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Learning to Care for Those in Harm's Way

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**On the cover**

The Halau Ho'ouma I ka Wai Ola O Hawai'i organization performs traditional Hawaiiin music and dance during the USU Diversity Day celebration that honored the different cultures. See story, page 4. (photo by Eric Ritter)

Researchers identify model to predict successful wound healing

by Sharon Holland

Battlefield surgeons and civilian physicians could have a powerful new tool to help patients recover from traumatic injuries, including life-threatening wounds from explosions.

By studying blood and tissue samples from patients, a team of military and civilian researchers have identified a model to predict the chances for successful wound healing in individual patients.

These predictions could help surgeons make critical, time-sensitive decisions, such as when to close a wound. Both premature and late closing can lead to serious complications for the patient.

The researchers' findings, "Lessons of War: Turning Data into Decisions," was published online July 17, 2015 in the journal *E-Biomedicine* (<http://dx.doi.org/10.1016/j.ebiom.2015.07.022>).

"This study demonstrates that it is not merely the physical destructive nature related to the mechanism of injury in wounds, but the (body's) resulting inflammatory response, that dictates wound outcome," says the senior author, Navy Capt. (Dr.) Eric Elster, professor and chair of the Department of Surgery at the Uniformed Services University of the Health Sciences and the Walter Reed National Military Medical Center. "In this study, we have also determined that this response is similar between military and civilian patients, which is critically important because it allows us to translate advances in military patients into civilian patients and the converse as well."

Elster and a team from the USU Walter Reed Surgical Critical Care Initiative (www.sc2i.org) collected blood, tissue and serum samples from 73 patients who sustained 116 life-threatening combat wounds in Iraq or Afghanistan and analyzed biomarker data and clinical observation to predict the likelihood of wound failure. The samples were taken prior to and during each surgical debridement (removal of dead or contaminated tissue) of the wound.

"We've long suspected that young, previously healthy patients who had sustained blast injuries have difficulty regulating their immune system," Navy Cmdr. (Dr.) Jonathan Forsberg, first author on

this study, says. "By characterizing patterns of inflammation using computer-intensive methods, we are now able to estimate the probability of surgical complications before they occur."

Because of body armor, improved tactical combat casualty care and a robust tertiary care system, many service members in Iraq and Afghanistan survived severe wounds that, in past wars, would have been fatal. But the severity of the injuries meant that "even highly experienced military surgeons had difficulty risk-stratifying their patients' wounds because the conventional manner of visually assessing wounds was inadequate," the authors wrote.

Using advanced computer analytic methods of the samples collected, the team was able to determine the presence of cytokines (proteins) that in turn could predict which patients would develop an inflammatory response that would lead to local wound failure. The result of such failure can include infection, amputation or death.

The result of the research is a decision-support tool to guide the timing of wound closure, although the paper noted that the process requires collection of numerous samples and advanced computer analysis, which would need to be carried out in a field hospital setting, not the front line of a battlefield.

In addition, a group of 18 critically injured civilian patients was evaluated to determine if similar inflammatory responses were observed. Preliminary findings were comparable, but the authors said that due to the small sample size, more patients would need to be studied.

If the study's results are further validated, "consistently applying this approach would improve surgical outcomes, allow trauma patients to spend less time in intensive care, and reduce health care costs," the authors concluded.

In addition to Elster and Forsberg, the authors were Drs. Benjamin Kyle Potter of USU and Walter Reed National Military Medical Center, Matthew Wagner of the Naval Medical Research Center, Andrew Vickers of Memorial Sloan-Kettering Cancer Center, Christopher Dente of Emory University, and Allan D. Kirk of Duke University Medical Center.

School of Medicine Presents Dean's Annual Faculty Teaching Awards

By the Office of Academic Affairs, F. Edward Hébert School of Medicine

USU F. Edward Hébert School of Medicine dean Dr. Arthur Kellermann recently announced the winners of the School of Medicine annual Faculty Teaching Awards. One winner was selected from a Basic Science department, and one from a Clinical Science department. These awards recognize two faculty who demonstrated outstanding performance in their roles as educators during the preceding academic year (July 1, 2014 – 30 June 2015). This is the fifth year that this prestigious honor has been bestowed on two School of Medicine faculty members.

The number of nominations submitted, and the caliber of those nominees, speaks volumes about the cadre of faculty at USU, according to Dr. Brian Reamy, senior associate dean for Academic Affairs in the School of Medicine. The dean's advisory committee reviewed the nominations, and after scoring and deliberation, Kellermann was honored to present Air Force Major (Dr.) Brian Neubauer, Department of Medicine, and Stephen Rothwell, Ph.D., Department of Anatomy, Physiology and Genetics (APG), with the awards.

Neubauer is an assistant professor in USU's Department of Medicine. He is a pre-clerkship module director, serves on the Council of Module Directors, and sees patients in the general internal medicine clinic at Walter Reed National Military Medical Center. Neubauer has been an outstanding leader, not only in his role in the pre-clerkship curriculum as a module director, but also establishing himself as a respected educational leader throughout undergraduate and graduate medical education. Neubauer has also had an impact as an educator at the national level. He co-presented a workshop on the integration of basic sciences in clinical clerkships at the Academic Internal Medicine Week national meeting in October 2014, as well as at the International Association of Medical Science Educators (IAMSE) National



Stephen Rothwell, Ph.D., Department of Anatomy, Physiology and Genetics (APG). (Photo by Tom Balfour).



Air Force Major (Dr.) Brian Neubauer, Department of Medicine. (Photo by Tom Balfour)

Meeting in June 2015, for approximately 30 attendees at each meeting.

"Maj. Brian Neubauer is an outstanding USU faculty member and an exceptional educator, who has been recognized as a role model by our medical students. Brian epitomizes what we hope we all can be as teachers. He is most deserving of recognition with a 2014-2015 Dean – School of Medicine (SOM) Annual Faculty Teaching Award," said Paul Hemmer, vice chair for Education Programs, Department of Medicine.

Rothwell was appointed a module director in the revised curriculum and asked to serve as a member of the Council of Module Directors and the pre-clerkship curriculum committee. He was a member

of the original curriculum reform team that built the current modular curriculum. Each year he evaluates the curriculum, and seeks to strengthen the teaching efforts of the faculty. Current projects include an evaluation of a new on-line learning tool and a computerized scanning atlas of embryonic specimens.

"Dr. Rothwell's contribution to the teaching mission of USU is truly exceptional, involving all aspects of teaching including course development, presentation and administration, as well as pedagogic innovation," said Greg Muller, vice chair for Research, APG.

Both winners will be recognized by placement of their names on tribute bricks in the USU courtyard.

USU celebrates Diversity Day

The Uniformed Services University of the Health Sciences (USU) hosted a smorgasboard of culture August 13 with the annual Diversity Day celebration.

USU President Dr. Charles L. Rice, who spoke during the event opening, said that diversity makes USU a much better institution.

"While we actively celebrate Diversity Day, we need to proactively seek it all the time," said Rice. "There is little doubt that organizations with a great deal of diversity make better decisions."

There were many activities and performers to help celebrate the day, including Celtic dancers, a Pacific Islander ceremonial dance, cultural musical instrument performances and several booths highlighting a variety of cultures and their contributions to society. Face painting, balloon animals and a moon bounce helped entertain the children who attended.



Celtic dancers perform traditional and modern Irish stepdance routines. (photo by MC3 Laura Bailey)



The Filipino Cultural Association of the University of Maryland demonstrates several folkdances of the Philippines including tinikling and sayaw sa bangko. (Photo by MC3 Laura Bailey)



Children were treated to a moonbounce and balloon animals. (photo by MC3 Laura Bailey)



For lunch, diners were treated to foods from around the world. (photo by Eric Ritter)



Several booths were on display that highlighted how different cultures contribute to diversity. (photo by MC3 Laura Bailey)

USU, MHS focus toward peacetime is readiness and innovation

Health.mil Courtesy Article

The Military Health System (MHS) is at a pivotal time as it transfers from wartime to peacetime. According to Uniformed Services University Dean of the F. Edward Hébert School of Medicine Dr. Arthur Kellermann, trying to switch from a military to a civilian health care organization is not the military's aim.

"After more than 13 years of war, the MHS is being challenged to recapture care at home and achieve the Quadruple Aim of increased readiness, better health, better care and lower costs," said Kellermann during the Military Health System Research Symposium in Fort Lauderdale, Florida. "As a civilian doc for more than 30 years, I don't believe the MHS can accomplish the quadruple aim by emulating private health sector competitors. We should leapfrog them instead."

Civilian health organizations and the MHS share a commitment to high-quality care, but their priorities differ. MHS seeks to lower costs and improve population health,

while civilian health care systems strive to increase revenue and place less emphasis on public health. Most importantly, MHS' top priority is readiness. Civilian health care systems don't have this obligation.

"The task before us is difficult but doable," Kellermann said. "If we start playing by our rules rather than somebody else's, we can improve access to care, promote population health, reduce per capita costs and generate high-value research. By drawing on our inherent strengths and capabilities, including a highly talented and versatile workforce, we'll not only 'win the peace,' we'll be better prepared for the next war."

The military can learn a lot from civilian researchers and health systems, Kellermann notes. The research symposium was created to bring the military's top health leaders, researchers and clinicians together with civilian academic scientists, international partners and industry to discuss research and related health care initiatives. The collaborative environment enables frank discussions of global health, trauma care and regenerative medicine, among other topics. The knowledge and ideas from

these interactions help MHS advance military health and strengthen important service-specific medical capabilities.

During the wars in Afghanistan and Iraq, the military's Joint Trauma System improved combat casualty care from the point of injury all the way through rehabilitation. In fact, despite progressively severe injuries, the U.S. military's case-fatality rate declined during the course of the wars to the lowest level the world has ever seen. Kellermann said MHS must capitalize on the nimbleness it developed over 13 years of war.

"These lessons came at high cost and must not be forgotten," Kellerman said to his audience. "You must not only remember what was learned, but how you learned it. Let's apply the same problem-solving approach to the challenges we face today. Nearly every military doctor and nurse I've spoken to recalls the intense demands of working downrange; however, all of them wistfully recall that they could actually get things done. The best advice I can offer the MHS today is to work every day like you're downrange."

Brown Bag Discussion "Understanding through Dialogue"

By MC3 Laura Bailey

Nearly 20 Uniformed Services University (USU) students, staff and faculty participated in the Brown Bag discussion, "Understanding through Dialogue", sponsored by USU's Office of Equal Employment Opportunity (EEO) and F. Edward Hébert School of Medicine (SOM) Diversity Committee, Aug. 20, 2015. Mindset was the topic of discussion.

Brown Bag discussions help the USU EEO to promote an environment free from personal, social or institutional barriers. The discussions also promote open dialogue between USU community members by providing a safe place for them to discuss important and often sensitive social matters that affect everyone.

"This month, the open group discussion started with the question, "Do we have a fixed mindset that prevents growth or do

we have a growth mindset that overcomes obstacles?" said Army Col. (Dr.) Jeffrey Hutchinson, the associate dean of clinical affairs and chief diversity officer for the SOM.

Hutchinson, who led in the discussion, drew two black lines on a white piece of paper. He added arrows at the end of each line. The lines appeared to be different in length (see photo). He then asked participants which line was longer.

The truth is, the lines are the same size, he said. It's an optical illusion because of the direction of the arrows, illustrating the two different mindsets.

"A person who believes one line is shorter than the other, despite the facts, represents the fixed mindset," said Hutchinson. "A person with a fixed mindset only sees obstacles. In contrast, a growth mindset sees new information and obstacles as a

chance to grow and learn."

After breaking up into smaller discussion groups, the participants shared what they had learned from each other.

"Good examples are necessary to nurture growth," said one participant. Others agreed that without mentorship, some people may remain stuck in a fixed mindset. "Sometimes, we need others to make us aware of another way," said another participant.

One attendee also said that if a person is truly fixed in their mindset, a mentor, even a great one, may not be able to permeate the fixed mind.

A professor shared a story about a poor Hawaiian child he had gotten to know through his church. Many years later, the child became very successful despite growing up in poverty.

Dialogue, Cont. Page 7

USU hosts collaborative GSN/PDC research workshop

by Sharon Holland

Two current and one former faculty member of the Uniformed Services University of the Health Sciences' Daniel K. Inouye Graduate School of Nursing conducted a Research Design/Methods Workshop August 4-6 at Fort Bragg, N.C., for two of USU's Postgraduate Dental College (PDC)

master's degree programs there -- the Comprehensive Dentistry and Endodontics residencies.

Army Lt. Col. Danette Cruthirds, Navy Cmdr. Kenneth Wofford, and Army Col. Paul Lewis, respectively, taught dental residents how to set up and conduct a research project as part of the second annual

workshop put on for the PDC.

The GSN faculty discussed with the residents what constitutes research, how to identify independent and dependent variables, how to operationalize variables, how to set up research methodology, statistical analysis for different types of questions and the ethics of conducting human subjects research. Over the course of the three days, breakout sessions were held in which the students could present their own ideas and the faculty helped to shape them into testable hypotheses. Both first-year and second-year dental residents participated in the workshop, and although the second-year residents took the course last year, the refresher was helpful when they were actually focusing in on their master's project.

"This was a wonderful learning opportunity," said Lewis, now Senior Nurse Scientist at Womack Army Medical Center, Fort Bragg. "I think we learned as much about dentistry as they did about research."

"This was an excellent example of interprofessional education," said Dr. Thomas Schneid, Executive Dean of the PDC.



Faculty and students in USU's collaborative GSN-PDC Research Design/Methods Workshop at Fort Bragg included (left to right, back row) Dr. Thomas Schneid (Executive Dean, USU PDC), Army Capt. John Hastings, Army Lt. Col. Danette Cruthirds (USU GSN), Army Capt. Andrew Klish, Army Capt. Sung Kim, Army Col. Paul Lewis (Womack Army Medical Center, formerly USU GSN), Army Capt. Julie Benjamin, Army Capt. Andrew Callahan, Navy Cmdr. Kenneth Wofford (USU GSN); (front row) Army Maj. Larry Munk, Army Maj. Steven Mark, and Army Capt. Anna Yoo. (Courtesy photo)

Dialogue, from Page 6

"He told me one day that as he got to know me he realized that I wasn't any smarter than he was and that was how the kid ended up getting ahead in life," said the participant. "His fixed mind set was changed through a trust relationship that began with humility -- being a friend to 'other.'"

"Having these discussions is really beneficial to me because I am reminded to take my own advice," said Navy Ensign Marlyn Moore, a first-year medical student at USU and a participant in the discussion. "Without hearing from others, sometimes I can't see the forest through the trees."

"Answering the question is not as important as the discussion itself," said Hutchinson. "There are numerous different answers to the posed question. Opinions vary based on the number of people participating and their walks of life. So, it's really an opportunity to recognize our own diversity and then discover how to use what we've learned."



Army Col. (Dr.) Jeffrey Hutchinson, the associate dean of clinical affairs and chief diversity officer for the SOM draws an optical illusion to demonstrate his point about understanding different interpretations of dialogue. (photo by MC3 Laura Bailey)

Final Frame



A historian with the Antietam Battlefield memorial site displays civil war-era surgical tools to USU medical students during the Antietam Battlefield Medical Staff walk. The annual event is conducted during the student's first year of medical school. The Antietam Battlefield medical staff walk provides an opportunity for the students to study a military campaign rich with medical problems that – while technologically different – remain valid teaching points for the students if put in the modern context. (Photo by Tom Balfour)