



THE INNOVATOR

OPTIMIZING COMBAT CASUALTY CARE



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VC3 Project Designed to Improve Patient Outcomes

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JTS Hosts 500th CCC Conference

CDR's Corner



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

"Optimizing Combat Casualty Care"

Greetings ISR,

March is here and spring is right around the corner. As you may know, this is an election year and this means that we have a "Super Tuesday" right around the corner. Super Tuesday is the biggest day of the 2016 primary season with Texas being among the 12 states and one territory participating in voting for the candidates who will be running for president. I encourage everyone to vote not only on Super Tuesday, but in November for the candidate of your choice. Your vote does matter and your voice should be heard, vote—it's your right and privilege.

Another big event that is happening in March is the ISR Organization Day on March 24. The ISR Special Events Committee has been working diligently for the last few months to raise funds to make this a special event for the entire ISR Family. While this event is

designed for our staff and family to get out and enjoy some fun time together for all of the hard work done around here, it doesn't encompass the true gratitude that is owed to the entire staff for the meaningful and dedicated work done for our Wounded Warriors and their families.

Organization Day is for you and I ask everyone to participate in as many events as possible that are scheduled throughout the day. You earned this day and it's a small token to show our appreciation for all that you do every day. Bring your family and enjoy the food and games while you enjoy your time with your ISR family and friends.

March also brings us other days, weeks, and monthly observations to celebrate and recognize during the month. First of all, March is National Women's History Month; National Nutrition Month; National Irish American Heritage Month; Red Cross Month; and Social Workers Month, just to name a few. The two weekly celebrations in March are during the

second week and they are National Bubble Week and Crochet Week. Some of the daily observations include National Anthem Day on the 3rd to celebrate our National Anthem. The 4th is Employee Appreciation Day and Hug GI Day; the 8th is International (Working) Women's Day and the 15th is the Ides of March day to observe the first day of the Roman New Year as well as the first day in the Roman calendar, but in the U.S. the first day of spring is on the 20.

March 17th is Saint Patrick's Day and on the 20 we observe International Earth Day. This month we will also observe Good Friday on the 25th and Easter will be celebrated on the 27th. And who can forget that this month we will lose one hour of sleep as we start daylight savings time on the 13th—remember to spring forward one hour.

A lot is going on during the month of March as it is here at the Institute. Take time to enjoy your families and loved ones, and thank you for all that you do every day. Army Strong!



Col. (Dr.) Michael Wirt presents Master Sgt. Natasha Turrell with an Army Commendation Medal Feb. 29.



ARMY MEDICINE

Serving To Heal...Honored To Serve

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SGM Says



Sergeant Major
James L. Devine

Greetings ISR,

March is here and spring is right around the corner. March also brings promotions of our finest ISR Soldiers. I would like to congratulate Spc. Tae Kim for his promotion to Sergeant. Congratulations to Pfc. Tyler Everett and Pfc. Kelechi Uzoukwu for their promotions to Specialist. They have displayed the potential to operate and perform at the next level.

Broadening assignments remain a SMA priority and HRC is actively seeking volunteers for Drill Sergeants (females), Recruiters, Observer/Controllers (O/Cs), EOAs, IGs, and Instructors. Noncommissioned officers need to understand minimum requirements, possess an updated DA photo, and ensures all education data

is updated in their Army Military Human Resources Record (iPERMS) to qualify. The Army will trust all selected individuals to fill broadening assignments to prepare the Army to *Win in a Complex World*.

TRUST is at the heart of the Army Profession. The Army is transitioning from an era of operational deployments to an era of training and preparing the formations for the next conflicts and will be faced with several threats of trust. Downsizing the force with tools such as QMP and QSP and fiscal austerity will accompany the transition. According to the Army Profession, trust is manifested in two interrelated but distinct realms. The campaign focused much of its effort on trust internal to the Army Profession. The other domain is external public trust, which is the trust held between the Army profession and the American people.

The maintenance of internal trust among members of the profession, and between members and institution, is critical to the effectiveness of the Army. Trust between Soldiers and Leader. The Soldiers promoted on 1 March 2016 are trusted by their leaders to perform at the next level. A subordinate must have the trust in its leadership to effectively accomplish the mission. The leader must trust that the subordinate is capable of carrying out the task without fail. This is done through effective training and engaged

leadership. When a Soldier knows that the leadership has their best interest at heart, there is no task that they will leave undone or questioned or when ordered.

Trust between the Army and the American People. The Army Profession also tells us that maintenance of trust between the Army profession and the American people is critical to its legitimacy within our democratic society. While the Army profession currently enjoys a high level of public trust, that trust relationship is intensely fragile. Today's Soldier wears the uniform proudly. It feels good when a civilian thanks you for your service. I often reply with "Thank You for Your Support. The loss of either internal or public trust would constitute a major threat to the profession.

Thank you all for what you do and get ready to enjoy spring break with your Family and Friends. Army Strong!

On the Cover



Lt. Col. (Dr.) Jeremy Pamplin, medical director of the U.S. Army Institute of Surgical Research Burn Center Intensive Care Unit and Chief of Clinical Trials, right, and Capt. (Dr.) Jeffrey DellaVolpe, a trauma surgeon at the San Antonio Military Medical Center view the capabilities of a Virtual Critical Care Consultation device being demonstrated by Pete Menicucci during a VC3 "Device Day" at SAMCC Jan. 26.



Sgt. Maj. James L. Devine, left, and Capt. Jose Juarez with Sgt. Sonja McDonald Feb. 11 after she was presented with an Army Achievement Medal.

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. Robin Smith, Spc. Jose Bernal, and Pfc. Josianne Babin-eaux. Please welcome these folks into the ISR family, if you haven't already. We would like to say farewell to the following Soldier: Master Sgt. Natasha Turrell; thank you for your contributions to the organization and best wishes in your future endeavors.

Congratulations to Spc.(P) Tae Kim on his selection for promotion to Sergeant for March 2016!! Please congratulate this NCO when you see him around. We also want to congratulate Pfc. Tyler Everett and Pfc. Kelechi Uzoukwu on their promotion to Specialist! Great job and well done!!

We held our NCO and Soldier of the



Capt Jose Juarez, right, presents Staff Sgt. Valentino Foronda with an Army Commendation Medal Feb. 17.

Month competition for February. And the victors were Sgt. Zeyar Htut and Spc. David Watson! Please congratulate these leaders on their enormous success! Their photographs will be on display in the company area.

Upcoming events: March is Women's History Month. I urge everyone to get out and enjoy the events that'll be set up at SAMMC. Our EO team will be involved in setting something up, more to follow on time and dates.

March also brings us many events throughout the month. March 13 marks the start of Daylight Savings Time, so we'll be losing an hour of sleep, which means there may be a lot of tired folks during that week, March 17 is St. Patrick's Day, March 20 will officially kick off the Spring Season, and March 24 is the USAISR Organizational Day, which will be chalk full of exciting events and great food. O-Day will be kicked off with a Golf Scramble at the Fort Sam Houston Golf Club. Come out and enjoy the festivities!! March 25 is Good Friday, and March 27 is Easter Sunday.

Continue to challenge yourselves and start changing the norm, start getting outside of your comfort zones and seize the opportunities. March will be gone before we know it, so let's make it the best month we can. Let's have fun this year!

Thank you all for everything that you all do every day and it is truly an honor to be your Commander and First Sergeant!
Army Strong!



NCO of the Month
Sgt. Zeyar Htut



Soldier of the Month
Spc. David Watson

VC3 Project Designed to Improve Patient Outcomes

Story and photo by Steven Galvan
USAISR Public Affairs Officer

Army medics deployed to remote or austere locations can face challenges when caring for injured Soldiers. In an effort to provide medical care guidance and recommendations by senior, experienced critical care providers to medics in tough situations a new project called Virtual Critical Care Consultation, or VC3, has been underway for the last several months.

According to the Lt. Col. (Dr.) Jeremy Pamplin, medical director of the U.S. Army Institute of Surgical Research Burn Center Intensive Care Unit and Chief of Clinical Trials, the VC3 project is designed to provide a low-cost, simple tele-monitoring system to inexperienced providers caring for critically ill patients and improve patient outcomes.

“The other potential user would be a small Army community hospital that doesn’t have critical care resources like critical care doctors, nurses or trauma surgeons,” said Pamplin. “For instance, a patient arrives at the community hospital but is not critically ill at the time. The providers may be on the fence as to how to care for the patient. Should they transport the patient to a larger hospital with critical care capabilities or admit the patient and observe him for a while? In this kind of environment, the staff could use the VC3 to get some recommendations and guidance.”

The VC3 project is being funded by the U.S. Army Medical Department Advanced Medical Technologies Initiative as a performance improvement program. The project was started in late 2015 and has been used by various Special Forces units during field training exercises. Pamplin said that the feedback from the training exercises has been very positive.

“To be able to pick up the phone and talk to a critical care provider while caring for a critically ill patient has provided them tremendous confidence and reassurance,” he said.



Lt. Col. (Dr.) Jeremy Pamplin, right, and Capt. (Dr.) Jeffrey DellaVolpe view the capabilities of a Virtual Critical Care Consultation device being demonstrated by Pete Menicucci during a VC3 “Device Day” at SAMCC Jan. 26.

To help identify other current technology that can be used immediately or within the next six months, the San Antonio Military Medical Center at Fort Sam Houston, Texas, hosted a VC3 “Device Day” where several vendors showcased existing technology to determine if it could support the project. Pamplin, along with Air Force Capt. (Dr.) Jeffrey DellaVolpe, a trauma surgeon at SAMMC, were among the key participants who tested the devices simultaneously with another group at Fort Bragg, North Carolina.

“A program like VC3 has the potential to be an indispensable tool to both deployed medics as well as to hospitals without robust critical care staff,” said DellaVolpe. “While the military currently has a shortage of critical care providers, it unfortunately does not have a shortage of critically ill patients. VC3 allows the expertise that exists at SAMMC to be at the fingertips of a provider virtually anywhere in the world.”

Pamplin explained that the platform

that they are looking for should be easy to use without too many distracting features.

“Video teleconferencing, imaging and continuous monitoring capabilities are nice to have, but not necessary in most circumstances,” explained Pamplin. “Technology can distract from patient care. One of the things that we’ve learned from the field training exercises is that if we can get photos ahead then we can provide the right clinical advice to best support the clinician on the ground.”

Pamplin added that the most useful photos are those of the care environment, the actual flowsheet that the clinician is using to care for the patient, the kit being used, and the wound.

“If we can get a better understanding of the clinical scenario then we can provide a more robust consult,” said Pamplin. “The less distractions that there is on both ends means that we can provide better patient care to the wounded warfighter.”

JTS Marks Huge Milestone with 500th Tele-Conference

Story and photos by Steven Galvan
USAISR Public Affairs Officer

The Joint Trauma System at the U.S. Army Institute of Surgical Research at Fort Sam Houston, Texas marked a monumental milestone Feb. 18 when it hosted the 500th Combat Casualty Care Tele-Conference. The first CCC tele-conference was conducted on Sept. 17, 2005 between medical providers at the Landstuhl Regional Medical Center, Germany and medical providers at Role 3 military medical treatment facilities in Iraq.

According to JTS Deputy Director, Mary Ann Spott, Ph.D., the conference was established and designed to increase communication of theater patients to LRMC and deployed medical providers to discuss issues relevant patient care.

“The conferences have been extremely successful in that they have provided continuity of care, identified gaps with respect to education, devices and knowledge for near real time correction,” said Spott. “This has allowed us to provide optimum care for our service members as they transition through the various medical treatment facilities. Our providers have become more integrated into the medical system, as have our logisticians, evacuation teams, prehospita and Veterans



Capt. (Dr.) Zsolt Stockinger provides opening remarks and welcome everyone in attendance at the 500th Combat Casualty Care Tele-Conference Feb. 18.

Administration teams.”

To commemorate the special occasion, Navy Capt. (Dr.) Zsolt Stockinger, JTS Director, invited several key speakers to share their insights in establishing not only the conferences, but the JTS. Dr. John Holcomb, a retired Army colonel and former USAISR commander, was joined by retired Air Force Lt. Gen. (Dr.) Douglas Robb, and

former director of the Defense Health Agency, and other military medical leaders who were instrumental in establishing the conference.

“There were a lot of people who made this program a success,” Stockinger said. “We owe a gratitude to all who were instrumental in helping us to save combat casualties lives by allowing us to provide the right care at the right place and at the right time.”

The tele-conferences are held every week with about 300 participants dialing in to discuss recently evacuated casualties. The participants include Role 1, 2 and 3 providers and medical care providers at military and VA hospitals.

“In addition, the clinical discussion was expanded to incorporate a tele-education model to give clinicians, nurses and medics the opportunity to earn continuing education credits while in a deployed environment,” said JTS Branch Chief of Education Dallas Burelison. “A total of 9,081 Continuing Medical Education and 1,352 Continuing Nursing Education credits have been awarded to participants of the conferences.”



U.S. Army Institute of Surgical Research staff and Joint Trauma System leaders in attendance at the 500th Combat Casualty Care Tele-Conference Feb. 18.

Fritz's Named Family Volunteers of the Year at BICU



Stan and Ann Fritz with the Brooke Army Medical Center Retiree Activities Group were selected as the 2015 Family Volunteers of the Year for volunteering at the U.S. Army Institute of Surgical Research Burn Center.

Story and photo by Steven Galvan
USAISR Public Affairs Officer

A retired Army couple was recognized as the Family Volunteers of the Year for their volunteer service at the U.S. Army Institute of Surgical Research Burn Center Intensive Care Unit waiting area by the Brooke Army Medical Center at Fort Sam Houston, Texas. For the past 10-and-a-half years Stan and Ann Fritz have been volunteers with the BAMC Retiree Activities Group and together they have volunteered more than 4,500 hours.

"What an honor and surprise," said Mr. Fritz. "It's not about us, but the volunteers who were here before us and those who are still involved. They have set a high standard for the volunteers, so we are grateful to all of them, not just the recognition."

The Fritz's are both retired school teachers, the second career for Mr. Fritz who is a retired Army Lt. Col. infantry officer and chose to teach through the military's Troops to Teach-

er program. The grateful couple said that they choose to volunteer because not only is it good for their marriage and health, but for personal reasons.

"For me it's a matter of giving back," said Mrs. Fritz. "We've meet some wonderful people who need our help and we are fortunate enough to help them in their time of need. Bottom line is just helping people."

"We both feel called to this and we feel that we're making a difference, but the families that we've worked with have made a difference in our lives," said Mr. Fritz.

The Fritz's say that they'll continue to volunteer as long as they have their health and are able to drive from

"We both feel called to this and we feel that we're making a difference, but the families that we've worked with have made a difference in our lives."

Mr. Stan Fritz

their home in Helotes to the hospital , about a 30 minute drive. Mr. Fritz added that he enjoys volunteering so much that he started volunteering at the Veteran's Administration Hospital in San Antonio a couple of years ago. Mrs. Fritz was also in charge of the BICU volunteers for three-and-a-half years and to said that she got to work with wonderful people willing to give their time for an important mission. They both highly encourage everyone to volunteer where they can because of the personal rewards.

"People often ask us how we could do this and I say that we've got the easy job," Mrs. Fritz said. "The staff works hard to care for the patients and the families, God bless them, have to be strong for their injured loved ones: that's the hard job."

Capt. Sabas Salgado, a critical care nurse at the BICU nominated the volunteers for the recognition. Sabas wrote on the nomination form: "As a retired military couple and members of the BAMC Retiree Activities Group, the Fritz family is described as transformational and a gift to the many who have met them. They not only embody what it means to be a great volunteer but they also embody every virtue and character that is a quintessential part of being a great team."

"What the nomination does not capture is the compassion this family has on the BICU staff and family," added Sabas.

Mr. Fritz believes that anyone can be a volunteer as long as they are friendly, compassionate, caring and willing to learn from others.

"We were led by some good dedicated people," said Mr. Fritz. "We learned and grew from them because of their dedication."

"You don't get paid monetarily," added Mrs. Fritz. "But you're going to get more out of it than you're going to put into. You're going to meet some wonderful people and feel loved. You're going to grow and you're going to be challenged. It's definitely a worthwhile experience."

Safety Notes

By Stephanie L. Truss
Health, Safety and Environmental Specialist



We want everyone to be aware of the dangers to their eyes at home, in the workplace and while playing sports. Thousands of eye accidents happen each day; 90 percent of these are preventable with the use of appropriate safety eyewear.

Because there are good eye safety regulations in the workplace, the home is the source of the fastest-growing number of eye injuries. Eye injuries are almost as great a danger to bystanders as the people using dangerous tools or chemicals in the home. Good eye protection is just as important for those watching you work as for the workers themselves.

March is Workplace Eye Wellness Month and here are a few reminders on how to prevent eye injuries in a hazardous workplace. The key is to identify, prevent the hazard and mitigate it.

Did you know that in the U.S. about 2,000 workplace eye injuries occur every day? Almost 70 percent of accidents happen because of flying or falling objects. And would you believe that most of the objects are smaller than the head of a pin?

Most workplace eye injuries occur where safety eyewear isn't required, or left up to the individual to decide if he'll wear it. Many of those injured on the job didn't think they needed to wear safety glasses or protective gear, or were wearing eyewear that didn't provide adequate protection.

Don't become an eye injury statis-

In the Spotlight

Spc. Shenouda Zarif

Job title: Bioscience Specialist

How long have you worked at the ISR? 18 months

What or who has been an inspiration to you in your work? Supporting the war on terrorism 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 fluently eight languages.

Short- and long-term goals: Short-term goal is to graduate OCS and long-term is 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



tic! Follow this eye safety checklist to protect your vision.

Eye Safety Checklist

This quick checklist will help you avoid workplace eye injuries and may also make you more aware of possible hazards outside of work.

Create a safe work environment.

- Minimize hazards from falling or unstable objects.
- Make sure that tools work and that safety features are in place.
- Make sure people know how to use tools properly.
- Keep bystanders out of hazardous areas.

Evaluate safety hazards.

- Identify the primary hazards at the site.
- Identify hazards from nearby workers, large machinery, and falling/shifting objects.

Wear the proper eye and face protection.

- Select the right eye protection for the work site. For assistance con-

tact the Safety Manager.

- Make sure safety eyewear is in good condition.
 - Make sure safety eyewear fits right and stays in place.
- Use smart workplace safety practices.**
- Always brush, shake, or vacuum dust and debris from hardhats, hair, forehead, or your brow before removing protective eyewear.
 - Don't rub eyes with dirty hands or clothing.
 - Clean eyewear regularly.

First Aid for Eye Injuries

But if there is an accident, follow these steps:

Specks in the Eye

- Don't rub the affected eye.
- Flush the eye with lots of water
- See a doctor if the speck doesn't wash out, or if pain or redness continues.
- Seek immediate medical attention.
- Report the injury to your supervisor and Safety Manager.

SAFETY continues on page 15

Health News

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



March brings St. Patrick's Day, the vernal Equinox or the First day of spring and daylight savings time. With these comes the color Green! Green is no longer just a color. It symbolizes ecology and the environment. Green signifies growth, nature, rebirth and fertility.

In Ireland it's a lucky color. And in every part of the world green means go! Spring forward, with a spring in your step! To help you get that spring back, March celebrates National Nutrition Month, an annual campaign created by the Academy of Nutrition and Dietics.

Healthful eating and active living help adults and seniors feel their best, work productively, and lower their risk for a variety of conditions. This fits right in with our Readiness Program and Performance Triad. Have you seen the new Go for Green food labels on the Dining Services Nutrition information page? Its' so easy! Take a quick look and make the right choice. You can even see how many walking steps or running miles it takes

to burn the calorie equivalent of each item with a red Stop label. Menus are also designated according to nutrition label. "Soldier Stamped Vegetarian and Heart Healthy."

And did you know there's an app for that! The Performance Triad app is available for free. You can download the app for iPhones, iPads, Android devices, and Windows phones by searching for "Performance Triad." http://armymedicine.mil/pages/Performance_Triad_app_now_available.aspx

On the same SAMMC Nutrition Information page, there are other app resources available: My Fitness Pal, Lose It, Super Tracker, Fooducate , My Family Meal Planner and USDA Choose MyPlate.gov provides "My Plate On a Budget" all for free download. Plan your meals like you plan your workouts! A plan for eating and hydrating before, during, and after physical training is essential. Maintaining healthy eating habits will help you improve your performance and quality of life as you age. Reduce your risk of heart disease, cancer, osteoporosis, and other debilitating diseases—protect your immune system

Another leaf on the Green Clover is National Sleep Awareness Week Campaign, beginning Sunday, March 6. Adjust your routines in advance of Daylight Savings Time which begins March 13 and ends November 6, with the change of clocks, National Sleep Foundation wishes to remind Americans that losing sleep is an important health consideration. Getting enough sleep every day is as important to your health as eating healthy and being physically active. People sleeping too few hours report being too tired to work efficiently, exercise or to eat healthy.

The Army Surgeon General has championed the Performance Triad of Sleep, Activity and Nutrition to build resilience and enhance the Army Family and mostly to improve readiness.



Military service can be brutal on a person's body. But it may be even more brutal on a person's sleep. Insomnia, sleep apnea and too little sleep appear common among military personnel.

A 2010 study looked at the sleeping habits and disorders among active duty military members. Researchers concluded that sleeping disorders related to the men and women's service were prevalent among the personnel who underwent sleep studies, especially if they had pain symptoms or PTSD. The bottom line is that adequate quality and quantity of sleep is necessary for maximal functioning.

Around the same time in 2009 the National Sleep Foundation's Sleep in America™ poll reveals striking disparities in the sleep patterns, health habits and quality of life between healthy and unhealthy Americans. Those in good health are two-times more likely than those in poor health to work efficiently, exercise or eat healthy because they are getting enough sleep. The poll suggests that inadequate sleep is associated with unhealthy lifestyles and negatively impacts health and safety. So eating, sleeping and being active are your good luck green clover. By doing this you also avoid risk factors for colon cancer. Happy Springing!



Around the ISR

Top right: Bernadette "Bernie" Couteau cuts her birthday cake Feb. 11.
Center right: Irma McNamee enters the Chili-Cookoff Feb.19 and placed 3rd. Second place-Brandon Gross; 1st-Steven Galvan.
Bottom right: Victor "Vic" Convertino, Ph.D. is presented with a token of appreciation by Ralph Franco after speaking about the physiology of the compensatory reserve Feb. 18 at the San Antonio Chapter Health Information Management System Society luncheon.
Bottom left: Sgt. Jeremy Walden describes patient care at 4 East to members of the Alamo Federal Executive Board during a tour of the Burn Center Feb. 10.
Top left: Burn Center staff pose with retired Lt. Col. Mike Asher, center, who retired from his volunteer position at the Burn Center Feb. 11.



Around the ISR Company

Top right: Spc. Chelsea Cates, right, is pinned on her new rank by Sgt. 1st Class Shawna Stover Feb. 1.
Bottom right: Staff Sgt. Francisco Rosario in pinned on his new rank by his brother-in-law, Master Sgt. Lucas Veras Feb. 1.
Center left: Capt. Jose Juarez, right, presents Sgt. Elizabeth Babcock with her Certificate of Promotion during her promotion ceremony Feb. 5.



Around the ISR Company Continued

Top right: Sgt. Nguvan Uhaa, left, pins Staff Sgt. Jamar William's new rank on his cover Feb. 1.

Center right: Sgt. Jessie Rodriguez, left, places a cover with the new rank on newly promoted Sgt. Jennifer Grant Feb. 1.

Bottom left: Capt. Gina Griffith, left, administers the Oath of Reenlistment to Sgt. Ryan Morris Feb. 2 during his reenlistment ceremony.

Top left: Capt. Jose Juarez, right, presents Staff Sgt. David Shelley with a Certificate of Promotion Feb. 1 during his promotion ceremony.



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

Extracorporeal CO₂ removal

Extracorporeal carbon dioxide removal enhanced by lactic acid infusion in spontaneously breathing conscious sheep.

Vittorio Scaravilli, Stefan Kreyer, Slava Belenkiy, Katharina Linden, Alberto Zanella, Yansong Li, Michael A. Dubick, Leopoldo C. Cancio, Antonio Pesenti, Andriy I. Batchinsky, *Anesthesiology*

Background: The authors studied in a sheep model, the effects on membrane lung carbon dioxide extraction (VCO₂ML), spontaneous ventilation, and energy expenditure (EE) of an innovative extracorporeal carbon dioxide removal (ECCO₂R) technique enhanced by acidification (acid load carbon dioxide removal [ALCO₂R]) via lactic acid.

Results: ALCO₂R enhanced VCO₂ML by 48% relative to ECCO₂R. During ALCO₂R, minute ventilation and natural lung carbon dioxide extraction were not affected, whereas total carbon dioxide production, oxygen consumption, and EE rose by 12% each.

Conclusions: ALCO₂R was effective in enhancing VCO₂ML. However, lactic acid caused a rise in EE that made ALCO₂R no different from standard ECCO₂R with respect to ventilation. The authors suggest coupling lactic acid-enhanced ALCO₂R with active measures to control metabolism.

Immune response

Rapid detection of neutrophil oxidative burst capacity is predictive of whole blood cytokine response.

Philip J. Vernon, Leasha J. Schaub, Jurandir J. Dallelucca, Anthony E. Pusateri, Forest R. Sheppard, *Plos One*

Background: Maladaptive immune responses, particularly cytokine and chemokine-driven, are a significant contributor to the deleterious inflammation present in many types of injury and infection. Widely available applications to

rapidly assess individual inflammatory capacity could permit identification of patients at risk for exacerbated immune responses and guide therapy.

Here we evaluate neutrophil oxidative burst (NOX) capacity measured by plate reader to immuno-type Rhesus Macaques as an acute strategy to rapidly detect inflammatory capacity and predict maladaptive immune responses as assayed by cytokine array.

Results: LPS stimulation induced secretion of the inflammatory molecules G-CSF, IL-1 β , IL-1RA, IL-6, IL-10, IL-12/23(p40), IL-18, MIP-1 α , MIP-1 β , and TNF α . Although values were variable, several cytokines correlated with NOX capacity. Specifically, IL-1 β , IL-6, the Th1-polarizing cytokine IL-12/23(p40), and TNF α were strongly associated with NOX.

Conclusion: NOX capacity correlated with Th1-polarizing cytokine secretion, indicating its ability to rapidly predict inflammatory responses. These data suggest that NOX capacity may quickly identify patients at risk for maladaptive immune responses and who may benefit from immuno-modulatory therapies. Future studies will assess the in-vivo predictive value of NOX in animal models of immune-mediated pathologies.

Hemorrhage

Rapid assessment of shock in a non-human primate model of uncontrolled hemorrhage: Association of traditional and non-traditional vital signs to mortality risk.

Macko AR, Crossland RF, Cap AP, Fryer DM, Mitchell TA, Pusateri AE, Sheppard FR, *J Trauma Acute Care Surg.*

BACKGROUND: Heart rate (HR), systolic blood pressure (SBP) and mean arterial pressure (MAP) are traditionally used to guide patient triage and resuscitation; however, they correlate poorly to shock severity. Therefore, improved acute diagnostic capabilities are needed. Here we correlated acute alterations in tissue oxygen saturation (StO₂) and end-tidal carbon dioxide (EtCO₂) to mortality in a Rhesus

Macaque model of uncontrolled hemorrhage.
RESULTS: Baseline values were equivalent between groups for each parameter. In non-survivors vs. survivors at T=5 min, StO₂ and EtCO₂ were lower, while MAP, SBP and HR were similar. Association of values over T=5-30 min to mortality demonstrated StO₂ and EtCO₂ equivalency with a significant group effect. MAP and SBP associated with mortality later into the shock period, while HR yielded the

lowest association.

CONCLUSION: Acute alterations in StO₂ and EtCO₂ strongly associated with mortality and preceded those of traditional vital signs. The continuous, non-invasive aspects of FDA-approved StO₂ and EtCO₂ monitoring devices provide logistical benefits over other methodologies and thus warrant further investigation.

TRANSLATIONAL RESEARCH

Polytrauma

Alternatives to autograft evaluated in a rabbit segmental bone defect.

McDaniel JS, Pilia M, Raut V, Ledford J, Shiels SM, Wenke JC, Barnes B, Rathbone CR
Int Orthop

ARDS

Early Utilization of Extracorporeal CO₂ Removal for Treatment of Acute Respiratory Distress Syndrome Due to Smoke Inhalation and Burns in Sheep.

Kreyer S, Scaravilli V, Linden K, Belenkiy SM, Necsoiu C, Li Y, Putensen C, Chung KK, Batchinsky AI, Cancio LC
Shock

Hemorrhage

Control of Severe Intra-Abdominal Hemorrhage with an Infusible Platelet-Derived Hemostatic Agent in a Non-Human Primate (Rhesus Macaque) Model

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TOP PAPER OF THE MONTH

Randy Crossland, Ph.D., right, is presented with a Combat Casualty Care Research Program coin by Lt. Col. (Dr.) Kevin Chung, Research Director for earning the Top Paper of the Month Feb. 25

Photo by Sgt. Nguvan Uhaa

AMEDD COMMISSIONING PROGRAM BRIEF

Sgt. Nguvan Uhaa, left, is interested in applying for an Army officer commissioning program and is asking Maj. Ramon Bradshaw, Interservice Physician Assistant Program Manager questions about some of the requirements for that program during an AMEDD Commissioning Program held at the ISR Feb. 2.



SAFETY continued from page 8

- Report the injury to your supervisor and Safety Manager.

Cuts, Punctures, and Foreign Objects in the Eye

- Unlike with specks of dust or metal, be sure not to wash out the affected eye.
- Don't try to remove a foreign object stuck in the eye.
- Seek immediate medical attention.
- Report the injury to your supervisor and Safety Manager.

Chemical Burns

- Immediately flush the eye with water or drinkable liquid. Open the eye as wide as possible. Continue flushing for at least 15 minutes, even on your way to seeking medical care.
- If a contact lens is in the eye, begin flushing over the lens immediately. Flushing may dislodge

Blows to the Eye

- Apply a cold compress without pressure, or tape crushed ice in a plastic bag to the forehead

- and allow it to rest gently on the injured eye.
- Seek immediate medical attention if pain continues, if you have reduced vision, or if blood or discoloration appears in the eye.
- Report the injury to your supervisor and Safety Manager.

The most important part of your eye safety is your personal responsibility in safeguarding your eyes. Some eye injuries are unavoidable, so it is good to know where to turn in case of an emergency.

Back When...



Can you guess who this ISR staff member is? This photo was taken in 1976 when he Pvt. in the Women's Army Corps at Fort Jackson, South Carolina.

Submit your photo for publication in upcoming issues.

Last Month's Answer:



Martin Zamalloa
BICU CNA

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Library News

By Gerri Trumbo
Library Manager



This month we give you a short refresher course on PubMed LinkOut through our electronic portal, LEAP (TDNet).

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On the Home page of LEAP (TD-

Net), you will see the LEAP Resources icon. (The USAMRMC symbol with the maroon and gold emblem.) This icon appears on citations from the LEAP subscribed journals only. To see the icons, you MUST access it through LEAP PubMed LinkOut.

Click on the icon to view electronic full text. When you click, you leave PubMed and are directed to the full-text provider's website.

