMERGENCY DEPARTMENT UTILIZATION FOLLOWING HOSPITAL DISCHARGE FROM THE TRAUMA SERVICE
D Huang MD, N Rubalcava MD, PW Goslar PhD, KM Chapple PhD, S Israr MD, SR Petersen MD, JA Weinberg MD
St. Joseph’s Hospital and Medical Center

Background: Emergency Department (ED) visits following hospital discharge may reflect failure of transition of care to the outpatient setting. Reduction of post-discharge ED utilization represents an opportunity for quality improvement and cost reduction. The Community Need Index (CNI) is a zip-code based score that accounts for a community’s unmet needs with respect to healthcare, and is freely accessible to the public via internet. The purpose of this study was to determine if patient CNI score can predict post-discharge ED utilization among hospitalized trauma patients.

Methods: Level-1 trauma patient admits between January 2014-June 2016 were stratified by 30-day post-discharge ED utilization (yes/no). CNI is a nationwide zip code-based score (1.0-5.0) and was determined per patient from CNI website. Higher scores indicate greater barriers to healthcare per aggregate socioeconomic factors. Patients with 30-day post-discharge ED visits were compared to those without, evaluating for differences in CNI and clinical and demographic characteristics.

Results: 354 of 3,245 patients (10.9%) utilized the ED. The ED utilization group was older (38.5±15.9 vs. 36.2±16.3 years, p=0.012), more injured (ISS 10.8±9.1 vs. 7.6±7.9, p<.001), more likely to have tested for illicit drugs (40.1% vs. 27.8%, p<0.001), have penetrating injury (30.5% vs. 18.2%, p<0.001), and in-hospital complications (18.4% vs. 5.1%, p<0.001). ED utilization increased stepwise with CNI: score of 5 was associated with a nearly 3-fold increase in ED utilization compared with CNI < 2 (16% vs. 6%, p =0.007). Adjusted for age, gender, injury severity score, insurance status, drug use, complications, and penetrating mechanism of injury, odds of CNI ≥ 4 associated with ED utilization was 1.8 (95% CI 1.3-2.5, p<0.001).

Conclusion: CNI is an easily accessible score that independently predicts post-discharge ED utilization in trauma patients. Patients with CNI ≥4 are at significantly increased risk. Targeted intervention concerning discharge planning for these patients represents an opportunity to decrease post-discharge ED utilization.
QS 65. USE OF A STATEWIDE TRAUMA IMAGE REPOSITORY DECREASES THE RATE OF UNNECESSARY TRANSFERS TO A LEVEL 1 TRAUMA CENTER
TJ Harris, WC Beck, A Bhavaraju, B Davis, MK Kimbrough, J Jensen, A Privratsky, RD Robertson, JR Taylor, KW Sexton
University of Arkansas for Medical Sciences

**Background:** Trauma care is expensive, with a majority of patients undergoing financially catastrophic expenditures at the time of injury. One contributor to the overall cost of care is overtriage of patients to tertiary care centers. In a 2014 study, Tang et al. found that 23.8% of traumas transferred from an outside hospital during a 2-year period were discharged, without major procedure, within 24 hours. Similarly, Sorensen et al. found that 26% of transfers for trauma were unnecessary. We hypothesized that implementation of a statewide Trauma Image Repository (TIR) would lead to decreased unnecessary transfers.

**Methods:** The institutional trauma data base was queried for all hospital transfers to a Level 1 academic medical center in a rural state from 12/1/2013 to 5/21/2017. Variables assessed included those in the National Trauma Data Bank Data Dictionary and whether or not images were uploaded to the Arkansas TIR. Bivariate frequency statistics were performed using JMP Pro 13.2.0 (Cary, NC).

**Results:** There were 2,412 patients transfers during the time period of which, 1517 had images uploaded into the Trauma Image Repository. During the study, utilization of the TIR increased from 44% to 74% of all transfers. TIR patients had longer length of stay (LOS) (5.2 vs 4.6, p=.012), ICU LOS (1.8 vs 1.3, p=.002), and more patients with an injury severity score (ISS) greater than 15 (70% vs 30%, p<.0001). There was no statistically significant difference in admission GCS (p=.06). In comparing groups with ISS < 15, those with images in TIR were discharged home from the ED 18% of the time while 25% those without images were discharged (p=.0014). Looking at patients with ISS > 15, there was no difference in % of discharges home from the ER (0.5% TIR and 1.14% without TIR images, p=.63).

**Conclusion:** Use of a statewide TIR reduced the number of patients transferred to a level 1 academic medical center with an ISS <15. Further work needs to be done to determine the mechanism by which using the TIR leads to this change.
QS 66. PREDICTORS OF DISCHARGE DESTINATION IN PATIENTS WITH TRAUMATIC INJURY: ANALYSIS OF THE OKLAHOMA TRAUMA REGISTRY
Z Khorgami MD, KL Ewing DO, CA Howard MD
University of Oklahoma College of Medicine - Tulsa

Background: A significant segment of patients with traumatic injuries need skilled assistance or inpatient rehabilitation after discharge. Discharge placement of trauma patients can be challenging, in part due to their socioeconomic situations. Predicting the need for discharge to a facility can help trauma teams facilitate early planning for discharge disposition to help reduce unnecessary hospital inpatient days. Prediction of home discharge can likewise help to arrange therapy and equipment needed at home earlier. This study aimed to determine the independent predictors of discharge to a facility in trauma patients, based on analysis of the Oklahoma Trauma Registry (OTR).

Methods: Patient characteristics, types of injuries, and discharge outcomes were analyzed from the OTR from 2005-2014. The study population consisted of trauma patients with major severity and one of the following criteria: length of hospital stay ≥ 48 hours, dead on arrival or death in the hospital, hospital transfer, ICU admission, or surgery on the head, chest, abdomen, or vascular system. Alive patients categorized to 1) discharge to home, and 2) discharge to a facility (skilled nursing facility, in-patient rehabilitation, or long-term acute care centers). Independent factors predicting discharge to a facility were identified by performing multivariate analysis (binary logistic regression) on 2005-2013 patients. A scoring model was developed to predict the discharge disposition and its predictability was evaluated on 2014 patients.

Results: 90,619 patients registered from 2005-2013, were analyzed. 20,566 patients (22.7%) were discharged to a facility. Age, injury severity scale (ISS), and specific types of injury and comorbidity were identified as independent predictors of the need for discharge to a facility, based on the multivariate analysis (Table). A scoring model was created using the following point scale: 5 for age ≥50 years, 4 for lower extremity fracture, 3 for ICU stay ≥5 days, 2 for pelvic fracture, intracranial hemorrhage, congestive heart failure, cardiac dysrhythmia, and history of CVA or TIA, and 1 for spine fracture, diabetes mellitus, hypertension, ischemic heart disease, and chronic obstructive pulmonary disease. The model was applied to 2014 patients (11,037 patients, with 2,916 patients discharged to a facility). A score ≥15 was noted to have a
positive predictive value of 84.4% and a score <10 had an 82.9% negative predictive value for discharge to a facility.

**Conclusion:** A scoring model using age, severity of trauma, types of injury, and comorbidities can predict the need for discharge to a facility in trauma patients. Use of earlier discharge planning has the potential to shorten the hospital stay for trauma patients, helping to better utilize resources.
QS 67. INSURANCE STATUS: A RISK FACTOR FOR EARLY MORTALITY IN TRAUMATICALLY INJURED PATIENTS
M Bonds MD, T Garwe PhD, B Oluborode MD, Z Sarwar MS, R Albrecht MD
University of Oklahoma Health Sciences Center

Background: Disparities in outcomes by insurance status within the trauma healthcare system have been demonstrated in many prior studies. Increased attention to the situation has not been shown to improve these gaps in care. Previously, the focus has been centered on outcomes throughout the entire hospital stay of the subjects; existing studies have shown increased in-hospital mortality in uninsured patients. It is unclear whether this increased risk of mortality in uninsured patients is also present early in hospitalization. We sought to determine whether insurance status was associated with 48-hour mortality.

Methods: This was a retrospective cohort study utilizing a Level I trauma center trauma registry and included adult trauma patients admitted to the LITC between 2005 and 2014. Exclusion criteria were patients younger than age 18, patients that died within two hours of arrival, patients with missing insurance data, and patients insured by Medicare. Patient demographics and clinical characteristics were obtained from the trauma registry. Outcomes, the primary being 48-hour mortality, were then compared between the following insurance groups: private insurance, Medicaid and uninsured using survival analysis to adjust for potential confounders.

Results: A total of 18700 patients were included for final analysis. Of these, 41% (7749) had private insurance, 50% (9257) had no insurance (self-pay), and 9% (1694) had Medicaid coverage. Overall, compared to insured, Medicaid/uninsured patients were significantly (p<0.05) younger, more likely to have penetrating injuries and had overall lower injury severity scores (ISS). Notably, Medicaid patients were more likely (p<0.05) to be intubated, present in hypovolemic shock and had a higher prevalence of pre-existing comorbidity compared to insured and uninsured patients. On multivariable analysis, when compared to those with private insurance, uninsured patients had the highest risk of mortality with hazard ratio of 1.81 (95% CI 1.4-2.33) after adjusting for age, race, ISS, penetrating injury, transfer status, intubation status, severe (AIS>=3) head and chest injury as well as pre-existing comorbidity, all which were independent predictors of 48-hour mortality. Patients with Medicaid coverage had a higher adjusted risk of early 48-hour mortality.
compared to privately insured patients but this was not statistically significant [HR 1.29 (95% CI 0.88-1.88)].

**Conclusion:** Disparate outcomes in trauma have been demonstrated during in the long-term care of these patients. There are many theories on why these differences in outcomes occur, ranging from patient factors to physician inherent bias. The current study shows that uninsured patients have a higher risk of early mortality compared to patients with private insurance and Medicaid. As this period of trauma care is standardized, the data suggests uninsured patients may possess characteristics that put them at higher risk of mortality after a traumatic injury. Early insurance disparities have not been previously demonstrated and this information could lead to better understanding as to why they occur.
QS 68. INJURY SEVERITY IS PREDICTED BY COMPENSATORY RESERVE MEASUREMENT (CRM) AT ADMISSION AND AFTER INTERVAL RESPONSE TO MANAGEMENT


University of Texas Health Science Center at San Antonio

**Background:** Trauma patient outcomes are contingent upon severity of anatomic injury, physiologic response and physiologic reserve. The compensatory reserve measurement (CRM) is an innovative monitoring technology that has the capacity to assess physiologic reserve with feature extraction of real-time continuous arterial pulse waveforms. The output generated by a CRM algorithm is expressed on a relative scale from 0% to 100%. A value range of 70%-100% represents normal reserve capacity; whereas, a value of 0% is associated with exhaustion of physiologic reserve and hemodynamic decompensation. As physiologic response to injury and injury severity are closely related, the purpose of this research effort was to define the relationship between CRM and injury severity assessed by the injury severity score (ISS). Our hypothesis was that CRM values on admission and after interval resuscitation would predict patients with higher injury acuity.

**Methods:** A prospective observational analysis of 300 consecutive adult trauma patients evaluated at a Level I Trauma Center was conducted between October 2015 and February 2017. CRM data were collected in a blinded manner from patients during the acute resuscitation phase. Continuous arterial waveform features were recorded and analyzed from a device with a CRM algorithm and associated clinical events were reviewed and recorded retrospectively. Data collected included patient demographics, vital signs, laboratory, noninvasive and invasive monitoring, GCS, AIS, ISS and CRM. All patients received the standard of acute trauma care including guideline-based resuscitation, noninvasive vital signs, pulse oximetry, and invasive monitoring as required. Analysis was conducted by comparing ISS stratified by acuity: ISS <u><</u> 8 (Group I), ISS 9-15 (Group II), ISS 16-24 (Group III), and ISS <u>></u> 25 (Group IV) with CRM values at admission and after a 15-minute care interval in the trauma resuscitation unit.

**Results:** The analysis consisted of 213 patients with injury and all requisite inclusion measures of continuous CRM, abbreviated injury
scale (AIS) score and calculated ISS. 87 patients were excluded for lack of complete data or no injury identified after evaluation. The majority of the injured cohort were male (n= 142 / 67%). The median age was 48 years old (range 18-87), with blunt mechanism as the cause of injury in 87% (n=186), and the median ISS = 8 (range 1-48). Group IV had a median admission CRM of 57 which was significantly different compared to the admission median CRM of 73 and 72 for Group I and II respectively (P<0.05), but not different from the Group III CRM of 61. Likewise, there were significant differences in the rate of abnormal CRM <70 on admission between Group IV (57%) and Groups I (36%) and II (41%). After a 15-minute interval of treatment, significantly more patients in Group IV had a persistently abnormal CRM < 0.70 relative to Group I (18%), Group II (20%), and Group III (30%).

**Conclusion**: These data suggest that CRM values and CRM value trends identify more severely injured patients. As such, this monitoring technology may prove to be a valuable decision support adjunct from point of injury throughout the continuum of care.
**QS 69. PRIMITIVE NEUROECTODERMAL TUMOR (PNET) INCIDENCE, TREATMENT PATTERNS, AND OUTCOME: A NATIONAL CANCER DATABASE ANALYSIS**

YK Hong MD, J Shah PhD, W Kim MD, N Bhutiani MD, M Stevenson MD, M Egger MD MPH, P Philips MBBS MPH, K McMasters MD PhD, RC Martin II MD PhD, CR Scoggins MD, MPH

*University of Louisville*

**Background:** Primitive neuroectodermal tumors (PNET) represent a rare type of aggressive tumor arising from the neural crest that comprises fewer than 1% of all sarcoma diagnoses. These tumors are classified as either central (cPNET) or peripheral PNET (pPNET) based on whether or not they arise from the central nervous system. The rarity of this disease has resulted in a paucity of information in the medical literature about this disease process and its management. The objective of this study was to evaluate the incidence, treatment patterns, and outcomes among patients with PNET.

**Methods:** The National Cancer Database was queried for patients diagnosed with PNET between 2004 and 2014. Patients were subsequently grouped based on the type of PNET (cPNET vs. pPNET). Demographic, tumor, treatment, and outcome variables were analyzed for the entire patient cohort and by the type of PNET.

**Results:** There was a total of 1358 patients with diagnosis of PNET, with 839 (61.7%) cPNET and 519 (38.2%) pPNET. Most patients were white (86.4%) and male (56.6%) with average age at diagnosis of 41.8 +/- 17.9 years. While all cPNET arose from the central nervous system, most common body sites of involvement for pPNET were soft tissue 482 (57.4%), bone/joint 109 (12.9%), peripheral CNS 86 (10.2%), pancreas 54 (6.4%), retroperitoneum 37 (4.4%), and small intestine 22 (2.6%). Nearly 100% of the PNET were invasive (pPNET 100%, cPNET 99.8%). Among tumors with reported grade, anaplastic (48.3%) and poorly differentiated (39.9%) types were more common than well differentiated (8.9%) and moderately differentiated (2.8%) types (p < 0.001). Lymph nodes were assessed in 724 (53.3%) of patients with positive lymph nodes found in 46 (6.3%) of cases. While surgery is the mainstay of treatment, nearly 20.2% of PNET overall were deemed unresectable of the primary site (25.6% in pPNET and 11.4% in cPNET) (p< 0.001). There were 650 (47.9%) patients with PNET who received radiation therapy with time to radiation of 123.31 days +/- 87.08 for
pPNET and 51.66 +/- 40.15 days for cPNET ($p < 0.001$). There were 994 (73.1%) patients with PNET who received systemic chemotherapy with time to treatment at 49.86 days +/- 160.1 for pPNET and 60.2 days +/- 49.8 for cPNET ($p = 0.29$). The 30-day and 90-day mortalities for cPNET when compared to pPNET were (pPNET 1.1% vs. cPNET 2.9%; $p = 0.28$) and (pPNET 2.1% vs. cPNET 6.6%; $p = 0.01$), respectively.

**Conclusion:** PNET represent a rare but aggressive malignancy that may arise in numerous locations, and treatment usually requires multimodal therapy comprising surgery, chemotherapy, and radiation. While cPNET are more often amenable to resection, they confer a poorer peri-operative and long-term prognosis than pPNETs. Future work aimed at understanding the biology of PNETs in general and identifying differences between these two tumor types may help improve the treatment and outcomes of patients with these malignancies.
QS 70. THE IMPACT OF PET-CT IMAGING ON TREATMENT RESPONSE IN BORDERLINE RESECTABLE PANCREATIC CANCERS: CAN TUMOR REGRESSION BE IDENTIFIED BEFORE SURGERY?
A Landmann MD, NS Rozich MD, CJ Britton BS, MM Bonds MD, KT Morris MD, RG Postier MD
University of Oklahoma Health Sciences Center

**Background:** Borderline resectable pancreatic cancer is often managed with neoadjuvant chemotherapy. The role of positron emission tomography (PET-CT) in surgical planning for this group of patients is currently unclear. The purpose of this study is to test the hypothesis that a decrease in Standard Uptake Unit (SUV_{max}) of >30% in patients with borderline resectable pancreatic cancer will correlate with higher pathologic grade of response to neoadjuvant treatment.

**Methods:** After IRB approval, patients were identified from a pancreatic cancer database who received a PET-CT at the beginning of neoadjuvant therapy and a repeat PET-CT prior to consideration for surgical resection during the study period (2007-2016). Data including pre-and post-treatment PET-CT results, pathologic response to treatment, and margin status were collected from electronic medical record.

**Results:** A total of 190 patients underwent PET-CT imaging as part of their staging workup of a pancreatic cancer. 90 patients had advanced disease at diagnosis and were treated with palliative chemotherapy. 16 patients had tumors that were not flurodeoxyglucose (FDG) avid and were excluded from analysis. 19 patients were resectable on initial PET-CT staging and were taken to surgery. The remaining 65 patients underwent neoadjuvant therapy for borderline resectable disease. 7 had a treatment response but were not fit for surgery, 29 had progressive disease on repeat imaging and were spared surgery. 29 patients had stable or responsive disease on repeat imaging, and were taken to the operating room with the intention of curative resection. Pathologic specimens were graded for biologic response to chemotherapy according to the College of American Pathologists Cancer Protocols: one patient had complete pathologic response (grade 0), seven patients had marked response with minimal residual tumor (grade 1), ten had a moderate response (grade 2) and seven had poor or no response (grade 3). Of the 29 patients who underwent surgery, 20 patients demonstrated a significant metabolic response on PET-CT imaging (>30%...
decrease in SUV<sub>max</sub>). An additional three patients had marginal decrease in SUV but demonstrated a smaller area of FDG-avid tumor size. Three patients had planned resection but were found to have evidence of peritoneal spread at surgery. When analyzing both imaging characteristics and tumor response to therapy, we found patients with a combination of at least a 30% decrease in SUV<sub>max</sub> who also were noted to have a 50% decrease in tumor size were more likely to have a grade 0 or 1 pathologic response to neoadjuvant treatment (p=0.036).

**Conclusion**: These findings demonstrate an association between radiographic response to neoadjuvant treatment on PET-CT imaging and biologic response in the tumor. Further work will be needed to determine the role of PET-CT in managing patients with borderline resectable pancreatic cancer. However, these results suggest potential prognostic information may be gained from the degree of tumor regression as measured by decrease in size of FDG-avid tumor and decrease in SUV<sub>max</sub>.
Background: After initial lumpectomy, 11-36% of patients will require additional surgery for close or positive margins. Not all patients who have further surgery will have residual disease in the additionally resected tissue. We hypothesized that patient and tumor characteristics can be used to predict the presence of residual disease found after subsequent re-excision or mastectomy in our patient population.

Methods: We identified patients treated at our institution between January 1, 2010 and May 30, 2017 who underwent lumpectomy followed by re-excision or mastectomy for close or positive margins. Charts were reviewed for number and types of surgeries, indication for additional surgeries, patient age, primary tumor type (invasive ductal, invasive lobular, intraductal carcinoma), margin size, specimen size, and presence of residual disease found after additional surgery. Margin size for invasive carcinoma requiring further surgery was institutionally defined as <2mm prior to June 2014 and no ink touching tumor for after. Margin size for intraductal carcinoma was institutionally defined as <2mm. Tumor size to specimen size ratio was determined as the ratio of largest tumor size to largest specimen size in millimeters. Patients receiving neoadjuvant therapy were excluded. T-test and Chi square, fisher’s exact, and multiple regression were applied as appropriate.

Results: Of 204 patients with positive or close margins after initial lumpectomy, 96 (47%) had residual disease (+RD) and 108 (53%) had no residual disease (-RD) found after additional surgery. On univariate analysis, patients with residual disease had a higher number of close/positive margins after initial lumpectomy (2.3 +RD vs 1.85 -RD, p=0.007), larger tumor size (20.8 cm +RD vs. 16.0 cm-RD, p=0.017) and were more likely to have ER/PR positive tumors (96% +RD vs. 85% -RD, p=0.02). On multivariate analysis, number of close/positive margins and ER/PR status remained statistically significant (p=0.01 and p=0.01, respectively). Tumor size approached significance (p=0.055). Patient age, tumor type, Her2Neu status, pathologic lymph node status, tumor grade, lumpectomy specimen size, and tumor size to specimen size ratio were
not statistically different between groups. Of the 204 patients, 183 (90%) underwent a re-excision lumpectomy. Of these, 166 (91%) went on to have clear margins with one re-excision and 17 (9%) patients required a third surgery. Patients who required a third surgery had significantly more close/positive margins on initial lumpectomy compared to those who underwent successful re-excision (2.9 vs. 1.9, p=0.005). No other patient or tumor characteristics were statistically different between the two groups.

**Conclusion:** Increased number of positive margins and positive ER/PR status were predictors of residual disease. Increased number of positive margins was also predictive of persistent positive margins after re-excision lumpectomy. These factors could be used by surgeons to help predict which patients will likely undergo successful re-excision and better counsel patients who are debating re-excision lumpectomy versus mastectomy.
QS 72. FACTORS ASSOCIATED WITH DECISION TO UNDERGO CONTRALATERAL PROPHYLACTIC MASTECTOMY VERSUS UNILATERAL MASTECTOMY
J Huang AB, A Chagpar MD MSc MPH MA MBA
Yale University

Background: Few studies have investigated factors that influence whether breast cancer patients decide to pursue contralateral prophylactic mastectomy (CPM) versus unilateral mastectomy (UM). We sought to determine reasons behind surgical decision-making in both patients who had UM and those who had CPM, and evaluate their satisfaction with the same.

Methods: Female unilateral breast cancer patients who had a mastectomy at a large academic institution were surveyed as to factors influencing their surgical decision. Patients rated potential decision-making factors as “very important”, “somewhat important”, or “not very important”. The Satisfaction with Decision (SWD) scale was used to assess patient satisfaction with their surgical decision. This is a validated instrument that provides a score from 1-5, with 5 being completely satisfied. Non-parametric statistical analyses were performed using SPSS version 24.

Results: Of 109 patients approached, 101 completed the survey (92.7% response rate). 55 patients underwent a CPM (54.5%). The average SWD score in our cohort was 4.79 out of 5. Patients who underwent UM were slightly less satisfied with their surgical decision, but this did not reach statistical significance (mean SWD 4.72 vs. 4.85, respectively, p=0.078). 56.5% of UM patients and 74.5% of CPM patients claimed to be completely satisfied with their decision (SWD 5/5). In addition, most UM (68.9%) and CPM (72.7%) patients reported that they would strongly recommend their respective surgical decisions to other patients (p=0.980). Of the 55 patients who underwent CPM, almost all patients listed the desire to reduce their risk of contralateral breast cancer (CBC) (96.4%) and desire for peace of mind (94.5%) as “very important” reasons for their decision to have CPM. Fewer CPM patients reported that the desire for symmetry of breasts or wanting to avoid future breast imaging were “very important” to their decision-making (52.7% and 45.4%, respectively). Most UM patients reported that not wanting to remove a normal breast (67.4%) was a “very important” reason for their decision to have UM over CPM, and 41.3% of patients reported that the perceived increased risk of complications in CPM was a “very important” reason for their surgical decision. However, the increased length of surgery (73.9%),
hospital stay (84.8%), and financial cost associated with CPM (87.0%) were “not very important” factors for the majority of UM patients who decided to forego CPM.

**Conclusion:** Both UM and CPM patients reported high satisfaction with their respective surgical decisions, and a strong willingness to recommend their decision to other patients. Factors that were very important for CPM patients in their surgical decision-making included the desire to reduce their risk of CBC and obtain peace of mind. UM patients preferred not to remove a normal breast, and to avoid additional risk of complications. Patients pursuing these different options, while motivated by different factors, are both highly satisfied by the choices they make, suggesting that tailoring surgery to an individual patient’s desires are likely to lead to higher patient satisfaction.
QS 73. BARRIERS TO ACCESS AND CARE FOR BREAST CANCER PATIENTS UNDERGOING RADIATION THERAPY
V Gemma MD, C Corn MD, S Israr, P Goslar PhD, T Thompson MS
St. Joseph's Hospital and Medical Center

Background: Whole breast radiation and brachytherapy are currently accepted treatments for patients with early breast cancer, but these require multiple treatment sessions over a period of days to weeks. The commitment necessary to complete therapy can be daunting for patients. Several studies have identified obstacles with radiation therapy in this patient population, including long wait times and transportation issues in underserved populations. The purpose of this study is to identify barriers to completing whole breast radiation and brachytherapy at a single institution. We hypothesized that barriers would be greater in the whole breast radiation group versus brachytherapy since there is a greater time demand overall, and that disparities and barriers would be more prevalent in the low-income, underserved population.

Methods: This prospective study included patients who had already undergone radiation therapy. A survey was conducted that investigated compliance, demographics (including ethnicity, household income, and employment status), and overall impact on different areas of patient life (family obligations, insurance status, and means of transportation). Inclusion criteria consisted of patients greater than age 18 or older with breast cancer who had undergone surgical resection of primary tumor, completed whole breast radiation therapy or brachytherapy, and had localized cancer defined by lesions: T1-T3, N1-N3, M0. Exclusion criteria consisted of patients less than 18 years old or greater than 90 years old, T4 tumor, metastatic disease, or currently receiving radiation therapy. Chi-square test of independence and nonparametric correlations were performed to examine the relation between these variables. This study was approved by the institutional IRB.

Results: Seventy-four (74) patients met inclusion criteria and were issued surveys by mail. Twenty-one (21) patients responded with completed surveys (28.3%). Patients were grouped by their treatment: 5/21 respondents were in the brachytherapy group (23.8%), and 16/21 were in the whole breast radiation group (76.2%). 9/21 (42.9%) of patients reported household income <$40,000/year, and 9/21 (42.9%) of patients reported >$70,000/year. The respondents described themselves as white, non-Hispanic (66.7%), Hispanic (23.8%), and Asian (9.5%). Mean total hours of treatment was higher for patients undergoing whole
breast radiation compared with brachytherapy (52.4+27.8 vs 13.8+6.2; p < 0.05). Lower household income was associated with barriers to completing treatment (p = 0.009) as did employment status (p = 0.009). More patients in the lower income category would not have chosen to complete the same treatment (p = 0.024).

**Conclusion:** Barriers to receiving radiation therapy are greater in low-income populations. Time constraints, methods of transportation, and employment status all negatively impact completion of treatment. The use of novel treatments methods with fewer barriers may improve breast cancer outcomes. One such treatment is intraoperative radiation therapy. Further studies should assess this therapy with more conventional treatment in underserved populations.
Background: There are more than 3.1 million women in the United States with the diagnosis of breast cancer. This has led to development of proposals directed at survivorship care planning (SCP). Intuitively, the survivorship clinics are directed at informing the patients of the status of their cancer at presentation, the choice of therapy and the potential long-term impact of cancer and treatment on their health. Whereas, all physicians involved in multidisciplinary care operate on the principles of informed consent which informs patients about the basic facts pertaining to their care, there is no data on the base-line level of knowledge that these women have before the SCP appointment and what difference if at all does this counseling appointment make.

Methods: A prospective exploratory study was designed to assess the patient’s knowledge of her cancer and treatment pre and post SCP appointment. A sixth grade reading level Breast Cancer-Knowledge Assessment Test (BC-KAT), a 22-item questionnaire was developed covering basics of breast cancer diagnosis (stage, biological markers, genetic test), surgical treatment, radiation treatment, and systemic treatment (chemotherapy, and endocrine therapy) by the multidisciplinary care team. Questions on certainty of response were included ranging from 0 = totally sure to 3 = not at all. A focus group of survivors vetted the questions. Breast cancer patients over the age of 21 who had completed all treatment except hormonal therapy participated. Patients completed the BC-KAT prior to and immediately following survivorship care planning/counseling. Responses were scored as either correct or incorrect. Questions were separated into three main subscales, Diagnosis, Treatment, and Certainty. The Wilcoxon rank sum test was utilized to examine pre- to post-survivorship changes in scores.

Results: A total of 50 women participated as planned; mean (SD) age was 60.2(12.4) yrs; 45(90%) had infiltrating ductal cancer; 1(2%) had invasive lobular care, 4(8%) mixed ductal/lobular. Thirty one (62%) were hormone receptor positive and HER2 negative; 10(20%) were HER2 positive, and 9(18%) were triple negative. Thirty one(62%) received breast conservation; 26(52%) received chemotherapy; 8(16%)
received Trastuzumab. Median (25th, 75th percentile) pre- and post-counseling scores for diagnosis were 80(70, 90) and 90(90,100) [p<0.001]. Median pre- and post-counseling scores for treatment were 90(80, 90) and 95(90,100) [p<0.001]. Median pre-counseling scores for Certainty were significantly greater than post-counseling scores [3(2-4) vs. 0(0-1.75)] [p < 0.001]. At baseline, the accuracy of responses was not related to: (i) age for Diagnosis (β = -0.16, p = 0.38), Treatment (β= -0.01, p = 0.96), or Certainty (β = 0.02, p = 0.60); (ii) ethnicity for Diagnosis(F(3,46) = 1.33, p = 0.28), Treatment (F(3,46) = 1.42, p = 0.25), or Certainty (F(3,46) = 1.49, p = 0.23). Level of education did not significantly predict pre-counseling Diagnosis (β = 4.90, p = 0.05) or Treatment (β = 0.79, p = 0.75); however, it did significantly predict pre-counseling Certainty (β = -1.00, p = 0.01).

Conclusion: Breast cancer patients have reasonable baseline knowledge of diagnosis and treatment. Survivorship care planning appointment increases patient’s knowledge and understanding of their disease.
QS 75. A NOVEL RISK CALCULATOR MODEL FOR PREDICTING LYMPHEDEMA FOLLOWING AXILLARY OR INGUINAL LYMPHADENECTOMY IN MELANOMA PATIENTS

AK Miller BS, LM Donahue BS, JK Tarpeh BS, AB Durham MD, TM Johnson MD, MS Cohen MD
University of Michigan Medical School

**Background:** Lymphadenectomy for resection of metastatic melanoma is associated with significant morbidity, most notably from development of secondary lymphedema (SLE). Previous work has elucidated several risk factors for SLE, including inguinal dissections and peripheral vascular disease. While recent evidence from the large MLST-II trial has challenged the traditional dogma of mandatory completion lymphadenectomy for sentinel node positive melanoma, it has also raised important new questions regarding the risk and benefit of lymphadenectomy surgery. Thus the discussion of risk/benefit with patients is even more important to quantify and as such, developing a tool to determine risk for SLE would be a very useful adjunct to that discussion. The goal of this study was to create a robust calculator model for an individual patient’s risk of developing SLE based on an index of preoperative, perioperative, and postoperative risk factors.

**Methods:** A retrospective review of our prospectively collected database of 526 patients undergoing completion axillary or inguinal lymphadenectomy for melanoma was performed. Candidate variables for the model were first identified by univariate logistic regression, and then combined using a multiple logistic regression model. Stepwise logistic regression was then used to refine the multiple regression models. Bootstrapping (n = 1000 iterations) determined the upper and lower bounds for our receiver-operating curve (ROC) plots. Machine learning (ML) methods were then utilized as comparison models to our stepwise regression models to determine the most accurate predictor model for SLE.

**Results:** Overall incidence of lymphedema in the analysis cohort was 22.1%; 35/304 axillary dissections and 81/220 inguinal. Candidate variables by logistic regression included operative blood loss, male gender, obesity, tobacco use, postoperative readmission, and postoperative complications (within 30 days). A preliminary model encompassing both inguinal and axillary dissections, developed through multivariate regression, attained a ROC of 0.699. A stepwise model for inguinal dissection improved to ROC = 0.733 with a specificity of 95% at the
operating point. Models developed using machine learning attained accuracy of only approximately 85% (highest ROC was only 0.63 from a support vector machine algorithm). ML had a significant false negative classification rate compared to the stepwise regression rate, lowering its clinical utility.

**Conclusion**: We created a novel risk-calculator model to quantitatively predict a patient’s risk for developing SLE following axillary or inguinal lymphadenectomy. Our robust stepwise regression model taking into account a number of important pre/post-operative variables was superior to iterative ML models and had a ROC of 0.733 with 95% specificity using a large database. Refinement with a larger multi-institutional dataset will further improve the model’s accuracy. Having such a calculator adds important data to the risk/benefit discussion between surgeons and patients for this challenging disease.
ePOSTER ABSTRACTS
P 1. FRAILTY IN PATIENTS UNDERGOING PARAESOPHAGEAL HERNIA REPAIR (PEHR)
AM Kao MD, J Otero MD, KA Schlosser MD, J Marx, RF Sing DO, T Prasad MA, BT Heniford, PD Colavita
Carolina Medical Center

Background: Considering the impact of aging patients undergoing elective surgery, assessment of frailty has been used in elderly patients as a measure of physiologic reserve. Frailty index scores and radiologic indicators of sarcopenia and osteopenia have been associated with higher postoperative morbidity and mortality rates in elderly patients. The present study assesses radiologic indicators of frailty and the impact on outcomes in patients undergoing PEHR, which has not previously been studied.

Methods: A prospectively collected institutional hernia-specific database was queried for PEHR performed from 2008 to 2017. Frailty index score was calculated using an externally validated 11-item frailty index. Computed tomographic (CT) imaging was used to measure psoas muscle cross-sectional area at L3 level and adjusted for patient height (skeletal muscle index). Osteopenia was defined as average Hounsfield units below 100.0 of the L3 vertebral body. Sarcopenia was defined using gender-specific cutoff points (<385 mm²/m² female, <545 mm²/m² male) determined by an international consensus group on the diagnosis of cachexia. Patients were separated into cohorts: no sarcopenia or osteopenia, osteopenia only, sarcopenia only, both sarcopenia and osteopenia. Univariate and multivariate logistic regression was used to assess relationship between frailty and postoperative outcomes.

Results: 264 patients with symptomatic PEH underwent surgical repair; of these, 122 (46.2%) had adequate preoperative CT imaging. Patients included 74.2% female, with mean age 66±11.5 years and mean BMI 29.1±5.1kg/cm². The mean total psoas area (TPA) was 1538.0 mm² and mean TPA after height normalization of 534.4 ± 304.6 mm². Mean L3 vertebral body bone density was 128.0 Hounsfield units. Nineteen patients (15.6%) had radiologic indicators of both osteopenia and sarcopenia; 22 patients (18.0%) had sarcopenia only, 24 (19.7%) osteopenia only, and 57 (46.7%) had no osteopenia or sarcopenia. Patients with both osteopenia and sarcopenia were more likely to require ICU stay (42.9%, p<0.0005) compared to patients with sarcopenia only (28.6%), osteopenia only (14.3%), and those without osteopenia or sarcopenia (14.3%). No difference was noted in major complications
with Clavien-Dindo Grade ≥3 (sarcopenia 28.6%, osteopenia 28.6%, no sarcopenia/osteopenia 28.6%, both sarcopenia/osteopenia 14.3%, p=0.67) or discharge to destination other than home (both sarcopenia/osteopenia 37.5%, no sarcopenia/osteopenia 25.0%, sarcopenia 25.0%, osteopenia 12.5%, p=0.23). There were no postoperative mortalities. After multivariate analysis adjusting for confounding factors, age was the only variable independently associated with Clavien-Dindo Grade ≥3 complications [Odds ratio (OR)- 1.2, CI 1.005-1.463]. Emergent repairs had increased likelihood of requiring ICU level care (OR 15; CI 2.46-92.48). Patients with osteopenia were 4.5 times more likely to have presence of postoperative symptoms at 1 month compared to patients without osteopenia/sarcopenia [CI 1.18-16.82].

**Conclusion**: Radiologic indicators of sarcopenia and osteopenia are used as surrogate measures of frailty and can be used to predict patients with increased requirements for ICU level care and postoperative symptoms. These can be utilized to guide preoperative discussions with patients.
P 2. TIME TO OPERATION DOES NOT INFLUENCE HEALTH OUTCOMES FOR PERFORATED PEPTIC ULCER DISEASE
EC Esquivel MS, JT Lung BS, S Dissanaike MD
Texas Tech University Health Sciences

Background: Perforated peptic ulcer (PPU) is usually considered a surgical emergency, with a mortality and morbidity up to 30% and 50%, respectively. PPU are associated with more than 70% of deaths in patients with peptic ulcer disease (PUD) and PPU develop in 2-10% of patients with PUD. Prior studies in Europe and India have shown a link between rapid surgical intervention and positive outcomes in PPU. We examined the relationship between the time interval from perforation to operation and postoperative outcomes.

Methods: Seventy two patients were admitted to Texas Tech University Health Sciences Center in Lubbock, TX for a perforated peptic ulcer January 1, 2010 - May 1, 2017. Data collected included the perforation to operation time interval, age, gender, ethnicity, income level (SES), insurance status, morbidity, mortality, and length of hospital stay. Logistic regressions were conducted using SPSS to determine predictive variables for perforation to operation time interval, postoperative morbidity, and postoperative mortality. Postoperative morbidities included myocardial infarction, sepsis, stroke, hypotension, congestive heart failure, arrhythmias, altered heart rate, edema, respiratory failure, pneumonia, gastrointestinal bleeding or motility issues, gastrostomy tube leakage, reperforation, pancreatitis, portal hypertension, abdominal abscesses, surgical infection, reoperation, renal failure, kidney stones, syncope, paresthesia, and hematologic changes.

Results: The mean age of patients was 59.6 years with 48 (66.7%) men; 47 (65.3%) were White, 30 (27.8%) Hispanic, and 4 (5.6%) Black. Eleven (15.3%) patients were lower SES, 28 (38.9%) middle SES, and 33 (45.8%) upper SES. Thirty-seven (51.4%) patients had a perforation to operation time interval less than 24 hours, 14 (19.4%) 24-48 hours, and 21 (29.2%) more than 48 hours. Thirty-three (45.8%) patients had a postoperative morbidity, 20 (27.8%) patients were readmitted, 9 (12.5%) had postoperative mortality with an average time to death of 37.6 days, and 7 (9.7%) had a postoperative surgical infection. Logistic regression analysis found no significant predictive variables for perforation to operation time interval, postoperative morbidity, or postoperative mortality.

Conclusion: Our results indicated that a longer perforation to operation time interval is not as consequential to patient outcome as suggested in previous studies outside the United States. Further research should be performed to examine whether this is due to advances in surgical and postoperative management in the United States that minimize the risk factor of a prolonged perforation to operation time interval.
P 3. PAIN MANAGEMENT AFTER APPENDECTOMY AND CHOLECYSTECTOMY: AN INNOVATIVE PROTOCOL USING EXPAREL
LB Petrey MD, PK Newman MS, EE Rainey MS
Baylor University Medical Center at Dallas

Background: In an effort to reduce post-operative opioid consumption, our research has been aimed at finding non-opioid alternatives to pain management to reduce opioid-related side effects and reduce hospital length of stay. The alternative in question is a long-acting local anesthetic known as Exparel. This study was designed to investigate the effectiveness of using Exparel in laparoscopic appendectomy and laparoscopic cholecystectomy procedures for reducing postoperative pain.

Methods: This retrospective cohort study included 5 years of data for 462 patients who received a laparoscopic appendectomy or laparoscopic cholecystectomy with or without intraoperative cholangiogram. Post-operative pain was analyzed using pain correlates, in this case inpatient opioid consumption and post-operative and total length of hospital stay. Opioid consumption was converted into morphine milligram equivalents using the CDC Guideline for Prescribing Opioids. Post-operative length of stay was time in hours and minutes, calculated from the end of surgery to discharge. Total length of stay was also in hours and minutes, calculated from admission to the hospital to discharge.

Results: The sample size for laparoscopic cholecystectomy was 138 patients, for laparoscopic cholecystectomy with intraoperative cholangiogram was 155 patients, and for laparoscopic appendectomy was 169 patients. There was a statistically significant decrease in inpatient opioid consumption using the “New Exparel” protocol when compared to other protocols. There was not a statistically significant difference across all treatment groups in terms of length of stay.

Conclusion: The data shows that using Exparel in laparoscopic appendectomy and cholecystectomy results in a decrease of inpatient opioid usage – up to 50% in some cases – and the use of it in these procedures would result in a decrease in opioid related side effects and addiction. The data analysis also shows that using Exparel does not have a significant effect on length of hospital stay, and this factor should not be considered when using Exparel. Data analysis on hospital cost is still underway.
P 4. PHEOCHROMOCYTOMA CRISIS: TREATMENT AND MANAGEMENT OF CARDIOPULMONARY COLLAPSE VIA EXTRACORPOREAL MEMBRANE OXYGENATION FOLLOWED BY SURGICAL INTERVENTION: A SINGLE INSTITUTION EXPERIENCE
ME Mahoney MD, LA Griffin MD, W Christopher MD, D Rudd MD, C Greenleaf MD, TM Earl MD, CD Anderson MD, JG Shake MD, WS Orr MD
University of Mississippi Medical Center

**Background:** Pheochromocytoma is an uncommon adrenal gland tumor that can present with a multitude of symptoms including headaches, sweating, palpitations, and paroxysmal hypertension. Treatment is surgical removal after appropriate alpha-blockade and beta-blockade. Although rare, a pheochromocytoma can lead to life-threatening crisis with cardiopulmonary failure. Extracorporeal membranous oxygenation (ECMO) has been established for cardiopulmonary support in cardiogenic shock, but its use in the management of pheochromocytoma is not well described.

**Methods:** Here we describe two patients who were treated with ECMO for hypoxic respiratory failure and cardiogenic shock secondary to pheochromocytoma.

**Results:** Patient 1 is a 37 year old female transferred to our center intubated after presenting hypotensive and hypoxic with complaints of nausea, vomiting, and abdominal pain. Upon arrival, she was found to have worsening pulmonary parameters despite increasing ventilatory support. She was placed on veno-venous ECMO resulting in significant improvement in respiratory status. Family discussions revealed the patient had a long history of refractory hypertension as well as intermittent headaches and palpitations. Work up revealed a left adrenal mass on imaging and elevated serum and urine metanephrines. She was treated with two weeks of alpha blockade before undergoing an open left adrenalectomy. Post-operative course was uneventful, and she was doing well at follow-up. Patient 2 is a 56 year old female who was transferred with acute onset of cardiogenic shock and respiratory failure believed to be due to pheochromocytoma. On work up, imaging showed a 4cm adrenal mass and elevated metanephrines. Echocardiogram revealed an ejection fraction of 10% on admission. She received veno-arterial ECMO support upon arrival and significantly improved. After extubation and ECMO decannulation, the patient received medical
management including alpha blockade two weeks prior to an open right adrenalectomy. During the operation, we found a large adrenal mass adhered to the inferior vena cava but were able to resect the mass in its entirety. Pathology confirmed pheochromocytoma. She had an uneventful post-operative course and was doing well at her two month follow-up.

**Conclusion:** Pheochromocytoma crisis is a rare condition that requires a multi-disciplinary management approach to improve patient outcomes and survival. ECMO can be used in the treatment of cardiopulmonary collapse resulting from pheochromocytoma crisis.
**P 5. HISPANIC PATIENTS REQUIRING SURGERY FOR DIVERTICULAR DISEASE MORE LIKELY TO BE MALE AND YOUNGER COMPARED TO OTHER ETHNICITIES**

Y Puckett MD MPH MS, T Pham MBA MS, CA Ronaghan MD, S Dissanaike MD, A Aryaie MD  
*Texas Tech University Health Sciences*

**Background:** Little literature exists on ethnic and gender differences in rates and severity of diverticular disease. A trend was noted at a tertiary referral center in the Southwestern US with a large Hispanic population, where acute diverticulitis occurred more frequently and with greater severity in young, Hispanic men. We hypothesize that diverticular disease is more common and more aggressive in younger Hispanic men when compared to other ethnic groups, and sought to verify this hypothesis using a large national sample.

**Methods:** National Surgical Quality Improvement Program database (NSQIP) was analyzed for the year 2015 for cases of diverticulitis, as defined by postoperative ICD-9 code 562.11 for ages 18-89 years. Patients were divided into two groups based on ethnicity: Hispanic and Non-Hispanic. Demographic data and outcome variables to test severity of the disease were abstracted. Markers of disease severity including preoperative WBC, total operation time, occurrence of sepsis, septic shock, requirement for blood transfusion, need for ostomy at primary surgery, unplanned readmissions, and need to return to the operating room as well as outcomes of length of stay and mortality were compared. Independent t-test was used to compare continuous variables and Chi-Square test was used to compare categorical variables.

**Results:** A total of 7,510 patients with diverticulitis who underwent surgery in 2015 were included, of whom 507 (6.75%) were Hispanic. Hispanic patients were 50% male while Non-Hispanic patients were 44% male (*p*=.01). The average age of Hispanic patients was 51 years, while the average age of Non-Hispanic patients was 59 (*p*<0.0001). The average age of Hispanic males was 46 while the average age of males of other ethnicities was 55 (*p*<0.0001). All variables used to measure severity of diverticular disease were not significantly different between the two groups.

**Conclusion:** Hispanic patients requiring surgery for diverticular disease are more likely to be male and younger when compared to other ethnicities. However, severity of the disease does not appear to be significantly worse in Hispanics. These findings supports the notion that diverticular disease is more common in younger men among the Hispanic population, however there does not appear to be a difference in severity of disease or outcomes.
**P 6. CECA BASCULES OR CECA VOLVULUS: DOES PRE-OPERATIVE IMAGING DIFFERENTIATE BETWEEN THE TWO AND DOES IT MATTER?**

**R Rassadi MD, CG Nelson BS, JK Dzandu PhD, AJ Mangram MD**

*HonorHealth John C. Lincoln Medical Center*

**Background:** Cecal bascule (CB) is infrequently reported. In the literature the incidence of volvulus approximates 25% and cecal volvulus (CV) accounts for 2% of intestinal obstruction. CB is a rare variant of a CV. The diagnosis of CB and CV is often performed radiographically. We hypothesize that CB is more prevalent than previously stated and the diagnosis per imaging is inaccurate.

**Methods:** A retrospective review of all consecutive patients with CPT code 44104 and a diagnosis code K56.2 from 2013 to 2017 was conducted. Patients were excluded if they did not have the preoperative or intraoperative diagnosis of CB or CV. Pre-operative imaging and intraoperative findings were compared based on the diagnosis within the operative report. Patient demographics, procedure performed, hospital length of stay and complications were assessed as short term outcomes. Data was analyzed using SPSS software v23.

**Results:** 25 patients total were analyzed, CV (n = 19) and CB (n = 6). The average age was 69 years in both groups and the majority were females (76%). In comparing the preoperative image based diagnosis with the intraoperative diagnosis, there was a statistically significant discordant finding (p value 0.007). CT diagnosis were CV (44%), CB (20%), dilated cecum crossing midline (12%), pneumoperitoneum (8%), CB vs CV (8%) and other (12%). Regardless of the diagnosis, the patients underwent a right hemicolectomy (RHC). Complications included postop ileus (n=4), postoperative bleeding (n=1), surgical site infection (n=1), subphrenic abscess (n=1) and death (n=1). Overall the complication rate was equally distributed between CB and CV patients. The length of stay was not significantly different between the two groups. The mean hospital length of stay was 11.5 +/- 5 versus 7.9 +/- 3.7 for CB versus CV respectively (p value 0.160). Discharge destinations were death (4%), home (68%), LTAC (4%), and SNF (24%).

**Conclusion:** The rarely described CB may actually occur with higher frequency than previously reported. It is important to have an index of high suspicion no matter the preoperative imaging findings. The treatment is urgent surgical intervention regardless of the diagnosis CB or CV. Preoperative imaging is adept at detecting an abnormality but it is difficult to determine bascule versus volvulus.
P 7. SURGICAL TREATMENT OF RECURRENT PILONIDAL DISEASE WITH BILATERAL GLUTEAL FASCIOCUTANEOUS ADVANCEMENT FLAPS
A Alizadeh BS, A Lee BS, M Uffenheimer BS, S Kohanzadeh MD, J Cohen MD, Y Nasseri MD
The Surgery Group of Los Angeles

**Background:** Patients with complex and recurrent pilonidal disease may undergo various flap-based procedures to reconstruct post-excision wound defect. Regardless of approach, dehiscence and recurrence occur in about 50% of patients and cosmetic results are subpar. We illustrate an outpatient, cosmetic approach to reconstruction via bilateral gluteal fasciocutaneous flap elevation with excellent outcomes.

**Methods:** This is a retrospective review of a prospective database. Following excision of pilonidal disease, gluteal fasciocutaneous advancement flaps are elevated using blunt discontinuous dissection in a 360-degree fashion to allow a tension-free repair. A multilayered tension-free closure is then performed, starting at the fascial level with careful attention to evert the skin edges. The resulting scar is mid-line, which has an added cosmetic benefit.

**Results:** Fifteen patients with a 2:13 female:male ratio, average BMI of 27.5 kg/m², and mean age of 29.4 years were studied. Four patients were smokers and three had a BMI greater than 30 kg/m². At a median follow-up of 56 weeks (range 6-176 weeks) there were no recurrences although seven had small lower incisional dehiscence that resolved with office hair shaving and wound care.

**Conclusion:** Bilateral gluteal fasciocutaneous advancement flap closure following excision of pilonidal disease is a promising outpatient, cosmetic and durable alternative in treatment of recurrent and complex pilonidal disease. Modification with retention sutures has been implemented to reduce dehiscence.
P 8. IMPLICATIONS OF TIME TO INTERVENTION IN PATIENTS PRESENTING WITH NECROTIZING SOFT-TISSUE INFECTION
R Latifi MD, A Patel MD, A El-Menyar MD
Westchester Medical Center

Background: Necrotizing soft-tissue infection (NSTI) is a life-threatening surgical condition that requires immediate recognition and treatment. We aimed to study the patterns of NSTI and the impact of time to intervention on the outcome in a cohort of patients with NSTI in a tertiary care center.

Methods: We conducted a retrospective analysis of all subjects presented with NSTI between 2006 and 2016. Patients were categorized based on the time to intervention (Gp-1 ≤12 hr, Gp-2 12.1-24 hr and Gp-3 >24 hr). Data were analyzed and compared using chi-square and ANOVA tests. Correlation coefficient was performed as well.

Results: We identified 102 patients with a confirmed diagnosis of NSTI (Gp-1: 44%, Gp-2: 21% and Gp3: 35%) with a mean age of 54±18 years; 41% of them were females and 59% were diabetics. Seven patients had repeated NSTI and 19 died (18.6%). Based on the causative organism, 37 (47%) had type I, 33 (42%) had type II and 7 (7%) had type IV. Out of the 19 deceased subjects, 7 had type I and 6 had Type II NSTI. Fournier gangrene was found in 21 patients, 59 had lower extremities NSTI and 16 had truncal NSTI. The median number of debridement was 3 (range 1-14). Amputation was performed in one patient. Median time to intervention was 14 hr (1-127). Time to intervention was correlated with the hospital length of stay (r=0.24, p=0.02). The age, gender, clinical presentations, risk factors and location were comparable among the 3 groups except for foul smell and crepitus that were more evident in Gp-1 and 2 in comparison to Gp-3. The mortality was higher in Gp-3 (22.2%) in comparison to Gp-2 (19%) and Gp-1(15.6%), however this was not statistically significant (p=0.73).

Conclusion: Time to intervention has clinical implications in patients presenting with NSTI, particularly for the hospital length of stay.
P 9. OUTCOMES FOLLOWING ELECTIVE PNEUMONECTOMY BY ACUTE CARE SURGEONS AT A SAFETY NET HOSPITAL

J Haenel RRT, J Johnson MD, R Stovall MD, R Lawless MD, KB Platnick MD, C Fox MD, E Campion MD, C Cothren Burlew MD, EE Moore MD, F Pieracci MD MPH

University of Colorado School of Medicine

Background: Elective pneumonectomy (EP) is performed traditionally for either hilar malignancy or sequelae of pulmonary infection. However, high reported morbidity and mortality following EP has led many centers to abandon this operation entirely, or at least refer patients to tertiary care centers with thoracic specialists. After noticing many similarities between perioperative care of acute care surgery and EP patients, our safety net hospital developed a multidisciplinary elective thoracic surgery practice staffed by pulmonologists, medical oncologists, and acute care surgeons. We hypothesized that both acute and long term outcomes following EP in this setting were favorable.

Methods: Following waiver of informed consent, we retrospectively analyzed a prospectively-maintained lung resection database for all patients who underwent EP over a five year period (2013-2017). All patients underwent a protocolized post-operative pathway including ICU admission, pulmonary vasodilators, and arrhythmia pharmacoprophylaxis. Long term survival was based upon either phone call or the patient’s last known contact with the healthcare system.

Results: 7 EPs were available for review. The mean age was 62, six patients (85%) were male, and with comorbidities notable for liver disease (71%), hypertension (71%) and chronic kidney disease (28%). Six (85%) cases were performed for lung carcinoma and one (15%) for refractory pulmonary aspergillosis. The mean operative length was five hours and the mean length of stay was 15 days. Three patients (47%) developed atrial fibrillation, one of whom required a pacemaker, and one (14%) required cardioversion. Two patients (28%) were readmitted postoperatively with noncompliance with supplemental oxygen. Two patients (28%) developed post-operative pneumonia and two (28%) developed hemothorax requiring reoperation. No patient expired within the first thirty days, and no patient developed a broncho-pleural fistula. All tumors had negative margins. At a mean follow up of 1 year, all patients were still alive. Of the mean follow up of 2 years available for three patients, one (14%) expired due to comorbidity unrelated to the surgery.

Conclusion: EP is a viable surgical option when indicated with favorable short and long-term survival. Furthermore, it can be performed safely by acute care surgeons at a safety net hospital.
Background: Biliary strictures represent a significant source of morbidity following donation after circulatory death liver transplantation (DCD-LT). Several groups have demonstrated that administration of tissue plasminogen activator (tPA) decreases biliary stricture rates, a phenomenon attributed resolution of microthrombi in the peribiliary vascular plexus. No studies have evaluated the cost-effectiveness of this strategy. This study sought to approximate the cost-effectiveness of tPA utilization for prevention of biliary strictures in DCD-LT.

Methods: A review of the peer-reviewed literature from January 2007 to October 2017 was used to identify studies evaluating outcomes in patients undergoing DCD-LT with and without tPA administration. The number of DCD-LT in which tPA was utilized and the number of DCD-LT recipients in each group who developed biliary strictures were extracted from each study. Biliary stricture rates in each group were used to calculate the absolute risk reduction (ARR) associated with tPA administration. This was then used to calculate the number needed to treat (NNT) for prevention of one biliary stricture. The incremental cost of a post-liver transplant biliary stricture was approximated using data from the Premier Perspective® Hospital Database. This cost was compared to the product of the NNT and the cost of a 100mg vial of tPA at our transplant center to determine the cost effectiveness of tPA utilization in DCD-LT for prevention of biliary strictures.

Results: Three studies comparing outcomes of DCD-LT with versus without tPA utilization were identified. Among livers in the tPA groups, the dose of tPA ranged from 2 mg to 100 mg based on center-specific protocol. The incidence of stricture in the setting of tPA administration was 43/215 (20%), while incidence in patients without tPA use was 57/132 (43%) (p<0.001). This translated into an ARR of 23.2% and a NNT of 4.3. Based on a reported cost of $7,890.38 per 100 mg vial of tPA, the cost associated with treating 4.3 patients was calculated to be $33,928.63. Based on an incremental cost of $81,888 associated with management of patients who developed post-transplant biliary strictures...
compared to those who did not develop biliary strictures, use of tPA infusion into the donor hepatic artery in DCD-LT was estimated to result in a savings of approximately $47,952.37 for each post-DCD-LT biliary stricture prevented.

**Conclusion:** Utilization of DCD-LT protocols which include tPA represents one possible cost-effective strategy for prevention of post-transplant biliary stricture in DCD-LT. The currently available literature on the efficacy of tPA in DCD-LT remains limited based on wide variation in center specific protocols, lack of multivariable analysis to control for confounding introduced by other improvements in DCD protocols, and retrospective study designs. Future prospective studies controlling for donor, recipient, and peri-operative variables are warranted to more accurately determine the efficacy and fiscal responsibility of this strategy.
Background: Graft placement is often required for permanent hemodialysis access in patients without suitable autogenous conduits. Bovine carotid artery Artegraft® (BCA) is a biologic graft that can be utilized as a conduit and has been shown to outperform polytetrafluoroethylene (PTFE) grafts. However, concern regarding immunologic sensitization may limit the use of BCA in the transplant candidate. Panel reactive antibody (PRA) is an immunological test utilized in transplant recipient selection representing the proportion of the population to which the transplant recipient will react via pre-existing antibodies; increases in PRA limit access to transplantation. The purpose of our study was to determine whether BCA graft placement was associated with changes in PRA and therefore should be considered a sensitizing event. We hypothesized that BCA graft placement would have no effect on PRA and that PRA change would be equivalent to patients who underwent native arteriovenous fistula (AVF) creation.

Methods: Of patients listed for kidney transplant at our institution, we identified 10 patients who underwent BCA placement for hemodialysis access and a matched cohort of 10 patients who underwent native AVF creation between 2014 and 2017. Comprehensive chart review was performed to identify demographic information, surgery date(s), PRA values, sensitizing events, and transplantation status. The PRA value nearest to the surgery date was compared separately for the BCA and AVF patients using a paired t-test. The change in PRA value from before to after the dialysis access operation was compared between BCA and AVF groups using a two-sample t-test. Pre-surgery PRA’s were also compared to the maximum PRA at 0-6, 6-12, 12-18 and 18-24 months post-surgery.

Results: Prior to the dialysis access operation, the mean PRA was 14.1±23.5% vs. 17.1±29.0% (p=0.76) and the median post-surgery follow-up time was 16 and 15 months for BCA and AVF cohorts, respectively. There were no statistically significant differences between pre- and post-
surgery PRA for BCA and AVF patients, regardless of time interval post-surgery. The difference in pre-/post-surgery PRA change between cohorts was not statistically significant for PRA’s closest to surgery (0.2±40.6% vs. 1.0±2.8%, p=0.95, at a median 4 and 3 months post-surgery, respectively) or when using the maximum in any post-surgery interval. Prior to their dialysis access surgery, there were 16 sensitizing events in 5 patients in the BCA group compared to 10 events in 5 patients in the AVF group (p=0.20). Only one of the ten patients in the BCA group had a clinically relevant and sustained increase in PRA following their dialysis access operation vs. no patients in the AVF group (p>0.99). However, this patient had a known sensitizing event (blood transfusion) between the BCA surgery and the post-operative PRA. Three of ten patients in the BCA cohort vs. five of ten patients in the AVF cohort went on to have successful kidney transplants (p=0.65).

**Conclusion:** The utilization of BCA for dialysis access was not associated with statistically significant changes in PRA. These data suggest that implantation of BCA will not affect access to organ transplantation.
ePOSTER ABSTRACTS (continued)

P 12. PREVENTING UNINTENDED THERMAL INJURY: STRATEGIES TO REDUCE STRAY ENERGY TRANSFER IN ROBOTIC SURGERY
H Carmichael MD, D Overbey MD, K Wikiel MD, TN Robinson MD, EL Jones MD
Denver Veterans Affairs Medical Center

Background: Stray energy transfer from the monopolar energy device or “Bovie” is an important mechanism for unintentional thermal injury during laparoscopic surgery. Multiple strategies have been elucidated that reduce stray energy transfer including: reducing the generator power setting, unbundling the instrument cords and utilizing low voltage cut or blend modes. Our prior work has shown that the assistant graspers may be particularly vulnerable to stray energy transfer in robotic surgery but strategies to reduce this have not been studied. The purpose of this study was to examine methods to reduce stray energy transfer during robotic surgery.

Methods: A live porcine model was used to compare stray energy transfer in vivo within the DaVinci Si Robotic Surgery System (Intuitive, Sunnyvale, CA). The change in tissue temperature nearest the tip of the assistant grasper (not electrically active) was measured using a thermal camera. The monopolar instrument was activated for five seconds (ForceTriad, Covidien, Boulder, CO) through a separate port without touching tissue or the other instruments. The inactive and active instruments were kept at least five centimeters apart within the surgical field. Experiments were repeated 10 times. Student t-tests were used for all comparisons, with a p-value less than 0.05 considered significant.

Results: Tissue nearest the tip of the assistant grasper increased an average of 8.4 degrees Celsius (95% CI 7.2–9.5) on 30W coagulation mode. Doubling the power to 60W coagulation mode increased tissue temperature by 9.4 degrees Celsius (95% CI 7.7-11.2), which was not different from the temperature change at 30W (p = 0.28). Unbundling the instrument cords reduced the temperature change to 3.8 degrees (95% CI 2.7-5.1, p < 0.001). Utilization of an impedance-monitoring generator (Erbe USA, Marietta, GA) reduced the mean change in temperature to 0.69 degrees Celsius (95% CI 0.39-0.99, p < 0.001).

Conclusion: Stray energy is transferred to the assistant grasper when using monopolar energy within the DaVinci Si robotic system, resulting in increased tissue temperature by nearly 10 degrees Celsius at this
inactive instrument. Separating the active electrode cord from other instrument cords or using an impedance-monitoring generator reduces stray energy transfer. Use of a higher power generator setting trended towards more stray energy transfer, but these differences were not statistically significant. These practical findings should modify the surgeon’s approach to energy use during robotic surgery in order to reduce patient harm.
Background: The two most commonly performed bariatric procedures in the U.S. are the Roux-en-Y Gastric Bypass (RYGB) and Sleeve Gastrectomy (SG). Despite the increased availability of risks and benefits of these operations, misconceptions persist. Patients' perceived risks of a procedure may be a major deterrent to surgery. RYGB involves altered gastrointestinal (GI) anatomy and two anastomoses, while the SG involves a gastric resection. When potential patients view images of the procedure, they may perceive RYGB to involve significant risk compared to SG, in which no significant GI alterations are depicted. The objective of this study was to evaluate preferences for RYGB vs. SG in a general U.S. population.

Methods: An electronic survey was distributed to a random sample of 1,000 U.S. adults. The survey asked respondents to select their preferred procedure (RYGB or SG) based 1) only on pictures of the procedures, 2) only data on risks and benefits of each procedure, 3) pictures along with the corresponding risk/benefit profile, and 4) procedure images with mismatched information (risks and benefits of RYGB with image of SG and vice versa).

Results: Overall 999 individuals met inclusion criteria and completed the survey; 66 (7%) had undergone weight loss surgery and were excluded from analysis. Mean age and BMI of respondents was 44.8±14.7 years (n=924) and 31.2±47.4 kg/m² (n=915); 65% (598/920) were female. The majority of respondents were white/non-Hispanic (713/925; 77%). The most common education levels achieved were college degree (281/923; 30%), some college (276/923; 30%), and high school diploma/GED (224/923; 24%). Thirty-six percent (293/925) of respondents have considered having surgery for weight loss. Those who considered having bariatric surgery had a higher mean BMI vs. those who had not considered it (32.5±8.8 vs. 27.0±6.9; P<0.001). A higher proportion of patients preferred RYGB over SG when images only were provided (54% vs. 46%), when information only was provided (63% vs. 37%), and when correct information with the procedure image was provided (56% vs. 44%). When presented with mismatched information and images, 56%...
preferred RYGB information+SG image (56%) vs SG information+RYGB image (44%), implying the data rather than the picture was the main determinant in their decision making. There was no difference in procedure preference by education level or race/ethnicity; however, the median body mass index was higher among those who preferred RYGB (27.4 kg/m², range 23.2-34.3) to SG (26.6 kg/m², range 23.1-31.8) when information was provided (P=0.003).

**Conclusion**: Based on this survey of a general U.S. adult population, providing evidence based information regarding the risks and benefits of a procedure resulted in the majority of respondents choosing RYGB over SG. When images of procedures were provided alone, a similar proportion of respondents preferred RYGB over SG. There are likely other factors contributing to the increasing volume of sleeve gastrectomy cases aside from patient preference.
P 14. AN INNOVATIVE THERAPEUTIC OPTION FOR NON-OPERATIVE TREATMENT OF AFFERENT LOOP SYNDROME IN THE POOR SURGICAL CANDIDATE
SK Hansen MD, RL Boyd MD, AX Sudan MD, HW Hollis Jr MD, WM Peterson MD
St. Joseph’s Hospital and Medical Center

Background: Afferent loop syndrome (ALS) following gastrojejunostomy is typically treated with open or laparoscopic revision. Alternatives to operative revision include esophagogastroduodenoscopy (EGD) with balloon dilation and stenting, transhepatic dilation and stent placement, and percutaneous jejunostomy tube placement. This report describes an innovative technique of percutaneous transhepatic external drainage in a patient with prohibitive risks for operative intervention for complications resulting from Afferent Loop Syndrome.

Methods: Percutaneous transhepatic external drainage of the afferent limb was performed in a 58 year old female presenting with chronic afferent loop syndrome. The patient’s pertinent medical history includes antrectomy with roux-en-y reconstruction for peptic ulcer disease, active chemotherapy for metastatic breast cancer, and chronic malnutrition with an albumin of 1.9 and BMI of 17.7. She was considered extremely high risk for operative intervention. Ultrasound was the primary method used to gain percutaneous access to the left hepatic duct. A guidewire was then used to insert a working sheath. A glidewire was then advanced through the ampulla and into the duodenum. A 10 Fr internal/external biliary drain was then advanced into the duodenum with the catheter side-holes extending into the biliary tree.

Results: In the first 12 hours following placement, 3.3 liters of small bowel contents were drained; this significantly improved the patient’s pain, distention, nausea, and intermittent emesis. The drain averaged over 1 L per day of output resulting in normalization of the patients liver functions tests and pancreatic enzymes. The patient was able to resume a normal diet and was discharged from the hospital. No procedural complications occurred in the patient.

Conclusion: Although surgical revision of the obstructed biliopancreatic limb remains the gold-standard treatment for afferent loop syndrome; percutaneous transhepatic external drainage with an internal/external biliary drain extended into the duodenum of the afferent limb is a safe temporizing procedure. Innovative percutaneous strategies are currently available at centers with advanced interventional specialists. These strategies minimize immediate risks and can be used as a bridge to definite operative repair.
**P 15. THE ROLE OF FELLOWSHIP TRAINING IN BARIATRIC SURGERY: AN ANALYSIS OF METABOLIC AND BARIATRIC SURGERY ACCREDITATION AND QUALITY IMPROVEMENT PROGRAM DATA**

MC Morell MD, AJ Borgert PhD, SE Henson RHIT, KJ Kallies MS, SN Kothari MD

**Gundersen Health System**

**Background:** Minimally invasive surgery (MIS) fellowships provide an important training environment for advanced laparoscopic techniques used in Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy (SG). Previous research has indicated that MIS fellowships result in increased operative times, but do not adversely impact patient outcomes. The objective of this study was to evaluate outcomes after RYGB and SG for cases with a fellow versus other types of first assistants.

**Methods:** RYGB and SG procedures were selected from the 2015 MBSAQIP Participant Use File. Cases were grouped by first assistant into those with a fellow, resident, or other. Statistical analysis included multivariable logistic regression.

**Results:** There were 42,213 RYGB and 94,786 SG cases that met inclusion criteria. First assistants were noted as fellows in 9% of cases, residents in 17%, and other in 74%. A higher proportion of RYGB cases involved fellows as first assistants (40%) vs. residents (31%) or others (30%) (P<0.001). For all three types of first assistant, the rate of any major complication was 2%. Overall complication rates were 4%, 3%, and 2% for fellow vs. resident vs. other assistant, respectively. Rates of any major complication by fellow, resident, and other first assistant were 2.9%, 2.6%, and 2.5% for RYGB (P=0.330) and 1.6%, 1.6%, and 1.2% for SG (P<0.001). When adjusting for operative and patient factors, the risk of combined major/minor morbidity was increased for both fellows (OR=1.23, 95% CI 1.11-1.37; P<0.001) and residents (OR=1.17, 95% CI 1.07-1.28; P<0.001) compared to other first assistants; however, only resident first assistants were associated with increased major morbidity (OR=1.14, 95% CI 1.03-1.04; P=0.020). Regardless of first assistant, RYGB (OR=1.62, 95% CI 1.51-1.75; P<0.001) was associated with increased major or minor morbidity, as was each 10-minute increase in operative time (OR=1.04, 95% CI 1.04-1.05; P<0.001).

**Conclusion:** Resident and fellow participation in bariatric surgery cases were associated with an increased risk of any major or minor postoperative morbidity; however, only resident participation was associated with an increased risk of major postoperative morbidity. Fellowship training provides an ideal environment for overcoming the learning curve of bariatric operations without compromising patient outcomes.
P 16. BARIATRICS BELOW THE BORDER AND TREATMENT OF UNFORSEEN COMPLICATIONS IN THE POST OPERATIVE PERIOD

LA Griffin Ray MD, WO Christopher MD, K Carter MD, KD Vick MD, T Helling MD, T Pinson MD, R Mcauley MD, W Cauthen MD

University of Mississippi Medical Center

**Background:** Thirty-five percent of Mississippians are obese. There are many reasons why Mississippians seek surgery outside the United States, with cost and lack of access frequently being primary drivers. Some bariatric and metabolic surgical programs outside the US have less stringent criteria for bariatric surgery, and may not provide pre-operative work-up, education, or long term follow up care. MBSAQIP accredited centers (AC) have specific inclusion requirements for patients eligible for surgery. Accredited centers also provide psychologic evaluation, dietary education, exercise and smoking cessation programs, extensive support groups, etc. Further work up includes evaluation for conditions that could complicate surgical outcome or issues that should be addressed at time of operation. Due to lower cost and less extensive evaluation regimens, patients sometimes seek treatment outside of MBSAQIP centers.

**Methods:** We have treated 8 patients over the past 4 years at our two institutions who have suffered severe complications after sleeve gastrectomy in Mexico and subsequently presented to our centers, often requiring extensive, costly and lengthy intervention.

**Results:** Patients have a tendency to present with inadequate knowledge of postoperative requirements, with lack of adequate preoperative teaching and testing, had prolonged, protracted hospital courses and have incurred crushing medical debt after a severe complication that they did not anticipate. Complications include post-operative hemorrhage requiring immediate return to the operating room with later formation of intra-abdominal abscesses requiring IR drainage procedures, septic shock gastric sleeve leak requiring emergent laparotomy, delayed perforation requiring initial attempted stenting followed by laparotomy, and esophageal perforation requiring neck exploration followed by dilation of esophageal stricture. Hospital bills range from $44,000-$128,000 at initial presentation. These costs do not include the cost of subsequent treatment. Furthermore several patients would not have been eligible for bariatric procedures in the US for various reasons including active of IV
drug use, active smoking status, and BMI <30. Patients also reported that cost was a main draw to seeking bariatric intervention abroad with costs reportedly ranging from approximately $4500-$5000 for operative intervention, with flight and lodging reported to be up to an additional $4000. Cash price at our institutions is $12,500.

**Conclusion:** There is an unknown number of patients in our state and US that seek bariatric care abroad. Patients who suffer complications after having bariatric surgery abroad may not have adequate care in the perioperative period by the initial surgical team. Patient work up and education also insufficient as many patients have minimal face to face pre-operative evaluation. This unpredictable as our information is provided solely by patient report. Providers in Mississippi should be proactive in recommending against medical tourism and greater efforts should be made to educate and counsel patients regarding the risks of having bariatric surgery outside the United States in non-MBSAQIP centers.
ePOSTER ABSTRACTS (continued)

P 17. THE USE OF BOTULINUM TOXIN IN CONTAMINATED ABDOMINAL WALL RECONSTRUCTION (AWR)
KA Schlosser MD, MR Arnold MD, KW Kercher MD, VA Augenstein MD, RR Lopez MD, R Raible MD, AE Lincourt PhD MBA, T Prasad, R Sing MD, PD Colavita MD, BT Heniford MD
Carolinas Medical Center

Background: Preoperative Botulinum toxin A (BTA) has been described to facilitate abdominal wall closure in patients with an open abdomen or large hernia defect. The present study describes the use of BTA in contaminated AWR.

Methods: All contaminated AWR utilizing preoperative BTA injections to the bilateral oblique muscles were identified from a prospective database. Demographics, operative characteristics, and outcomes were evaluated. Preoperative CT scans were reviewed using three dimensional volumetric software.

Results: Fifteen contaminated abdominal wall hernia repairs were performed with preoperative BTA (14 CT guided, 1 US guided). Mean age was 66.6±9.4yr, BMI 32.6±6.2kg/m2, and 33.3% were males. All patients had comorbidities (cardiac, pulmonary, endocrine, renal); 4 patients had diabetes, 1 had active tobacco use, 2 patients had COPD, 5 patients had a history of MRSA infection. Mean previous abdominal operations was 8.3±2.6 per patient, and, of the 12 with previous hernia repairs, they averaged of 3.3±2.2 failed prior repairs. Three had a prior component separation. Seven patients presented with infected mesh, four had enterocutaneous fistulas (ECF) involving mesh, two had an ostomy in the field. Preoperative CT scan demonstrated a large mean defect area 300.0±103.2cm2 and loss of domain (mean hernia volume 2210.2±1750.8cm3). BTA was injected 34.5±14.7days prior to surgery. Mean operative time was 258.7±74.5min with a mean mesh size of 649.6±289.8cm2. Eleven patients required component separation, 12 had advancement flaps, and 14 patients achieved primary fascial closure; one patient required a partial bridged repair for a defect measuring 760cm2. Five patients were classified as wound class II based on planned concomitant procedures. Biologic mesh was placed in 10 patients, 4 patients had synthetic mesh placed (Wound classes 2 and 3), and one patient with a ECF was closed primarily. Postoperative major complication rate (Clavien-Dindo ≥3) was 40%. By univariate analysis, patients with intraoperative bowel resection had an increased likelihood
of a major complication (p=0.01), while patients who had advancement flaps were less likely to have major complication (p=0.04). Wound complication rate in these contaminated cases was 40%; four patients had simple cellulitis treated by antibiotics, and one abscess and seroma were treated with percutaneous drain. Larger defect width was predictive of wound complications (16.7±4.6 vs 15.4±4.8, p=0.003). One patient died in hospital of respiratory failure, one was readmitted and died of a perforated duodenal ulcer; both were highly comorbid patients. Mean follow up was 3.6±5.2 months.

**Conclusion:** Preoperative BTA injection of the bilateral oblique muscles can be a very helpful adjunct in AWR of massive defects in a contaminated setting. There were limited wound complications in these cases. BTA injection appears to be an effective technique in facilitating fascial closure where component separation alone may not be adequate, possible, or has previously failed.
P 18. RETRO-RECTUS PLACEMENT OF BIO-ABSORBABLE MESH IMPROVES PATIENT OUTCOMES

J Cho BS, MC Helm BS, JH Helm MD, N Mier BS, A Kastenmeier MD, JC Gould MD, MI Goldblatt MD
Medical College of Wisconsin

**Background:** Previous studies suggest the use of absorbable synthetic mesh for contaminated and high-risk wounds as a safe alternative to biologic or permanent synthetic mesh in open complex ventral hernia repairs. However, there is little consensus on the ideal placement of bio-absorbable mesh for a successful abdominal wall reconstruction in open complex ventral hernia repairs. We hypothesized that midline retro-rectus placement of bio-absorbable mesh would significantly reduce complications and recurrence rates when compared to repairs with intraperitoneal mesh placement.

**Methods:** A retrospective review was conducted of patients who underwent open complex ventral hernia repair using bio-absorbable mesh (Bio-A, Gore, Flagstaff, AZ). Patient demographics, hernia characteristics, Centers for Disease Control wound type, and Hernia Working Group wound class were collected. Hernia-related quality of life (HerQLes) surveys were used pre- and post-operatively to assess quality of life. Perioperative details and postoperative complications were collected. Follow up was obtained either in person, or by validated phone questionnaire.

**Results:** A total of 81 patients were included. Seventy-four (91.4%) of these hernia repairs had mesh in the retro-rectus position, while 7 (8.6%) had intraperitoneal mesh placement. Patient demographics, including preoperative comorbidities, did not differ between groups. The retro-rectus group had larger hernia defects (156.2 cm) compared to the intraperitoneal group (63.9 cm), which was not statistically significant (p=0.058). Overall complications (e.g. dehiscence, wound drainage, cellulitis, sepsis) were also similar in both groups of patients. Recurrence rates in the retro-rectus and intraperitoneal group were 8.1% and 42.9%, respectively (p=0.005). Overall, the average patient follow-up was 22 months and did not differ between groups. The retro-rectus group indicated a significant (p<0.05) improvement in quality of life compared to the intraperitoneal group from baseline. No long-term (>7 days) antibiotics were used and no mesh implants were removed during the study.

**Conclusion:** Patients who underwent open complex ventral hernia repairs with bio-absorbable mesh in the retro-rectus position experienced lower overall complication rates than those with intraperitoneal mesh placement. In addition, despite a larger hernia defect in the retro-rectus group, recurrence rates were significantly reduced and favorable with retro-rectus placement of mesh.
P 19. DISAPPOINTING RESULTS WITH INTRA-OPERATIVE SCLEROTHERAPY FOLLOWING VENTRAL HERNIA REPAIR: A SINGLE CENTER EXPERIENCE
JJ Weis MD, HB Cunningham MD, MJ Watson MD
University of Texas Southwestern Medical Center

Background: Seroma is a common complication of ventral hernia repair particularly with approaches such as the Chevrel/Browse anterior rectus sheath repair. We previously reported a 21% incidence of post-operative seroma during a single surgeon’s 10-year experience with this approach. Due to the high frequency of this complication, the same surgeon began using intraoperative sclerotherapy during ventral hernia repairs. Recent reports in the literature have shown mixed results with prophylactic sclerotherapy. The purpose of this study was to review our results with sclerotherapy and compare patient outcomes to historical controls.

Methods: We retrospectively reviewed charts of all ventral hernias performed by a single surgeon from February 2016 to February 2017 (N=42). Five patients were excluded because they either did not receive intra-operative sclerotherapy (n=2) or because follow-up data was incomplete (n=3). Wound complications (infection, seroma, and hematoma) in the sclerotherapy group were compared to the historical controls using a chi square test.

Results: Complete data was available for 37 patients. Average BMI was 31.8 ± 5.7. This cohort had undergone an average of 3.7 prior abdominal operations and 0.6 prior hernia repairs; the median defect size was 64cm² (IQR 25-121). Thirteen patients (35%) had lateral components release (4 unilateral, 9 bilateral) in addition to release of the anterior rectus sheath described by Chevrel/Browse. Synthetic mesh was used in 68% and biologic mesh in 32%. Sclerotherapy agents administered included talc (n=20), doxycycline (n=5), and dehydrated ethanol (n=12). In total, 17 sclerotherapy patients (46%) developed wound complications including 13 patients (35%) who developed seromas. When the sclerotherapy group was compared to historical controls, there were non-significant trends toward increased wound complications (46% vs. 31% respectively, p=0.08) and seromas (35% vs. 21% respectively, p= 0.053). Incidence of wound complications were highest for the group receiving talc (60%) followed by dehydrated ethanol (33%) followed by doxycycline (20%). Of those with wound complications, 14 patients (82%) ultimately required incision and drainage (I&D) of their wound. Four patients underwent bedside I&D while 10 patients returned to the operating room. Four
patients required multiple operations for wound management. After I&D, patients required 150 days ± 62 days of wound care until wounds were completely healed. No patients required mesh explant.

**Conclusion**: In this case series, intra-operative sclerotherapy showed rates of wound complications which were clinically, albeit not statistically, higher compared to historical controls. These wound complications resulted in substantial morbidity requiring return to the operating room for I&D in the majority of cases. Following I&D, patients needed almost 5 months of wound care on average before they completely healed. Based on these results, we have discontinued the use of intra-operative sclerotherapy in our practice. We now perform complete closure of subcutaneous space with running, absorbable, barbed suture. We recommend using sclerotherapy agents with caution until further high quality evidence is available to support their use when mesh is present within the cavity being sclerosed.
ePOSTER ABSTRACTS (continued)

P 20. LAPAROSCOPIC INTRAPERITONEAL REPAIR OF SPIGELIAN HERNIAS: THE GUNDERSEN EXPERIENCE
RS Watson MD, BT Grover DO
Gundersen Health System

Background: Spigelian hernias are a fascial weakness that occurs in the lateral abdominal wall at the semilunar line below the white line of Douglas. The hernia sack splays out underneath the external oblique making diagnosis sometimes difficult. Laparoscopic repair is considered a standard approach and in this video we demonstrate our preferred approach and technique to repairing these relatively uncommon hernias.

Methods: We present our preferred operative technique for Spigelian hernia repairs, illustrated by a video of one of our patients. Our general approach is a transabdominal laparoscopic approach with fascial closure and pre-peritoneal mesh placement.

Results: We present the case of a 69 year old male with a palpable mass in his left lower quadrant of his abdomen. He denied any significant symptoms from the mass including pain, history of obstructive symptoms or incarceration episodes. An abdomen pelvis CT scan was obtained with demonstrated a left sided spigelian hernia with an approximately 3 cm fascial defect. The hernia contents appeared to contain omentum and mesenteric fat with a hernia sack size of 10 cm. He was otherwise healthy, very active and with no prior surgical history. The patient underwent laparoscopic hernia repair with fascial closure, and transfascial suture securement of pre-peritoneal mesh placement. The mesh was secured circumferentially with absorbable tacks and the peritoneum closed with absorbable tacks. The procedure was performed as outpatient surgery and the patient was discharged home later in the evening. The patient was seen in follow-up in 2 weeks and was doing well with minimal pain, no evidence of recurrence or complication. He was discharged from surgical clinic.

Conclusion: Transabdominal laparoscopic approach with fascial closure and pre-peritoneal mesh placement resulted excellent hernia repair with minimal morbidity and high patient satisfaction for patients presenting with spigelian hernias.
P 21. REDUCING THE PAIN: A COST EFFECTIVENESS ANALYSIS OF TRANSVERSUS ABDOMINIS PLANE BLOCK USING LIPSOMAL BUPIVACAINE FOR OUTPATIENT LAPAROSCOPIC VENTRAL HERNIA REPAIR
TM Enniss MD, JB Young MD, M McCrum MD, JM Nunez MD, R Nirula MD, RE Nelson PhD
University of Utah School of Medicine

Background: Transversus abdominis plane block (TAP) with liposomal bupivacaine has been studied as an effective method of reducing the need for post-operative opioids and increasing same day discharge rates. However, less is known about the cost-effectiveness of this strategy relative to opioids alone for hernia repair. We performed an economic evaluation of these strategies using a computer simulation model.

Results: The liposomal bupivacaine TAP block was a dominant strategy yielding a $456.75 decrease in cost and an 0.1 increase in QALYs relative to opioids alone. In one-way sensitivity analysis of cost ICER values were most sensitive to variations in the amount saved by SDD and the cost of bupivacaine. In probabilistic sensitivity analyses, TAP strategy was cost-effective at a willingness-to-pay threshold of $50,000/QALY in 89% of iterations and at a willingness-to-pay threshold of $100,000/QALY in 95% of iterations.

Conclusion: The use of liposomal bupivacaine TAP block resulted in cost savings and improved QALYs in base case analyses and was cost-effective at conventional willingness to pay thresholds in the vast majority of iterations in probabilistic sensitivity analyses.
Background: Postoperative pain control is challenging for both surgeons and patients. In an effort to reduce opioid use, multimodal pain regimens are at the forefront of postoperative pain control. Liposomal bupivacaine is an FDA approved local anesthetic that consists of bupivacaine loaded into multivesicular liposomes, allowing for prolonged release up to 72 hours following a single intraoperative administration at the surgical site. The goal of this study was to evaluate the effectiveness of liposomal bupivacaine in controlling postoperative pain in patients undergoing open inguinal or incisional hernia repair.

Methods: A prospective randomized study was conducted in patients undergoing outpatient open inguinal or incisional hernia repair. Patients were randomized into either a control arm that received the standard of care, injection of bupivacaine HCl at the surgical site, or an experimental arm that received either a surgical site block (inguinal hernia) or a transversus abdominus plane (TAP) block (incisional hernia) using liposomal bupivacaine. Operations were performed by a single surgeon at a high volume, urban hospital. Background information was collected as well as length of operative time, length of time to discharge from outpatient recovery, opioid requirements during the postoperative period, use of other analgesics, and objective information regarding patients’ perception of their pain control.

Results: There were 6 patients that underwent open inguinal hernia repair and 1 patient that underwent open incisional hernia repair. Two patients received bupivacaine HCl and 5 patients received liposomal bupivacaine. Patients who received liposomal bupivacaine required significantly less opioids (644 vs 226 morphine equivalents, p<0.05), reported better satisfaction with their pain control (p<0.05), and felt the pain they experienced was less than they expected (p<0.05). There were no differences in operative time or the amount of time spent in the recovery room.

Conclusion: This proof of concept study demonstrates a role for liposomal bupivacaine as part of a multimodal postoperative pain control regimen. This study is limited by the small sample size. A large-scale, randomized prospective trial is needed to confirm these results. Further studies evaluating the effectiveness of liposomal bupivacaine in other procedures could lead to more use of this novel drug and a greater reduction in opioid use in postoperative patients.
P 23. THE RELATIONSHIP BETWEEN PRE-HOSPITAL USE OF KETAMINE AND HOSPITAL OUTCOMES
AJ Mangram MD, GR Shirah MD, JF Sucher MD, FR Ali-Osman MD, VA Johnson MD, A Abidali DO, S Hall PharmD, JF Barletta PharmD, K Shatto RN, E Reinhart, JK Dzandu PhD
HonorHealth John C. Lincoln Medical Center

Background: In the current epidemic of narcotic abuse, alternative methods for analgesia are being explored. Ketamine is an N-methyl-D-aspartate (NMDA) antagonist which causes dissociation, analgesia, amnesia and elevated blood pressure. Paradoxically, these drug effects can be beneficial in the trauma patients. However, the effect of ketamine administration on patient outcomes has not been well elucidated. We hypothesize that ketamine in the pre-hospital adult trauma patient is associated with worse hospital outcomes.

Methods: We conducted a retrospective review of all consecutive trauma activations at American College of Surgeons verified level 1 and level 3 trauma centers from December, 2016 to August, 2017. Patients were excluded if there were no run sheets, transfers from other facilities or ISS=75. Patients included were divided into 2 groups. Group 1 received Ketamine, group 2 includes patients who had morphine, fentanyl or no analgesia. The following variables were reviewed: age, ethnicity, sex, route of transportation, and time of transportation, mechanism of injury, revised trauma score, illicit drug use, Glasgow Coma Scale, systolic blood pressure, and respiratory rate. The primary outcome was admission to the intensive care unit (ICU). Secondary outcomes included ICU length of stay, hospital length of stay, complications, need for mechanical ventilation and death. Multivariate analysis was performed to control for identified confounding variables.

Results: A total of 1564 trauma patients were assessed (ketamine, n=43; no ketamine, n=1789). Demographic variables were similar however, patients who received ketamine were younger (41 ± 18 vs. 51 ± 23, p=0.004), more likely to arrive by helicopter (54% vs 7%, p<0.001), had a lower revised trauma score (5.7±1.8 vs. 7.4±1.5, p<0.001), had a higher injury severity score (15.4 ±10.7 vs. 8.6 ±8.7, p<0.001), and used illicit drugs (40% vs. 12%, p<0.001). The need for mechanical ventilation was 51% in the ketamine group compared to 11% in the controls (p<0.001). Admission to the ICU was 72% in patients who received ketamine vs. 31% in the controls (p<0.001). Variables identified as confounders on univariate analysis of ICU admission included age, injury severity score
(ISS), revised trauma score (RTS), illicit drug use and opioid utilization. Multivariate analysis revealed that ketamine [OR (95%CI) = 4.67 (2.31-9.41)], RTS [OR (95%CI) = 0.92 (0.86-0.99)] and illicit drug use OR (95%CI) = 2.44 (1.77-3.38)] were independent predictors for admission to the ICU.

**Conclusion:** Pre-hospital use of ketamine is an independent risk factor for admission to the ICU. Given the current opioid epidemic, further investigations are needed to explore the risks and benefits of ketamine in this setting.
P 24. POINT OF CARE ULTRASOUND BY FIRST RESPONDERS IN RURAL SETTINGS CAN IDENTIFY INJURIES AND CHANGE TRIAGE DECISION-MAKING.
P Sobash BS, JM Helm BS, A Everett RN, V Sohini BS, M McClure, P Mammen MD MBA, CN Ellis MD
Texas Tech University Health Sciences

Background: In rural settings, timely access to medical care is the main contributor to complications. In West Texas, the average time from injury to first responder arrival is approximately 80 min and arrival to the definitive site of care is over 167 min. Hence, trauma in this rural region has some of the worst outcomes. Early identification of injury reduces triage time, enhances appropriate utilization of resources, and improves outcomes. Point of Care Ultrasound (POCUS) is used to visualize major injuries and identify sources of shock. However, image acquisition and interpretation in the prehospital setting is difficult, requires extensive training, and may be time consuming. We set out to see if first responders could acquire adequate images with minimal training and quantify the added triage time needed for POCUS.

Methods: EMS from rural counties were trained using a 2-hour hands-on course in the use of POCUS. Images included neck, pulmonary, cardiac, abdomen, and pelvic windows. Surveys of first responders were used to assess skill acquisition and usefulness of training sessions. EMS were then given POCUS for a 3 month field test. Images were saved for evaluation after the completion of the test. Trauma surgeons reviewed images to assess image quality and identification of target structures. Surgeons graded images as either adequate or not and if a target structure could be identified. After completion of the 3-month field test, first responders were surveyed to assess ease of use, technical complications, and total added time.

Results: 63 first responders were trained using a 2-hour hands-on course. All trainees felt that POCUS would be beneficial in triage. 82.5% (52/63) trainees wished to have further training on the machine. 30% (19/63) had difficulty with the pulmonary images. In field-testing, 57 patients were recorded by the trained EMS. 19 recorded patients were for trauma. Trauma surgeons reviewed the 19 trauma images. Cardiac and abdominal images were good quality and target structures were identified in 93%. 2 patients had images concerning for free intraperitoneal fluid. Tracheal imaging was done on only 6 patients. 39 EMS completed follow up surveys. All reported the POCUS was easy to use. The average time
to complete POCUS was 3 minutes. Technical difficulties included the length of the probe cord, charging of the devise on an ambulance, and ambient lighting within the ambulance. Interest in expanded use included transfer of images, vascular access, imaging for other conditions, and interpretation of images while in transit.

**Conclusion:** EMS can perform POCUS after a short hands-on session. Images obtained appear to be adequate to identify major injuries. Triage decisions and field resources can be maximized using POCUS. We believe the cost of adding POCUS to rural EMS is offset by improved triage time, reduction of wasted resources, and improved survival. We note the expanded use of POCUS by EMS for patients with other conditions may further reduce the upfront cost of this program. Finally, we noted great interest from the rural hospital emergency room to have access and training to this tool. We recommend Wifi capabilities to allow image interpretation while in transit and direct communication between EMS and trauma surgeons in rural areas.
P 25. THE TRAUMA TERTIARY SURVEY: STILL NEEDED IN MODERN TRAUMA CARE?
BP Mitchell BS, K Stumpff MD, TJ McDonald RN MSN, S Glorsky MD, S Berry MD, J Howard MD, A Bennett MD, JL Green MD, RD Winfield MD
University of Kansas School of Medicine

Background: Since its first description nearly thirty years ago, the trauma tertiary survey (TTS) has been recognized as essential to avoiding missed injuries; however, much has changed since the initial report of its use. Electronic health records, widespread use of whole-body CT scan, resident work hour restrictions, and the increased presence of advanced practice providers (APP) have changed workflow and the composition of the trauma team. Despite these changes, we hypothesized that the TTS would remain a critical means for preventing missed injuries at our Level I trauma center.

Methods: We identified patients from our trauma registry discharged between 7/01/16 and 12/31/16. We analyzed TTS completion rates, detection of missed injuries, and injuries requiring further management. We further determined which providers were completing the TTS, the timing from initial presentation that the TTS was performed, and performed a qualitative assessment of the TTS for completeness.

Results: TTS was completed on 264 of the 407 (65%) patients discharged during the study period. The time from patient presentation to completion of the TTS averaged 41 hours. The majority of TTS were completed by resident physicians and nurse practitioners (92% total, with NP’s and Residents each contributing 46%), with the remainder completed by attending surgeons, Physician Assistants, Fellows, and Medical Students. Out of three missed injuries that were detected using the TTS, only one missed injury required additional surgical management. Qualitatively, TTS completed by an APP were more thorough and complete, including more detailed physical examination, descriptions of plans for further care, and additional imaging ordered as a result of the TTS. TTS completed by residents were void of conclusions and gave no plan for future care and routinely appeared to have been cut and pasted from other notes in the medical record.

Conclusion: Although the missed injury rate in our series was significantly lower than historical cohorts, TTS remains an integral component of modern trauma care. Overall, we discovered a suboptimal
rate of TTS completion at our center during the period sampled, which serves as an opportunity for quality improvement. Among completed surveys, we found no difference in missed injury rates by provider, but found that TTS completed by APP’s were more complete and conclusive than those completed by residents. This highlights an important educational opportunity for residents on the trauma team, as the importance of and rationale for the TTS has likely not been adequately conveyed to this group.
EY Koh MD, BT Oyeniyi BS, EE Fox PhD, ML Scerbo MD, JS Tomasek MD, CE Wade PhD, JB Holcomb MD
University of Texas Health Science Center at Houston

**Background:** Most studies of trauma deaths include the large percentage (up to 98%) of non-preventable deaths in their calculations, potentially biasing their intervention efforts. In this study we aimed to compare the potentially preventable trauma deaths between 2 time periods at our institution.

**Methods:** Trauma patients who died in our hospital in 2005-2006 or 2012-2013 were included. Data was collected retrospectively from medical records. Mortality was adjusted for age, gender and mechanism of injury. Non-preventable deaths were excluded from analysis. The Mann-Whitney and chi square test were used to compare variables between both time periods.

**Results:** Between the study time periods there was a decrease in potentially preventable deaths, from 143/496 (29%) to 65/531 (12%), p < 0.001. Deaths from motor vehicle collisions decreased significantly, from the leading cause of death in 2005-2006 to the second leading cause of death in 2012-2013, behind falls. Head injury as a cause of death significantly decreased (40.6% to 24.6%, p = 0.03), while hemorrhage remained the leading cause of death and was stable during both time periods (47.6% to 43.1%, p = 0.55). Overall, the time to death decreased from a median of 85.3 hours to 67.3 hours (p= 0.05).

**Conclusion:** Potentially preventable trauma deaths represented 20% of all deaths and decreased during the study period. While the proportion of deaths from head injuries decreased significantly, hemorrhage remains constant as the leading cause of potentially preventable deaths. Continued research to improve survival from hemorrhage is warranted.
P 27. THE “ABC” SCORE AND THAWED FFP IMPROVES RESUSCITATION AND REDUCES PENETRATING TRAUMA MORTALITY
AA Heelan Gladden MD, RC McIntyre Jr MD, ED Peltz DO, S Vega MBA, R Krell BSN, C Velopulos MD, L Ferrigno MD, FL Wright MD
University of Colorado School of Medicine

Background: A priority in a massive transfusion protocol (MTP) is accurate, early identification of patients. We initiated a quality improvement project to improve early identification of hemorrhagic trauma patients and initiate appropriate blood product administration. This effort consisted of implementing the Assessment of Blood Consumption Score (ABC score) into our pre-hospital trauma patient triage process and the addition of thawed Fresh Frozen Plasma (FFP) to our initial MTP cooler. We hypothesized that implementing these changes would enhance identification of hemorrhagic patients and increase compliance with balanced blood product transfusion ratios, and that these processes would decrease mortality in hemorrhagic trauma patients.

Methods: A retrospective review of our trauma activations at a level II trauma center was performed to identify patients that were hypotensive on arrival (systolic ≤90 mm Hg) or had MTP activated. Chart review was performed to identify number and type of blood products delivered and mortality. Pre-implementation activation of MTP (aMTP) was at the discretion of trauma provider and only frozen FFP was available, with the thawing process beginning when MTP was ordered, resulting in a delay of approximately 30 – 45 minutes. In June 2016, the ABC score was implemented to triage trauma patients based on emergency medical services (EMS) telephone report and MTP was activated if the patient had a score of ≥2. We also revised our MTP products to include thawed FFP in the first MTP blood cooler. Comparisons were made in the period 15-months prior (2015-16) versus 15-months after implementation (2016-17). Actual MTP was defined as ≥ 4 units in one hour for the first 4 hours after arrival or ≥ 10 units in the first 6 hours. Chi-squared and t-test were applied as appropriate.

Results: Our center had 17 aMTP before and 96 aMTP after implementation. Of these, 47% (8 patients) in the pre-implementation group received MTP, and 40% (39/96) in the post-implementation group (p=0.78). Patients who received appropriate blood product
transfusion ratios improved from 38% (3/8) to 82% (32/39) following implementation (p= 0.008). Before implementation, we had an overall mortality rate of 31%. After implementation, overall mortality was 21% (p=0.23). Penetrating trauma mortality rate decreased from 45% to 15% (p= 0.02), and blunt trauma mortality was not significantly different, 29% vs. 25% (p=0.78).

Conclusion: Implementation of the ABC score and inclusion of thawed plasma in the first MTP coolers improves compliance with appropriate transfusion ratios and penetrating trauma mortality at a level II trauma center.
P 28. IMMEDIATE AVAILABILITY OF THAWED PLASMA FOR TRAUMA PATIENTS IS FEASIBLE AND TIME SAVING
HA Brown BS, L Wolf MLS SBB, TJ McDonald RN MSN, J Ball BS, B Donovan BS, B Evans BS, K Kinammon BS, JL Green MD PhD, RD Winfield MD
University of Kansas School of Medicine

Background: Trauma is the leading cause of death for persons between the ages of one and 47 years worldwide, and death from hemorrhage is a leading cause of preventable mortality. Previous studies have demonstrated a reduction in time to hemostasis among patients receiving early plasma and that this may be associated with a reduction in mortality. At our institution, standard operating protocol was changed in June 2013 to have three units of packed red blood cells and three units of thawed plasma available on arrival for our highest level of trauma activation. We hypothesized that the immediate availability of plasma after June 2013 would reduce time to plasma administration and mortality rate from hemorrhage following major trauma.

Methods: A retrospective review of trauma patients presenting to our Level I Trauma Center between January 1, 2009 and December 31, 2016 was conducted. Patients were identified in the institutional trauma registry, and medical records reviewed to obtain detailed information regarding transfusion practice. Patients were included if they received plasma within the first hour of hospitalization.

Results: 114 patients met criteria for inclusion in this study. The median age of study patients was 36 years, 82% were male, the median ISS was 29. 55% of patients suffered injury via blunt mechanism. There were 32 patients treated prior to implementation of the thawed plasma protocol and 82 patients in the subsequent period. Patients treated prior to thawed plasma availability were on average older (45 vs. 36 years) and more severely injured (ISS 34 vs. 27) than the post-implementation cohort; however, these differences were not significant. Median time to initial plasma transfusion decreased significantly from 24 minutes to 12 minutes (p<0.001) following the thawed plasma protocol’s enactment. Patients treated after implementation of the thawed plasma protocol showed a decrease in mortality (56 vs. 48%); however, this was not significant.

Conclusion: Implementation of a protocol to provide thawed plasma on arrival of severely injured patients is feasible and decreases the time to initial plasma transfusion. While there was not a significant change in mortality after protocol implementation, our data support the benefits of having thawed plasma available to ameliorate the risk of hemorrhagic death by encouraging early hemostatic resuscitation.
P 29. CAN SERUM HYPOKALEMIA BE USED AS A SURROGATE MARKER OF SEVERE INJURY IN YOUNG TRAUMA PATIENTS?
A Landmann MD, CA Ghafil MD, MC Macallister MD, Z Sarwar MS, T Garwe PhD, RM Albrecht, MD, JS Lees MD
University of Oklahoma Health Sciences Center

Background: Hypokalemia is a frequent finding in trauma patients on admission laboratory exams. Little data exists to characterize the clinical significance of a serum potassium below 3.5mEq on overall injury patterns and overall prognosis. The purpose of this study was to investigate the incidence and outcomes of hypokalemia in severely injured trauma patients. Our hypothesis is serum hypokalemia serves as a surrogate marker that can be used to risk stratify patients based on injury severity.

Methods: After IRB approval, a retrospective chart review was conducted of trauma patients presenting to our institution over a one-year period. Inclusion criteria were adult patients who survived long enough to undergo an operation or be admitted to the intensive care unit for at least one day. Patients were divided into four categories based on their admission potassium: normal (>3.5 mEq/L), mild (3.2-3.5mEq/L), moderate (3.0-3.2mEq/L), or severe hypokalemia (<3.0 mEq/L). Data was collected from the hospital charts, including operative interventions, injuries, medications, overall length of stay and need for mechanical ventilation.

Results: Over the study period, 417 adult patients admitted through the level-one trauma center met inclusion criteria (Table 1). We noted a statistically significant inverse association with hypokalemia and age, (p <0.05) and hypokalemia and BMI, (p <0.05). Patients with severe hypokalemia had a disproportionately higher number of penetrating injuries (34.3%), a tendency to have a higher base-deficit at presentation (avg. 7.0), and need for blood transfusion (82.9%). Despite differences in admission potassium levels, the mean time for hypokalemia to normalize was not significantly different across the three groups (p=0.54), suggesting that the abnormalities in potassium levels may be transient.

Conclusion: Serum hypokalemia is a frequently seen on admission laboratory exams in trauma patients. In our retrospective assessment, we found that patients with hypokalemia were younger and more likely victims of penetrating trauma with no significant difference in injury severity score or mortality. While this is an observational study and further investigations with larger cohort studies are needed, there is suggestion that hypokalemia may be a marker of the hormonal response to injury as it is found more often in younger, thinner patients who have sustained a penetrating injury.
P 30. AIRWAY RISK ASSOCIATED WITH THE HALO VEST FIXATION DEVICE
TR Kopelman MD, AR Azurdia MD, JW Walters DO, PG Pieri MD, SC Letteri MD, M Singer-Pressman PhD, I Feiz-erfan MD
Maricopa Medical Center

Background: The halo vest fixation device (HVFD) introduces a significant obstacle for clinicians attempting to secure a definitive airway in trauma patients with cervical spine injuries. The authors sought to determine the intubation failure rate and associated mortality of adult trauma patients in HVFD undergoing emergent and elective endotracheal intubation.

Methods: This study was a retrospective chart review between 2007 and 2012. Only adult trauma patients that were intubated while in HVFD were included. An emergent intubation was deemed an unanticipated need for definitive airway control, while elective intubations were planned, such as an intra-operative intubation. Failed intubation was defined as the immediate and unexpected need for a surgically established airway at time of intubation and/or death or anoxic brain damage resulting from hypoxia immediately associated with a difficult and complicated intubation.

Results: A total of 46 patients underwent 60 intubations (52 elective, 8 emergent) while in HVFD. Overall, patients were unable to be intubated on five occasions (8.3%) with an associated mortality rate of 3.3%. Intubation failure rates were not statistically different among those performed electively (3/52) versus emergently (2/8) (p=0.07). However, a statistically significant mortality difference was observed in the emergent versus elective intubation group (25% versus 0%, p=0.0003). Emergent intubation was required on more than one occasion in 3 patients, two of whom ultimately expired secondary to hypoxic events. The third patient underwent tracheostomy after the second occurrence.

Conclusion: The failed intubation and airway related mortality rates of patients in HVFD were substantial in this study, especially in the emergent setting. Early tracheostomy should be considered following any emergent airway in this patient population.
P 31. MANAGEMENT OF TRACHEOBRONCHIAL INJURIES: A SINGLE INSTITUTION EXPERIENCE
AR Zimmermann, CH Palacio MD, SR Todd MD, JW Suliburk MD, CT Wilson MD, SD Gordy MD
Baylor College of Medicine

Background: Trachoebronchial injuries are challenging for surgeons given their low incidence and associated limited experience with operative management. Historically these injuries were frequently lethal in the field. Modern improvements in prehospital care delivery, advanced airway management and rapid transport likely allow for definitive treatment at trauma centers. There has been little published regarding the management and outcomes for these injuries. This study evaluates the initial surgical management and long-term outcomes of patients with cervical and thoracic tracheobronchial injuries.

Methods: A retrospective chart review was utilized to identify patients with traumatic cervical and thoracic tracheobronchial injuries at our Level I Trauma center. Data was collected from January 2012 to July 2016 and included demographics, mechanism of injury, location of injury, diagnostic modality, initial management and outcome.

Results: During the study period there were 17871 trauma admissions. 18 had tracheobronchial injuries. All patients were male, with an average age of 34.6. Mechanisms of injury were penetrating 66% (n=12) and blunt 33% (n=6). Physical exam findings included: crepitus 50% (n=9), hemoptysis 11% (n=2) and air leak 39% (n=7). All patients received a CXR, except one who was taken stat to the operating room. CXR findings included subcutaneous emphysema 65% (n=11), pneumomediastinum 59% (n=10), pneumothorax 29% (n=5), hemopneumothorax 6% (n=1), transected trachea 6% (n=1), and normal 12% (n=2). 61% of the patients received a CT scan. CT findings included subcutaneous emphysema 36% (n=4), pneumomediastinum 55% (n=6), pneumothorax 9% (n=1), thoracic tracheal injury 27% (n=3), cervical tracheal injury 9% (n=1), left main stem bronchus injury 9% (n=1), and normal 9% (n=1). Operative management was utilized in 83% of patients (n=15). Locations of the injuries included cervical trachea 56% (n=10), intrathoracic trachea 33% (n=6) and main stem bronchus 12% (n=2). One patient had complex injuries. The most common incisions performed were a collar incision 39% and right thoracotomy 17%. The majority (89%) of patients were intubated, averaging 15.5 days. The average ICU length of stay was 17 days. One death occurred in a patient with
tracheal transection. He arrested after intubation in the operating room. 50% of patients had follow up in clinic for an average of 71 days. Two readmissions occurred: 1 for syncope, the other for a mediastinal abscess. Complications occurred in 39% of patients including: respiratory failure 28% (n=5), pneumonia 22% (n=4), mediastinitis 11% (n=2), mediastinal abscess 6% (n=1) and tracheal stenosis 6% (n=1). Tracheostomy was performed in 39% (n=7) of patients.

**Conclusion:** Clinical findings of crepitus, air leak and radiographic findings of subcutaneous emphysema and pneumomediastinum should raise suspicion for a tracheobronchial injury. Only three patients had nonoperative management, all of whom had intrathoracic airway injuries. Those three exceptions, notably, did not have crepitus or a discernable air leak, suggesting that the absence of relevant physical exam findings may be a negative predictor for the need for surgical repair. One patient died due to a delay in securing the airway in the setting of tracheal transection. The greatest impediments to surviving this rare injury remain early transport, clinical exam and expeditious initial airway management.
P 32. SHOULD NON-RESUSCITATIVE EMERGENT THORACOTOMY FOR BLUNT THORACIC TRAUMA BE GUIDED BY CHEST TUBE OUTPUT?
S Konda MD
Baylor College of Medicine

**Background:** The indications for a non-resuscitative emergent thoracotomy in trauma have traditionally been guided by chest tube output. The current values, immediate drainage of 1500mL or ongoing bleeding at a rate of 200mL per hour, were arbitrarily selected. To date, these values have not been validated, nor has anyone characterized patients who receive emergent thoracotomy by mechanism. We hypothesized that the likelihood of a significant intra-thoracic injury requiring repair would be decreased in blunt trauma.

**Methods:** This was a retrospective review of all blunt trauma patients who underwent an emergent thoracotomy at an American College of Surgeons verified urban Level I Trauma Center from January 2009 through January 2014. The Trauma Registry and electronic medical record were queried for variables to include patient characteristics, injury patterns, details surrounding the chest tube, and outcomes. A p-value < 0.05 was considered significant.

**Results:** Over 5 years, 72 patients were identified who underwent thoracotomy following blunt thoracic trauma. Eight patients were excluded due to no recorded output upon chest tube placement. Of the remaining patients, 30 underwent non-resuscitative emergent thoracotomy. The mean age was 39±17 years. Mean ISS and chest AIS were 33 and 4, respectively. Eleven patients underwent emergent thoracotomy for hypotension and 6 based on chest tube outputs. Two patients had emergent thoracotomy performed for initial chest tube output versus 4 for continued high output. Initial chest tube output in patients who subsequently underwent emergent thoracotomy was found to be 623.63±879.1 mL. The average time to the operating room was 15 hours for those who underwent emergent thoracotomy for continued high chest tube output. Six patients had a therapeutic operative intervention performed during emergency thoracotomy. Of these, the initial indication for operation was hemodynamic instability in 3, and persistent high chest tube output in 1. Two patients met both of these indications.

**Conclusion:** Trauma patients requiring emergent thoracotomy following blunt mechanisms of injury are taken to the operating room for lower outputs than the traditional threshold. Often, there is no intervention performed during emergent thoracotomy. The decision to operate based on hemodynamic instability was associated with a higher likelihood of therapeutic intervention than operating based on chest tube output alone.
P 33. INCREASED INCIDENCE OF PULMONARY EMBOLISM AMONG PATIENT WITH TUBE THORACOSTOMY
B Fegale MD, M Firek BS, B Zakhary MPH, H Lee MPH, A Tabuenca MD, A Depew MD
Riverside University Health Systems General Surgery

Background: Tube thoracostomy (TT) is often a necessary lifesaving intervention for chest injuries. Complications range widely, including malposition and thoracoabdominal injury. Previous studies analyzing the National Trauma Data Bank (NTDB) have associated various factors other than deep venous thrombosis (DVT) that put patients at risk for pulmonary emboli (PE). We aimed to investigate the relationship between TT and PE.

Methods: The NTDB was analyzed from 2010 to 2012 to identify patients with chest tube (TT) and without (control). Patients were matched based on injury severity scores (ISS) as well as chest injury AIS score. Of 2,340,835 patients in the NTDB, 85,770 had chest tubes. Of those patients we found a matching control of 79,877. Multiple regression analyses were performed to determine risk factors for PE.

Results: The odds ratio of PE in TT patients was 1.16 with a p value of 0.049. This is suggestive of a statically significant association between TT and PE. Other risk factors included in the multiple regression model included ISS, AIS, CT, DVT, pulmonary artery catheterization (PAC), central venous catheterization (CVC), cardiac contusion, aortic injury, ventilator days greater than three, and injuries to the spine, pelvis, and lower extremities.

Conclusion: Among trauma patients, TT is an independent risk factor for PE. The mechanism of increased PE in patients with TT may be similar to theories related to chest trauma in general. Local intrathoracic inflammation of the venous endothelium causes release of procoagulant factors. Additionally, hypoxia further causes damage to the endothelium. We propose that external compression of the chest tube exacerbates this mechanism, leading to localized thrombosis. Another possible explanation is that compression of an intrathoracic vein leads to venous thromboembolism.
P 34. MAXILLOFACIAL CT IN BLUNT TRAUMA PATIENTS- A SINGLE INSTITUTION REVIEW
EA Alore MD, KL Hamilton MD, P Matheus MD, M Louis MD, R Todd MD, RM Vera MD
Baylor College of Medicine

Background: Maxillofacial computed tomography (CT) scans are often ordered as part of a blunt trauma workup. However, maxillofacial CTs are costly while exposing patients to additional radiation. Our goal is to assess utilization of maxillofacial CT for blunt trauma patients at a Level 1 trauma center and determine physical exam findings predictive of underlying operative fractures. We hypothesize that maxillofacial CTs are overutilized and do not alter surgical management in the majority of patients.

Methods: We performed a retrospective review of all blunt trauma patients presenting to our Level 1 trauma center from January – December, 2016 who had a maxillofacial CT. All patients received primary and secondary physical exam surveys in accordance with advanced trauma life support. The ordering of supplemental radiologic studies fell to the discretion of the medical provider. Physical exam findings from all clinical notes were collected for the first 48 hours after patient presentation. Radiologic reports and operative notes were reviewed to determine the presence of a facial fracture and the requirement of operative intervention. Pearson’s chi square and logistic regression were utilized with an alpha level of 0.05.

Results: Out of 2308 patients who presented to our hospital with blunt trauma, 442 (19%) received a maxillofacial CT. Of these patients, 272 (62%) were found to have a facial fracture and 97 (22%) required an operative intervention. Mechanisms of injury associated with the highest rates of operative intervention for facial fractures included trample injuries (58%), aggravated assault (34%) and motor vehicle accidents (22%). Orbital fractures were the most common facial fracture, occurring in 28% of patients, followed by nasal fractures (26%) and mandible fractures (19%). However, most fractures requiring operative intervention were mandible fractures (15%), followed by orbital fractures (3.2%) and zygomaticomaxillary complex fractures (2.3%). Mandible fractures were the easiest to diagnose on exam based on findings of malocclusion (OR 57, p<0.001), subjective change in occlusion (OR 157, p<0.001) and trismus (OR 28, p<0.001). Nasal fractures were the most difficult to predict without imaging, with 21% having no related physical exam.
findings reported, followed by isolated zygomatic arch fractures (19%). Palpable step-offs, visualization of an open fracture, subjective change in occlusion and maxillary mobility were the most reliable physical exam findings and were 100% predictive of an underlying facial fracture. Facial lacerations and abrasions (OR 0.60, p=0.02) and soft tissue bruising (OR 0.90, p=0.66) were not independent predictors of underlying facial fractures despite being two of the most common physical exam findings reported.

**Conclusion:** Maxillofacial CT has a high diagnostic value in blunt trauma patients when selectively performed based on physical exam findings. Currently, no protocol exists on when a maxillofacial CT should be ordered in blunt trauma patients. We provide a starting framework of physical exam findings and mechanisms of injury associated with facial fractures that require operative intervention.
P 35. BLOOD ALCOHOL CONTENT (BAC) DOES NOT PREDICT THE USE, YIELD, OR TIME TO HEAD CT SCAN AMONG INTOXICATED TRAUMA PATIENTS

MK McIntyre BA, NS Kumar MS, EH Tilley PhD, S Gashi MPH, DJ Samson MS, A El-Menyar MD, R Latifi MD
Westchester Medical Center/New York Medical College

Background: Head CT (h-CT) of intoxicated patients is commonly used in emergency departments (ED). Nevertheless, there are little data on h-CT yield or who should be scanned. Our study aimed to investigate the rates, yield, and cost of h-CT scans among intoxicated trauma patients.

Methods: In this 4-year retrospective cohort study (2013-2017), we identified all level 1 and 2 trauma patients (≥14 years) who presented to the ED with alcohol intoxication (BAC > 10mg/dL) and analyzed the use and yield (significant, incidental, no findings) of h-CT scans and neurosurgical intervention (NSI). We also analyzed BAC in comparison to payer status and time to h-CT.

Results: During this period, we identified 437 patients with evidence of intoxication (average BAC: 212.3±89.2 mg/dL) of whom the majority (71.9%) were male (average age 39.6±16.06 years). The most common mechanism of injury was motor vehicle crashes (55.5%) followed by falls (23.2%). Overall, 409 (93.6%) patients received a h-CT however only 83 (19.0%) had acute findings. 59 (13.5%) patients had incidental findings, and 266 (60.9%) had no findings on h-CT. We found that the average BAC did not differ between patients with or without a h-CT ordered (p=0.98) nor did it differ significantly between h-CT finding groups (p=0.44). Of those with acute h-CT findings, only 15 (18.1%) had a NSI, but this was not influenced by BAC (p = 0.62). The median time to ordering h-CT was 20 minutes but this was not influenced by BAC (p= 0.80). Overall, the majority of payer sources were auto insurance (52.2%) followed by Medicaid/Self Pay (17.2%), private insurance (15.8%), and Medicare (5%). On average, those with Medicaid/Self Pay were found to have a significantly higher BAC compared to those covered by auto insurance (p= 0.0025).

Conclusion: Among intoxicated trauma patients, 93.6% received a h-CT but only 19% had acute findings. We found that BAC is not associated with the use, yield, or time to h-CT scan. These results indicate that while an increased level of alcohol intoxication confounds the patient’s presentation, it does not necessarily predict a higher prevalence of head injury.
P 36. A CROSS-DISCIPLINARY APPROACH TO WEANING MECHANICALLY VENTILATED PATIENTS WITH TRAUMATIC BRAIN INJURY: AN ANALYSIS OF CLINICAL OUTCOMES
KM Burns BS, JP Dugan BS, MKH Baldawi MD, M Baldawi MD, DG Heidt MD
University of Toledo Medical Center

Background: Traumatic brain injury (TBI) patients are at risk for extended ventilator use, which increases risk of developing iatrogenic complications. Weaning protocols have been shown to improve patient outcomes. However, the benefit of a protocol-driven, cross-disciplinary approach to timely extubation of TBI patients on mechanical ventilation (MV) remains unclear.

Methods: We performed a retrospective cohort analysis of a mechanical ventilator weaning protocol, which was established in January 2015 for patients with TBI. This protocol empowered nurses and respiratory therapists to actively wean patients with physician approval. Patients on mechanical ventilation with Glasgow Coma Scale of 8 and below from January 1, 2011 to March 31, 2017 were eligible.

Results: Among the 139 patients over the age of 18 with a GCS of 8 or below during the study period, 108 (78%) were in the pre-intervention cohort and 31 (22%) were in the post-intervention cohort. There were no significant differences in in-hospital mortality (31.5%, n=34 pre- vs. 45.2%, n=14 post-intervention, P=0.16), 30-day mortality (34.3%, n=37 pre- vs. 45.2%, n=14 post-intervention, P=0.27), mean ICU length of stay (9 days, n=108 pre- vs. 8 days, n=31 post-intervention, P=0.18) and total length of stay (12.5 days pre- vs. 10 days post-intervention, P=0.08), complication rates (53.7%, n=58 pre- vs. 51.6%, n=15 post-intervention, P=0.84), time spent on MV (8.8 days pre- vs. 7.3 days post-intervention, P=0.30), and total charge (212,087 USD pre- vs. 157,481 USD post-intervention, P=0.141). Despite no statistical significance, patients admitted after implementation of the weaning protocol demonstrated trends toward decreased time on MV, shorter ICU and total length of stay, and reduced cost.

Conclusion: A cross-disciplinary approach to weaning off MV is equivalent to traditional weaning protocols with trends towards decreased time on the ventilator, length of stay and cost. With continued implementation, this protocol could protect against complications such as VAP, while reducing patient and hospital costs.
P 37. PANCREATICO-PERICARDIAL FISTULA AFTER MULTICAVITY GUNSHOT WOUND: DIAGNOSIS AND MANAGEMENT
C Jiang MS, A Lin MD, P Rhee MD, E Rose MD, CJ Dente MD, J Nguyen DO, R Gelbard MD, BC Morse MD MS
Emory University School of Medicine

Background: Pancreatic fistulas after common after penetrating injuries requiring resection is not uncommon. However, concomitant pancreatic injuries and cardiac injuries from gunshots are exceedingly uncommon. This study examines the diagnosis and management of pancreatico-pericardial fistula after multicavity gunshot wound.

Methods: Patients with concomitant pancreas and cardiac injuries were identified from the trauma registry of large urban level 1 trauma center from January 2009 to December 2015. Patients were examined to determine complications from this combination of injuries including pancreatico-pericardial fistulas.

Results: Over the 7 year study period, 142 patients were identified with cardiac injuries. Of these, 3 (2%) patients were identified with combined gunshot wounds to the pancreas and the heart (male gender = 3, mean age = 29 years, gunshot mechanism = 3 patients); there was only one survivor (33%). The survivor had gunshot entering on the right at the level of thoracic vertebra 8 and injuring the spinal cord yielding paraplegia, a tangential cardiac injury with wound in the pericardial sac, Grade II liver laceration, Grade III pancreas transection, Grade II stomach laceration, and lodging in the anterior abdominal wall. The patient had a pericardial window without cardiac repair, hepatorrhaphy, gastric repair and distal pancreatectomy/splenectomy with peripancreatic drain placement. On postoperative day 15, the patient developed fever, leukocytosis and hypotension. CT showed a large pericardial effusion. This was subsequently confirmed on echocardiogram with concern for tamponade physiology. Emergent pericardiocentesis was performed with resolution of the effusion. Subsequent fluid studies demonstrated amylase > 20,000 units/mL. ERCP was performed with showed pancreatic stump leak, and pancreatic stent was placed. After stent placement, the effusion and peripancreatic drainage decreased.

Conclusion: Survivors of concomitant penetrating pancreatic and cardiac injuries is uncommon. Early recognition and diagnosis of pancreatico-pericardial fistula causing an effusion is imperative and management centers on drainage of the effusion and diversion of pancreatic drainage.
P 38. OUTCOMES FOLLOWING BLUNT TRAUMATIC SPLENIC INJURY TREATED WITH CONSERVATIVE OR OPERATIVE MANAGEMENT
S Corn MD, J Reyes MEd, SD Helmer PhD, JM Haan MD
University of Kansas School of Medicine - Wichita

Background: Laparotomy with splenectomy or splenorrhaphy is accepted as the recommended management for blunt splenic injury in hemodynamically unstable patients. For hemodynamically stable patients, observation and angiography with embolization have also been described. The aim of this study was to evaluate the treatment outcomes of blunt splenic injury based on patient factors, physiology, splenic injury severity, and associated injuries. A secondary purpose was to evaluate if location of embolization (proximal vs. distal selective splenic artery embolization) accounted for any differences in complications or mortality.

Methods: A retrospective review was conducted of 360 patients ≥18 years of age with a splenic injury following blunt trauma. All patients were evaluated at an ACS-verified level I trauma center from January 1, 2008 to February 1, 2017. Data collection included demographics, injury characteristics, treatment modality, complications, and outcomes. Patients were categorized and data analyzed on an intent-to-treat basis as follows: observation alone, embolization, or operative intervention.

Results: Patient demographics were similar between the three groups. Those undergoing operative intervention were found to have higher grade splenic injuries, were more frequently described as being hemodynamically unstable at admission (80.9% in the operative group, p<.001), and on CT imaging, were found to have greater amounts of hemoperitoneum. This group also had the highest rate of advanced interventions such as mechanical ventilation (75.8%, p <.001), complications (wound infection 11.7%, p<.001; pneumonia 12.5%, p=.032; and other 47.2%, p<.001), and mortality (26.3%, p<.001). The observation only and embolization groups were similar regarding admission hemodynamics and rate of concomitant injuries. Patients managed with embolization were found to have the lowest rate of complications (range: 0% - 5.3%) and mortality (2.6%). Those that were observed suffered more complications (range: 0.6% - 17.4%) and higher mortality (4.1%) than the embolization group, but less than the operative intervention group. There were 20 failures in the observation group, 2 requiring operative management and 18 undergoing embolization. Of
the 18 observation failures that required angiography, 7 did not identify any active hemorrhage but underwent empiric embolization. There were no embolization failures requiring repeat embolization or surgery. Within the embolization group, the choice of location (proximal vs. distal selective) and material used for embolization (coil, Amplatzer plug, gelfoam, or combination) was left to the discretion of the interventional radiologist. Forty-nine patients underwent proximal embolization, with the remaining 27 undergoing distal selective procedures. Of these, 26 did not identify an injury on angiography but underwent empiric embolization, while 50 underwent embolization for active injuries identified on angiography. There were no differences between these groups in admission hemodynamics, associated injuries, CT findings, angiography results, or embolization material used. Importantly, there were no differences in complications or mortality between these groups.

**Conclusion**: Blunt splenic trauma can be treated successfully with observation alone, embolization, or operative treatment in appropriately selected patients. Review of this data may indicate that operative intervention is over-utilized, while embolization can provide benefit over observation alone. There does not appear to be a significant difference between proximal main splenic artery embolization compared to distal selective embolization.
P 39. DETECTION OF HOLLOW VISCUS INJURY-IMPORTANCE OF CLINICAL EXAM
K Carter MD, B Sparkman MD, LA Griffin Ray MD, R Talluri MD, E Blaudeau MD, L Martin MD
University of Mississippi Medical Center

Background: Many trauma patients that present to a level 1 trauma center undergo computed tomography scan of their abdomen and pelvis for a multitude of reasons. As CT scanners have become more sensitive and specific to intra-abdominal injuries, many new findings been noted without expertise in to what they translate to clinically. Motor vehicle collisions remain a large contributor to blunt abdominal trauma. When signs that are typically associated with hollow viscous or mesenteric injury are noted, it is unclear as to what the best course of action is. Different patients seem to have a varied clinical course that can range from asymptomatic to a missed visceral injury. Treatment options also vary greatly and may include nothing at all to an exploratory laparotomy that may be completely negative. As hollow viscous injury is difficult to diagnose from a CT, and a delay in diagnosis is associated with significant morbidity and mortality, we aim to discern variables that, alongside with CT scans, will aid in faster, more accurate diagnosis. Our hypothesis is that patient’s with mesenteric hematomas on CT and abdominal wall stranding or hematomas will largely be treated non-operatively. We also hypothesize that certain indicators, such as free pelvic fluid, will be associated more commonly with hollow viscous injury. Primary outcome are bowel injury surgical intervention versus non-operative management without bowel injury per the hospital stay. Secondary outcomes are length of stay, morbidity secondarily to missed diagnosis and death.

Methods: At our Level 1 academic trauma center we reviewed the abdominal CT results from all patients with blunt trauma over age 16 for two years for any findings related to bowel or mesenteric injury. Clinical data was also gathered from the medical record. The Bowel Injury Prediction Score was determined from this data. The presence of hollow viscous injury (HVI) requiring surgical intervention, either resection or primary repair, was noted from the operative record.

Results: There were 1230 patients included of which most were male (87%) with mean age of 41 years. Most (63%) were involved in a motor vehicle collision (MVC). Twelve patients with HVI were identified, 7 small bowel, 4 colon, and 1 both. The CT and clinical finding of those with and without HVI is summarized in Table 1. Abdominal fluid with
solid organ injury (SOI) and without was the most common finding with moderate or large amounts more likely to correlate with HVI. In 4 patients with an HVI, the presence of fluid was the only CT finding noted. Mesenteric hematomas were more commonly found with HVI but were only identified in 34 patients. Pneumoperitoneum was identified in 9 patients but only 2 were noted to have HVI, although 5 others underwent laparotomy. None of the other common CT findings had a strong correlation with HVI. BIPS did not correlate strongly with HVI. There were 1134 patients with BIPS of 0-1 but 8 of these did have a HVI. There were 90 patients with a BIPS of 2-3, and only 4 had an HVI. HVI was uncommon in our review (1%). BIPS did not appear to be useful in prediction of HVI but may raise awareness. The only two findings that were significant in patients with HVI versus without HVI were mesenteric hematoma on admission CT and admission abdominal tenderness, however because so few patients in the study had HVI it is difficult to use these as predictors for HVI.

**Conclusion:** Detection of HVI remains elusive and close clinical monitoring is paramount.
P 40. MOTORCYCLE INJURIES ARE ASSOCIATED WITH SIGNIFICANT RISK OF TESTICULAR OR SCROTAL TRAUMA: SOMETHING AMERICANS AND THE FRENCH CAN AGREE UPON
A Grigorian MD, J Livingston BS, D Mayers DO, S Schubl MD, E Kuncir MD, C Barrios MD, V Joe MD, J Nahmias MD
University of California Irvine Medical Center

Background: The incidence of scrotal or testicular injury in trauma is less than 1%. A large descriptive analysis from a French database regarding genitourinary injury (GUI) found motorcyclists followed by bicyclists to have the highest incidence of scrotal or testicular injury. Motorcyclists are vulnerable to high-impact collisions while bicyclists incur less significant force velocity. According to the Pew Research Center, 59% of the French population owns a bicycle compared to 53% in the United States but more Americans own a motorcycle than in France (14% vs 12%). We hypothesized that in the United States, motorcycle collision would have a higher association with scrotal or testicular trauma and subsequent scrotal or testicular operation compared to a bicycle collision. Additionally, we aimed to compare data from the National Trauma Data Bank (NTDB) to the aforementioned French study.

Methods: This was a retrospective analysis using the NTDB. We included all male patients <18 years of age. The NTDB does not differentiate between scrotal or testicular trauma. We determined risk for scrotal or testicular trauma and subsequent surgery using a univariate regression analysis. Covariables used in our multivariate analysis included age <65 and injury severity score (ISS) > 15.

Results: HVI was uncommon in our review (1%). BIPS did not appear to be useful in prediction of HVI but may raise awareness. The only two findings that were significant in patients with HVI versus without HVI were mesenteric hematoma on admission CT and admission abdominal tenderness, however because so few patients in the study had HVI it is difficult to use these as predictors for HVI.

Conclusion: In support of the French experience, a motorcycle collision has higher risk for scrotal or testicular injury compared to bicycle collision in the United States. We also found a higher risk for subsequent scrotal or testicular surgery in those with motorcycle collision. Future prospective research can investigate the role that protective gear may have in reducing scrotal or testicular trauma and/or subsequent need for scrotal or testicular surgery, especially in motorcycle collisions.
P 41. MANAGEMENT OF TRAUMATIC VENTRICULAR LACERATION WITH TOPICAL HEMOSTATIC ONLAY
ZP Kimball BS, AH Xue MD, A Zaharris BS, WD Boyd MD, PA Perry MD
University of California Davis

**Background:** Although relatively rare, traumatic ventricular laceration is associated with significant morbidity and mortality. The surgical management of such injuries can be extremely challenging and carry significant potential for adverse outcomes. Utilization of an absorbable fibrin patch onlay (Tachosil®, Baxter Biosurgery) in the management of traumatic ventricular laceration has not been previously described. Tachosil® is a fibrin and factor-laced collagen sealant patch that sticks to tissue and applies a two-dimensional layer of mesh over a target area. We have recently incorporated the use of Tachosil® in the surgical repair of traumatic ventricular lacerations in adults. Here we describe our experience with this onlay at a high-volume, urban, Level I Trauma Center.

**Methods:** All instances of adult traumatic ventricular laceration requiring Cardiac Surgery support over a two-year period were reviewed. There were four cases in which Tachosil® was utilized for ventricular repair. In all instances the absorbable fibrin patch was cut to appropriate dimension, moistened with saline, and held over the target area for 1-3 minutes to promote hemostasis. The exact technique of repair (e.g. with or without additional suture buttress) was at the discretion of the operating surgeon.

**Results:** Four adult patients over a two-year period received a Tachosil® onlay as part of the management of a traumatic ventricular laceration (3 left ventricle, 1 right ventricle). One patient received an additional patch onlay to a concomitant inferior vena cava (IVC) injury. Causes of injury included two penetrating stab wounds, one gunshot wound, and one blunt chest trauma. All patients presented with hemopericardium and underwent median sternotomy. Tachosil® was used in conjunction with pledgeted suture for three injuries and alone for two (1 left ventricle, 1 IVC). All injuries were successfully controlled without the use of cardiopulmonary bypass. In no instance was there failure of surgical hemostasis or need for re-intervention due to repair-related complications such as bleeding or pseudo-aneurysm. Overall survival to discharge was 75%, with one patient expiring on post-op day two due to withdrawal of care in setting of advanced age and severe poly-trauma.
ePOSTER ABSTRACTS (continued)

**Conclusion:** Here we report four cases of successful traumatic ventricular laceration repair utilizing Tachosil® in an adult. Surgical repair of these injuries can be extremely challenging, especially without cardiopulmonary bypass. Typical repair technique includes placing pledgeted non-absorbable sutures to achieve hemostasis, which can sometimes be challenged by surrounding cardiac structures (e.g. coronary artery) and friable ventricular tissue. We have found that the utilization of Tachosil® can be an adjunct to or replace the suture repair with good effect. We also believe it provides additional opportunity to avoid the use of cardiopulmonary bypass for repair of these injuries as good hemostasis may be achieved despite the lack of ventricular decompression. In our experience, one or two layers of Tachosil® is generally sufficient to provide a durable ventricular repair. This is the first report of utilizing Tachosil® in the surgical management of traumatic ventricular lacerations. Use of this absorbable fibrin patch onlay is effective in the management of such injuries and deserves further investigation.
P 42. IMPROVING THE SAFETY OF OLDER ADULT PEDESTRIANS IN HAWAII- AND THE REST OF THE U.S.
L Yap, D Galanis PhD, WL Biffl MD, CR Speck
University of Hawaii

**Background:** Older adults (age >64) suffer worse outcomes following virtually every type of traumatic injury when compared with younger adults. Thus, prevention efforts are critical to reduce the burden of injury in the elderly. Hawaii has the greatest proportion of older adults of any state, and is tied for the highest fatality rate for pedestrians struck by motor vehicles (PED) in the U.S. (25.4 per 100,000). In Hawaii, PED have the highest fatality rate of any traumatic mechanism. To address this problem, several injury prevention initiatives have been implemented in Hawaii over the past several years, related to education, engineering, and law enforcement. The purpose of this study was to describe the characteristics of HI PED and compare them with PED in the rest of the U.S., to identify areas for further prevention efforts.

**Methods:** Fatality Analysis Reporting System (FARS) data were analyzed for 2010-2015. HI PED >64 were compared with PED >64 from the rest of the U.S. (US PED), as well as younger adult HI PED (HI PED <65). Tests of proportions were conducted to assess differences between categorical variables. Rates were computed based on U.S. Census data for 2000. "*" denotes statistical significance (p<.05).

**Results:** 29,294 PED were fatally injured in the U.S. during the study period. There were 55 HI PED >64, 5696 US PED >64, and 100 HI PED <65. There were several notable contrasts between HI PED >64, US PED >64, and HI PED <65 (presented in respective order): 1) There was significant seasonal variation, with the highest percentage occurring in January-March for all groups (47% vs 37% vs 33%)*. 2) Weekend PED fatalities were less common in HI (16% vs 28% vs 25%). 3) Older adults more frequently were injured during the day (06:30-18:29) compared with younger adults (53% vs 56% vs 26%)*. 4) The number fatally injured in a crosswalk differed significantly (51% vs 20% vs 16%)*. 5) The number occurring in low speed limit zones (<26 MPH) differed significantly (56% vs 17% vs 32%)*. 6) The proportion jaywalking (26% vs 17% vs 19%) and “in roadway improperly” (2% vs 9% vs 26%) differed. 7) Of those tested, the number of PED who were alcohol positive (9% vs 15% vs 40%) differed. Preliminary data indicate that PED fatalities dropped dramatically in the first half of 2017, compared with prior years.
Conclusion: Older adults differ from younger adults in several factors related to PED fatalities. Some factors among elderly victims in HI are uniquely common such as seasonality, weekday occurrence, being in a crosswalk, being in a low speed limit zone, and jaywalking. On the other hand, some factors are more common among younger adults compared with older adults throughout the U.S., such as being in a roadway improperly, using alcohol, and being struck at night. These factors can help inform further injury prevention efforts both locally as well as nationally.
P 43. DEER STAND FALL EPIDEMIOLOGY: AN OPPORTUNITY FOR INJURY PREVENTION
MR Arnold MD, AB Christmas MD, BW Thomas MD, RJ Vaio MS, KW Cunningham MD, BT Heniford MD, RF Sing DO
Carolinas Medical Center

Background: There are approximately 250,000 licensed deer hunters in North Carolina. Tree stands are utilized by many hunters to improve their viewing area and because deer have no predators from above. Tree stands can reach 20 or more feet in height. There are few regulations regarding tree stand safety. Furthermore, deer season occurs during the winter months and multiple factors can interfere with climbing including winter clothing, inclement weather, carrying a gun, and twilight conditions. To address injury prevention, we first sought to determine the epidemiology of injuries due to deer stand falls.

Methods: Medical records were reviewed for all trauma patients with deer stand-related fall injuries that were admitted to an American College of Surgeons-verified Level I trauma center from 2006-2017. Demographic data were collected included patient age, hospital length of stay (LOS), disposition, injury severity score (ISS), initial Glasgow Coma Score (GCS), revised trauma score (RTS), initial systolic blood pressure, and blood alcohol content (BAC) upon arrival. Furthermore, records were searched for weather and lighting conditions, patient action (climbing, shooting, seated) at the time of fall, harness use, and commercial vs. homemade tree stand. Injuries and interventions were recorded and categorized by system for analysis.

Results: Thirty-seven patients were identified. 34 (91.9%) were male. Mean age at the time of presentation was 45.9 years old. Mean ISS was 9.8 SD 5.0, and RTS was 12.0 SD 0.2. All patients arrived with a GCS of 15. The most common category of injury was orthopedic 26 (70.3%), followed by vertebral fractures 19 (51.4%), and thoracic 16 (43.2%). Five (15.2%) suffered spinal cord injuries and 4 (11.8%) had radiographic evidence of TBI. 22 patients (56.3%) required operative or procedural intervention with 59.1% of operations being orthopedic procedures. Chest injuries occurred in 11(29.7%) patients, and included rib fractures, pulmonary contusions, and hemopneumothorax. Five patients had a BAC greater than the legal limit of 0.08 mg/dL. Hospital length of stay was 6.3 days, with most patients discharged home. No data was available regarding weather conditions, the use of a safety harness, or whether the deer stand was homemade or commercially available. Patient action was
only recorded in 7 of 37 patients. 12 patients fell from 10-20 feet, and 13 fell from greater than 20 feet, with the remaining 12 missing data. There was no significant difference in outcomes for fall height. (p>0.05 for all outcomes).

**Conclusion**: Falls from deer stands often result in severe injuries requiring surgical intervention, and may result in permanent disability. The majority of these injuries are orthopedic, but are closely followed by vertebral injuries with a high proportion of spinal cord injuries. Given the popularity of deer hunting, this represents a significant public health concern. Unfortunately, these injuries are underreported and there is no standardization in the assessment of conditions surrounding the event. With proper reporting of the circumstances surrounding the falls, such as weather conditions, stand height, alcohol use, and type of stand used, we can better determine the mechanisms associated with the fall and thus develop strategies to predict and prevent these injuries.
P 44. PRESSURE ULCER IN TRAUMA PATIENTS: A HIGHER SPINAL CORD INJURY LEVEL LEADS TO HIGHER RISK
A Grigorian MD, M Sugimoto BS, V Joe MD, S Schubl MD, M Lekawa MD, M Dolich MD, E Kuncir MD, C Barrios MD, J Nahmias MD
University of California Irvine Medical Center

Background: Trauma patients hospitalized for more than two days are at risk for development of pressure ulcer (PU) with an incidence ranging from 0.4% to 30.6%. The risk is even greater in patients with spinal cord injury (SCI). The neurological level of injury (paraplegia or tetraplegia) was found not to be associated with risk for PU in a large systematic review. We hypothesized that in the acute trauma population, a higher level of SCI (cervical or thoracic) has a higher association with PU compared to a lower level of SCI (lumbar or sacral).

Methods: This was a retrospective analysis of the National Trauma Data Bank (NTDB) years 2007-2015. Patients were grouped by the complication of PU and by the level of SCI (cervical, thoracic, lumbar, and sacral). We determined risk factors for PU using a univariate regression analysis. Covariables used in our multivariate analysis included smoking, traumatic brain injury, age > 65, hypertension, steroid use, diabetes, cerebrovascular accident, obesity, pelvic injury, peripheral vascular disease, severe abbreviated injury score-lower extremity (grade > 3), spinal cord injury and malnourishment.

Results: A total of 29,666 patients had a PU in the NTDB between 2007-2015 (0.4%). Of these patients, 11.6% had some form of SCI. Patients with PU had a mean age of 53.6, most were male (67.2%) and had a median injury severity score of 19. The most common comorbidity was hypertension (36.9%) followed by smoking (11.9%). The most common SCI level in trauma victims with PU was cervical (6.5%) followed by thoracic (4.1%). Cervical (adjusted odds ratio [OR] = 15.55, confidence intervals [CI] = 14.81-16.33, p<0.001) and thoracic (OR=15.96, CI=15.01-16.97, p<0.001) SCI were more strongly associated with PU compared to lumbar (OR=6.86, CI=6.06-7.77, p<0.001) and sacral (OR=3.26, CI=2.26-4.70, p<0.001) SCI.

Conclusion: Using a large national database we found SCI to be a strong predictor for risk of PU in the acute trauma setting. Contrary to previous reports, higher level of SCI (cervical or thoracic) is associated with higher risk compared to lower level (lumbar or sacral). These patients should be appropriately screened and receive timely prophylactic interventions such as position changing, keeping the head of the bed at the lowest safe elevation and using pressure reducing surfaces to avoid the development of PU.
**P 45. CONQUERING “STAGE FRIGHT”: NAVIGATING THE NEW AJCC BREAST CANCER STAGING GUIDELINES**

**AT Mancino MD**
**Central Arkansas VA**

**Background:** Cancer staging plays an important role in defining the prognosis of cancer and in determining treatment. The standard for staging is the AJCC TMN staging system, which is periodically updated to include newly acquired clinical, pathologic and other data. Based on validation of numerous biomarkers of prognosis in breast cancer, the 8th Edition includes a new Prognostic Stage system which will replace the Anatomic Stage system in January 2018. This system includes TNM, tumor grade, estrogen receptor (ER), progesterone receptor (PR) and Human epithelial growth factor receptor 2 (HER2) and, in appropriate subgroups, genomic prognostic panels. For HR+, HER2-negative, and lymph node-negative tumors, T1 or T2, a 21-gene (Oncotype Dx) recurrence score < 11 results in Stage 1. No upstaging is performed based on multigene panel testing.

**Methods:** We reviewed the past ten years of breast cancer cases from our tumor registry to assess the impact of implementing the Prognostic Stage on our cancer staging practices. All cases were restaged using the new guidelines.

**Results:** There were 109 cases of breast cancer in our registry. Five patients had small clinically stage 1 tumors but refused further node evaluation and so had no pathologic stage; two further patients refused any further evaluation after core biopsy. Of the 101 patients with pathologic staging, the initial TNM staging was Stage 0 – 46, Stage 1A – 42; IIA – 8; IIB -1; IIIA -2; IV – 2. The addition of prognostic indicators does not change the stage in the Stage 0 or Stage IV patients. In the Stage IA patients, 23 remained Stage IA; however, ten were upstaged to IB and two to IIA. Seven patients could not have Prognostic scoring due to lack of HER2 data. Two of the eight Stage IIA patients remained at that stage, with one downstaging to IA and five to IB. The IIB tumor also downstaged to IB. One stage IIIA tumor changed to IIB and one to IIIC. Of the 36 patients with hormone receptor-positive, HER2-negative, and lymph node-negative tumors, we only had five tumors on which Oncotype Dx was performed, four of which were <11. All four were TNM Stage IA. Only one of the five Stage IIA tumors meeting that criteria had Oncotype performed. Utilization of Prognostic Staging changed the stage in 21% of our patients. Factors that caused the most
significant increase in stage involved either Grade III, or triple negative tumors. Decrease in stage resulted in triple positive tumors or Grade I, ER+,PR+ tumors. Our review identified a need for Oncotype testing in T2 hormone receptor-positive, HER2-negative, and lymph node-negative tumors.

**Conclusion:** Implementation of the AJCC 8th edition Prognostic Staging in our breast cancer patients will necessitate some extra work in navigation of the staging tables, but is not as formidable of a task as it initially seemed. Due diligence will need to be performed to make certain that prognostic indicators are ordered and documented appropriately. But in utilizing this new system, we will be able to provide more appropriate treatment plans for our patients.
P 46. AN OPPORTUNITY FOR IMPROVEMENT IN ACRAL LENTIGINOUS MELANOMA: A COMPARISON BETWEEN AFRICAN AMERICANS AND CAUCASIANS
WO Christopher MD, AG Ray MD, ME Mahoney MD, RT Brodell MD, NT Sheehan MD, AH Seawright DNP, JJ Wynn MD, CD Anderson MD, TM Earl MD, WS Orr MD
University of Mississippi Medical Center

Background: The morbidity and mortality associated with melanoma is directly associated with the clinical stage of disease at the time of diagnosis. Acral lentiginous (AL) melanoma is a rare subset of melanoma that typically occurs on the hands, feet, and subungually. AL melanoma is more common in African Americans (AA) than Caucasians. Comparisons between AA and Caucasians with AL melanoma is limited.

Methods: A retrospective analysis of all patients with Acral Lentiginous melanoma treated at our institution from August 2015 to November 2017.

Results: 10 patients with AL melanoma were identified. The mean age at diagnosis was 57.8 years. Seven (70%) of the patients were male and 60% of the patients were African American (AA). The mean depth of invasion was 8.51 millimeters (mm). The primary disease site was the lower extremity in 90% of all patients; all AA's disease site was the lower extremity. A total of 80% of patients were alive at the time of analysis. There was a trend toward a greater depth of invasion of the primary AL melanoma in AA compared to Caucasians (12.23 mm vs 2.93 mm, respectively; p = 0.14). There was a significant difference in age at diagnosis between AA (47.3 years) and Caucasians (73.5) (p = 0.04). Sixty-seven percent of AAs presented or developed metastatic disease compared to 0% of Caucasian patients (p = 0.035). Five AAs (83%) required systemic therapy compared to zero Caucasian patients (p = 0.01). Two (33%) AAs had died of AL melanoma compared to 0% of Caucasians.

Conclusion: At our institution, AAs with AL melanoma present at a younger age with more advanced stage disease. Also, AAs are more likely to develop metastatic disease and require systemic therapy.
P 47. THE ANGEL WINGS INCISION: A NOVEL SOLUTION FOR MASTECTOMY PATIENTS WITH REDUNDANT AXILLARY TISSUE

E Hill DO, D Ochoa MD, F Denham MD, BM Wilson BS, MF Lin-Duffy DO, A Merrill MD, A Rivere MD, R Henry-Tillman MD
University of Arkansas for Medical Sciences

Background: The post-surgical incisional complication of lateral dog ears is a common finding in women with redundant axillary tissue undergoing mastectomy without reconstruction. The presence of dog ears is a frequent source of patient complaints and creates many patient challenges, including physical discomfort, sensation of fullness or heaviness, difficulty with prosthetics, finding appropriate fitting clothing or brassieres, and a constant psychological reminder of their cancer diagnosis and surgical ordeal. Many techniques have been proposed to address the problem of redundant axillary tissue such as the suturing sliding technique, the fishtail closure or VY plasty, advancement flaps, and the waisted teardrop, but none of these provide consistent satisfactory outcomes. The angel wings incision is a novel surgical technique that results in tissue flaps that create a smooth lateral body contour upon closure in patients with redundant axillary tissue.

Methods: Preoperatively, a pinch test is performed to assess the amount of adiposity extending off the lower lateral edge of the breast and the latissimus muscle that can be removed without affecting arm range of motion. The width and length of the mastectomy incision needed to encompass the redundant axillary tissue is calculated and drawn using the standard surgical ratio of 1 to 3. The lateral portion of the winged incision is composed of a pair of identical parallel curvilinear lines. These lines should remain equidistant from one another from the most lateral/posterior aspect of the incision to approximately the anterior axillary line. The superior line is below the inferior border of the axillary hair line, and the inferior line is at the inferior aspect of the excess adiposity as determined previously with the pinch test. Intraoperatively, the angel wings incision consists of two separate steps. The first step is a separate lateral incision that addresses the redundant axillary tissue. The second step addresses the mastectomy portion of the procedure, with or without lymph node biopsy. The lateral superior and inferior flaps are created, avoiding violation of the latissimus dorsi fascial planes. Enough subcutaneous tissue should be removed to create a smooth skin flap. After the flaps are completed and the subcutaneous tissue is removed, the lateral wound edges are approximated with skin staples to minimize
blood loss and decrease the risk of infection while the mastectomy is completed. During skin approximation the arm should be relaxed in normal anatomic position at the patient’s side, to ensure even realignment of the incision and remaining tissue. Once the mastectomy portion is finished, a drain is placed in the wound bed. The temporary staples are removed and the skin is closed with full thickness dermal sutures. 3-0 Vicryl continuous suture is used to close the incision lateral to the anterior axillary line. The wound is then dressed with dermabond skin glue.

**Results**: At the completion of the mastectomy with Angel Wings Incision, the body contour is flat without dog ears. The extent of the posterior dissection is dependent upon the amount of redundant accessory tissue, which varies with each patient. ICD10 codes for billing of the angel wings incision include the following: E65 for a localized adiposity and M95.9 for acquired deformity of other specified area. Operative dictation notes should specify “acquired deformity of the upper flank and axillary region”.

**Conclusion**: In our clinical experience over many years, there is no increase in patient reports of lateral pain or restricted arm movement with the Angel Wings incision compared to traditional mastectomy incisions. An IRB approved protocol to formally evaluate post surgical outcomes with this novel technique has been approved.

Methods: Between 9/2016 and 9/2017, 40 patients at 3 sites underwent peri-operative electromagnetic transthoracic nodule localization (EMTTNL) prior to video/robotic assisted thoracoscopic surgery (VATS/RATS). Patients considered for EMTTNL were all radiographic stage 1. Preoperative CT scans with inspiratory and expiratory views were obtained. After induction of anesthesia and positioning, landmark registration was performed followed by EMTTNL using a tip-tracked needle. Upon access of the lesion, dye was injected into the lesion and tracked back to the visceral pleura. The patient then underwent diagnostic wedge resection followed by completion lobectomy or segmentectomy based on frozen section results.

Results: The median age of participants was 65 years, BMI was 27.2 and 65% were female. The majority of lesions were in the right upper lobe, 12/40 (30%) and left upper lobe 14/40 (35%). The mean size of the lesions was 13 mm and average distance from the pleura was 10 mm. The majority of the lesions were radiographically described as solid, 22/40 (55%). EMTTNL was deemed successful in 95% (38/40) of cases (1 case dye could not be identified, 1 case dye diffused). The median volume of dye injected was 0.5 mL. VATS/RATS wedge resection of the nodule in question was successful in 95% (38/40) of cases. Sixty-five percent of patients were found to have a malignant diagnosis; all benign diagnoses have a minimum of 6 month follow-up without progression. No
complications were reported as part of the localization procedure.

**Conclusion:** The use of peri-operative EMTTNL prior to VATS/RATS is both safe and feasible. A prospective multicenter trial is necessary to validate these findings and to extend our knowledge in regards to how this technique affects performance of VATS/RATS for ground glass and small/deep non-palpable nodules.
P 49. THE USE OF PRE-OPERATIVE VARIABLES TO PREDICT UNRESECTABILITY IN PANCREATIC CANCER
K Hessel DO, T Schmitt MD, S Kumer MD PhD
University of Kansas School of Medicine

Background: Surgical resection remains the only potential cure for pancreatic cancer. While imaging has improved, approximately 20% of patients still undergo an aborted Whipple procedure. We aimed to determine whether pre-operative risk factors for an aborted Whipple can be predicted.

Methods: Patients were identified from January 2011 through September of 2016. Patients undergoing Whipple procedure for adenocarcinoma of the pancreatic head were considered. Preoperative variables of interest included: jaundice, pain, weight loss, nausea, GI obstruction, neo-adjuvant chemotherapy/radiation, time between imaging and OR, use of CT, MRI, EUS, ERCP, CA 19-9, CEA, age, and gender. Statistical analysis was completed in SPSS.

Results: Of 106 patients undergoing attempted Whipple, 71 were resectable and 35 were unresectable (33%). Average age was 55 and 67 in the unresectable and resectable groups, respectively. Age was not a risk factor for unresectability. Pre-operative pain was more likely in the unresectable patients (p=0.05). Unresectable patients were more likely to have a CT repeated at our institution in addition to an OSH scan (p=0.04). No other pre-operative variables were significantly different between the two groups.

Conclusion: Pancreatic adenocarcinoma is best treated with surgical resection, but in our study 33% of patients initially thought resectable were not. Our study demonstrates abdominal pain as a potential pre-operative indicator of unresectability. Patients found to be unresectable were more likely to have a CT repeated at our institution, perhaps indicating concern for resectability on imaging. As aborted Whipple is likely to delay chemotherapy and radiation, identifying patients who are at high risk to have an aborted procedure is imperative.
P 50. ISOLATED RETROPERITONEAL LYMPH NODE METASTASIS IN RECTAL ADENOCARCINOMA: THE USE OF ROBOTIC RETROPERITONEAL LYMPH NODE DISSECTION
PT Hangge MD, N Wasif MD, EP Castle MD, CH Stucky MD
Mayo Clinic Arizona

Background: Isolated retroperitoneal lymph node recurrence after curative colorectal surgery is rare, with an incidence of 1-2%. It carries a poor prognosis; however with surgical resection, survival increases. In recent years a more aggressive surgical approach to treatment of retroperitoneal recurrence has been gaining favor. We describe the first reported case of robotic-assisted retroperitoneal lymph node dissection of retroperitoneal lymph nodes after curative resection of pT2, pN2a, M0 rectal adenocarcinoma.

Methods: A 57 year old male with no major comorbidities presented with history of pT2, pN2a, M0 rectal adenocarcinoma for which he underwent laparoscopic abdominoperineal resection. Initial preoperative PET/CT demonstrated hypermetabolic activity of distal retroperitoneal, bilateral iliac, perirectosigmoid and presacral regions with resolution following neoadjuvant FOLFOX therapy and radiation. Fourteen months post-operatively, two hypermetabolic lymph nodes were found in the retroperitoneum during surveillance imaging. The decision was made to proceed with curative resection using a robotic-assisted technique. With the patient in lithotomy, the abdomen was entered. The retroperitoneum was exposed through opening the peritoneal reflection of the small bowel mesentery as well as mobilizing the ascending colon and duodenum. The free edge of the incised peritoneum was attached to the anterior abdominal wall to provide retraction. Bulky lymphadenopathy was noted at the aortic bifurcation. Beginning along the right common iliac artery, the right ureter was identified and dissection carried cephalad using electrocautery. Next, the para-aortic lymph node packets were carefully dissected from the level of the bifurcation through the previous inferior mesenteric artery stump and up to the level of the duodenum. Lastly, the left ureter was identified and dissection was carried down the left common iliac artery to its bifurcation. Given extensive dissection of the right retroperitonum, a right ureteral stent was inserted at the end of the case.

Results: Final pathology demonstrated metastatic adenocarcinoma in 3 nodes: para-aortic, intracaval and preaortic. The patient was started on adjuvant chemotherapy and is currently disease free.
ePOSTER ABSTRACTS (continued)

**Conclusion:** Robotic retroperitoneal lymph node dissection is described in other pelvic tumors, but has not been described in rectal cancer metastasis. Using a robotic-assisted technique, we demonstrate curative treatment of the rare case of isolated retroperitoneal lymph node rectal adenocarcinoma recurrence. Given the anatomy of this area, the surgery is technically demanding, but may offer decreased morbidity at experienced centers compared to the traditional open approach. Further investigation into its safety and oncological outcomes for rectal cancer is warranted.
P 51. HYPERThERMIC INTRAPERITONEAL CHEMOTHERAPY ALTERS TIMING AND RATES OF COMPLICATIONS IN ONCOLOGIC COLON RESECTION

TJ Mouw MD, RJ Odell DO, PJ DiPasco MD, JD Valentino MD, JH Ashcraft DO, M AlKasspooles MD

University of Kansas Medical Center

**Background:** Cytoreductive surgery (CRS) and hyperthermic intraperitoneal chemotherapy (HIPEC) have been commonly used to treat carcinomatosis arising from low-grade mucinous neoplasms and gynecologic cancers. The indications for this operation have been expanding to include both primary colon and rectal cancer as well as intraperitoneal recurrences. Little is known about how this technique impacts a patient’s perioperative course. We aim to determine the impact of CRS and HIPEC on patients undergoing colon resection.

**Methods:** A query of the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) database was conducted for years 2007-2015 using CPT codes associated with colectomy. From these results, an additional search was conducted for CPT codes associated with CRS HIPEC. Resections for benign indications were excluded. Complication rates and median times to diagnosis were compared using Chi square and nonparametric analysis.

**Results:** The query identified 98,039 colectomy-only and 583 colectomy+HIPEC cases which met criteria. Patients who underwent colectomy+HIPEC were more likely to experience organ space surgical site infections (4.0% vs 13.2% p<0.001), wound dehiscence (1.2% vs 2.4% p=0.009), sepsis (3.4% vs 14.1% p<0.001), and returns to the operating room (5.2% vs 10.5% p<0.001). Colectomy+HIPEC patients also had delayed presentation of organ space infections (11 vs 14 days p=0.006). Readmission rates between the groups were similar, however readmissions were delayed for colectomy+HIPEC patients compared to colectomy-only patients (14 vs 19 days p<0.001).

**Conclusion:** CRS HIPEC increases the morbidity of common colon cancer operations. Additionally, the time course for some complications is delayed. Surgeons may need to adjust their postoperative management and expectations in order to minimize missed complications. However, the data suggest that increased complications are not translating into avoidable readmissions for patients who undergo CRS and HIPEC in addition to colon resection.
P 52. POSTOPERATIVE MECHANICAL VENTILATION IS ASSOCIATED WITH INCREASED MORBIDITY AND A WORSE PERIOPERATIVE OUTCOME AFTER CYTOREDUCTION AND HYPERThEMIC INTRAPERITONEAL CHEMOTHERAPY

X Huang, P Hewgley, PV Dickson, ES Glazer, L Douthitt, B Bicknell, K Pointer, JL Deneve

University of Tennessee Health Science Center

Background: Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS/HIPEC) has improved outcomes for select patients with peritoneal carcinomatosis (PC) but may be associated with intraoperative hemodynamic changes and potential morbidity. We evaluated outcomes of patients who required intraoperative vasopressor (IVP) use and post-operative mechanical ventilation (POMV) while undergoing CRS/HIPEC.

Methods: An IRB approved retrospective review was performed for patients who underwent CRS/HIPEC for PC. Clinicopathologic, intraoperative and perioperative variables and outcomes are described.

Results: Seventy patients (median age 55.5 years, 64% female and 69% Caucasian) underwent CRS/HIPEC for PC from appendiceal (46%), colon (17%), ovarian (17%) or other malignancies (20%). The median peritoneal cancer index (PCI) score was 11.0 (1-39) and 95% underwent completeness of cytoreduction (CCR) score of 0/1, and 62 (89%) required multivisceral resection. Forty-nine patients (70%) required IVP and 28 (40%) required POMV. Patients who required POMV had a higher PCI (18.1 vs 12.0, 0.016) and were more likely to require multivisceral resection of > 4 organs (71% vs 43%, 0.019). POMV was associated with a longer intraoperative duration of IVP use (223 minutes vs 120 minutes, 0.010), requirement of IVP use greater than 120 minutes (80% vs 38%, 0.004), and continued IVP requirement at the end of CRS/HIPEC (25% vs 7%, 0.036). Patients requiring POMV had longer anesthesia and operative times (648 vs 516 minutes and 598 vs 441 minutes, respectively, <0.0001 and < 0.0001). Patients requiring POMV had a higher blood loss (996 vs 442 mL, <0.0001), required greater intraoperative fluid administration (5.6 vs 4.0 Liters, 0.003), and had higher rates of red blood cell (82% vs 50%, 0.006) and fresh frozen plasma (39% vs 5%, <0.0001) transfusions. Post-operatively, patients requiring POMV had longer ICU and hospital stay (4.25 days vs 2.0 days, <0.0001 and 11.3 days vs 8.4 days, 0.001, respectively, and were more likely to experience a major complication (29% vs 7%, 0.016). Patients who required POMV
were able to extubate within 14.5 hours (10-211 hours) and 3 patients (11% vs 0%, 0.030) required reintubation. On multivariable analysis, duration of IVP use greater than 120 minutes (0.017), FFP transfusion (0.028) and operative length (0.008) were independently associated with the need for POMV after CRS/HIPEC.

**Conclusion**: POMV is associated with increased perioperative morbidity for patients undergoing CRS/HIPEC. Operative length and duration of IVP use greater than 2 hours are associated with increased risk of POMV. Preoperative counseling of about the potential need for POMV is necessary for patients undergoing CRS/HIPEC.
P 53. CYTOREDUCTIVE SURGERY AND HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY (CRS/HIPEC): EARLY VS. LATE EXPERIENCE AT A SINGLE INSTITUTION
CS Velazco MD, MS, RJ Gray MD, BA Pockaj, CH Stucky MD, N Wasif MD
Mayo Clinic Arizona

Background: Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS/HIPEC) is used for treatment of peritoneal carcinomatosis. This study aims to evaluate our institutional experience with CRS/HIPEC to determine if there is a difference between our early and late experience as determined by length of stay (LOS), and rates of complications, 30-day readmission, reoperation and mortality.

Methods: A retrospective study was conducted on CRS/HIPEC procedures performed at our institution from 2010-2017. Postoperative complications were classified according to Common Terminology Criteria for Adverse Events (CTCAE; version 4.0). Two-tailed Fisher's exact or Mann-Whitney U tests were used for statistical analysis.

Results: 103 procedures were performed in total, including 72 via open laparotomy, 30 via laparoscopy (with three conversions), and one robotic resection. 52 (50%) of the cohort were male, 81% were Caucasian, and the median age at CRS/HIPEC was 56 years. The most common primary tumor origin was colon (71%), appendix (12.6%), peritoneum (9.7%), and ovarian (2.9%). 79 (77%) of the patients had primary tumor resection prior to CRS/HIPEC. Median and mean PCI score was 10.5 and 12, respectively, with 81 (78.6%) of patients receiving a CC-0/CC-1 cytoreductive resection. 62 (60%) patients had postoperative complications overall, of which 28 (27.2%) were CTCAE grade 3 or above. 13 (12.6%) patients were readmitted within 30 days and reoperation was required in 9 (8.7%) patients. The early experience (first 50 cases) and late experience (>50 cases) were compared. The rate of postoperative complications was the same in both groups (p=0.185): 20% and 31.5% for the early and late groups, respectively. Reoperative rates were significantly higher (p=0.014) in the early experience: eight (8.7%) patients required return to the operating room in the early experience as compared to one (1.9%) patient in the late experience. Median LOS was seven (IQR: 4, 11) days overall, but was significantly higher (p=0.018) in the early experience versus the late experience, at nine (IQR: 4, 13) days and six (IQR: 4, 10) days, respectively. Readmission rates were not significantly different between the two groups (p=0.771). There was one
30-day mortality for a rate of 0.98% overall.

**Conclusion:** Institutional experience with cytoreductive surgery and hyperthermic intraperitoneal chemotherapy over time decreases 30-day reoperative rates and length of stay. Readmission rates and grade 3/4 postoperative complications remained constant.
**P 55. MULTIDISCIPLINARY CANCER CARE MODEL: THE EFFECT OF NURSE NAVIGATORS IN IMPROVING OUTCOMES OF CANCER PATIENTS**

RD Munoz NP-C, L Farshidpour, UB Chaudhary MD, AH Fathi MD

*University of California San Francisco at Fresno*

**Background:** There has been a demand for quantitative evidence concerning the quality of cancer care that patients receive. Several recent publications have called attention to deficiencies in cancer care experiences that are prominent in the immediate period following a cancer diagnosis. A randomized controlled trial identified the following three major challenges faced by cancer patients and caregivers: 1) delays in and lack of coordination of care; 2) lack of relevant information; and 3) inadequate attention to their emotional and social problems. This study sought to determine whether the involvement of a nurse navigator as a coordinator of cancer care improved outcomes for patients with a complex GI cancer diagnosis. It was hypothesized that enrollment in the navigation program would improve the overall time from diagnosis to treatment, while ensuring presentation at a multidisciplinary tumor board, as well as demonstrate a decrease in the percentage of missed appointments.

**Methods:** This retrospective study compared randomly selected GI oncology patients with and without a nurse navigator. Initial staging and workup after diagnosis of the index cancer can be a lengthy process resulting in significant treatment delays. We measured the crucial time elapsed between the diagnosis to initiation of treatment as a measure of quality. Evaluating the number of missed appointments for each cohort assessed the effect of care coordination on treatment compliance. Comparison of medians was performed using the Wilcoxon rank sum test and proportions were evaluated using Pearson’s chi-squared test or Fisher’s exact test. A two-tailed p-value <0.05 was considered significant.

**Results:** Patients enrolled in the nurse navigation system as a part of the multidisciplinary cancer program had a significantly shorter time lapse between the diagnosis to treatment commencement points (P Value < 0.001). In this group, the average time spent between the index diagnosis to the start of treatment was 15.15 days, compared to 42.93 days for patients who were not part of the multidisciplinary GI cancer program. Statistical analysis revealed no difference in missed appointment rates between two groups (P Value: 0.7). Average missed appointment rates for the multidisciplinary group was 9.6, while the other group missed an
average of 9.02 appointments.

**Conclusion:** This study underlines the necessity of multidisciplinary cancer care models with an emphasis on nurse navigation programs to improve patient outcomes. Nurse navigators serve as treatment guides to direct the patients along shortest and safest path towards the most optimal personalized cancer treatment. The research indicates nurse navigation, as part of a multidisciplinary team, improves the timeliness of care.
P 56. PUSHING THE C. DIFFICILE ENVELOPE: IS THERE A SIMPLER SURGICAL SOLUTION?
DA Pigneri MD, AM Johnston MD, MC Bristol MD, PJ Granet MD
Scripps Memorial Hospital La Jolla

Background: C. difficile is a common problem in US healthcare. A recent prevalence study found C. difficile to be the most commonly reported pathogen in healthcare-associated infections. An estimated average of 80,400 C. difficile infections occur each year in the US alone. Traditional surgical treatment for C. difficile colitis has consisted of total abdominal colectomy with end ileostomy creation. In 2011, this was challenged by Neal et al at the University of Pittsburgh. They demonstrated improved outcomes with creation of a loop ileostomy, colonic lavage, and antegrade vancomycin flushes when compared with standard total abdominal colectomy and end ileostomy. This approach resulted in a dramatically reduced mortality rate (19% vs 50%, p = 0.006). Additionally, they demonstrated a 93% rate of colonic preservation. This marked improvement in mortality is promising, and challenges the need for removal of the infected colon. Their study would argue that colonic lavage may serve as source control in lieu of total abdominal colectomy and that local delivery of vancomycin to the colon is sufficient to clear the remaining infection. With this paradigm in mind, we found ourselves faced with several patients unwilling to undergo ostomy creation.

Methods: This is a case series report. We report seven patients with complicated C. difficile colitis who refused ostomy creation and were treated with enteral delivery of large volume liquid vancomycin via a surgically placed transgastric jejunal feeding tube.

Results: There were no deaths. Six out of seven patients experienced resolution of their active C. difficile infection without need for further surgery and were able to preserve their colon. In the one patient who did not rapidly improve and required total abdominal colectomy with end ileostomy, delaying colectomy for a 24 hour trial period (specified time set forth by patient) of vancomycin flushes via the transgastric jejunal feeding tube did not result in a poor outcome.

Conclusion: Our case series would suggest that placement of a transgastric jejunal feeding tube for enteral delivery of liquid vancomycin is an acceptable form of treatment for C. difficile colitis in the setting of patients who are unwilling or unable to undergo standard surgical therapy. Additional benefits of this approach include the ability to rapidly reach nutritional goals, the opportunity to administer enteral tube feed preparations containing pro-biotics, and the avoidance of additional surgery for ostomy reversal. Further research remains to be done in a prospective fashion to look for potential non-inferiority of this treatment.
Background: There is a considerable interest in global humanitarian work, including Medicine Sans Frontiers (MSF) and natural disaster missions, among surgical residents. Despite this interest, many current training programs do not teach key surgical skills necessary to practice safely in such settings. To address this disparity, our group created the Colorado Humanitarian Surgical Skills Workshop, an annual cadaver-based course exposing senior residents to surgical techniques essential in low- and middle-income countries (LMICs) and not traditionally taught in residencies. We sought to evaluate workshop effectiveness objectively by comparing pre- and post-testing of external fixation of long bone fractures. We hypothesize that the current workshop model increases competence as assessed by multiple choice testing and hands-on cadaveric exercises.

Methods: One of the 27 procedures taught during the course, external fixation was chosen to assess the effectiveness of the workshop. Residents received didactic lectures from orthopedic surgeons followed by hands-on practice in a cadaveric lab, preceded and followed by pre- and post-course assessments. Residents were assessed based on confidence levels, clinical knowledge and manual skills. Change in confidence levels as well as clinical knowledge were assessed using a Likert scale and a multiple-choice test. Manual skills were evaluated based on the ability to place an external fixator in the setting of a combined femoral and tibial fracture in a cadaver. Residents were grouped into pairs and were given 15 minutes to perform external fixation. A standardized rubric including stability, alignment and external construct, as well as imaging criteria, were used to grade the fixation. Pre- and post-testing scores were analyzed using Wilcoxon two tailed paired t test. Statistical significance was determined at a p value of < 0.05.

Results: There were a total of 12 participants in the workshop. There was a statistically significant improvement in mean scores for the multiple choice knowledge test (pre-test score 54.6% ± 11.1 and post-test score 69.0% ± 14.2, p<0.01). Manual skills were also significantly
improved. The mean pre-test score for the external fixation skills test was 20.5% with none of the participants able to complete the exercise in the allocated time. The mean post-test score was 71.2% and the average time of completion was 12.4 minutes, with only one pair not completing the fixation (p<0.01). Prior to the course, residents stated that they were either not confident or somewhat unconfident performing external fixation of the lower extremity. At the end of the course, 100% of residents replied that they were either confident or somewhat confident performing this procedure (p<0.01).

**Conclusion:** Participants of the Colorado Humanitarian Surgical Skills Workshop demonstrated increased confidence, knowledge, and skill pertinent to external fixation after lectures by orthopedic surgeons and hands-on practice in a cadaveric lab. Our analysis indicates that our current workshop model is an effective tool for teaching external fixation and may serve as an exemplary for instruction of other skills required in humanitarian surgical scenarios.
P 58. “BUT THEIR YELP REVIEWS ARE AWFUL!” ANALYSIS OF GENERAL SURGEONS’ YELP REVIEWS
C Liu BS, M Uffenheimer BS, Y Nasseri MD, J Cohen MD, J Ellenhorn MD
The Surgery Group of Los Angeles

Background: Yelp is the most widely used website patients search when looking for a physician. The content of these reviews can have a significant impact on a practice. However, little is known about the content of such reviews or how they relate to the characteristics of physicians or their practices.

Methods: In this observational study, we analyzed the online reputation of general surgeons on the west side of Los Angeles. Demographics, practice characteristics, and online presence were recorded. Tabulated results were evaluated using independent t-test, one-way ANOVA, and Pearson’s correlation analysis to determine associations between number of total and negative reviews with respect to practice structure and physician characteristics.

Results: Of the 146 general surgeons, 51 (34.9%) had at least 1 review, and 29 (19.9%) had at least 1 negative review. There were 806 total reviews, 679 (84.2%) positive reviews, and 127 (15.8%) negative reviews. The negative reviews contained a total of 376 negative remarks, categorized into: physician demeanor (124, 32.9%), clinical outcomes (81, 21.5%), office/staff (83, 22.0%), scheduling (44, 11.7%), and billing (44, 11.7%). Surgeons with a professional website had significantly more reviews than those without (p=0.003). Surgeons in private practice had significantly more reviews (p=0.002) and more negative reviews (p=0.031) than surgeons who were institution employed. A strong correlation was found between a surgeon’s number of reviews and number of negative reviews (p<0.001).

Conclusion: Most general surgeons have no Yelp reviews. A surgeon’s web presence, private practice, and total number of reviews are significantly associated with both positive and negative reviews. As the most common category of complaints related to physician demeanor, surgeons may optimize their online reputation by improving their bedside manner.
P 59. THE PEDIATRIC SURGEON-SCIENTIST: SUCCEEDING IN TODAY’S ACADEMIC ENVIRONMENT
EH Steen MD, CM Moles BSPH, AM Goldstein MD, MJ Morowitz MD, N Ahuja MD, LS Cheng MD, SG Keswani MD
Baylor College of Medicine

**Background:** Pediatric surgeons have long been active supporters of conducting basic science research. However, new challenges facing the scientific community have increased pessimism amongst academic surgeons pursuing successful basic science careers. The purpose of this study is to compare pediatric surgeons’ perceptions of basic science research compared to other surgical sub-specialties.

**Methods:** An online survey was distributed to all members of the Association for Academic Surgery and Society of University Surgeons. A total of 1033 (41%) members responded, and 137 (13.3%) were pediatric surgeons. Comparisons were made between the five most-represented surgical subspecialties. Data are presented as reporting percentage, p-values by Student’s t-test.

**Results:** Pediatric surgeons are those most likely to believe that surgeons can succeed as basic scientists in today’s hospital environment compared to other specialties. Pediatric surgery reported the highest rates of NIH funding of surgical specialties. They also reported feeling less external pressure from clinical demands, hospital administrative duties, and work-life balance than their surgical peers.

**Conclusion:** Pediatric surgeons have a more positive outlook on the state of academic surgery, and exhibit an enhanced ability as basic researchers to overcome the challenges that face surgeon-scientists. Pediatric surgery may be a model for succeeding in basic science in today’s challenging surgical research environment.
P 60. VENOUS THROMBOEMBOLISM RATES ARE NOT SIGNIFICANTLY GREATER IN OBESE PATIENTS EVEN IN EMERGENT SURGERY

TK Nguyen BS, A Bennett MD, E Burgen MPH, S Glorsky MD, S Berry MD, J Howard MD, JL Green MD PhD MBA, GJ Chen MD PhD MPH, RD Winfield MD
University of Kansas School of Medicine

**Background:** There is limited data on venous thromboembolism (VTE) rates in obese patients who undergo emergent surgical procedures. Evaluating these hypercoagulable patients in the high-risk scenario of an emergent procedure is important for risk stratification and developing strategies to mitigate these complications. We hypothesized that obese patients who undergo emergent abdominal surgery will have higher rates of VTE than normal weight counterparts and at higher rates than obese patients undergoing elective abdominal surgery.

**Methods:** We performed a retrospective review of data collected from NSQIP evaluating patients undergoing abdominal surgeries in 2015, stratifying patients by body mass index (BMI) and subcategorizing them by the nature of their procedure (elective vs. emergent). Univariate analyses were performed to identify correlations between comorbidities and VTE. Multivariate logistic regression assessing significant factors as well as known predisposing, enabling, and illness-related variables was subsequently performed to establish association between these risk factors and VTE.

**Results:** A total of 99,550 patients met inclusion criteria. Univariate analysis revealed differences in VTE risk depending on BMI group (p=0.047) and an increased risk for VTE among patients undergoing emergency procedures (p=0.037). Multivariate logistic regression demonstrated a lack of association between BMI and VTE with no BMI group showing a significant increase relative to normal weight patients. There was likewise no relationship between emergent procedures and VTE (95% CI [-0.2194, 0.2411], p=0.9140).

**Conclusion:** There was no association between either obesity or the performance of emergent surgery on rates of VTE following abdominal surgery. This suggests that standard of care management of obese patients with regard to VTE prophylaxis should be adequate to mitigate these complications, regardless of whether the patient is undergoing an emergent or non-emergent procedure.
P 61. VENOUS THROMBOEMBOLISM PROPHYLAXIS IN MALIGNANCY: ARE LOCAL PRACTICES CONSISTENT WITH NATIONAL RECOMMENDATIONS?

JM Chang MD, RF Goldberg MD, N Wasif MD MPH, RJ Gray MD, BA Pockaj, CH Stucky MD
Mayo Clinic Arizona

Background: The American Society of Clinical Oncology (ASCO) published an update to their practice guidelines in 2014. Their review of the literature evidence resulted in a strong recommendation that patients undergoing major abdominal or pelvic surgery for malignancy should receive pharmacologic venous thromboembolism (VTE) prophylaxis starting preoperatively and continuing up to 4 weeks post-surgery unless otherwise contraindicated. Surgeon compliance to these guidelines is sporadic; therefore we sought to evaluate the level of awareness amongst a group of local surgeons.

Methods: After obtaining IRB approval, a survey of practice patterns was created and distributed to the members of the Arizona Chapter of the American College of Surgeons (AZACS) at the 2016 annual meeting in Tucson, AZ. Descriptive statistics were performed. Survey responses regarding knowledge of ASCO guidelines were grouped into “Aware” for respondents who reported as being “Very Aware/Somewhat aware” or “Not Aware” for respondents who reported as being “Neither aware nor not aware/Somewhat not aware/Not at all aware”.

Results: Eighty-eight surgeons attended the meeting, including 41 actively practicing members of the AZACS, and 6 retired surgeons. Twenty-three board-certified surgeons returned surveys; twenty-one who were in clinical practice. Fifty-seven percent of practicing surgeons (n=12) reported using VTE prophylaxis just prior to surgery. Surgeons’ knowledge of ASCO guidelines was reported as “Very Aware” (10%), “Somewhat aware” (54%), “Somewhat not aware” (10%), “Not at all aware” (12%), and “Neither Aware nor not aware” (15%). Seventeen respondents reported performing major abdominal or pelvic oncologic surgery in multiple areas (82% colorectal, 59% upper gastrointestinal, 53% hepatobiliary, 29% pancreas, 29% adrenal, 18% kidney/bladder). Twenty-nine percent perform greater than 50 major oncologic surgeries per year. Six surgeons who reported performing oncologic surgery reported using VTE prophylaxis on discharge (2/6 had no fellowship training, 1/6 surgical oncology fellowship, 1/6 transplant surgery fellowship, 1/6 trauma/critical care fellowship, 1/6 minimally invasive
surgery fellowship). Ten surgeons performing oncologic surgery (10/17) reported being “Aware” of ASCO guidelines. Five of these surgeons who were “Aware” (5/10) reported using VTE prophylaxis on discharge. Only one surgeon (1/7) who reported being “Not Aware” of ASCO guidelines used VTE prophylaxis on discharge. Similarly, 6/10 of surgeons who reported being “Aware” of ASCO guidelines used preoperative VTE prophylaxis compared to 4/7 of surgeons who reported being “Not Aware” of ASCO guidelines.

Conclusion: A minority of surgeons surveyed report routine use of VTE prophylaxis in the perioperative period. Similarly, these surgeons have limited knowledge of ASCO guidelines despite specialty training or having a consistent oncologic practice. Further research into national trends and further education of surgeons is needed for improved outcomes in cancer patients.
EMERGENT LIVER TRANSPLANTATION FOLLOWING BLUNT INJURY TO THE LIVER
RS Smith MD, E Thomas DO, A Martin MD, T Loftus MD, JM Yang MD, C Jacobs MD
University of Florida

Background: The liver is the most commonly injured organ in blunt trauma. Liver transplantation in the setting of trauma is rarely indicated and is often reserved in the setting of severe anatomical injury or acute liver failure. The majority of trauma cases that have resulted in liver transplantation were due to uncontrollable bleeding. Survival and long-term outcomes have significantly improved in regards to all indications for liver transplantation.

Methods: Retrospective case review

Results: A 19-year old male presented as a hospital transfer following a farming accident. He sustained a severe liver injury and was initially stabilized at an outside hospital with exploratory laparotomy and packing. He arrived hemodynamically stable and was taken to interventional radiology for angiography where embolization of the right hepatic artery was performed due to active bleeding and multiple pseudoaneurysms. Subsequently, he was taken to the OR with the presence transplant surgery. He was found to have a left portal vein injury that was primarily repaired and an avulsed left hepatic duct injury. The right lobe of the liver was grossly necrotic. A HIDA was performed that confirmed transection of the left hepatic duct therefore he was listed for transplantation using exception criteria. On post injury day 8, he underwent liver transplantation without immediate complications. He was discharged to home on post transplantation day 6. In subsequent follow up visits he has been doing well and continues on immunosuppressive agents.

Conclusion: Liver transplantation in the setting of severe liver injury can be a life-saving procedure that is seldom utilized. Recent outcomes are similar when comparing liver transplantation in both trauma and other forms of end stage liver disease. The majority of cases involving transplantation following trauma were secondary to uncontrollable bleeding or total liver necrosis. In this case scenario, the liver was felt to be nonviable due to right sided liver necrosis and severe anatomical injury to the left lobe. The average time from injury to transplantation in recent reports was 14 days. In this scenario, early need for transplantation was identified and transplantation was performed on day 8. The patient spent a total of 14 days in the hospital.
P 63. CONCOMITANT PLACEMENT OF RIGHT INTERNAL JUGULAR DUAL LUMEN DIALYSIS CATHETER AND CENTRAL VENOUS CATHETER: IS IT SAFE?
B Spitzer MD, K Kirkland MS, SD Helmer PhD, J Reyes MEd, C Ammar MD, C Subbarao MD
University of Kansas School of Medicine - Wichita

Background: Central venous catheters and dialysis catheters are not typically placed in the same vessel. Placing them concomitantly in the same vessel may increase some potential risks, but also offers some advantages. The convenience of preparing and draping only one site, avoiding less desirable locations such as the groin or left internal jugular vein, and decreased use of subclavian or peripherally inserted central catheters may decrease rates of central stenosis. This study examines the safety and efficacy of placing both a tunneled dual lumen dialysis catheter and a triple lumen central venous catheter in the right internal jugular vein compared to only a dialysis catheter.

Methods: We conducted a retrospective chart review for all adult patients who underwent placement of right internal jugular dual lumen dialysis catheter by a single surgeon practicing in the Midwest. Patients meeting the inclusion criteria were grouped based on whether they received a dialysis catheter alone or in combination with a central venous catheter in the right internal jugular vein. Hospital records were reviewed to evaluate the incidence of catheter-related thrombosis, line infections, line malfunctions, pneumothorax, and the need for line replacement. The data were analyzed to compare line-related complications between patients who had a central venous catheter placed at the same time in the same vein and those that did not.

Results: Investigators attempted to retrieve records on 192 patients. Thirty-two patients were excluded from analysis because hospital records could not be located or the patient did not meet the inclusion criteria for the study. Data analyses were conducted on 160 complete records, with 97 patients in the dialysis catheter and central venous line group and 63 patients in the dialysis catheter only group. The two groups (both catheters vs. dialysis catheter alone) were not statistically different with regard to age (62.1 ± 16.3 years vs. 57.9 ± 17.6 years, P = 0.129) and gender (47.4% male vs. 55.6% male, P = 0.315). More patients in the group receiving both catheters had a history of deep vein thrombosis, but this did not reach statistical significance (10.3% vs. 1.7%, P = 0.052). More patients in the dialysis catheter only group received pre-operative
antibiotics (60.3% vs. 40.2%, P = 0.013). No significant differences were found in the incidence of thrombosis (1.0% vs. 0.0%, P > 0.999), line infection (2.1% vs. 0.0%, P = 0.519), line malfunctions (2.1% vs. 0.0%, P = 0.516), or catheter replacement (5.2% vs. 1.6%, P = 0.404) in patients that did or did not have a central venous catheter placed concomitantly with the dialysis catheter, respectively. No patients in either group had a pneumothorax.

**Conclusion:** Concomitantly placed central venous catheter with dual lumen dialysis catheter in the right internal jugular vein is not associated with significant increase the risk of thrombosis, line infection, pneumothorax, or need for replacement compared to only placing a dialysis catheter in this position. While not currently utilized with frequency, these preliminary data indicate that placing both a dual lumen dialysis catheter and central venous catheter in the right internal jugular simultaneously is a viable option.
P 64. MORNING REPORT DECREASES LENGTH OF STAY IN TRAUMA PATIENTS
JD Wolfe BS, JR Gardner BS, MJ Sutherland MD, MK Kimbrough MD, JC Jensen MD, RD Robertson MD, KW Sexton MD
University of Arkansas for Medical Sciences

Background: Patient hand-offs have been an area of recent interest in the Trauma community. All too often, Trauma services have a vast number of patients with limited amount of time to hand these patients off between shifts resulting in errors and inefficiencies in patient care. There is a wide variety of patient hand-off methods that exist. Recently UAMS, a statewide tertiary care center, has switched from an email-based system to a Morning Report (MR) model.

Methods: Prior to the intervention, patient hand-offs were communicated between resident teams without attending provider supervision. After MR was implemented, these hand-offs were completed in a face to face meeting between resident teams with oversight from 3 attending surgeons (night call, trauma day call, and emergency general surgery day call). The enterprise data warehouse was queried for all patients meeting inclusion criteria for the National Trauma Data Bank from 2014 until mid-2016. Bivariate frequency statistics and least squares regression analysis were performed using JMP Pro Version 13.2.1.

Results: A total of 9468 patients were analyzed in this study (pre-MR, n=8657; post-MR, n=811). The majority of patients were white (64.7%), males (69.6%) who arrived from the scene (65.7%) via ground transport (82.6%) with blunt force trauma (80.6%). When excluding patients with LOS < 1 day and mild injuries (ISS<15), the LOS for the pre and post-MR cohorts were 6.0 ± 8.5 and 4.9 ± 6.0, p value < .0001. A least squares regression was performed and showed MR was an independent predictor of length of stay in these trauma patients (p=.004) when controlling for age (p<.0001), TRISS (p<.0001), ISS (p<.0001), and number of comorbidities (p<.0001).

Conclusion: Implementation of an attending supervised Trauma MR is associated with a significantly decreased length of stay in patients with multisystem trauma. Further work needs to be done to fully illustrate the implications of having a MR system in place.
P 65. FEASIBILITY OF SMS TEXTS TO ASSESS LONG TERM QUALITY OF LIFE IN TRAUMA PATIENTS
B Donovan BS, J Ball BS, TJ McDonald MSN RN NEA-BC, S Glorsky MD, S Berry MD, J Howard MD, A Bennett MD, JL Green MD PhD, RD Winfield MD
University of Kansas School of Medicine

Background: The National Academies of Sciences, Engineering, and Medicine has included post-discharge Health-related Quality of Life (HRQoL) and patient-related outcomes (PRO) as metrics in determining the quality of trauma care. Collecting these post-discharge data is not commonly performed at most United States trauma centers, and as such, strategies to assess these metrics are in need of further attention. This study aims to assess the feasibility of using SMS texts to deliver a HRQoL survey to patients. We hypothesized that SMS texts are a feasible option for the collection of data on HRQoL on trauma patients.

Methods: All adult discharges from the trauma service at our Level 1 Trauma Center between June 28, 2017 and July 28, 2017 were approached on the date of discharge and asked to participate. Patients were excluded if unable to speak English or if cognitive deficits precluded completion of the survey. Enrolled patients were asked to provide mobile phone number and service provider. A unique link to a QoL survey was then sent to the participating subjects’ mobile phones via SMS at one week post-discharge with a second survey sent at one month.

Results: 104 patients were discharged during the time period studied, with 59 ultimately participating. The overwhelming reason for non-participation was not owning a smartphone (n=27). Patients declining participation were significantly older than those who chose to participate (64 vs. 43 years, p<0.001). Participants and non-participants were otherwise similar in terms of demographics and injury severity. Of participating patients, 17 responded to the initial one week survey (28.8%) while 9 responded to the one month survey (15.3%), both within acceptable bounds for post-discharge survey response rates among trauma patients.

Conclusion: Use of SMS text is a viable method of obtaining quality of life data on trauma patients after discharge. This pilot study has identified challenges and opportunities in obtaining this information and will serve as a guide for future multimodality efforts to obtain this valuable information and improve the quality of care and outcomes for the injured.
Background: We surveyed palliative care specialists (PCS) and trauma surgeons (TS) to elicit attitudes regarding: 1) the importance of goals of care (GoC) conversations for injured seniors; 2) their confidence in their own specialty’s ability to conduct GoC conversations; and 3) their confidence in the ability of the other specialty to do so.

Methods: A survey was developed by the Prognostic Assessment of Life and Limitations After Trauma in the Elderly (PALLiATE) Consortium, beta tested with TS and PCS physicians not affiliated with the Consortium, and approved by the Research Committees of the American Association for the Surgery of Trauma (AAST) and the American Academy for Hospice and Palliative Medicine (AAHPM) before dissemination to each group’s physician members.

Results: Responses were received from 118 TS (8.8%) and 244 PCS (5.7%). PCS rated being more familiar with the GoC concept, were more likely to report high quality training in performing GoC conversations, believed more PCS were needed in ICUs, and had more interest in conducting GoC conversations relative to TS. Interestingly, both sets of physicians believed themselves to perform GoC discussions better than the other specialty perceived them to do so. Regarding perceptions of the best model for conducting GoC discussions, both physician sets favored their own specialty leading team GoC meetings. Both agreed that GoC discussions should occur within 72 hours of admission.

Conclusion: Both PCS and TS believe their specialty performs GoC discussions better than the other perceives them to, and their own specialty should lead team-oriented GoC discussions.
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