

# EXTREMITY WAR INJURIES XVI

EMBRACING PEACE, PREPARING FOR WAR

August 15-16, 2022 • Washington, DC



# Message from the Program Oversight Co-Chairs

Dear Colleagues:

We would like to welcome you to the Society of Military Orthopaedic Surgeons (SOMOS) / Orthopaedic Trauma Association (OTA) / American Orthopaedic Society for Sports Medicine (AOSSM) / American Society for Surgery of the Hand (ASSH) 2022 Research Symposium, Extremity War Injuries XVI (EWI XVI).

For the sixteenth annual EWI event, the program is divided into seven general sessions: Each session will have didactic presentations, followed by questions and answers. There will be small group discussion breakout sessions at the end of each day. There will also be concurrent tracks on Trauma, Upper Extremity and Readiness.

The SOMOS, OTA, AOSSM and ASSH have all given their support to EWI XVI to promote its dual aims of strengthening existing collaborations with the military and to also promote the most important new advances. We anticipate continuing on the strong tradition of previous EWI conferences that have been so important in improving the care of extremity trauma and influencing future research work.

We look forward to another EWI meeting that will lead to new collaborations, improve the care of military and civilian patients, and help drive the future work aimed at improving the care of our patients and of all participants. Thank you for your involvement.

Respectfully,

CAPT(sel) Scott M. Tintle, MD  
David Teague, MD  
EWI Symposium Oversight Co-Chairs



# EXTREMITY WAR INJURIES XVI

# Extremity War Injuries XVI

Grand Ballroom A unless otherwise indicated

## August 14, 2022

3:00 pm - 5:00 pm

**EWI Symposium Check In** (Foyer)

## August 15, 2022

6:30 am

**EWI Symposium Check In** (Foyer)

6:30 am – 7:00 am

**Coffee** (Foyer)

7:00 am – 7:05 am

**Symposium Welcome: Embracing Peace, Preparing for War: Goals for the Meeting**

CAPT(sel) Scott M. Tintle, MD  
Walter Reed National Military Medical Center

7:05 am – 7:15 am

**EWI 2022: Why Are We Here? History of EWI**

COL (Ret) James Ficke, MD  
Johns Hopkins University Medical Center

7:15 am – 7:45 am

**Breakfast/Industry Update**

\*CME Not Available

7:45 am – 7:55 am

**Burden of Musculoskeletal Disease and Funding Mismatch**

Lee Grossman  
Orthopaedic Research and Education Foundation

7:55 am – 8:10 am

**Utilization of the Department of Defense Peer-Reviewed Orthopaedic Research Program (PRORP): Combating Musculoskeletal Disease With PRORP**

LT Ashley B. Anderson, MD  
Walter Reed National Military Medical Center

8:10 am – 8:30 am

**CDMRP/PRORP/USAMRAA-Research Alphabet Soup Explained**

Akua Roach, PhD  
US Army Medical Research and Development Command

8:30 am – 9:00 am

**Readiness of United States Navy Medicine**

RADM Bruce Gillingham, MD  
Surgeon General United States Navy

9:00 am – 9:20 am

**BREAK** (Foyer)

**Session I: Readiness**

Moderator: CAPT(sel) Scott M. Tintle, MD

9:20 am – 9:30 am

**Civilian Navy Program Development at University of Pennsylvania - A Model for the Future?**

COL Jeremy Cannon, MD  
University of Pennsylvania

9:30 am – 9:40 am

**Military and Civilian Partnership at Vanderbilt: A Model for the Future?**

LTC Daniel J. Stinner, MD  
Vanderbilt University

9:40 am – 9:50 am

**Level One Military Trauma Center**

LTC(P) Eric Verweibe, MD  
San Antonio Military Medical Center

9:50 am – 10:00 am

**The KSA Program and Military Surgical Readiness**

COL Danielle Holt, MD  
Uniformed Services University of the Health Sciences

10:00 am – 10:10 am

**SOMOS/AANA Collaboration: Is This a Model for Other Sub-specialties?**

LTC Jonathan F. Dickens, MD  
Duke University

10:10 am – 10:40 am

**The Withdrawal from Afghanistan, Medical Lessons Learned**

**Panel on Readiness: How do Military Orthopaedic Surgeons Stay Prepared to Deploy and for Stateside War Care?**

Moderator: CAPT(sel) Scott M. Tintle, MD

Panel:

COL Kenneth J. Nelson, MD

Fayetteville, NC

COL Jean-Claude DAlleyrand, MD

Landstuhl Regional Medical Center

COL B. Kyle Potter, MD

Walter Reed National Military Medical Center

CAPT George Nanos, MD

Walter Reed National Military Medical Center

LCDR Christopher Renninger, MD

Walter Reed National Military Medical Center

CAPT(sel) Scott M. Tintle, MD

Walter Reed National Military Medical Center

10:40 am – 10:50 am

**Questions from Audience**

10:50 am – 11:10 am

**BREAK** (Foyer)

**Session II: Lower Extremity Trauma**

Moderator: LCDR Christopher Renninger, MD

11:10 am – 11:20 am

**Combat Orthopaedic Surgery Trauma Surgery Course**

LCDR Christopher Renninger, MD

Walter Reed National Military Medical Center

11:20 am – 11:30 am

**Amputation Optimization**

COL B. Kyle Potter, MD

Walter Reed National Military Medical Center

11:30 am – 11:40 am

**Osseointegration Update**

Julio Rivera, PhD

Walter Reed National Military Medical Center / Henry Jackson Foundation

11:40 am – 11:50 am

**Lower Extremity Amputations in the Civilian Setting**

David C. Teague, MD

University of Oklahoma

11:50 am – 12:00 pm

**METRC Update**

Michael J. Bosse, MD

Atrium Health Musculoskeletal Institute

12:00 pm – 12:10 pm

**Orthopaedics Near the Point of Injury: Value Added or A Waste of Resources?**

LTC Daniel J. Stinner, MD

Vanderbilt University

12:10 pm – 12:40 pm

**Lunch/Industry Update**

12:40 pm – 1:05 pm

**Dessert with Exhibitors**

**Session III: Upper Extremity / Orthoplastics**

Moderator: Jason M. Souza, MD

1:05 pm – 1:15 pm

**Tips from the Experts on PRORP Success**

Akua Roach, PhD

US Army Medical Research and Development Command

# Extremity War Injuries XVI

Grand Ballroom A unless otherwise indicated

August 15, 2022

1:15 pm – 1:20 pm

## Benefits to the Orthoplastics Approach

Sarah N. Pierrie, MD  
University of Cincinnati

1:20 pm – 1:30 pm

## Orthoplastics in the United States Military - Does It Exist?

Jason M. Souza, MD  
Ohio State University

1:30 pm – 1:45 pm

## Orthoplastics in the United Kingdom - Is This the Ideal Model for Success?

Michael B. Kelly, MD  
Southmead Hospital, Bristol, United Kingdom  
Umraz Khan, MD  
Southmead Hospital, Bristol, United Kingdom

1:45 pm – 1:55 pm

## Going It Alone - How to Succeed without Plastic Surgery Support – Is It Possible?

Joseph R. Hsu, MD  
Carolina Medical Center

1:55 pm – 2:15 pm

## Orthoplastics Panel Discussion

Moderator: Sarah N. Pierrie, MD, University of Cincinnati

### Panel:

Jason M. Souza, MD  
Ohio State University  
LCDR Christopher Renninger, MD  
Walter Reed National Military Medical Center  
Joseph R. Hsu, MD  
Carolina Medical Center  
Umraz Khan, MD  
Southmead Hospital, Bristol, United Kingdom  
CAPT(sel) Scott M. Tintle, MD  
Walter Reed National Military Medical Center

## Track A: Trauma Grand Ballroom A

Moderator: LCDR Christopher Renninger, MD

2:20 pm – 2:30 pm

## Abstract—Oxygen

Robert V. O'Toole, MD  
University of Maryland

2:30 pm – 2:40 pm

## Postoperative Wound Infection After Extremity Fractures

LTC Daniel J Stinner, MD  
Vanderbilt University

2:40 pm – 2:50 pm

## Infection: Updates in Management

LTC Daniel J Stinner, MD  
Vanderbilt University

2:50 pm – 3:00 pm

## Ultrasound to Diagnose Acute Compartment Syndrome

Meir Marmor, MD  
University of California, San Francisco

### RESEARCH HIGHLIGHTS

3:00 pm – 3:05 pm

## Biomechanical Validation of the Field-Expedient Pelvic Splint

LT Jonathan C. Savakus, MD  
Vanderbilt University Medical Center

3:05 pm – 3:10 pm

## Long-Term Health Outcomes of Limb Salvage vs. Amputation for Combat-Related Trauma

LT Jordan Tropf, MD  
Walter Reed National Military Medical Center

3:10 pm – 3:15 pm

## The Role of Cultures in Diaphyseal Tibia Nonunions: A Multicenter Study

Hannah Floyd  
Atrium Health Musculoskeletal Institute

3:15 pm – 3:20 pm

## Discussion

## Track B: Upper Extremity Grand Ballroom C

Moderator: MAJ J. Banks Deal Jr., MD

2:20 pm – 2:30 pm

## Pearls/Pitfalls learned from the Multi-center NIH Wrist Trial

Kevin C. Chung, MD  
University of Michigan

2:30 pm – 2:40 pm

## Why Does Bone Health Matter to the Military?

Jennifer M. Wolf, MD  
University of Chicago

2:40 pm – 2:50 pm

## PEG Fusion Update

Jaimie T. Shores, MD  
John Hopkins University

2:50 pm – 3:00 pm

## Thumb Amputations

Heather Baltzer, MD  
Toronto Western Hand Program  
University Health Network

### RESEARCH HIGHLIGHTS

3:00 pm – 3:05 pm

## A Novel Funnel Conduit Reduces Neuroma Formation Post-Traumatic Extremity Injury

Erica Lee, MS  
Johns Hopkins School of Medicine

3:05 pm – 3:10 pm

## A Missed Opportunity: Nerve Injuries in Combat-Related Extremity Limb Salvage

LT Marissa Dearden, MD  
Walter Reed National Military Medical Center

3:10 pm – 3:15 pm

## Return to Running, Rucking and Shooting: Arthroscopic Bankart vs. Open Latarjet

LTC Joseph W. Galvin, DO  
Madigan Army Medical Center

3:15 pm – 3:20 pm

## Discussion

# Extremity War Injuries XVI

Grand Ballroom A unless otherwise indicated

## August 15, 2022

3:20 pm – 3:40 pm

**Breakout Sessions**

3:40 pm – 4:55 pm

**BREAK** (Foyer)

**Breakout Group 1**

**Orthopaedic Readiness - Gaps in Understanding and How to preserve Expertise**

CAPT George Nanos, MD  
Walter Reed National Military Medical Center

**Breakout Group 2**

**Orthoplastic Surgery - How Do We Make This a Reality in the United States?**

Jason M. Souza, MD  
Walter Reed National Military Medical Center

5:30 pm – 7:00 pm

5:30 pm – 7:00 pm

7:00 pm

**Breakout Group 3**

**Amputation Surgery**

COL B. Kyle Potter, MD  
Walter Reed National Military Medical Center

**Breakout Group 4**

**Femur/Tibia/Hindfoot Injuries**

LCDR Christopher Renninger, MD  
Walter Reed National Military Medical Center

**Informal Coffee & Conversations  
Grant Funding Tips from the Experts**

Akua Roach, PhD  
US Army Medical Research and Development Command

**Reception/Scientific Poster Session**

**EWI Faculty Dinner**

## August 16, 2022

6:30 am

6:30 am – 7:00 am

7:00 am – 7:05 am

**EWI Symposium Check In** (Foyer)

**Coffee** (Foyer)

**Welcome / Review of Day Two**

CAPT(sel) Scott M. Tintle, MD  
Lt Col Andrew Sheehan, MD  
Walter Reed National Military Medical Center

**Session IV: Readiness Research from the 30,000 Foot Perspective**

Moderators: LTC Joseph Galvin, DO & Maj Aaron E. Barrow, MD

7:05 am – 7:15 am

**State of Sports Medicine and Readiness Research: The AOSSM Perspective**

Kurt Spindler, MD  
President, AOSSM, Cleveland Clinic

7:15 am – 7:25 am

**Military Medical Readiness Research in 2021: Progress, Potential, and Challenges**

LTC Jonathan F. Dickens, MD  
Duke University

7:25 am – 7:35 am

7:35 am – 7:45 am

7:45 am – 7:55 am

7:55 am – 8:05 am

8:05 am – 8:35 am

8:35 am – 8:55 am

**Discussion**

**Building a Multicenter Network: How to Do It and Lessons Learned**

John Clohisy, MD  
Washington University

**Building a Multicenter Network: How to Do It and Lessons Learned**

Daniel I. Rhon, DPT, DSC  
San Antonio Military Medical Center

**Discussion**

**Breakfast/Industry Update**

\*CME Not Available

**BREAK** (Foyer)

**Track A: Trauma**

**Grand Ballroom A**

Moderator: LCDR Michelle Gosselin, MD

8:55 am – 9:05 am

**FIXIT**

Robert V. O'Toole, MD  
University of Maryland

9:05 am – 9:30 am

**Update on Severe Hindfoot / Midfoot / Pilon Trauma - OUTLET**

Michael J. Bosse, MD  
Atrium Health Musculoskeletal Institute

9:30 am – 9:45 am

**Ballistic Trauma in Chicago**

Jason A. Strelzow, MD  
University of Chicago, IL

9:45 am – 9:55 am

**Discussion**

**RESEARCH HIGHLIGHTS**

9:55 am – 10:05 am

**Local and Systemic Ketorolac and Rat Open Femur Fracture Healing**

Katherine Li, MD  
Atrium Health Musculoskeletal Institute

**Track B: Threats to Readiness: Non-Arthritic Hip Pain**

**Grand Ballroom C**

Moderator: LCDR Brian Barlow, MD

8:55 am – 9:05 am

**Management of Focal Chondral Lesions About the Hip (Virtual)**

Asheesh Bedi, MD  
University of Michigan Health

9:05 am – 9:15 am

**Managing Labral Injuries: From Debridement to Reconstruction**

Craig S. Mauro, MD  
University of Pittsburgh Medical Center

9:15 am – 9:25 am

**Periacetabular Osteotomy: When, Why, and Expected Clinical Outcomes**

Scott B. Rosenfeld, MD  
Baylor College of Medicine

9:25 am – 9:45 am

**Extra-Articular Causes of Non-Arthritic Hip Pain**

J.W. Thomas Byrd, MD  
Nashville Sports Medicine & Orthopaedic Center

# Extremity War Injuries XVI

Grand Ballroom A unless otherwise indicated

## August 16, 2022

### Track A: Trauma Grand Ballroom A

Moderator: LCDR Michelle Gosselin, MD

- 10:05 am – 10:15 am **Potential Knee Osteoarthritis Predictors in Service Members with Limb Loss**  
Joseph G. Wasser, PhD  
Walter Reed National Military Medical Center
- 10:15 am – 10:25 am **4-Aminopyridine Salvages Muscle Atrophy and Bone Loss Following Combined Nerve and Muscle Injury**  
John Elfar, MD, FACS  
Penn State CORTS
- 10:25 am – 10:35 am **Elective Amputation for Chronic Regional Pain Syndrome: A Reasonable Option?**  
LT Benjamin W. Hoyt, MD  
Walter Reed National Military Medical Center
- 10:35 am – 10:45 am **Characterization of Combat-Related Lower Extremity Limb Salvage in the Military Health System**  
Stephen Goldman, PhD  
Extremity Trauma & Amputation Center of Excellence
- 10:50 am – 11:00 am **BREAK** (Foyer)

### Track A: Upper Extremity Non-Battle Injury Grand Ballroom A

Moderator: CAPT(sel) Scott M. Tintle, MD

- 11:00 am – 11:15 am **Scapholunate Dissociation: Advances in Care (Virtual)**  
Scott W. Wolfe, MD  
Hospital for Special Surgery
- 11:15 am – 11:25 am **Scaphoid Non-Union**  
Aviram M. Giladi, MD, MS  
Medstar Union Memorial
- 11:25 am – 11:45 am **Scaphoid Non-Union: Vascularized Cartilage Replacement (VIRTUAL)**  
James Higgins, MD  
Medstar Union Memorial
- 11:45 am – 11:50 am **Discussion**

### Track B: Threats to Readiness: Non-Arthritic Hip Pain Grand Ballroom C

Moderator: LCDR Brian Barlow, MD

- 9:45 am – 9:55 am **Discussion**
- RESEARCH HIGHLIGHTS**
- 9:55 am – 10:05 am **3D Bioprinted Osteochondral Plugs: A Potential Treatment for Osteochondral Injuries**  
Nicholas A. Chartrain, PhD  
The Geneva Foundation; 4D Bio3 Center at the Uniformed Services University of the Health Sciences
- 10:05 am – 10:15 am **Distance to Dislocation Predicts Failure Following Primary Arthroscopic Bankart Repair**  
Major Aaron E. Barrow, MD  
University of Pittsburgh Sports Medicine
- 10:15 am – 10:25 am **Comparison of Inflammatory Profiles Between ACL and Multiligament Knee Injuries**  
Cale Jacobs, PhD  
University of Kentucky
- 10:25 am – 10:35 am **The Role of Fatigue in Return to Sport Testing Following Anterior Cruciate Ligament Reconstruction**  
Bradley S. Lambert, PhD  
Houston Methodist Hospital
- 10:35 am – 10:45 am **Discussion**
- 10:50 am – 11:00 am **BREAK** (Foyer)

### Track B: Threats to Readiness: Shoulder Grand Ballroom C

Moderator: LTC Daniel Song, MD

- 11:00 am – 11:10 am **Critical Issues in Shoulder Instability**  
Albert Lin, MD  
University of Pittsburgh Medical Center
- 11:10 am – 11:20 am **In-Season Decision Making and Return to Play/Duty Considerations**  
Brian R. Waterman, MD  
Wake Forest University
- 11:20 am – 11:30 am **Management of Focal Chondral Lesions About the Shoulder**  
Lance E. LeClere, MD  
Vanderbilt University
- 11:30 am – 11:40 am **Glenohumeral Osteoarthritis in the Young, Active Patient**  
Robert U. Hartzler, MD  
TSAOG Orthopaedics
- 11:40 am – 11:50 am **Discussion**

All abstract presentations are available on the SOMOS website at [www.somos.org/ewi](http://www.somos.org/ewi)

# Extremity War Injuries XVI

Grand Ballroom A unless otherwise indicated

## August 16, 2022

11:55 am – 12:25 pm	<b>Lunch/Industry Update</b>	<b>Session VII: Innovations in Injury Surveillance and Non-Operative Therapeutics</b>
12:25 pm – 12:55 pm	<b>Dessert with Exhibitors</b>	Moderator: Adam Popchak, PhD
<b>Session V: Orthobiologics: From the Benchtop to Clinical Practice</b>		3:10 pm – 3:20 pm
Moderators: CDR James Bailey, MD & LCDR Jennifer Smith, MD		<b>Clinical Outcomes and Big Data: Implications for the DoD</b>
12:55 pm – 1:05 pm	<b>Basic Science Update</b>	Jay Irrgang, PhD University of Pittsburgh
	Chelsea Bahney, PhD University of California, San Francisco, Steadman Philippon Research Institute (SPRI)	3:20 pm – 3:30 pm
1:05 pm – 1:15 pm	<b>Innovations in Point of Care Blood Product Collection and Delivery (VIRTUAL)</b>	<b>MIRROR in 2021: Current Capabilities and Future Directions</b>
	Adam Anz, MD Andrews Institute for Orthopaedics and Sports Medicine	Jenny Yuan, MD, PhD Uniformed Services University
1:15 pm – 1:25 pm	<b>Adipose-Derived Stem Cells: Overview and Clinical Applications (VIRTUAL)</b>	3:30 pm – 3:40 pm
	Jason Dragoo, MD University of Colorado	<b>Injury Surveillance Among Elite Tactical Athletes</b>
1:25 pm – 1:40 pm	<b>Orthobiologics in My Clinical Practice (VIRTUAL)</b>	Jason Jadgechew Naval Special Warfare Command
	James P. Bradley, MD University of Pittsburgh Medical Center	3:40 pm – 3:50 pm
1:40 pm – 1:45 pm	<b>Discussion</b>	<b>Blood Flow Restriction Therapy: State of the Art in 2022</b>
1:45 pm – 1:55 pm	<b>BREAK (Foyer)</b>	Johnny Owens, PT Owens Recovery Science
<b>Session VI: Knee Chondral Injuries and Post-Traumatic Osteoarthritis</b>		<b>Discussion</b>
Moderators: CDR James Bailey, MD & LCDR Jennifer Smith, MD		<b>BREAK (Foyer)</b>
2:00 pm – 2:10 pm	<b>The Pathogenesis of PTOA: What Do We Know in 2022?</b>	<b>Breakout Sessions</b>
	Christian Latterman, MD Brigham and Women's Hospital	4:10 pm – 5:00 pm
2:10 pm – 2:20 pm	<b>Orthobiologics as a Primary Treatment for PTOA</b>	<b>Breakout Group 1</b>
	Bert R. Mandelbaum, MD Cedars Sinai Kerlan-Jobe Institute	<b>Wrist and Elbow Upper Extremity Non-Battle Injury</b>
2:20 pm – 2:30 pm	<b>The Role of Osteotomy: When, Where, How</b>	CAPT(sel) Scott M. Tintle, MD Walter Reed National Military Medical Center
	LTC Jonathan F. Dickens, MD Duke University	Aviram M. Giladi, MD, MS Medstar Union Memorial
2:30 pm – 2:40 pm	<b>Surface-Based Treatment of Focal Knee Chondral Lesions</b>	<b>Breakout Group 2</b>
	Seth L. Sherman, MD Stanford University	<b>Biologics</b>
2:40 pm – 2:50 pm	<b>Osteochondral Allograft Transplantation for Focal Knee Chondral Lesions</b>	Justin W. Arner, MD UPMC
	Thomas DeBerardino, MD San Antonio, TX	Chelsea Bahney, PhD University of California, San Francisco & Steadman Philippon Research Institute (SPRI)
2:50 pm – 3:00 pm	<b>Discussion</b>	<b>Breakout Group 3</b>
3:00 pm – 3:10 pm	<b>BREAK (Foyer)</b>	<b>Cartilage Restoration</b>
		LTC Christopher Tucker, MD Walter Reed National Military Medical Center
		Lance E. LeClere, MD Vanderbilt University
		<b>Breakout Group 4</b>
		<b>Hip Preservation</b>
		Craig S. Mauro, MD UPMC

## Accreditation Information

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American Academy of Orthopaedic Surgeons and the Society of Military Orthopaedic Surgeons. The American Academy of Orthopaedic Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

The American Academy of Orthopaedic Surgeons designates this live activity for a maximum of 12 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

# Extremity War Injuries XVI

## Poster Presentations

Grand Ballroom B

### READINESS

**Poster 1:** Increased Failure with Arthroscopic Bankart Repair Following Second Anterior Dislocation

Michael A. Fox, MD, University of Pittsburgh

**Poster 2:** Rate and Time to Return to Running Following Arthroscopic Shoulder Surgery in Young Athletes

LTC Joseph W. Galvin, DO, Madigan Army Medical Center

**Poster 3:** Printing a Potential Therapeutic Meniscus Tissue Device

George J Klarmann, PhD, Uniformed Services University- 4D-Bio3 Center

**Poster 4:** New Screening Metrics for Bone Stress Injuries In Distance Runners

Aaron Carbuhn, PhD, University of Kansas Medical Center

**Poster 5:** SLAP Repair vs. Biceps Tenodesis for Isolated Type II SLAP Tears: A Meta-Analysis and Expected-Value Decision Analysis

ENS Andrew J. Recker, BS, Wake Forest School of Medicine

**Poster 6:** Hip-Spine Relationship in Femoroacetabular Impingement: Does Hip Arthroscopy Affect Pelvic Mobility?

LT Jessica R. Stambaugh, MD, Naval Medical Center San Diego

**Poster 7:** Open Bankart vs. Arthroscopic Bankart with Remplissage for Anterior Glenohumeral Instability with Subcritical Glenoid Bone Loss

LT Jordan Tropf, MD, Walter Reed National Military Medical Center

### TRAUMA

**Poster 8:** Increased Cumulative Hypotension Suppresses the Adaptive Immune Response in Blunt Trauma Patients with Major Fractures

Todd McKinley, MD, Johns Hopkins

**Poster 9:** 12 Month Results of the Trauma Collaborative Care Intervention

Stephen Wegener, PhD, Johns Hopkins

**Poster 10:** 4-Aminopyridine Promotes Cutaneous Reinnervation and Accelerates Wound Healing

Jagadeeshaprasad Mashanipalya, PhD, Penn State College of Medicine

**Poster 11:** Implementation of a Clinical Decision Support Toolkit for Controlled Substance Prescribing

Rachel Seymour, PhD, Atrium Health Musculoskeletal Institute

**Poster 12:** Intraosseous Morphine Decreases Postoperative Pain and Medication Use Following TKA

Bradley S. Lambert, PhD, Houston Methodist Hospital

**Poster 13:** The US Military Healthcare System Response to the Afghanistan Evacuation

CPT Timothy Murphy, MD, Walter Reed National Military Medical Center