



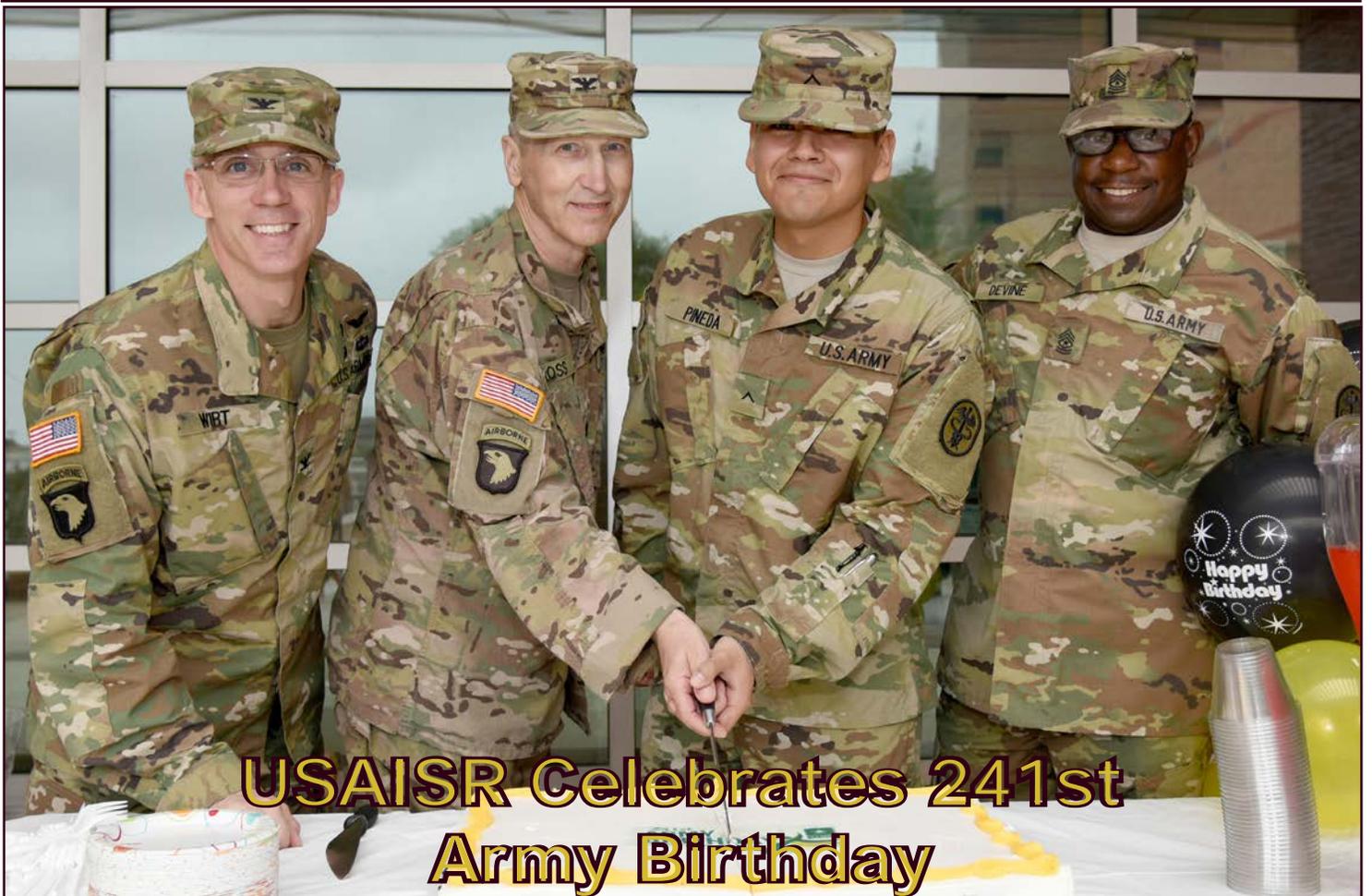
THE INNOVATOR

OPTIMIZING COMBAT CASUALTY CARE



JULY 2016

THE NEWSLETTER OF THE U.S. ARMY INSTITUTE OF SURGICAL RESEARCH



USAISR Celebrates 241st Army Birthday

Inside This Issue

- CDR's Corner 2
- Promotion/Retirement..... 3
- Company Notes..... 4
- Health and Wellness Fair 5
- LGBT Pride Month Celebration 7
- Safety Notes/Employee in the Spotlight 8
- Health News 9
- Around the ISR..... 10-11
- Celebrating Science 12-15
- Back When/Library News 16

Page 6



GEMS Summer Camps Underway

Scan 2-D code for USAISR Website link



CDR's Corner



Col. (Dr.) Michael D. Wirt
Commander, USAISR

"Optimizing Combat Casualty Care"

Hello ISR Team,

This will be my last write-up as your Commander. In a couple of weeks we will be having our Change of Command ceremony where I will relinquish command to Col. (Dr.) Shawn Nessen. I can't believe that it has already been two years since I had the distinct honor of assuming command of the Institute. I can honestly say that this has been an incredible assignment that will sincerely treasure. It has been one where we have an opportunity to make a real-world impact each and every day with some of the Army's most incredible and dedicated staff. You, the ISR team, is what makes this Institute so amazing. There is not a more dedicated and relentlessly driven staff in any other research facility in the DoD. I don't believe that there was a single day that I wasn't inspired by your dedication and motivation at achieving the ISR mission of optimizing combat casualty



Col. (Dr.) Michael Wirt, right, presents Lt. Col. (Dr.) Jeremy Pamplin with a Meritorious Service Medal during his going away party June 27.

care.

Your unyielding efforts and commitment to our combat wounded and their families is unparalleled by any other organization or team. You are saving lives on and off the battlefield every day. Everything that you do at this Institute is directly beneficial and necessary to improving the survival of our service members. I look forward to knowing that I will be able to reach back to the ISR and continue to gain knowledge from your continued efforts as I transition to FORSCOM, working with the Soldiers who are directly benefiting from your groundbreaking research. It has truly been an honor for me to have had the opportunity to be a part of this organization.

I want to thank everyone for what you are doing every day in making this team the best that it can be. I wish that I had the space in this newsletter to thank each of you by name, but unfortunately that's impossible so please forgive me. First of all, I want to thank

our headquarters staff for all of their support in making this organization operate each day. I especially want to thank the CG for the opportunity that was given to me to command this prestigious institute. I would like to also sincerely thank our two highly successful Directors of Research, Lt. Cols. Stuart Tyner and Kevin Chung for keeping the research directorate highly productive and absolutely on point. I would also like to thank our two most recent JTS directors, Col. Kirby Gross and Capt. Zolt Stockinger, who have keep their directorate germane and producing real-time translatable performance improvement solutions for our service members on the battlefield. Col. Booker King, thank you for taking care of the tremendous Burn Center team; most recently, successfully attaining the coveted designation of Verification with Commendation while caring for some of the most

CDR continues on page 9



ARMY MEDICINE
Serving To Heal...Honored To Serve

The Innovator is an authorized publication for members of U.S. Army Institute of Surgical Research, published under the authority of AR 360-1. Contents are not necessarily official views of, or endorsed by, the U.S. Government, Department of Defense or the Army. Editorial content is prepared by the ISR Public Affairs Officer. 210-539-5470 or DSN 429-5470



Promotion to Colonel

Col. John Melvin, center, Burn Center Chief Nurse is pinned on his new rank June 3 by his two sons, Cadet Patrick Melvin, left, and Michael Melvin.



Retired After 40 Years of Service

Gale Mankoff, right, is presented with a Superior Civilian Service Award by Lt. Col. (Dr.) Kevin Chung during her retirement ceremony June 24. Mankoff served 40 years of combined military and civil service to military medicine and the Army Medical Department.

On the Cover



USAISR celebrated the U.S. Army's 241st birthday June 14 with a cake cutting ceremony. A time-honored tradition is to have the command's oldest and youngest Soldiers cut the cake. Col. (Dr.) Kirby Gross, second to left, and Pvt. Uzziel Pineda cut a ceremonial cake as Col. (Dr.) Michael Wirt, USAISR Commander, left, and Sgt. Maj. James Devine, right, look on.

Company Notes



Company Commander
Capt. Jose A. Juarez

First Sergeant and I would like to welcome the following Soldiers to the ISR family: Lt. Col. Kevin Nemelka, Maj. Craig Ainsworth, Maj. Regina Sanders, Capt. Stephen Cummins, Sgt. 1st Class Robert Hann, Spc. Neil Williams and Pfc. Stephen Gallop. We would like to say farewell to the following Soldiers; Lt. Col. Wylan Peterson, Maj. Kelly Kafka, Maj. Jason Montgomery, Maj. Julie Rizzo, Sgt. 1st Class Shawna Stover, Sgt. Andrew Ludescher, Sgt. Wilfredo Martinez, Sgt. Jacqueline Mason, Spc. Michael Amoako, Spc. Courtney Charlson and Spc. Austin Frye. Thank you for your contributions to the organization and best wishes in your future endeavors. Your presence will most definitely be missed!

A congratulation to Sgt. 1st Class Joel McVay as his sequence number came up for promotion. This is a momentous transitional promotion for noncommissioned officers as this is the first promotion from the semi-centralized system to the Army's centralized system. Please congratulate him on his promotion to the Senior Noncommissioned Officer Ranks. We also promoted Pvt. Uzziel Pineda to his current rank. Please congratulate him as well on this much deserved promotion.

We want to congratulate our five Soldiers who graduated from the Basic Leaders Course on June 23rd: Spcs. James Gorley, Daniel Oladejo, Charice Rodgers, David Watson and



Sgt. 1st Class Joel McVay is pinned on his new rank by his wife Sarah during his promotion ceremony June 9.

Matta Zarif. All of them represented the organization with distinction. Sgt. Marcus Jones graduated from Advanced Leaders Course; congratulations and job well done! We also want to congratulate Staff Sgt. Daniel Zimmerman on his completion of Air Assault School. Strong work!

We held our NCO and Soldier of the Month Board for June. Please congratulate Spc. Thomas Spino on his victory. His photograph will be on display in the company area.

Summer is upon us and the heat is on! Summer safety is paramount this time of the year. June is also designated as National Safety Month (NSM). The National Safety Council (NSC) selects yearly themes for this month for organizations to focus on. This year's theme is "Safe for Life". You can access posters and tip sheets on NSM from the NSC at www.nsc.org/nsm.

Upcoming events: June is Lesbian, Gay, Bisexual and Transgender (LGBT) Pride Month. Our EO team spear-headed the LGBT observance held on June 28. July is going to be an extremely busy month with multiple events. It will kick off with the 4th of July weekend. Please ensure that all personnel maintain safety in all events

that you participate in. The Company Change of Command will be on July 15, and the USAISR Change of Command will be on July 19.

Continue to progress in personal and professional development. Carpe Diem!

Thank you all for everything that you all do every day. It is truly an honor serving as your Commander and First Sergeant!

One Team... One Purpose!

Conserving the Fighting Strength!



Soldier of the Month
Spc. Thomas Spino

Burn Center Clinical Education Team Participates in 3rd Annual San Antonio Health, Wellness Fair



Karliss Kimbrough, Burn Center Outreach Coordinator, left, poses with a group of siblings during the Health and Wellness Expo June 18.

By Steven Galvan
USAISR Public Affairs Officer

The U.S. Army Institute of Surgical Research Burn Center Clinical Education team were among the numerous city and state representatives at the third annual Health and Wellness Expo June 18 at Henry B. Gonzalez Convention Center.

“What an opportunity to spread the message about burn prevention to San Antonio residents in such a large venue,” said Lt. Col. Robin Smith, Chief of Clinical Education.

Sarah Murray, a Burn Center Intensive Care Unit Clinical Nurse Specialist stated that she was excited to see all the interest in the burn prevention at the Burn Center display booth.

“We estimated that there were more than 500 adults and children that came through to see the Burn Center display,” said Murray.

Maj. Laura Kraemer, Burn Center Post-Anesthesia Care Unit nurse assisted in manning the display booth and handed out crayons and coloring books on burn prevention.

“They were a huge hit with the children,” she said.

The team also met several past patients who shared their experience of being an inpatient at the Burn Center and took information to spread the burn prevention flyers to family and

friends.

“The outreach focus was geared towards the upcoming Fourth of July celebrations and benign sparklers,” said Karliss Kimbrough, Burn Center Outreach Coordinator. “A previous patient came to the display booth who had been treated at the ISR Burn Center for full thickness burns from sparklers on her right torso. We discussed and showed the scars of the dangers of sparklers with a bride-to-be who is planning to have sparklers at her wedding—I believe that every one at that wedding will take extra precautions when handling the sparklers.”

Smith added that without the volunteers for this outreach it would not have been a complete success.

“It takes a lot of effort moving all the outreach supplies, set up display at the venue and share with people that burns can be prevented,” she said. “Thanks to Maj. Kraemer, Ms. Murray, Capt. Mollie Christianson, and Sgt. Shane Berry for their support and willingness to support burn prevention efforts.”



Sarah Murray explains the dangers of fireworks June 18, especially the injuries that can be caused by “safe” fireworks like Sparklers.

GEMS Summer Camps Underway at USAISR

First year for HS Student to participate as a near-peer



Near-peer mentor, Jordon Edmond, right, demonstrates the proper suturing techniques June 21 to GEMS high school students Caitly Friermuth and Matthew Loftus.

Story and photos by Steven Galvan
USAISR Public Affairs Officer

The U.S. Army Institute of Surgical Research began its Gains in the Education of Mathematics and Science summer camps for the fifth year June 20. This year's four-day camps were held during the last two weeks of June and the second week in July. The Army-sponsored middle and high school camps are led by licensed Texas teachers and near-peers. For the last four years, the near-peers were college students, but this year marks the first time that a high school student has been hired to serve as a near-peer for middle school students.

Fifteen-year-old Jordon Edmond, a student at Alabama School of Math and Science in Mobile, Alabama, came to San Antonio to spend the summer with her family. Her father who is stationed at Fort Sam Houston encouraged her to apply for the summer position. Edmond, who attended GEMS as a middle and high school

student at Fort Rucker, Alabama when her father was stationed there jumped at the chance and said that she's loving

her first job.

"I'm really proud that I got this opportunity and that I am the only high school student as a near-peer," said Edmond. "I especially like that what we are teaching the students affects Soldiers and civilians. It's just great."

Stephanie Truss, GEMS Coordinator welcomed Edmonds to the program.

"This shows the GEMS students that they can participate in this program as a student and a near-peer," said Truss. "I believe that it gives them the drive to apply for other programs as they move forward through school."

When Edmond returns back to school in the Fall she will go back as Junior with teaching experience and knowing that she made a difference in the GEMS camps this summer.

"I love it when students come to me and ask me questions about the projects that we are working on," she said. "I don't just give them the answers. I try to explain in a manner that they get involved in coming up with the an-

GEMS continues on page 7



Middle school students Mary Decker and Marcus Drake practice suturing skills on an artificial skin slab June 21.

GEMS continued from page 6

swer, so we work together to come up with the answer to their questions--together.”

GEMS is a nationwide hands-on research program offered to middle and high school students at Army research laboratories. The program is designed to engage and guide student’s interests in science, technology, engineering and mathematics (STEM). GEMS is designed to excite students with in-depth STEM enrichment with real-life Army experiences, educational curriculum and mentoring from research scientists and engineers.



GEMS resource teacher, Nicole Monet explains proper suturing techniques to middle school students June 22.

Celebrating LGBT Pride Month



Col. (Dr.) Michael Wirt, right, and Sgt. Maj. James Devine present 1st Sgt. Thadenia Leach with a City of San Antonio Proclamation signed by the San Antonio Mayor, Ivy Taylor. The proclamation designates June to be LGBT Pride Month and was presented to Leach who was the guest speaker at the celebration June 28 at the medical mall hosted by the USAISR EO Team.

Safety Notes

By Stephanie L. Truss
Health, Safety and Environmental Specialist



This time of the year brings many outdoor activities for most of us. Whether having a barbeque with family and friends or time at the beach or pool, there are some safety tips to always remember that will make those activities fun and memorable.

Water Activity Safety

As July is one of the hottest months of the year, many families turn to water activities to beat the heat. However, even fun water activities have serious risks if the proper precautions aren't taken. Review safe boating practices.

- Never consume alcohol while driving a boat.
- Before boating, always check that there are enough life preservers on hand for every passenger.
- Set water safety rules for your family.
- Pools should be enclosed completely with a fence to restrict access to the area. Consider installing wireless outdoor sensors that will alert you via phone or with a chime inside your home if the sensors are activated.
- Keep a first aid kit near the pool.
- **Grilling Safety**

July is one of the peak months for grilling fires. Enjoy grilling your favorite meals this summer while also keeping your family safe.

- Check gas grill hoses for cracks, holes and leaks.
- Keep children away from grills. Gas leaks, blocked tubes, and propane tanks can be a cause of grill fires and explosions.
- Never grill indoors, in the garage, in any enclosed area or on a surface that might catch fire.

In the Spotlight

Sgt. Elizabeth Babcock
Job title: Clinical Trials NCOIC

How long have you worked at the ISR? Since January 2016

What or who has been an inspiration to you in your work?

There have been many people in my life that have personally inspired me at various times in my career in the military, but the greatest driving factor overall would have to be my son and daughter. Showing them the value of having pride in what you do, while enjoying what you is worth more than any paycheck. Being part of the AMEDD family is all about giving back; thru mentorship, medical advancements, and giving HOPE to others... it's inspiring in itself.



What is your favorite part of your work? My favorite part of my work is seeing a research project come together from an idea to a potentially life changing product. I have had the privilege of meeting and working with so many brilliant, innovative people that it feels great to be a part of it all and contribute.

What is your proudest achievement? My proudest achievement would have to be finishing Graduate school last fall.

Short- and long-term goals: My short-term goal is to commission this year as an AMEDD officer. My long-term goal is to eventually go back to school and get my Ph.D. in Translational Medicine.

Hobbies: In my spare time I enjoy gardening (flowers), reading and traveling.

Favorite book: Dean Koontz, *Frankenstein*

Favorite movie/TV show: *The 100*

Favorite quote: "“Your life is only what you make it to be. No one else can do it for you and you're the only one that can hold you back or allow others to hold you back from your goals. Never settle and you will never be disappointed.”"

- Keep the grill at least two feet away from decks, siding, branches and any outdoor equipment that can catch fire quickly.



Food Safety

Following these simple steps to make sure our family remains safe from food poisoning:

- Clean: Make sure you clean all surfaces, utensils, and hands with soap and water.
- Separate: When grilling, use separate plates and utensils for raw meat and cooked meat and ready-to-eat foods (like raw vegetables) to avoid cross-contamination.
- Cook: Cook foods to the right temperature by using a food thermom-

SAFETY continues on page 15

Health News

By Maria G. Dominguez, R.N. COHN-S/CM Occupational Health



At the workplace, summer means an endless rotation of employee vacations. We all love a good summertime soak in the sun—if you're lucky, the warm weather will bring outdoor activities like hiking, barbecuing and hanging out by the pool or on a faraway beach.

With everyone off frolicking in the sun, skin cancer risk skyrockets. Stay educated and in the shade this summer season. And though you may not know it, a moderate dose of ultraviolet (UV) radiation from the sun actually does our body good by creating Vitamin D, which keeps our bones and teeth healthy. Sunlight contains UV radiation, which causes premature aging of the skin, wrinkles, cataracts, and skin cancer. There are no safe UV rays or safe suntans. Studies show that long-term exposure to bright sunlight may increase the risk of cataracts and growths on the eye, including cancer. UV rays reflected off sand and water can cause eyes to sunburn, potentially

resulting in temporary blindness in just a few hours. In support of UV Safety Month this July, the American Academy of Ophthalmology reminds the public of the importance of shielding eyes from the sun's harmful rays with 100 percent UV-blocking sunglasses and broad-brimmed hats.

While at the beach, celebrate "Clean Beaches Week" which is "Earth Day" for beaches. An annual celebration of the healthy beach lifestyle from July 1-7. What is it all about? Clean Beaches Week is a seven-day celebration of Americans recognizing and embracing the benefits of beaches in their lives. The four initial themes that highlight the importance of beaches to all Americans:

Environment: The 4th of July is the biggest beach holiday in America – and the **MOST LITTERED**. During Clean Beaches Week, the public will be strongly urged to "leave no trace" of litter, only footprints at the beach.

Dining: The American Heart Association recommends that all Americans eat seafood at least twice a week. During Clean Beaches Week, Americans will be encouraged to have a healthy meal every day during their visit to the beach.

Recreation: More than 180 million Americans visit the beach each year. During Clean Beaches Week, the public will be urged to get out and get active everyday by playing, surfing, fishing, walking or reading during their beach visit.

Travel: Each year Americans make two billion visits to ocean, gulf and inland beaches. During Clean Beaches Week, the public will be encouraged to reduce their carbon footprint through energy efficiency, conservation, carpooling, walking and other green activities.

Winding down the month is World Hepatitis Day July 28: "Know hepatitis. Act now: Are you at risk? Get tested. Demand Treatment."

Don't see your vacation simply as a discrete period of time, but rather as something that you will talk and think about a lot both beforehand and, hopefully, for years after the fact. Make your summer memorable. Think Safe and Healthy. Travel Smart and Stay Healthy!

From an early age many of us are aware of the importance of the Fourth of July. The Declaration also plays a significant role in our world today and in recent history. Without the words of our founding fathers some of the civil rights that have been passed might never have come to light. That is why the celebration is so significant to everyone!

CDR continued from page 2

severely injured patients in the DoD. Thank you to Col. Richard Williams for advancing the critical and complex maxillofacial research of your new directorate, addressing some of the most difficult questions of wound healing and nerve regeneration. Lastly, I would like to thank Dr. Vic Convertino, our Senior Scientist, for his groundbreaking research efforts, sage advice, and exceptional leadership. To all of the task area managers, primary investigators, leaders, and supporting staff, keep up the great work and thank you for all that you do. Our important work could not be done without you.

I would be remiss if I didn't thank the two people who keep this organization going day-in and day-out. Ms. Connie Luna, thank you for your unwavering support and your meticulous efforts in keeping me organized (a real challenge) every day. To our Chief of Staff, Mr. Terry Owens, thank you for your tireless dedication, your service to our Nation, and for everything that you do every day. The support you provide this Institute enables all of us to remain singularly focused on our missions.



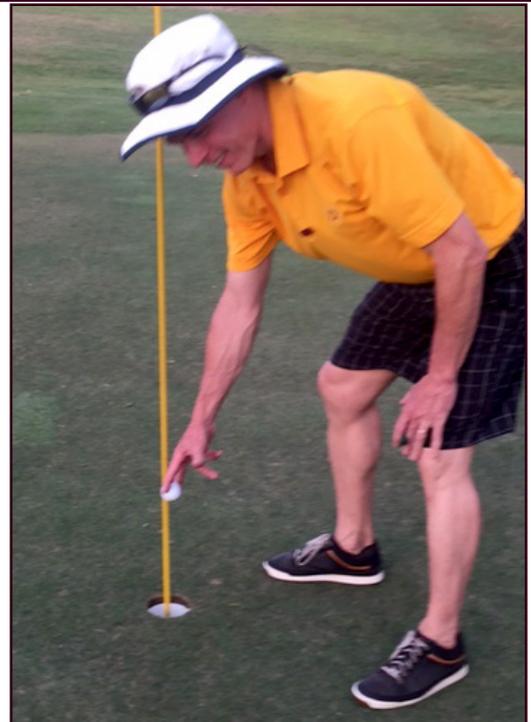
Around the ISR

Top left: Spc. Harvey Harper, right, is presented with a Oath of Re-enlistment and Honorable Discharge certificates June 6 by Col. (Dr.) Richard Williams at his reenlistment ceremony.

Top right: Logistics staff members pose for a group photo June 9.

Bottom right: Dr. John Kragh removes his golf ball from the hole after hitting a hole-in-one during his intramural match in May at the Fort Sam Houston, La Loma Golf Course. This was his last hole and won the match by one stroke. Photo by Gary Muniz.

Bottom left: Col. John Melvin gives a tour of the Burn Center to members of the U.S. Army Recruiting Command, Nashville Educator Tour June 8.



Around the ISR cont.

Top left: Col. (Dr.) Booker King, right, welcomes the family of the Brooke Army Medical Center Commanding General, Brig. Gen. Jeffery Johnson to the Burn Center for a tour June 20.

Top right: Clinical Trials in Burns and Trauma Research staff members pose for a group photo June 3.

Bottom center: Andrew Wallace gives a tour of the Burn Center to members of the U.S. Army Recruiting Command, Kansas Educator Tour June 22.



CELEBRATING SCIENCE



In this section we endeavor to celebrate the dissemination of generalizable knowledge in the form of published manuscripts. One of our core missions is translation of knowledge gained through pre-clinical and clinical experiments in an effort to optimize combat casualty care. It is important to acknowledge and recognize the collective work of our investigators during this process. Hence, we plan on "celebrating science" on a regular basis.

TOP THREE PAPERS OF THE MONTH

Air transport

En Route Use of Analgesics in Nonintubated, Critically Ill Patients Transported by U.S. Air Force Critical Care Air Transport Teams.

Mora AG, Ganem VJ, Ervin AT, Maddry JK, Beberta VS
Mil Med.

INTRODUCTION: U.S. Critical Care Air Transport Teams (CCATs) evacuate critically ill patients with acute pain in the combat setting. Limited data have been reported on analgesic administration en route, and no study has reported analgesic use by CCATs. The author's objective was to describe analgesics used by CCATs for nonintubated, critically ill patients during evacuation from a combat setting. **METHODS:** The authors conducted an institutional review board-approved, retrospective review of CCATT records. They included nonintubated, critically ill patients who were administered analgesics in flight and were evacuated out of theater (2007-2012). Demographics, injury description, analgesics and anesthetics, and predefined clinical adverse events were recorded. Data were presented as mean \pm standard deviation or percentage (%).

RESULTS: Of 1,128 records, the authors analyzed 381 subjects with the following characteristics: age 26 ± 7.0 years; 98% male; and 97% trauma (70% blast, 17% penetrating, 11% blunt, and 3% burn). The injury severity score was 19 ± 9 . Fifty-one percent received morphine, 39% hydromorphone, 15% fentanyl, and 5% ketamine. Routes of delivery were 63% patient-controlled analgesia (PCA), 32% bolus intravenous (IV) administration, 24% epidural delivery, 21% continuous IV infusions, and 9% oral opioids. Patients that were administered local anesthetics (nerve block or epidural delivery) with IV opioids received a lower total dose of opioids than those who received opioids alone. No differences were associated between analgesics and frequency of complications in flight or postflight.

CONCLUSION: About half of nonintubated, critically ill subjects evacuated out of combat by CCATT received morphine and more than half had a PCA. In our study, ket-

amine was not frequently used and pain scores were rarely recorded. However, we detected an opioid-sparing effect associated with local anesthetics (regional nerve blocks and epidural delivery).

Hemorrhage

Severe Hemorrhagic Shock Induces Acute Activation and Expansion of IL-8+/IL-10+ Neutrophils with Enhanced Oxidative Reactivity in Non-Human Primates.

Vernon PJ, Paredes RM, Sooter AJ, Schaub LJ, Grossman HM, Pusateri AE, Glaser JJ, Sheppard FR.

Shock

BACKGROUND: Neutrophilic inflammation is a mediator of morbidity and mortality in response to hemorrhagic shock. Although injury-induced neutrophil margination has long been observed, the nature of neutrophils' role in the "second hit" paradigm remains to be fully elucidated. We sought to extensively characterize neutrophil phenotype and functionality in response to severe hemorrhage in non-human primates (NHPs).

METHODS: NHPs were subjected to severe hemorrhagic shock and resuscitation. Blood was obtained at baseline (T=0min), end of shock (T=60min), end of resuscitation (T=180min), T=360min and 24 hrs (T=1440min). Neutrophils were quantified by complete blood count and flow cytometry. IL-8 and IL-10 production were determined by intracellular flow cytometry. Oxidation of dihydrorhodamine-123 (DHR-123) was used to determine neutrophil oxidative bursts (untreated), priming (+fMLP) and burst capacity (+PMA/ionomycin) via microplate reader ex-vivo. Data are reported as mean \pm SEM; statistical significance was measured using repeated measures ANOVA with Bonferroni Adjustment.

RESULTS: CD45CD11bCD16 neutrophils doubled post-injury; this was due to activated IL-8/IL-10 neutrophils which increased in frequency in relation to resting IL-8/IL-10 cells. At 24 hrs, the proportions of activated to resting neutrophils returned to baseline levels. Resuscitative measures initially

decreased neutrophil oxidative output; however, oxidative bursts, priming and burst capacity were significantly increased at 24 hrs.

CONCLUSION: These results demonstrate an acute expansion and phenotypic activation of circulating neutrophils post-injury followed by a return to homeostatic proportions within 24 hrs; paradoxically, phenotypically “resting” neutrophils at 24 hrs have significantly higher oxidative potential, predisposing for exaggerated inflammatory responses. These data are consistent with clinical literature and provide important functional insight into neutrophil-mediated shock pathology.

Tourniquet

Physiological Consequences of Abdominal Aortic and Junctional Tourniquet (AAJT) Application to Control Hemorrhage in a Swine Model.

Kheirabadi BS, Terrazas IB, Miranda N, Voelker AN, Grimm R, Kragh JF Jr, Dubick MA.

Shock

INTRODUCTION: Specialized tourniquets such as Abdominal Aortic and Junctional Tourniquet (AAJT) have been deployed for control of junctional hemorrhage with limited information concerning their efficacy and safety. We examined physiological effects of a 2-hr abdominal application of AAJT to control groin hemorrhage in a swine model. **METHODS:** Anesthetized pigs were subjected to 25%

controlled hemorrhage and a groin arterial injury. Resulting hemorrhage from the groin wound was controlled for 2hrs by applying AAJT on each pig’s abdomen. After AAJT removal, the artery was repaired and blood flow was fully restored for 1hr. CT angiography and blood analyses were done and tissues collected for histology. Experiments were conducted in three groups of pigs: 1) mechanically ventilated (MV); 2) spontaneously breathing (SB); and 3) spontaneously breathing during AAJT application but transitioned to mechanical ventilation (SB-MV) before AAJT release. **RESULTS:** AAJT application produced sharp increases in blood pressure and heart rate. SB animals experienced labored and rapid respiration, but their PaO2 and PaCO2 were unaffected. Their respiration suddenly stopped when the AAJT was released requiring manual respiratory assistance. However, 3 pigs in SB group eventually died from cardiac and respiratory arrests, which coincided with hyperkalemia and metabolic acidosis that occurred after reflow. These changes were less severe in other groups. Other measures including increased hematocrit, tissue injury biomarkers, and kidney function indicators were similar in all groups. Histological changes were mild and reversible. **CONCLUSION:** The ischemia-induced hyperkalemia and metabolic acidosis associated with AAJT application are life-threatening in spontaneously breathing subjects. Cardiopulmonary resuscitation appears necessary when AAJT is released to prevent life threatening consequences.

TRANSLATIONAL RESEARCH

Hemorrhage

Inflammatory Profile in Response to Uncontrolled Hemorrhage in a Non-Human Primate (Rhesus Macaque) Model.

Burdette AJ, Paredes RM, Crossland RF, Macko AR, Aden J, Sheppard FR.

Shock

Infection

Ciprofloxacin-loaded keratin hydrogels reduce infection and support healing in a porcine partial-thickness thermal burn.

Roy DC, Tomblyn S, Isaac KM, Kowalczewski CJ, Burmeister DM, Burnett LR, Christy RJ.

Wound Repair Regen.

Lung Injury

Trauma-Related Acute Lung Injury Develops Rapidly Irrespective of Resuscitation Strategy in the Rat.

Wu X, Schwacha MG, Dubick MA, Cap AP, Darlington DN

Shock

Corneal Repair

Magnetic Nanoparticles as a Potential Vehicle for Corneal Endothelium Repair.

Cornell LE, Wehmeyer JL, Johnson AJ, Desilva MN, Zamora DO.

Mil. Med.

Infection

Time dependent effectiveness of Locally Applied Vancomycin Powder in a Contaminated Traumatic Orthopaedic Wound Model.

Tennent DJ, Shiels SM, Sanchez CJ Jr, Niece KL, Akers KS, Stinner DJ, Wenke JC.

J Orthop Trauma

Infection

Pentraxin 3: an immune modulator of infection and useful marker for disease severity assessment in sepsis.

Ketter P, Yu JJ, Cap AP, Forsthuber T, Arulanandam B

Expert Rev Clin Immunol



TOP PAPER OF THE MONTH

R. Madelaine Paredes, Ph.D., left from the Navy Medical Research Unit-San Antonio, is presented with a Combat Casualty Care Research Program coin June 29 by Lt. Col. (Dr.) Kevin Chung, Director of Research, for earning the Top Paper of the Month.

CLINICAL RESEARCH

Tourniquets

Assessment of Groin Application of Junctional Tourniquets in a Manikin Model.

Kragh JF, Lunati MP, Kharod CU, Cunningham CW, Bailey JA, Stockinger ZT, Cap AP, Chen J, Aden JK, Cancio LC.

Prehosp Disaster Med.

Orthopaedic Trauma Registry

The Military Orthopaedic Trauma Registry: The Potential of a Specialty Specific Process Improvement Tool.

Rivera JC, Greer RM, Spott MA, Johnson AE.

J Trauma Acute Care Surg.

Osteoarthritis

Total knee arthroplasty for posttraumatic osteoarthritis in military personnel under age 50.

Murtha AS, Johnson AE, Buckwalter JA, Rivera JC.

J Orthop Res.

Kidney Injury

Acute Kidney Injury in Critically Injured Combat Veterans: A Retrospective Cohort Study.

Stewart IJ, Sosnov JA, Howard JT, Chung KK.

Am J Kidney Dis.

Combat MEDEVAC

Combat MEDEVAC: A comparison of care by provider type for en route trauma care in theater and 30-day patient outcomes.

Maddry J, Mora AG, Savell S, Reeves LK, Perez CA, Bebartar VS.

J Trauma Acute Care Surg.

Clinical Skills

Saving the Military Surgeon: Maintaining Critical Clinical Skills in a Changing Military and Medical Environment.

Edwards MJ, Edwards KD, White C, Shepps C, Shackelford S.

J Am Coll Surg.

Burn ICU

Developing a Cognitive and Communications Tool for Burn Intensive Care Unit Clinicians.

Nemeth C, Anders S, Strouse R, Grome A, Crandall B, Pamplin J, Salinas J, Mann-Salinas E.

Mil Med.

EXTRAMURAL COLLABORATION

Infection

Dengue Virus (DENV) Neutralizing Antibody Kinetics in Children After Symptomatic Primary and Postprimary DENV Infection.
Clapham HE, Rodriguez-Barraquer I, Azman AS, Althouse BM, Salje H, Gibbons RV, Rothman AL, Jarman RG, Nisalak A, Thaisomboonsuk B, Kalayanarooj S, Nimmannitya S, Vaughn DW, Green S, Yoon IK, Cummings D.
J Infect Dis.

Compensatory Reserve

The Effect of Passive Heat Stress and Exercise-Induced Dehydration on the Compensatory Reserve During Simulated Hemorrhage.
Gagnon D, Schlader ZJ, Adams A, Rivas E, Mulligan J, Grudic GZ, Convertino VA, Howard JT, Crandall CG
Shock

Hemorrhage

Hemodynamic Stability to Surface Warming and Cooling During Sustained and Continuous Simulated Hemorrhage in Humans.
Poh PY, Gagnon D, Romero SA, Convertino VA, Adams-Huet B, Crandall CG.
Shock

PFGE

A single-center, six-year evaluation of the role of pulsed-field gel electrophoresis in suspected burn center outbreaks.
Kohanim S, Palioura S, Saeed HN, Akpek EK, Amescua Yun HC, Tully CC, Mende K, Castillo M, Murray CK
Burns.

HIV

23-Valent Pneumococcal Polysaccharide Vaccine Uptake in the United States Air Force HIV Program.
Ocampo TF, Le T, Matthews PE, Okulicz JF.
J Int Assoc Provid AIDS Care

Rapamycin

Adaptations to chronic rapamycin in mice.
Dodds SG, Livi CB, Parihar M, Hsu HK, Benavides AD, Morris J, Javors M, Strong R, Christy B, Hasty P, Sharp ZD.
Pathobiol Aging Age Relat Dis

SAFETY continued from page 8

eter. That's the only way to know it's a safe temperature. Remember, burgers should be cooked to 160°F.

- **Chill:** Chill raw and prepared foods promptly if not consuming after cooking. You shouldn't leave food at room temperature for longer than two hours (or 1 hour if outdoor temperatures are above 90° F), so if you're away from home, make sure you bring a cooler to store those leftovers.

Many people think the inside color of grilled burgers- whether pink or brown—indicates if they're safe to eat. This is a myth. The U.S. Department of Agriculture has shown that one out of every four hamburgers turns brown before it has reached a safe internal temperature. Using a thermometer is the only way to know if cooked meat is safe to consume. Yet new research, recently published by the Food and Drug Administration, shows that only 23 percent of those who own a food

thermometer use it when cooking burgers.

Road Safety

Last year, to crack down on drunk driving over Fourth of July weekend, Texas law enforcement instituted a "No Refusal" weekend. During a No Refusal weekend, any motorists or boaters suspected of drunk driving who refuse a breathalyzer test will have a search warrant issued against them for police to take a blood specimen to test their blood-alcohol level.

Don't let drunk driving ruin your celebrations. Here are a few reminders to stay safe:

- Choose a designated driver. If you're going to party where you know there will be alcohol, plan ahead and select a designated driver or alternative form of transportation.
- Before you get to the party, know exactly how you will get home.
- If you're hosting a celebration, be sure to provide plenty of non-alco-

holic drink options for the designated drivers.

- Avoid late night driving. Nobody likes to leave a party early, but if it means getting home safe, it's probably worth it.
- Drive in the right lane. Sticking to the right lane can save your life from drunk drivers, and wrong-way drivers alike. Oftentimes drunk drivers drift out of their lane or into oncoming traffic. The further you are to the right of the road, the better your chances of avoiding being side swiped or hit head-on by a drunk driver.

Remember, always planning ahead and making smart choices are essential when it comes to your safety.



Back When...



Can you guess who this ISR staff member is? This photo was taken in 1974 when she was a Spc.4 at her reelstment ceremony in Fort Ord, California.

Submit your photo for publication in upcoming issues.

Last Month's Answer:



Col. (Dr.) Michael Wirt
USAISR Commander

USAISR Company Change of Command Ceremony

July 15, 2016
0900

USAISR Change of Command/ Change of Responsibility Ceremony

July 19, 2016
0900

Battlefield Health and Trauma Research Institute

Remember, you MUST be registered with this library (USAISR) before registering with Athens. The instructions and links are located on our main intranet library home page. The patron registration form is found under Forms and Publications or can be picked up in hard copy at the ISR Library front desk.

This form should be filled out in full with all required information including your CAD# which is the number found on the back of your CAC card. We use this as the barcode for your library record.

I would appreciate an email describing any issues you experience when using the electronic services. Sending me a screen shot when you can't reach something will also help us to pinpoint the problem and get it fixed faster.

Thank you for your patience as we work through these developments and be sure to report broken links so we can fix them.

Thank you for using the ISR Library.

Library News



By Gerri Trumbo
Library Manager

For the past few weeks we have experienced a number of problems and issues with access to our electronic library. Please be aware we are continually working on this. The infrastructure of the IP ranges was changed and this has caused the publishers to block our access as they do not recognize the new IPs. We are working diligently to inform publishers and TDNet (LEAP) and the other journal resolvers we

access of changes and updates to our systems.

One alternative to access issues would be to use your Athens credentials on LEAP. This will give you access with your username/password rather than the IP authentication. Unfortunately I have found that this route doesn't always work either. But usually it is going to give results when you are blocked directly on the LEAP platform.

