



# THE INNOVATOR

OPTIMIZING COMBAT CASUALTY CARE



AUGUST 2016

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

Page 6



## Nessen Takes Command During a Dual Ceremony

Inside This Issue

Page 5

- CDR's Corner ..... 2
- Matthew Rowan Mourned..... 3
- SGM Says ..... 4
- Company Notes..... 5
- Safety Notes/Employee in the Spotlight ..... 8
- Health News ..... 9
- Around the ISR..... 10-11
- Celebrating Science ..... 12-14
- SAM Tourniquet Team Wins Award ..... 15
- Back When/Library News ..... 16



Scan 2-D code for USAISR Website link



## Bryant Takes Command of USAISR Company

# CDR's Corner



Col. (Dr.) Shawn C. Nessen  
Commander, USAISR

## "Optimizing Combat Casualty Care"

Hello ISR Team,

This is not the way that I thought I would start off my tour at this Institute. We were all hit hard with the devastating news of Dr. Matthew Rowan and his wife Sunday. The newly-wed couple was among the 16 passengers killed in the hot air balloon crash near Austin on July 30. I did not know Matt personally, but everything that I've heard and read about Matt has been nothing but positive and impressive. He had just been selected to be the USAISR Chief of Clinical Trials for Burn and Trauma at the Burn Center. I read his curriculum vitae and I understand why he was perfect for this position. Matt, at only 34-years-old, had already made a tremendous contribution in burn and trauma research. He was just getting started. His latest paper has already been viewed more than 24,000 times and has been cited in 12 other



Brig. Gen. Jeffrey Johnson, Commanding General , Brooke Army Medical Center, welcomes Col. Shawn Nessen and his wife Jill to the U.S. Army Institute of Surgical Research and San Antonio after the change of command/change of responsibility ceremony July 19.

publications, which is impressive.

I've talked to some of Matt's co-workers here who knew him personally and I do know that he was loved by many and that he was very much in love with his wife Sunday and his five-year-old stepson. He was described as someone who lived life to the fullest with a great sense of humor and a very promising future. He was highly respected by his peers and colleagues. Matt didn't want this job to make a name for himself or for the salary. He was told when he took this job that he would make a lot more elsewhere. Matt said that he wasn't concerned about his salary. The reason that he wanted to do this job was to make a difference and to contribute to the care of wounded warriors. He was truly determined to improve burn

and trauma care for all victims of these injuries on and off the battlefield.

Our thoughts and prayers go out to the family and friends of Matt and Sunday. We will miss them both very much. This is a great setback for the Institute and one that will take time for us to recover from. I ask that you help each other get through this profoundly sad time together. I also want you to know that the entire ISR leadership team, especially myself, are here to assist you in any way that we can. Unexpected tragedies like this are unexplainable and difficult to cope with, but together we will make it through this challenging time. We will be holding a memorial service for Matt on Tuesday at 1230 at the SAMMC Chapel and I hope that everyone has the opportunity to attend the ceremony.



**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

# Rowan, wife among 16 passengers on hot air balloon crash

By Steven Galvan, DBA  
USAISR Public Affairs Officer

Staff members at the U.S. Army Institute of Surgical Research mourn the loss of a colleague, co-worker and friend. Matthew P. Rowan, Ph.D., and his wife Sunday. They were among the 16 passengers on the hot air balloon that crashed near Austin, Texas July 30. Rowan had been at the USAISR for about two-and-a-half years through a postdoctoral fellowship with the Oak Ridge Institute for Science and Education and had recently accepted the position as the USAISR Chief of Clinical Trials for Burn and Trauma Research.

Rowan and his wife were both 34. He earned a Ph.D. in Neuropharmacology and Neuroscience from the University of Texas Health Science Center at San Antonio in 2011.

“Dr. Rowan was a brilliant young researcher who at a young age had already made a significant impact in burn and trauma research,” said USAISR Commander, Col. (Dr.) Shawn C. Nessen. “Matt’s death is truly a trag-

edy to the research community, the US Army and the Nation. We had expected him to be a leader in the institute’s efforts to improve burn and trauma management for many years to come.” USAISR Director of Research, Lt. Col. (Dr.) Kevin Chung described Rowan as “incredibly gifted and brilliant.”

“When he accepted his new job, I told him that it didn’t pay that much,” continued Chung. “He said that the pay didn’t matter. He said that he was doing it because he wanted to do something that is meaningful. He said that he wanted to serve wounded warriors.”

“The USAISR family sincerely expresses our deepest sympathies to Dr. Rowan’s family and friends,” added Nessen. “Matt was a fine young man highly respected and loved by all who knew him. Those who knew him best describe him as a force of nature who seemed indestructible and who was determined to improve trauma and burn care for Soldiers and other victims of these injuries. We will miss him.”



Matthew P. Rowan, Ph.D.



Matthew P. Rowan, Ph.D., third from right, back row, was the Chief of Clinical Trials for Burn and Trauma.

On the Cover

Col. (Dr.) Shawn Nessen, left, takes the U.S. Army Institute of Surgical Research flag from Maj. Gen. Brian Lein, Commanding General, U.S. Army Medical Research and Materiel Command and Fort Detrick, Maryland July 19. Lein hosted a dual change of command/change of responsibility ceremony where Nessen took command of the USAISR.

## SGM Says



1st Sgt. Natasha Santiago  
Interim Sergeant Major

Greetings ISR Team,

July brought much transition to the USAISR. As we all know, transition is a part of being in any organization. Leaders will come and go, but mission accomplishment and overall readiness needs to remain a priority for our Soldiers, Families, and Civilians as we continue moving forward as with what I consider to be the pinnacle of the “Team of Teams” in the AMEDD.

Over the next few months, I will be serving as the interim SGM of our organization. SGM Devine is a Soldiers’ SGM who led from the front in taking care of Soldiers, and had a true passion for the organization and its mission. I have every intention on continuing that legacy within the USAISR. At the company, SFC (P) Hensley and SFC Lowe will be covering down and assisting CPT Bryant with company operations.

I want to take just a few moments to talk about how important it is now more than ever to continue working as a team. Times of transition and leadership changes can bring out the best and sometimes the worst in people. I tend to think that it forces those that are more timid to step out into more prominent leadership roles. In June, I had the privilege of hearing Simon Sinek talk about leadership. I wanted to share some of the items that spoke to me in the audience:

1. Leaders set the environment; perfor-



First Sgt. Natasha Santiago, right, takes responsibility as interim USAISR Sergeant Major as she hands off the Institute flag to Capt. Cleveland Bryant, USAISR Company Commander, during a dual change of command/change of responsibility ceremony July 19.

mance is a result of the leadership.

2. Everyone has the capacity to be a leader; it does not mean that everyone should be one; the risks are real.
3. Courage is external and is present when someone believes in you; that will inspire you to do extraordinary things.
4. Consistency is more important than intensity.
5. Leadership is about the growth of your people.
6. The best leaders are the best followers.

Sometimes, you have to step up to the next position or take the job that it appears nobody wants in your career whether you feel you are ready or not. You may not feel that you have all of the tools in your “Toolbox” to do what needs to be done. The great thing about our profession, is that we don’t need to have all of the answers all of the time; nobody expects us to. We need to establish relationships with those around us. Once we do that, then we can ask for guidance and counsel when needed. No man is an island.

I challenge everyone to step outside of your comfort zones and to push your limits. In my career, I would not have had the experiences that I have, if my superiors had not challenged me to take on different and exciting assignments and jobs. Granted, what may seem challenging to one may not be to all, but remember this; sometimes those around you will see things that you may not see in yourself. Have trust in your leaders.

I am honored to be your Senior Enlisted Leader.  
One Team. One Purpose.  
Conserving the Fighting Strength.



## Company Notes



Company Commander  
Capt. Cleveland S. Bryant Jr.

All, Hello everyone, this is CPT Cleveland Bryant, your new Company Commander of the USAISR. I am totally delighted to be located within a groundbreaking organization highly revered not only throughout the Department of Defense, but also internationally within the medical research community at large. Given my background as a prior enlisted 68K (91K back then); I am honored to return to the laboratory sciences amongst fellow 68Ks. Though the ISR mission is slightly different than what I experienced as a clinical laboratory technician, the pursuit has remained the same conserving the fighting strength of our Army and our

nation.

On behalf of my family and myself, I would like to express my warmest appreciation and gratitude of the sincere welcome received upon arrival to the USAISR. I am grateful and eager to explore the wonderful projects our soldiers and civilians are diligently involved within their areas of expertise. I am honored to embark a command of such an elite diverse organization of professionals focused toward the advancement of medical science through innovative, conscious endeavor. Looking forward to visit your areas of operation. Again, thank you for the warm welcome and support. God bless you all.

# Bryant Takes Command of USAISR Company

By Steven Galvan, DBA  
USAISR Public Affairs Officer

Soldiers and staff members at the U.S. Army Institute of Surgical Research, a subordinate command of the U.S. Army Medical Research and Materiel Command, bid farewell to one commander and welcomed a new one during a change of command ceremony June 15 at Fort Sam Houston, Texas. Capt. Jose A. Juarez Jr. relinquished command of the USAISR Company to Capt. Cleveland S. Bryant, Jr., in a ceremony hosted by USAISR Commander, Col. (Dr.) Michael D. Wirt.

During his remarks, Wirt commended Juarez for his exemplary leadership and accomplishments.

“Capt. Juarez, your accomplishments as the company commander are impressive,” said Wirt. “This command is a success because of your leadership, motivational skills, inspirational integrity, and your ability to plan and successfully execute all missions. Thank you again for your flawless commitment to our mission and vision.”

Juarez thanked the Institute’s leadership for their support and allowing him to fulfill his longtime dream.

“As a young enlisted Soldier, I was impressed by a company commander, and I told myself that someday I would be in that position,” said Juarez. “I

didn’t know when or where, but I knew that it’s what I wanted to do. And to do it here at this command was more than I imagined. Thank you, it has been and honor and a privilege to have served as your company commander.”

Bryant’s last assignment was as the Medical Logistics Officer at the 2nd Infantry Division Sustainment Brigade in Waegwan, Korea. He thanked Wirt for giving him the opportunity to command the ISR Company and thanked Juarez for his service as he gets ready to retire from the Army.

“It is a great honor and privilege to be part of an organization of which spearheads innovation, creativity and ingenuity of Army medicine to new levels of excellence,” said Bryant. “Capt. Juarez, thank you for your patience, counsel and wisdom throughout this process. As for your legacy, we will continue to promote the standard of excellence you set forth, as you and your family begin transition to retirement. I wish you the best of wishes, blessings and peace.”

Bryant enlisted in the Army in 2000, earning the Military Occupational Specialty of Medical Laboratory Technician (68K). In 2007, he attended the Officer Candidate School and commissioned as a Second Lieutenant in the Medical Service Corps in 2008.

“Capt. Bryant, welcome to the ISR,”

added Wirt. “I have heard nothing but great things about you, and I’m confident that you will pick up where Capt. Juarez left off. You have some outstanding NCOs and Soldiers under your command who will give you their best every day to ensure that you will also have a successful tour as well.”



Capt. Cleveland Bryant addresses the staff and Soldiers during a change of command ceremony July 15.

# Dual Ceremony at Combat Casualty Care Research Institute Marks New Leadership



The official party at the change of command/change of responsibility ceremony salutes as the 323rd Army Band "Fort Sam's Own" plays *Two Ruffles and Flourishes* and the *General's March* July 19,

By Steven Galvan, DBA  
USAISR Public Affairs Officer

In a dual ceremony held by the U.S. Army Institute of Surgical Research, a subordinate command of the U.S. Army Medical Research and Materiel Command, Col. (Dr.) Shawn S. Nessen assumed command of the USAISR and 1st Sgt. Natasha M. Santiago assumed her new role as the acting sergeant major. The change of command and change of responsibility ceremony held July 19 at Joint Base San Antonio-Fort Sam Houston, Texas, also honored the services of the outgoing commander, Col. (Dr.) Michael D. Wirt and Sgt. Maj. James L. Devine.

Maj. Gen. Brian C. Lein, commander of U.S. Army Medical Research and Materiel Command and Fort Detrick, Maryland, hosted the ceremony and during his remarks he praised Wirt and Devine and attributed the success of the Institute "to their superb guidance and leadership."

"The ISR is continuously conducting innovative and necessary life-sav-

ing research, and it's due to your sound and selfless leadership," Lein said. "It has been a pleasure working with the both of you and I thank you both for

that you have accomplished.

"Col. Nessen, congratulations on your new assignment and welcome to MRMC and ISR team," added Lein. "Your previous assignments have prepared you for this tour as you continue the critical work in combat casualty care."

Nessen takes command of the USAISR after a tour at the Martin Army Community Hospital at Fort Benning, Georgia, where he served as the Deputy Commander for Clinical Services. Nessen was also the Deputy Commander for Clinical Services of the 212th Combat Support Hospital, Miesau, Germany. Prior to that tour, he was a staff critical care surgeon and Chief of the Department of Surgery at Landstuhl Regional Medical Center at Landstuhl, Germany.

During his remarks, Nessen thanked Lein for the opportunity to command the "Institute that has been at the forefront of optimizing combat casualty care and finding solutions for **COC continues on page 7**



Outgoing Sergeant Major, Sgt. Maj. James Devine, right, hands the Institute flag to outgoing USAISR Commander, Col. (Dr.) Michael Wirt during a dual change of command/change of responsibility July 19.

**COC continued from page 6**

our wounded warriors who bravely put their lives in harm's way to ensure our freedom.”

“Col. Wirt, you have done a tremendous job as commander of the ISR, and I know that I have my job cut out for me to continue your superb leadership and to keeping this Institute operating impressively,” continued Nessen “I will strive to meet the challenge, and I wish you much success at your next assignment in Korea.”

Wirt, who served as the USAISR commander since July 2014, is transferring to Yongsan Garrison, South Korea, where he will serve as the Eighth Army surgeon, and Devine is retiring from the Army after 30 years of service.



Top: Maj. Gen. Brian Lein, Commander, U.S. Army Medical Research and Materiel Command and Fort Detrick, Maryland, hosted the dual change of command/change of responsibility ceremony July 19 and provides remarks to the USAISR staff, Soldiers and friends in attendance.

Left: Col. (Dr.) Shawn Nessen gives his first order as the USAISR Commander to Capt. Cleveland Bryant, USAISR Company Commander.

Right: The USAISR Soldier of the Year, Spc. David Watson presents a bouquet of yellow roses to Mrs. Jill Nessen during a change of command/change of responsibility ceremony July 19 where Col. (Dr.) Shawn Nessen took command of the USAISR.



# Safety Notes

By Stephanie L. Truss  
Health, Safety and Environmental Specialist



With the start of school just around the corner, drivers need to do their part to keep kids safe as they walk and bike to school. Whether you are taking your kids to school or just driving through a school zone, you can do your part to keep kids safe. August is designated as Back-to-School Safety Month and I would like to remind motorists to be extra careful at all times.

Start now focusing on school zones and make the needed adjustments with your start out time to work to avoid the rush and traffic. It's even more important for drivers not to be distracted or talking and texting on their phones as driving patterns change, school zone speed limits are enforced, and kids are crossing busy intersections. Turning off your cell phone is one of the smartest things you can do.

Here are some simple reminders for drivers:

- Motorists are required to stop when approaching a school bus that is stopped with its red lights flashing and STOP arm is extended.
- The only time traffic approaching an oncoming school bus does not need to stop, is if there is a raised barrier such as a concrete divider or at least five feet of unpaved space separating the lanes of traffic.
- Motorists should be alert and watch for children especially near schools, bus stops, school buses, and in school parking lots.
- At bus stops, children should wait in a safe place away from the road.
- Children should never walk behind a bus.

**While Driving:**

## In the Spotlight

Spc. Shenouda Zarif  
**Job title:** Bioscience Research Specialist

**How long have you worked at the ISR?** 2 years

**What or who has been an inspiration to you in your work?** Supporting Overseas Contingency Operations and helping other Soldiers.



**What is your favorite part of your work?** I am proud to serve and be a part of the best Armed Forces in the world.

**What is your proudest achievement?** Speaking eight languages fluently.

**Short- and long-term goals:** My short-term goal is to graduate from OCS and long-term goal to obtain another degree in Homeland Security.

**Hobbies:** Learning languages, hunting, bodybuilding, reading and stock trading.

**Favorite book:** The Bible

**Favorite movie/TV show:** Breaking Bad

**Favorite quote:** "Do to others as you would have them do to you." Luke 6:31

- Slow down and be especially alert in the residential neighborhoods and school zones
- Take extra time to look for kids at intersections, on medians and on curbs
- Enter and exit driveways and alleys slowly and carefully
- Watch for children on and near the road in the morning and after school hours
- Reduce any distractions inside your car so you can concentrate on the road and your surroundings.
- Put down your phone and don't talk or text while driving.

**Reminder for your kids:**

- They should cross the street with an adult until they are at least 10 years old
- Cross the street at corners, using traffic signals and crosswalks
- Never run out into the streets or cross in between parked cars
- Make sure they always walk in front of the bus where the driver can see them

On a different topic—with the hectic first few days of schools, family routines are changing. This is one factor that can lead to parents accidentally leaving their children in cars. Parents need to understand how quickly a car

**SAFETY continues on page 16**



## Health News

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



Happy August! We are all winding down from vacations, moves, and bearing the Texas heat! Now the buzz is back to school. School clothes, books, backpacks, lunch etc., etc. Another whirlwind!

There is a health condition that is observed in August that is seldom discussed and not as highly publicized as other conditions—Psoriasis. But having psoriasis has meant having to deal with it at work and school. It means being concerned about the reactions of co-workers, students and customers and struggling with feelings. Usually starts in teen years. Many feel ashamed about their psoriasis and not wanting to talk about it. Mostly people with psoriasis avoiding wearing dark-colored clothes, so as not to show the flaky hair. There are the sticky ointments. Shots and odors. Most psoriatics spend decades of on-the-job anxiety and worry about what other people think. Research into the genetics of psoriasis didn't begin until the early 1970s. Scientists now believe that at least 10 percent of the general population inherits one or more of the genes that create a predisposition to psoriasis. However, only two percent to three percent of the population develops the disease. Established psoriasis triggers include stress, injury to the skin: sunburn, immunizations, infection, medications, and diet. Anything that can affect the immune system can affect psoriasis. So imagine your newly diagnosed teenager wanting to play

sports etc.

If only it hadn't taken decades to realize how unfounded and self-destructive feelings and actions can be. If only someone, a caring fellow employee, teacher or mentor, had taken you aside and told you not to get so hung up about psoriasis. Be upfront and specific. The goal is to have a talk to find ways to resolve the problem that will benefit the employer, your co-workers, other students and yourself. It's better to ask for support or adaptations from your employer and/or your child's school than to try to work through the pain and risk a flare-up. For more information: <https://www.psoriasis.org/>.

On the first Sunday in August, all kids across the nation have a special day to celebrate as it is National Kids Day! Celebrate by checking their immunization records, and scheduling their annual eye exam. Vaccination is one of the best ways parents can protect infants, children and teens from 16 potentially harmful diseases. Vaccine-preventable diseases can be very serious, may require hospitalization, or even be deadly - especially in infants and young children.

National Immunization Awareness Month occurs every August designed to help us learn about the 16 diseases that can be prevented with vaccines, as well as the benefits and risks of vaccination. Texas Department of Health Services offers immunization information and ImmTrac, the Texas Immunization Registry. You can find: Texas



Minimum State Vaccine Requirements for Students: School Immunization Requirements, K-12 (Public and Private); Child-Care Facility Immunization Requirements, College and University Immunization Requirements. <http://www.dshs.texas.gov/immunize/default.shtm>.

A couple of other concerns this summer has brought is: Metro Health Reports New Zika Case. The total count of confirmed Zika cases in San Antonio is eight. All cases acquired the infection while traveling abroad. If you traveled to a Zika-affected area, upon return please take extra precautions to avoid mosquito bites for two weeks. See your healthcare provider if you develop a fever, rash, joint pain, or red eyes within two weeks after traveling. Be sure to tell your health care provider where you traveled.

On another topic, the San Antonio Metropolitan Health District (Metro Health) is notifying the community of a level II "heat advisory." Level II indicates a sustained heat index greater than or equal to 108 degrees Fahrenheit or air temperature greater than or equal to 103 degrees Fahrenheit. Always remember to never leave children or pets alone in vehicles, especially during heat advisory periods. Metro Health reminds the community to take precautions including proper hydration and protection from the sun. Additionally, people should check on their neighbors, especially the elderly, children or those with special needs, to ensure access to heat relief and hydration.

Warning signs of heatstroke include: red, hot, and moist or dry skin, no sweating, a strong rapid pulse or a slow weak pulse, nausea, confusion or acting strangely. If a person exhibits any of these signs after being in a hot vehicle, cool rapidly (not an ice bath but by spraying them with cool water or with a garden hose). Call 911 or your local emergency number immediately.

# Around the ISR

Top right: Sgt. 1st Class Burt Hensley, left, and Sgt. Tae Kim, right, pose with Spcs. Fabian Quattlebaum and Raymond Calzada July 29 after graduating from the Basic Leadership Course where Quattlebaum made the Commandant's List. Photo by Spc. Victor Galvez.



Middle right: The USAISR Intramural soccer team finished 4th during the soccer season. Team members are: top row, PS1 Fadahunsi Oluwabunmi, Spc. Awobimpe Kayode, Spc. Kelechi Uzoukwu, Sgt. Tae Kim, Staff Sgt. William Vidal and Spc. Andres Penagosnino. Bottom row: Senay Tewolde, Spc. Olawale Aderemi, Spc. Jordan Smith, Senay Tewolde and Roy Dory.

Bottom right: Andrew Wallace, right, explains the Burn Flight Team mission and equipment July 27 to members of a Congressional Staff Delegation.

Bottom left: Members of the Systems of Care for Complex Patients task area pose for a group photo July 27.

Top left: Maj. Gen. Brian Lein, left, presents Col. Michael Wirt with a Legion of Merit before the change of command/change of responsibility ceremony July 19.



## Around the ISR cont.

Top right: Sgt. Jennifer Grant serves refreshments after the change of command/change of responsibility ceremony July 19.

Middle right: Dominique Greydanus with Col. Traci Crawford, Deputy Commanding Officer at Brooke Army Medical Center after the change of command/change of responsibility ceremony July 19.

Bottom right: Chris Wiseman presents Patricia Santos with a Commander's Award for Civilian Service July 27 as Leila Rathburn looks on.

Bottom left: Col. Michael Wirt presents Sgt. Maj. James Devine with a Legion of Merit during his retirement ceremony July 21.

Top left: Staff Sgt. Adrain Whitaker, left, give a tour of the Burn Center Rehab area July 21 to foreign military officers attending the Medical Strategic Leadership Program.



# 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

**Burn Severity**  
 Noninvasive Techniques for the Determination of Burn Severity in Real Time.  
 Burmeister DM, Cerna C, Becerra SC, Sloan M, Wilmink G, Christy RJ.  
*J Burn Care Res*



David Burmeister



Robert Christy

Visual diagnosis of second-degree burns has proven inadequate for determining the appropriate treatment regimen. Although multiple noninvasive imaging techniques have shown promise for providing information about burn wound severity, the ideal technology to aid burn wound excision would provide real-time readouts. Herein, the authors examine a high-resolution infrared (IR) camera (thermography) and a multiprobe adapter system (MPAS-6; transepidermal evaporative water loss, colorimetry) to assess their usefulness in predicting burn severity. Contact burn wounds of increasing severity were created in a porcine model. Wounds were assessed for 4 days with an IR camera and MPAS-6. In addition, each day, the burn wounds were biopsied for histological analysis to determine burn depth for correlation with noninvasive measures. Surface temperatures decreased with increasing burn severity, which was associated with increasing transepidermal evaporative water loss. Melanin content correlated with the depth of collagen coagulation and was bimodal, with superficial and full-thickness burns having higher values than deep partial thickness wounds. Erythema content was highest in superficial burns and negatively correlated with necrosis (high-mobility group box protein 1 expression). Importantly, surface temperature taken on every single day after injury was predictive of all histologically determined

measurements of burn depth (ie, collagen coagulation, apoptosis, necrosis, vascular occlusion). The results indicate that IR imaging and skin quality probes can be used to support the diagnosis of burn severity. Most importantly, IR measurements gave insight into both the zone of coagulation and the zone of stasis on every postburn day studied.

**Acute Kidney Injury and ARDS**  
 Reciprocal Risk of Acute Kidney Injury and Acute Respiratory Distress Syndrome in Critically Ill Burn Patients.  
 Clemens MS, Stewart IJ, Sosnov JA, Howard JT, Belenkiy SM, Sine CR, Henderson JL, Buel AR, Batchinsky AI, Cancio LC, Chung KK.  
*Crit Care Med*



Michael Clemens



Kevin Chung

**OBJECTIVE:** To evaluate the association between acute respiratory distress syndrome and acute kidney injury with respect to their contributions to mortality in critically ill patients.  
**DESIGN:** Retrospective analysis of consecutive adult burn patients requiring mechanical ventilation.  
**SETTING:** A 16-bed burn ICU at tertiary military teaching hospital.  
**PATIENTS:** Adult patients more than 18 years old requiring mechanical ventilation during their initial admission to our burn ICU from January 1, 2003, to December 31, 2011.  
**INTERVENTIONS:** None.  
**MEASUREMENTS AND MAIN RESULTS:** A total 830 patients were included, of whom 48.2% had acute kidney injury (n = 400). These patients had a 73% increased risk of developing acute respiratory distress syndrome after controlling for age, gender, total body surface area burned, and

inhalation injury (hazard ratio, 1.73; 95% CI, 1.18-2.54;  $p = 0.005$ ). In a reciprocal multivariate analysis, acute respiratory distress syndrome ( $n = 299$ ; 36%) demonstrated a strong trend toward developing acute kidney injury (hazard ratio, 1.39; 95% CI, 0.99-1.95;  $p = 0.05$ ). There was a 24% overall in-hospital mortality ( $n = 198$ ). After adjusting for the aforementioned confounders, both acute kidney injury (hazard ratio, 3.73; 95% CI, 2.39-5.82;  $p < 0.001$ ) and acute respiratory distress syndrome (hazard ratio, 2.16; 95% CI, 1.58-2.94;  $p < 0.001$ ) significantly contributed to mortality. Age, total body surface area burned, and inhalation injury were also significantly associated with increased mortality.

**CONCLUSIONS:** Acute kidney injury increases the risk of acute respiratory distress syndrome in mechanically ventilated burn patients, whereas acute respiratory distress syndrome similarly demonstrates a strong trend toward the development of acute kidney injury. Acute kidney injury and acute respiratory distress syndrome are both independent risks for subsequent death. Future research should look at this interplay for possible early interventions.

**Muscle Trauma**

Severe Muscle Trauma Triggers Heightened and Prolonged Local Musculoskeletal Inflammation and Impairs Adjacent Tibia Fracture Healing.

Hurtgen BJ, Ward CL, Garg K, Pollot BE, Goldman SM, McKinley TO, Wenke JC, Corona BT.

*J Musculoskelet Neuronal Interact*



Benjamin Corona

**OBJECTIVES:** Complicated fracture healing is often associated with the severity of surrounding muscle tissue trauma. Since inflammation is a primary determinant of musculoskeletal health and regeneration, it is plausible that delayed healing and non-unions are partly caused by compounding local inflammation in response to concomitant muscle trauma.

**METHODS AND RESULTS:** To investigate this possibility, a Lewis rat open fracture model [tibia osteotomy with adjacent tibialis anterior (TA) muscle volumetric muscle loss (VML) injury] was interrogated. We observed that VML injury impaired tibia healing, as indicated by diminished mechanical strength and decreased mineralized bone within the fracture callus, as well as continued presence of cartilage instead of woven bone 28 days post-injury. The VML injured muscle presented innate and adaptive immune responses that were atypical of canonical muscle injury healing. Additionally, the VML injury resulted in a perturbation of the inflammatory phase of fracture healing, as indicated by elevations of CD3(+) lymphocytes and CD68+ macrophages in the fracture callus at 3 and 14d post-injury, respectively.

**CONCLUSIONS:** These data indicate that heightened and sustained innate and adaptive immune responses to traumatized muscle are associated with impaired fracture healing and may be targeted for the prevention of delayed and non-union following musculoskeletal trauma.



**TOP PAPER OF THE MONTH**

Benjamin Corona, Ph.D., right, is presented with a Combat Casualty Care Research Program coin June 27 for earning the Top Paper of the Month by Lt. Col. (Dr.) Kevin Akers, Deputy Director of Research.

Photo by Staff Sgt. Olarewaju Magreola

## TRANSLATIONAL RESEARCH

### **Pseudomonas aeruginosa**

Creation of stable *Pseudomonas aeruginosa* promoter-reporter fusion mutants using linear plasmid DNA transformation.

Chen P, Leung KP.

*BMC Res Notes*

### **Neurotherapeutics**

IGF-1 and Chondroitinase ABC Augment Nerve Regeneration after Vascularized Composite Limb Allotransplantation.

Kostereva NV, Wang Y, Fletcher DR, Unadkat JV, Schneider JT, Komatsu C, Yang Y, Stolz DB, Davis MR, Plock JA, Gorantla VS.

*PLoS One*

## CLINICAL RESEARCH

### **Burn Care**

Guidelines for Burn Care under Austere Conditions: Surgical and Nonsurgical Wound Management.

Cancio LC, Barillo DJ, Kearns RD, Holmes JH 4th, Conlon KM, Matherly AF, Cairns BA, Hickerson WL, Palmieri T.

*J Burn Care Res*

### **Burn Care**

Guidelines for Burn Care under Austere Conditions: Special Etiologies: Blast, Radiation, and Chemical Injuries.

Cancio LC, Sheridan RL, Dent R, Hjalmarson SG, Gardner E, Matherly AF, Christensen DM, Bebartta VS, Palmieri T.

*J Burn Care Res*

### **Burn Care**

Guidelines for Burn Care under Austere Conditions: Special Care Topics

Young AW, Graves C, Kowalske KJ, Perry DA, Ryan CM, Sheridan RL, Valenta A, Conlon KM, Jeng JC, Palmieri T.

*J Burn Care Res*

### **Burn Care**

Perioperative Temperature Management During Burn Care.

Rizzo JA, Rowan MP, Driscoll IR, Chan RK, Chung KK.

*J Burn Care Res*

### **Genitourinary Injury**

Genitourinary injuries and extremity amputation in operations enduring and Iraqi freedom: early findings from the trauma outcomes and urogenital health (tough) project.

Nnamani NS, Janak JC, Hudak SJ, Rivera JC, Lewis EA, Soderdahl DW, Orman JA.

*J Trauma Acute Care Surg*

### **Arthritis**

Arthritis, comorbidities and care utilization in veterans of Operations Enduring and Iraqi Freedom.

Rivera JC, Amuan ME, Morris RM, Johnson AE, Pugh MJ.

*J Orthop Res*

## EXTRAMURAL COLLABORATION

### **Chest Seals**

Adherence evaluation of vented chest seals in a swine skin model.

Arnaud F, Maudlin-Jeronimo E, Higgins A, Kheirabadi B, McCarron R, Kennedy D, Housler G.

*Injury*

# USAISR researchers win Army's innovation award

By Steven Galvan, DBA  
USAISR Public Affairs Officer

Researchers at the U.S. Army Institute of Surgical Research, a subordinate command of the U.S. Army Medical Research and Materiel Command, were among the team named winners of the 2015 Major General Harold "Harry" J. Greene Award for Innovation.

Dr. John F. Kragh, an orthopedic surgeon and researcher, and Michael Dubick, Ph.D., Damage Control Resuscitation task area manager at the USAISR, were among the team receiving the award that included members from the medical community, academia and industry. The team developed, tested and fielded the SAM Junctional Tourniquet that was selected as the winner in the group category of the innovation award.

The SAM Junctional Tourniquet is designed to stop bleeding in junctional areas of the torso where limb tourniquets cannot be used like in the pelvic area or armpits. The SAM Junctional Tourniquet is FDA cleared and is an adjustable belt with two configurable and inflatable bulbs that can be applied directly to a hemorrhage area to control bleeding. The junctional tourniquet weighs less than a pound and designed to be applied in less than a minute.

"This is just another example as to how team efforts can work to deliver potentially lifesaving interventions to the battlefield," said Dubick. "As task area manager, it's my job to facilitate the research we do and to help primary investigators set up needed collaborative efforts with academia and industry."

"For me, this is professionally a real joy to have worked so well with such a comprehensive team of committed experts representing several stakeholders," Kragh said. "Even more moving for me is that those we knew and lost, like Corporal Jaimie Smith at Black Hawk Down in Somalia, are now able to be saved, like the Afghan policeman

who had a virtually identical wound as Jaimie. How good is that! This is as good as it gets."

Other members of the innovation award winning team include: Col. (Dr.) Lorne Blackbourne, former USAISR commander and trauma surgeon at the San Antonio Military Medical Center; Col. (Dr.) Lance Cordoni, Chief of Medical Consultants Division, Capability Development and Integration Directorate at the U.S. Army Medical Department Center and School; James Johnson, Ph.D., Director, Center for Applied Learning, Wake Forest University School of Medicine; and Lance Hopman, Head of Research and Development at SAM Medical.

"It's very satisfying to know that the Army saw the innovation to fill a capability gap to help prevent service members from dying from junctional wounds where standard limb tourniquets could not be applied, and so recognized us and the SAM Junctional Tourniquet for this Innovation Award," added Dubick. "As this is the fourth

Army Greatest Invention or Innovation Award for our group, all being team efforts, further reflects how relevant ISR is to the Army and Warfighter with respect to 'Optimizing Combat Casualty Care.'"

"I'm happy to be a member of the award winning team as it will shine more light on this lifesaving device," said Cordoni. "Hopefully we will get the SAM Junctional tourniquet into all Army training programs and medical kits, so that our medics will have these when they need them."

The award presented by the U.S. Army Materiel Command is a combination of the Army's Greatest Invention Award and the Soldier's Greatest Invention Award. The Greene award was named after Maj. Gen. Greene who was an innovator at USAMC. Greene was killed by gunfire while conducting an inspection of an Afghan military academy in 2014. The gunman was wearing an Afghan army uniform and the Taliban claimed responsibility for the attack.



Michael Dubick, Ph.D., Col. (Dr.) Lance Cordoni and Dr. John Kragh hold a SAM Junctional Tourniquet that was selected as the 2015 Major General Harold "Harry" J. Greene Award for Innovation (Group Category) by the U.S. Army Materiel Command.

Back When...



Can you guess who this ISR staff member is? This photo was taken in 1995 when he was in the 3rd Grade in Houston, Texas.

Last Month's Answer:



Gale Mankoff  
Clinical Research  
Nurse Coordinator

Submit your photo for publication in upcoming issues.

Please note that the My Athens registration at AVL is not intended for USAISR personnel. Our My Athens accounts are administered by US-AMRMC. Each Command (DHA/MEDCOM and USAMRMC) pays for a certain amount of Athens customers, so it is vital that we register correctly.

The link for the AMEDD Virtual Library is:  
<https://medlinet.amedd.army.mil/index.htm>

If you have any questions or issues with AMEDD AVL, feel free to contact me or use the ASK A LIBRARIAN link at the top left corner of the AVL homepage.

Thank you for using the ISR Library!

**SAFETY continued from page 8**

can heat up, how susceptible children are to heat, and what they need to do to help prevent these tragic deaths.

Children have tragically died from being trapped in a sweltering car or truck – sadly, 623 children have died this way since 1998. It can happen at temperatures as low as the mid-50s. But with heat waves across the country, these horrific incidents are happening far too often. The majority of these devastating stories have taken place in the southern states!

Every year, thousands of children are hurt or die because a driver moving forward very slowly didn't see them. These incidents for the most part take place in residential driveways or parking lots and are referred to as "front overs" (the opposite of a back over).

Back over incidents also kill or seriously injure thousands of children because a driver backing up didn't see them. A back over incident typically takes place when a car is backing out of a driveway or parking space. Another hazard is kids setting cars in motion. Always lock your vehicle, so it is not an attractive "toy" to young children.

As always, think safety first!

Library News



By Gerri Trumbo  
Library Manager

Did you know we have total access to the AMEDD Virtual Library? This virtual library has gateways to over 20 medical/health databases to include Dentistry & Oral Sciences Source (DOSS), Clinical Key for Nursing, STAT!Ref, and Veterinary Medicine eBook Collection to name a few.

The AVL also provides links to the Air Force and Navy virtual libraries. Access to content may be restricted.

UpToDate CME provides you with opportunities for CME instruction and courses. You use your CAC login to access.

There is also a list of the top AVL Mobile Resources that can be downloaded as apps to your tablet or smart phone. Some of these are TRICARE Formulary via Epocrates Online, MD Consult Mobile, Clinical Trials.gov, and PubMed for Handhelds including PICO Search.

