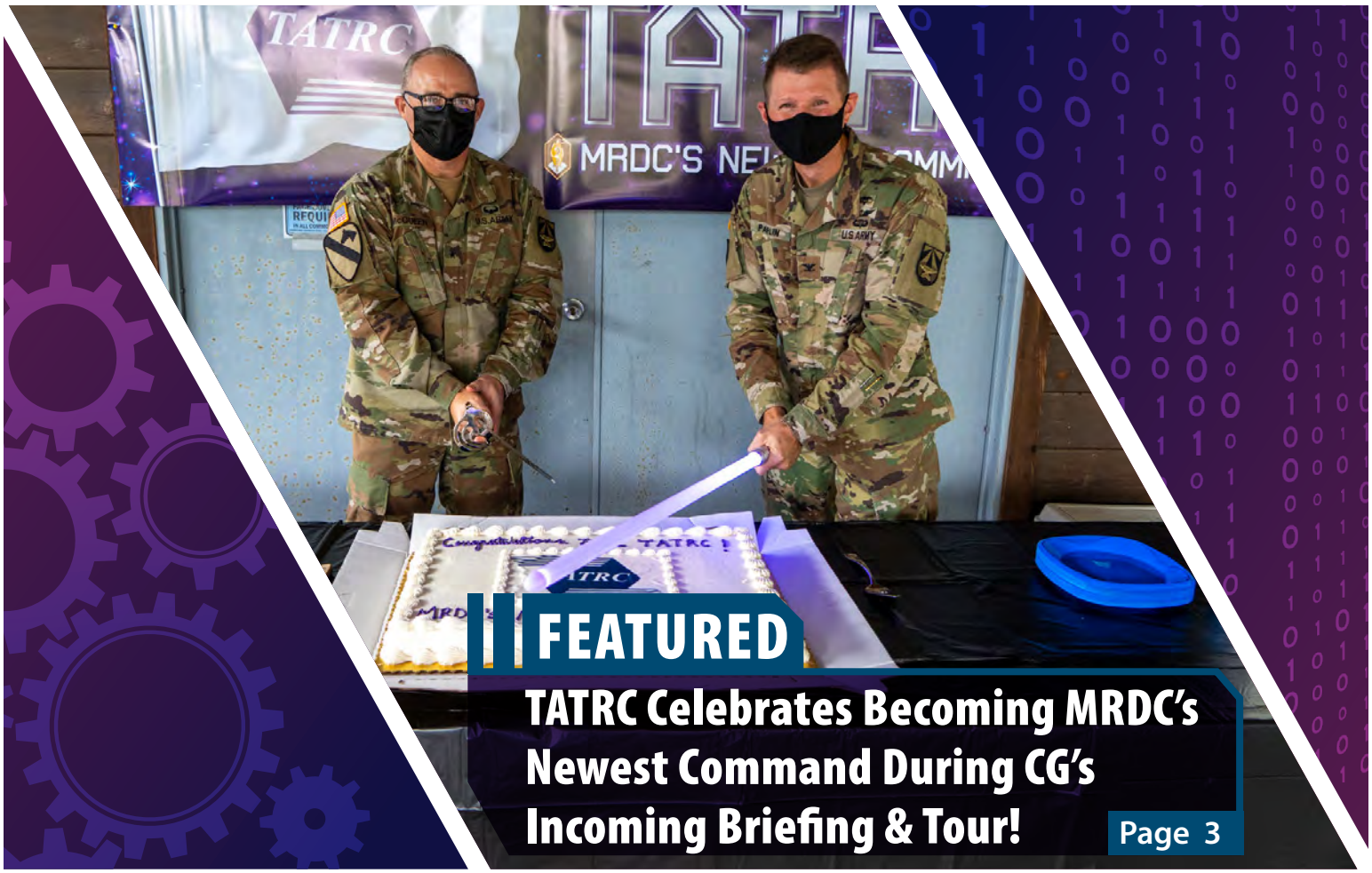
TATRC TIMES

VOLUME 8 | QUARTER 1 & 2

MARCH 2022

A QUARTERLY PUBLICATION OF THE
TELEMEDICINE & ADVANCED TECHNOLOGY RESEARCH CENTER



FEATURED

TATRC Celebrates Becoming MRDC's Newest Command During CG's Incoming Briefing & Tour! Page 3

ALSO INSIDE:

TATRC's NEXUS Environment Continues to Expand MMSIV Comparative Effectiveness Portfolio - Page 27

TATRC Welcomes First Ever 'Deputy to the Commanding General' to MRDC - Page 6

Project BOOM Joins Forces and Supports the Marines - Page 22

In this Issue:

TATRC Celebrates Becoming MRDC's Newest Command During CG's Incoming Briefing & Tour!

Earlier last fall, we had the honor of hosting MRDC's newest Commanding General, BG Anthony McQueen, for his incoming Commander's briefing and tour! In addition to BG McQueen, we had the privilege of also welcoming CSM Victor Laragione, Dr. Ana-Claire Meyer, Senior Research and Technology Advisor, Ms. Dawn Rosarius, Principal Assistant for Acquisition, and COL Andrew Kim, Deputy Commanding Officer, who all took part in a six-hour-long, in-depth visit to the TATRC campus.

Not only did they get to take a tour of our new state-of-the-art NEXUS lab and observe the medics doing data collection during the simulation scenario, they also got to meet and hear from each of our key senior leaders and division chiefs.

Rounding out the day, was a very special and momentous occasion for our organization because it was during this visit that BG McQueen, announced and congratulated the TATRC organization on becoming MRDC's newest official Command as a Direct Reporting Unit (DRU).

This notable achievement positions TATRC to continue its mission to fuse data, humans, and machines into trustworthy solutions to optimize Warfighter performance and casualty care far into the future.

To mark the exciting time in TATRC's history, a cake-cutting ceremony was held where BG McQueen, alongside TATRC Commander, COL Jeremy Pamplin, sliced through the cake together with a saber, as TATRC staff proudly looked on.

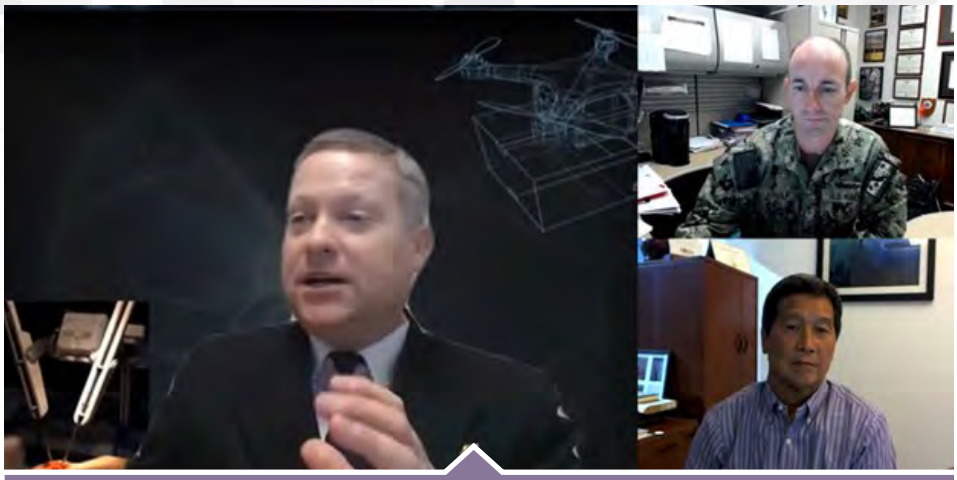
TATRC celebrated becoming MRDC's newest command with a cake-cutting ceremony where MRDC Commanding General BG McQueen, alongside TATRC Commander, COL Jeremy Pamplin, sliced through the cake together with a saber.

BG Anthony McQueen gets hands-on during a demonstration in our NEXUS Lab.

All in all, a great day for team TATRC!

A special thanks to the hardworking, dedicated staff members who contribute everyday to the success of our organization!

TATRC's 2nd Telerobotic Surgery Symposium Surges Forward with Industry



CAPT Gordon Wisbach and Dr. Sean Stroup, NMRTC-SD moderating a panel on "Enabling Technology & Services for Surgical Telementoring."

On 8 December, TATRC hosted the second Telerobotic Surgery Symposium as a virtual event. The event was chaired by CAPT Gordon Wisbach, General Surgeon and Director of the Robotic Surgery Program at Naval Medical Readiness and Training Command San Diego, and co-chaired by Mr. Nathan Fisher, Chief of TATRC's Medical Robotics and Autonomous Systems Division. The first symposium in this series was held in May 2021 with the objective to identify and align major stakeholders from federal agencies and develop a federal "Community of Interest," as well as to define a shared vision and technology development roadmap for TeleRobotic Surgery spanning near, mid, and far term time horizons. The second TeleRobotic Surgery Symposium built on the first and focused on "Establishing a Surgical Telementoring Foundation." This event relayed lessons learned, identified capability gaps, and an updated collective roadmap.

Historical picture of CAPT Cubano's first ever telesupported laparoscopic surgery performed onboard the USS Abraham Lincoln in the late 1990s.

TATRC's Telesurgical Robotic Prototype, TRON, used in a simulated demonstration of robotic-assisted surgery for trauma.

Unlike the first symposium, which was internal, and DoD-only, attendees joined virtually from all across the country spanning academia and industry, and joining the branches of the Military for this second symposium. A total of twelve guest speakers delivered presentations throughout the day, sharing their own perspective and experiences in researching technologies and services related to surgical telementoring and robotic surgery. COL Jeremy Pamplin, TATRC's Commander, kicked off the symposium describing the history of telesurgery and the challenges we will encounter in the future operating environment that are driving the need for innovation in this area.

As with the first symposium, after initial messages from CAPT Wisbach and COL Pamplin, the virtual program started with "Tales from a Surgeon Pioneer in the Field" and emphasized the clinical goal of improving patient surgical care both in garrison and on the battlefield. This keynote was provided by CAPT Miguel Cubano, 5th Fleet Surgeon, who provided his account of the first ever telesupported laparoscopic surgery, which he performed onboard the USS Abraham Lincoln in the late 1990s.

After the keynote, stakeholders and subject matter experts from outside of the DoD were invited to highlight foundational enabling technologies for surgical telementoring and emphasize our methodical step-wise introduction of telerobotic surgery through leveraging remote surgical expertise. The first sessions' speakers highlighted enabling technologies in telemedicine, next-generation communications, digital operative theater, and decision support.

Telerobotic Surgery
continued to page 5

Team TATRC Meets to Forge Our Future

Team TATRC gathered at the Morningside Inn for an all hands Strategic Messaging and Vision Planning Meeting.

This past fall, the TATRC Team had a rare opportunity to gather in-person for an all hands on deck Strategic Messaging and Vision Planning Meeting off-site!

With the exception of a few who joined in virtually, most of the team gathered at our favorite "home away from home," the Morningside Inn, with the challenge of creating our new Command's Vision and path forward. Through various exercises, workgroups, and breakout sessions, the entire team spent the day brainstorming the future of TATRC and how we aim to fit into the future and to make a difference in the advancement of military medical care.

The team was also treated to a very special keynote speaker to kick off the morning, with a rousing and inspirational talk from BG Stephanie Ahern, the Director of Concept Development & Learning Futures and Concepts Center at the Army Futures Command!

BG Ahern spoke to the group and facilitated an engaging discussion on multi-domain operations, the future challenges that military medicine will be facing, as well as the changing nature of warfare, and leveraging and understanding future technologies more quickly. In describing TATRC's valuable role, BG Ahearn said, "At its core, TATRC is doing valuable, important work in helping us realize what it will take to operate in future, multi-domain, low bandwidth environments."

These days, we are grateful for any chance to gather as a group, but were especially thankful as we worked toward defining TATRC's Vision for the future of our new Command. Our thanks to everyone who contributed to make this mission critical event a success.

Telerobotic Surgery

continued from page 4

The final session was comprised of senior researchers from lead robotic surgery companies including Intuitive Surgical, Medtronic, and Verb Surgical. A common theme presented by these speakers and discussed in the panel session, was the need to accelerate data capture from trauma surgery and define "what right looks like" through data analytics. More so than the advancements of robotic surgery technology, data will be the rate limiting factor for supporting lesser skilled providers in the forward surgical setting.

"The insights shared from the guest speakers are vital in shaping our research and development strategy and roadmap for increasing our military surgical capability and capacity for the future fight," stated Mr. Nathan Fisher, symposium Co-Chair. "The discussions from this meeting will lead to a more informed plan for how to apply these clinical care concepts and technologies to overcome the challenges we face in providing timely and effective surgical support to our Warfighters."

TATRC Welcomes First Ever 'Deputy to the Commanding General' to MRDC

Mr. Joseph Holland arrived at MRDC earlier this year as the command's new Deputy to the Commanding General – the first person to ever hold that title.

He comes to USAMRDC following a two-year stint as the first-ever permanent Deputy Chief of Staff at Army Futures Command, and as such is familiar with MRDC infrastructure and personnel.

During his recent SES induction ceremony, Mr. Holland stated, "I am extremely glad to be here. I am focused forward as a Soldier for Life, and also towards the objectives of maximizing human potential, preventing injury to our Soldiers, and to enhancing survivability for the joint Warfighter." As part of his arrival to the Command, Mr. Holland visited and toured all of the key elements that make up MRDC, and TATRC was one of those stops!

Mr. Holland was welcomed to TATRC for a comprehensive overview and orientation briefing to learn about our organization and key initiatives. Joined by CSM Victor Laragione, Mr. Holland met with members of TATRC's senior leadership team and Division leads for a deep dive of what we do and how it all relates to project convergence. These discussions were followed by a patient care and data collection scenario carried out by our MMSIV and MedRAS teams, which highlighted our efforts currently in progress, as well as the capabilities of our NEXUS sim space and lab areas.

During his tour, Mr. Holland reiterated that TATRC is a unique resource and should continue exploring how this medical simulation capability can even further integrate into overall MRDC efforts comprehensively.

It was a privilege to host Mr. Holland, and we're grateful for his interest and support of the TATRC mission. We look forward to working closely together as we help drive toward the future of military medicine!

Mr. Joseph Holland, MRDC's Deputy to the Commanding General, visits TATRC to learn about our organization and key initiatives.

Mr. Holland gets a front row view of TATRC's patient care and data collection scenario demonstration.

National Guard Moves Ahead with Proof-of-Concept Pilot of TATRC Readiness App

TATRC DHIC Deputy, Ron Yeaw, with SFC Billy Weber, Senior Enlisted NCO, and other Members of the ARNG MD HQ JFHQ Medical Detachment team.

Over the past 3 years, the Army National Guard (ARNG), in conjunction with TATRC's Digital Health Innovation Center, have been working collaboratively on an medical readiness app called PR2ME (Portal for Ready and Resilient Individuals using mobile enterprise). PR2ME, a component of the Mobile Health Care Environment (MHCE) system, is a novel and secure mobile application that ARNG citizen-soldiers can use on their personal devices to complete the Department of Defense (DoD) Periodic Health Assessment (PHA), Part A.

Following an 18 month delay to rebuild and transition the Medical Operational Data System (MODS) to a new vendor contract, a Maryland HQ specific proof-of-concept was finally planned for PR2ME in December of 2021. Onsite training was conducted 17–18 November, but the pilot was pushed out to accommodate a change in the data exchange between PR2ME prototype/MHCE system. The Maryland HQ PR2ME proof-of-concept is scheduled for April of this year. Per SFC Billy Weber, Senior Enlisted NCO, for the JFHQ Medical Detachment, "It's been a long time coming but we feel it will be worth the wait."

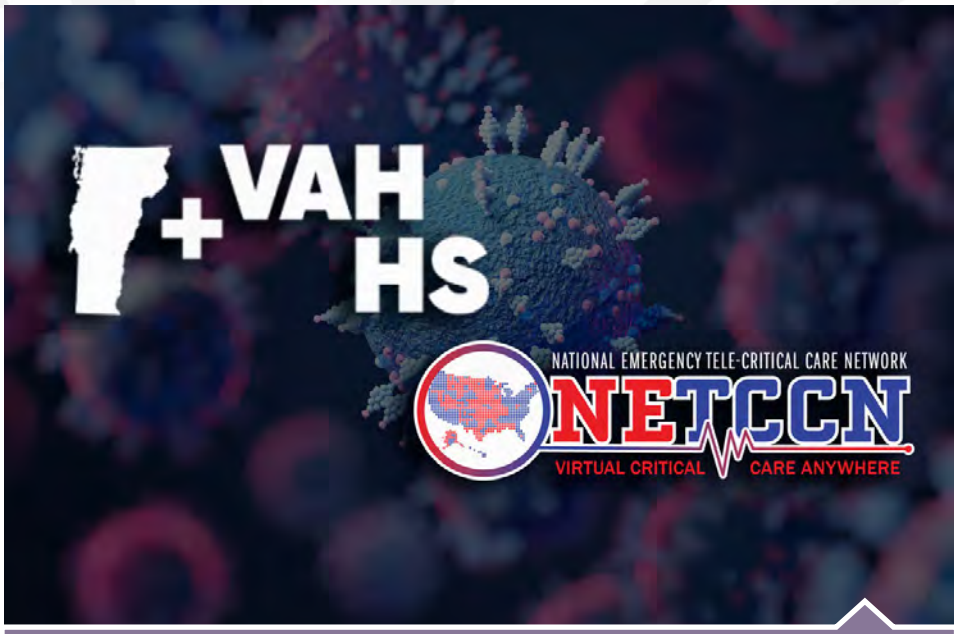
ARNG Chief Surgeon COL Susan Fondy, MD MPH, echoes SFC Weber's enthusiasm. "In PR2ME we've made a significant investment in reducing barriers to individual medical readiness, and are eager to get it to work beginning with our MD ARNG Soldiers."

Two additional proof-of-concept field tests will be performed in FY22, with the goal of an enterprise release early in FY24. With ARNG's 350,000 Soldiers, the PR2ME product has the potential to be TATRC's largest ever software fielding to date.

For more information on PR2ME, please contact Mr. Ron Yeaw, DHIC Deputy Division Chief at: ronald.e.yeaw2.civ@health.mil.

Vermont Taps NETCCN for Tele-Critical Care in Fight Against Omicron

TATRC, along with Vermont Hospital and Health System Association (VAHHS) are collaborating to make the National Emergency Tele-Critical Care Network (NETCCN) available to hospitals across the state of Vermont.



TATRC and Vermont Hospital and Health System Association (VAHHS) are collaborating to make the National Emergency Tele-Critical Care Network (NETCCN) available to hospitals across the state of Vermont.

NETCCN consists of networks of critical care clinicians and providers that can deliver virtual care "from anywhere to anywhere" through the use of secure, smartphone-based telemedicine platforms. Through NETCCN "apps," supported hospitals across Vermont can request and receive on-demand, 24/7 virtual assistance from critical care physicians, nurses, respiratory therapists and other specialty clinicians.

"NETCCN addresses a fundamental challenge for our healthcare system during disasters like COVID-19 surges: enabling easy communication between those working outside of their comfort zone or scope of practice and clinical expertise at the right place and time to affect best possible outcomes. This is especially true for the care of severely-ill patients needing intensive care level support but who may not have access to an intensive care unit due to patient volume or lack of available transport," said COL Jeremy Pamplin, TATRC's Commander and an intensive care physician. "NETCCN has responded to numerous calls for support within hours to help these small, rural hospitals that are unable to transfer patients to a referral center, provide life saving therapies."

VAHHS has rapidly brought together healthcare leaders from across the state to raise awareness, coordinate and streamline availability of NETCCN for Vermont's hospitals. VAHHS's assistance in harmonizing licensure rules and credentialing processes accelerated the availability of NETCCN and reduced the burden on its member healthcare organizations.

"Many of Vermont's hospitals don't have Intensive Care Units (ICUs), so they don't have the critical care experts needed to care for our sickest COVID patients. During normal operations, we are able to transfer patients to referral centers with this capability, but during surges, those hospitals are full and unable to accept additional patients. NETCCN brings instant access to experts through an easy-to-use and secure platform, allowing our smaller hospitals to optimize care for these severely ill patients until transfer is possible. Perhaps just as important, access to these experts relieves the stress and anxiety felt by clinicians in our small hospitals by helping them know they have given the best possible care for their patients, even when the outcome may not be ideal," said Devon Green, Vice President of Government Relations, VAHHS.

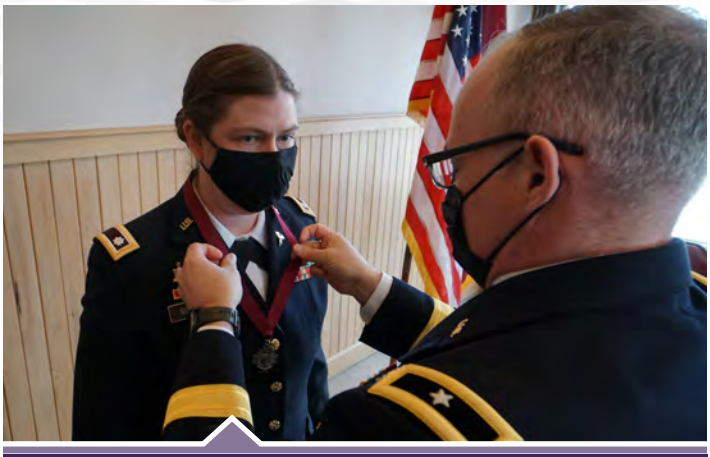
NETCCN is presently live in 4 hospitals in Vermont with additional hospitals scheduled to go live soon.

NETCCN is available at no cost to supported hospitals and healthcare. Through the pandemic, NETCCN has delivered over 5,000 patient-days of care to over 40 hospitals in 13 states and territories.

For more information on the NETCCN initiative, or to request support go to: https://www.tatrc.org/netccn/.

TATRC's First Nurse Scientist Promoted to Lieutenant Colonel!

LTC Patty Schmidt at her official promotion, presided over by COL Jeremy Pamplin.



BG Anthony McQueen presents LTC Patricia Schmidt her O2M3 Medallion.

Congratulations are in order for TATRC's newest Lieutenant Colonel, LTC Patricia M. Schmidt! Joined by her family, MRDC Senior Leadership, TATRC Command Team, and her colleagues, LTC Schmidt donned the oak clusters in an official promotion ceremony held at the Frederick Elks Lodge in January.

TATRC Commander, COL Jeremy Pamplin, presided and began the ceremony with a heartfelt telling of his history of working with LTC Schmidt, from a burn intensive care unit to the present, where she plays a critical role on the TATRC team as Acting Division Chief of our MMSIV Division, as well as Research Nurse Scientist in our Science Cell! LTC Schmidt's family then assisted with the pinning of her shoulder boards and beret, while her parents proudly looked on.

In addition to her promotion, LTC Schmidt was also recognized and inducted into the Order of Military Medical Merit (O2M3)! MRDC Commanding General, BG Anthony McQueen, was on hand to officially present the O2M3 award and speak to LTC Schmidt's excellence and promotion of fellowship and esprit de corps! Other recipients of the O2M3 award, donned their medallions and stood in solidarity as she received hers.

We couldn't be more proud to have been witness to and able to help LTC Schmidt celebrate these tremendous achievements. An incredible asset to the team and military medicine as a whole, your TATRC family wishes you all the best and Godspeed as you begin this new chapter of your already accomplished career!

Congratulations from all of us here at TATRC to LTC Patricia Schmidt!

MEDCoE MEDVID Team Captures TATRC Sim Scenarios in Action

The chilly month of February brought in some warmth from Texas with the arrival of the U.S. Army Medical Center of Excellence (MEDCoE) MEDVID team, who came to film and capture footage of TATRC's medical data collection and simulation efforts!

Shortly after the U.S. Army Medical Capabilities Development and Integration Directorate (MED CDID) visited TATRC in January, their Director, COL James Jones, started discussions about bringing the scenarios that we were running in our NEXUS lab to life for future reference. After seeing our medical simulation scenario play out first hand, he wanted to capture it to share with others about the unique capability that TATRC has, and most importantly, how it highlights medical convergence.

We had the pleasure of working with this distinguished film crew to script, produce, and showcase our medical technology initiatives and capabilities as they relate to medical convergence and specifically, PC22! This efficient and talented team covered a lot of content across our outdoor field environment and NEXUS Lab.

The long filming days and efforts to stay warm while we were outdoors, were all worth it as the excitement was contagious among our staff and the film crew, as we worked together to capture footage of our space and the various technologies being tested.

The talented and superb crew from MedCoE MEDVID continued to surprise us with a fast turn-around time, delivering a final product that was

MEDCoE's MEDVID team capturing footage in the field of our data collection and simulation scenarios & efforts.

Long days outdoors in chilly weather was worth it to capture content across TATRC's outdoor field environment and NEXUS Lab to showcase various technologies being utilized in action.

MEDCoE MEDVID ***continued to page 11***

AMTI Program Manager Receives "Women in Leadership" Impact Award

TATRC's own Ms. Holly Pavliscsak found herself in the spotlight as she was selected as a 2021 G2Xchange Leading for Impact, Women in Leadership Award Winner! Holly, who has been with TATRC for many years, is always providing positive, out-of-the-box, innovative thinking with various research initiatives, with a spirit that helped shape TATRC into who we are today. She has truly been a leader and stepped up to the plate when she took over leading the Advanced Medical Technology Initiative (AMTI) Program in 2016. The AMTI program provides a valuable opportunity for innovators to identify and demonstrate key technologies that are medically and militarily unique through short term projects that provide knowledge and material products that in turn, empower leadership to make more informed research and acquisition decisions. The AMTI program, under Ms. Pavliscsak's exemplary leadership, has seen tremendous accomplishments including knowledge and materiel by-products that manifest themselves as peer review publications (over 200 in the last five years), presentations (over 250 in the last five years), new standard operating procedures, patents (two currently in process), ruggedization, customization, and prototypes. Some AMTI funded projects will go on to be the starting point for clinical research, while a few of the best ideas will ultimately be adopted by the Military Health System (MHS) enterprise and become programs of record.

Ms. Holly Pavliscsak, AMTI Program Manager.

As a recipient of this award, Ms. Pavliscsak joins a long, distinguished list of women who are recognized and celebrated for guiding, mentoring, and driving the industry through their impactful leadership; pushing technology and business transformation and modernization; and/or accelerating efforts to initiate the next positive disruption that will truly change how Federal agencies support their mission. She also joins another fellow fantastic, female trailblazer, Ms. Jeanette Little, who was presented this prestigious award last year for TATRC.

In response to receiving this award, Holly stated, "It is my honor to serve as the leader of the Advanced Medical Technology Initiative, a program that supports the best ideas for solving real world problems in military health. I truly enjoy mentoring our awardees through the challenges that are required to make a great idea become a reality, and in turn, promoting their successes and lessons learned that will modernize military health care."

Ms. Pavliscsak's contributions were recognized as part of the virtual conference on 27 October and details can be found at: **https://etc.g2xchange.com/statics/2021-leading-for-impact-women-in-leadership-honorees/**.

Congratulations Holly, on this well-deserved recognition!

MEDCoE MEDVID

continued from page 10

posted to DVIDS less than a month after filming.

The video features cameos from our MRDC Commanding General, BG Anthony McQueen, and MEDCoE's Commanding General, MG Dennis LeMaster, and of course, our brilliant team mates – the SME's & medics turned "actors" from our MMSIV & MEDRAS Divisions.

We've shared the link to this fantastic video on social media, but for those who have yet to see it, it can be accessed via DVIDS at this link: **https://www.dvidshub.net/video/845171/medical-convergence** and it has been posted to our TATRC YOUTUBE Channel at: **https://youtu.be/T1ZJSWXE2Lg**.

We are grateful for the amazing opportunity, to our colleagues at MEDCDID, specifically COL Jones who was instrumental in helping to route the film crew to us, and to LTC Brent Creer for assisting us in this endeavor as well.

It was a pleasure working with such an efficient, professional team and we are thrilled that there is a final product available to share with others that tells the story about medical convergence, and its importance to our Warfighters!

AMTI
ADVANCED MEDICAL TECHNOLOGY INITIATIVE

PROJECT SPOTLIGHT

Identification of Wound Bacteria Utilizing a Handheld Imaging Device to Improve Wound Healing & Prevent Major Complications Including Hospitalization & Amputations

Madigan Army Medical Center, located at Joint Base Lewis-McChord, in Tacoma, Washington, first opened in 1944 as a temporary hospital for war wounded soldiers and has since evolved into an interdisciplinary network of Army medical services serving over 100,000 active-duty Service Members, retirees, and their families. The Madigan Advanced Wound Care and Limb Preservation Clinic, under the direction of Dr. Charles Andersen, provides a distinctly exceptional and essential service to the military community for both inpatients and outpatients.

Dr. Charles Andersen has spent 40 years at Madigan Army Medical Center – first, as an active-duty Colonel and then as a civilian vascular surgeon. His positions have included Chief of the General Surgery Service, Program Director for the General Surgery Residency Program, Chief of the Department of Surgery, Chief of Vascular Surgery Service, Chief of the Vascular Limb Preservation Wound Care Service, and currently, Chief of the Wound Care Service. For the past 26 years, Dr. Andersen has spearheaded a successful initiative to prevent amputations in patients with diabetes.

The clinic is a multidisciplinary hub composed of advanced wound care clinicians, vascular surgeons, and podiatric surgeons with training in limb preservation. This is an invaluable resource for patients, as the multidisciplinary approach optimizes patient care, shortens implementation times, and fosters academic discussion amongst the different specialties to provide optimal patient and care to prevent amputations. This multidisciplinary team approach, with daily discussion about patient care, promotes an academic environment that values innovation. In other words, it's a place devoted to giving a better chance to people who may be at risk of becoming seriously ill from a chronic wound, and / or losing a limb.

Dr. Charles Andersen, Chief of Wound Care Service, MAMC

Wound Bacteria
continued to page 13

Wound Bacteria continued from page 12

Wounds can happen after trauma, surgery, or because of a complication in the context of a chronic illness where there can be poor blood flow and oxygenation, impaired immune defences, and high blood sugar levels, amongst other problems. The clinic is a critical resource for patients, who can spend years, and in some cases decades, battling non-combat wounds such as pressure ulcers in wheelchair-bound patients, as well as diabetic foot ulcers. According to the U.S. Department of Veterans Affairs (VA), around 25% of military Veterans have diabetes (compared to 8% in the general adult population), and diabetic limb amputation rates are twice as high in VA patients versus those in public hospitals.

Clinicians like Dr. Andersen do their best to provide each patient with the best tools to help their wounds heal – this means addressing their underlying health issues, prescribing antibiotics, and providing wound hygiene (cleaning and debridement) over multiple sessions, amongst many other strategies. Unfortunately, despite a clinician's best efforts, not all wounds heal, and some experience delayed or stalled healing that can result in serious, life-threatening complications for the patient.

Delayed wound healing can evolve into a permanent issue causing chronic pain, loss of a limb, the need for costly rehabilitation and prosthetics, permanent disability, and an overall poor quality of life. A wound that won't heal has a greater chance of becoming infected, which can lead to sepsis, an infection that may involve many of the organs in the body and can drive patients into the intensive care unit and even result in death.

What prevents a wound from healing is a great source of interest, particularly for clinicians like Dr. Andersen and his team, who see the impact of this issue firsthand. One of the reasons that scientists and clinicians around the world have pointed to, is the role that bacteria play in the healing process.

Bacteria live everywhere in our body and play an important role in protecting us. However, when found in the wound bed at high concentrations, bacteria stall the healing process and substantially increase the chance of the wound of becoming infected. Unfortunately, detecting the presence of bacteria is not a straightforward process. Some patients may not display any signs or symptoms to indicate the presence of bacteria, and even when infection has ensued, the signs and symptoms of infection are unreliable because some conditions alter or attenuate them.

Taking a biopsy to identify the presence of bacteria creates an additional wound within the wound, and the chosen biopsy site may not represent the true magnitude of the problem since bacteria are not evenly distributed throughout the wound bed. Further, analyzing the sample can take days, so treatment may be delayed while waiting for biopsy results to become available, or on the contrary, antibiotics and other measures may be administered needlessly.

Having a tool readily available in the clinic or in the hospital ward that can identify the presence of bacteria at the bedside could mean the difference between losing or wining the battle against infection. That is what sparked Dr. Andersen's interest in handheld fluorescence imaging technology, which he discovered at a Limb Preservation Conference in 2019.

MolecuLight® is a handheld medical imaging device that detects bacteria in wounds at concentrations higher than 104 CFU/g, the level known to increase the risk of infection and delay wound healing. This device illuminates wounds with an innocuous violet light that interacts with some components inherent to bacteria, so they emit fluorescent light (i.e. glow a certain color), revealing themselves when otherwise they would go unnoticed to the naked eye. The clinician is then able to know if and where there are high concentrations of bacteria in the wound. Cyan-colored fluorescent signals (bright white with a bluish halo) comes from one particularly dangerous pathogen, Pseudomonas, while a red-colored fluorescence indicates most other bacterial species when they reach pathogenic levels.

Dr. Andersen used AMTI funding to purchase his first MolecuLight® as a pilot initiative. The results, published under the title: "Bacteria Fluorescent Imaging to Improve Wound Treatment", were very encouraging. In the pilot, 25 wound care patients had fluorescence imaging performed during a routine wound care visit. With the addition of the imaging information, the treatment plans for the patient's wound changed 88% of the time, as previously invisible bacteria were revealed. Indeed, a staggering 58% of the patients had high levels of bacteria without displaying any clinical signs and symptoms; appropriate treatment would have been delayed without the use of the device. After this first experience with MolecuLight®, the team never looked back – the device has been incorporated into their daily practice and has been used in over 300 patients over the course of their care.

The ability to identify high levels of bacterial presence early on has led to proactive, timely, and appropriate changes in therapy. At Madigan alone, this has avoided numerous hospitalizations and major complications such as limb-loss. It has also led to a more sensible antibiotic use, which helps battle antibiotic resistance.

Dr. Andersen's invaluable experience led him to participate, alongside other renowned specialists in the wound care world, in the development of the

Wound Bacteria
continued to page 14

Wound Bacteria continued from page 13

first official guidelines that outlined the appropriate use of this imaging technology. He has authored and co-authored multiple medical and scientific publications that demonstrate the impact of this diagnostic tool, and moreover, the importance of earlier intervention in wound care. Notably, he has been an advocate through his research on the importance of addressing wound-related cellulitis, an infection of the skin adjacent to the wound, the diagnosis of which is enabled by the fluorescence imaging technology.

The topic of bacterial loads and their importance in wound care, as well as the role that fluorescence imaging plays in the diagnosis and care of wounds at risk of infection, have been in the top scoring abstracts at two consecutive Symposiums on Advanced Wound Care (SAWC) meetings and, recently, Dr. Andersen was awarded with oral presentations for both his work on fluorescence patterns indicative of cellulitis as well as his work on the role that fluorescence imaging had played at Madigan in aiding management of pressure ulcers, and thereby preventing pressure-ulcer hospitalizations.

Fluorescence imaging can be used across medical specialities; in chronic wounds, post-operative wounds, traumatic wounds, etc., and the applications are ever growing. According to Dr. Andersen, "This is a technology that is becoming the new standard of care for the management of wounds that improves outcomes, helps prevent complications, and is a better use of our resources. Dedicating AMTI's resources to stocking our different outpatient and inpatient facilities with this kind of technology would represent a ground-breaking shift in the management of wounds and, notably, an improvement in the quality of life of our patients."

Indeed, this wound-care technology helps to avoid unnecessary interventions, shorten treatments, and reduce hospital stays.

For more information on the AMTI Program, please reach out to AMTI Program Manager, Ms. Holly Pavliscsak at: holly.h.pavliscsak.ctr@health.mil.

AMTI Program Kicks Off New Monthly "How To" Lunch & Learn Sessions

The first official Lunch & Learn series, as part of the Advanced Medical Technology Initiative (AMTI) effort to shine a spotlight on successful AMTI-funded projects, kicked off late last fall. It originally started off as a small virtual gathering of like-minded individuals from TATRC and MITRE, a Federally Funded Research and Development Center (FFRDC), who wanted to discuss and collaborate on similar projects and determine if there was any synergy, or connections that could be made to further research on successful projects, and learn about ongoing work that may be completely out of their scope of awareness.

That first meeting had less than ten attendees, and now the monthly meeting has grown to over fifty attendees from across the Defense Health Agency (DHA), TATRC, MRDC, MITRE and PEO-STRI. At each session there are several AMTI projects presented, along with a couple of MITRE projects presented with the sole purpose of learning something new and collaborating when beneficial. Topics since the lunch and learns began, have covered a multitude of militarily relevant topics to include virtual health, broadband and connectivity, mining audio cues, dry needling, near-infrared spectroscopy, inertial measurement, behavior change, sensor technology, and emotional intelligence gaming. The vast diversity of projects presented is a reflection of the projects that both AMTI and MITRE support, and truly highlights their value to military health care.

These Lunch & Learns take place every month virtually via MS Teams, and anyone is welcome! So please plan to join us and learn something new! Please reach out to the AMTI team to RSVP and get registered, or for more information at: USARMY.DETRICK.MEDCOM-USAMRMC.LIST.AAMTI-PM@MAIL.MIL.

MedRAS Deputy Mr. Ethan Quist Steps into his New Role

Mr. Ethan Quist,
MedRAS Deputy Chief

Ethan Quist presenting during a VIP Visit, which is just one example of how he rapidly and seamlessly adopted leadership roles within the MedRAS Division.

This past January, Mr. Ethan Quist, Robotics Engineer in TATRC's Medical Robotics and Autonomous Systems (MedRAS) Division officially transitioned into his civilian role as the new Deputy Chief of MedRAS. Prior to this new appointment, Ethan had been serving as a support contractor since he arrived to the organization in January 2020. Over the past two years, Ethan was instrumental in the execution of several MedRAS intramural research projects and conceiving of, authoring, and managing new intramural research proposal submissions. Ethan has rapidly and seamlessly adopted leadership roles in the MedRAS division and has demonstrated his leadership potential with his interactions not just with the TATRC team, but with our external partners as well. TATRC's MedRAS division is fortunate to have Ethan transition into the civilian service and take on additional tasks and responsibilities as the new Deputy Chief.

Since joining TATRC, Ethan has been given a tremendous amount of responsibility for managing projects and executing research and engineering tasks with minimal guidance and oversight. As the lead engineer for two research projects that were behind schedule at the time he started here in January 2020, he made significant progress towards getting these projects back on schedule despite significant challenges imposed by COVID-19. In addition to excelling at his role as lead engineer on intramural research projects, he has provided valuable SME guidance and oversight to extramural research partners. Going forward in his new role, Ethan will be working directly with Mr. Nathan Fisher, the MedRAS Division Chief to refine the MedRAS strategic plan and R&D portfolio and engage with stakeholders to maximize the impact of research outcomes and potential for technology transition.

Ethan has a Master's Degree in Robotics from the University of Maryland and a Bachelor's Degree in Computer Engineering from Clemson. Before starting at TATRC, he had significant experience as a Project Engineer in the commercial sector. Ethan has demonstrated his commitment as a team player, consistently responding to new challenges with a positive and can-do attitude. Reflecting on his new appointment, Ethan stated, "I am honored by the appointment and trust that TATRC has in me. I am excited to find and develop robotic solutions to Warfighter performance and casualty care. When in doubt, more robots!"

MMSIV Team takes IMSH Annual Conference by Storm

Evan Feuer *(2nd from the left)* & Chrissie Phillips *(3rd from the left)* meeting with the Madigan team

The International Meeting on Simulation in Healthcare (IMSH) is the world's most extensive and largest simulation conference. Put on each year by the Society for Simulation in Healthcare, whose mission is dedicated to providing better healthcare and training for practitioners through healthcare simulation learning, research, and scholarships, the conference affords individuals, organizations, and special healthcare groups opportunities to share knowledge, unique expertise, and devise innovative techniques tools to improve healthcare quality.

The 2022 six-day conference held from 14th to 20th January took its venue to Los Angeles Convention Center. Chrissie N. Alleman and Evan Feuer, Senior Medical Modelling and Simulation engineers at TATRC, represented our Medical Modeling Simulation, Informatics, and Visualization (MMSIV) Division on the ground.

The IMSH welcomed more than 90 exhibitors and a registered 1200 simulationists. The conference also recorded several presented ideas created and managed by some aspiring innovators and researchers.

The conference began on a high note with heartfelt awards to individuals who have been instrumental to the health simulation programs. Among the awards presented at the President's Diamond Ball, was one that went to our very own Chrissie Alleman! Chrissie was recognized for being one of the few simulationists globally credentialed as both a Certified Healthcare Simulation Educator (CHSE) and a Certified Healthcare Simulation Operations Specialist (CHSOS). This well-deserved acknowledgement was an exciting way to start off the first in-person IMSH Conference since 2020!

The discussions throughout the sessions were engaging and thought provoking, and brought together simulationists

***IMSH* continued to page 17**

IMSH *continued from page 16*

from all different backgrounds while showcasing new knowledge, techniques, and shared experiences in healthcare simulation.

The presentation, "How Realism Is Changing In Simulation," was presented by a former paramedic that turned a career in simulation into a movie special effects career. He uses digital scanning and other hi-tech techniques to create human simulators that truly suspend reality. These are techniques that could bring a whole new level of realism to some of the projects at TATRC, especially in MMSIV's NEXUS Lab.

Chrissie and Evan were lucky enough to meet with the U.S. Army Major, Kyle Couperus, MD, BSN, and Madigan Army Medical Center team. Together with his team, Chrissie and Evan took a look at their newest iteration of a virtual reality (VR) training tool for a medical treatment in a Chemical, Biological, Radiological, Nuclear, and high yield explosives (CBRNE) environment, which was initially developed with the assistance of TATRC. The discussions and time spent together that the conference afforded led to the possibilities of future collaborations.

Our team utilized this opportunity to attend multiple education and research presentations. This gave them a chance to observe cutting edge tools and learn some of the new techniques that could be useful during research at TATRC. The team also managed to test and do demos on multiple new technologies. Chrissie and Evan, apart from being impressed by the latest inventions, found opportunities to positively impact the research at TATRC towards by increasing fidelity and realism. When looking back at the opportunity to be on the ground, in-person again at IMSH, Chrissie said, "The fantastic line-up of the keynote speakers provided a magnificent learning opportunity as well. The IMSH also did a notable job pulling talents together to give everyone who attended a chance to learn and truly gain valuable knowledge. For myself and Evan specifically, we were able to not only observe advancements in simulation in person, but we were also able to get a hands on demonstration of technologies that could aid the research we're doing at TATRC that will ultimately allow us to help our Warfighters."

The MMSIV team is looking forward to another exciting conference in 2023!

Chrissie Phillips using haptic feedback gloves. Although these are designed for creating real haptic feedback in a VR environment, they can be modified through their APK to track finger and hand movements in a real world scenario.

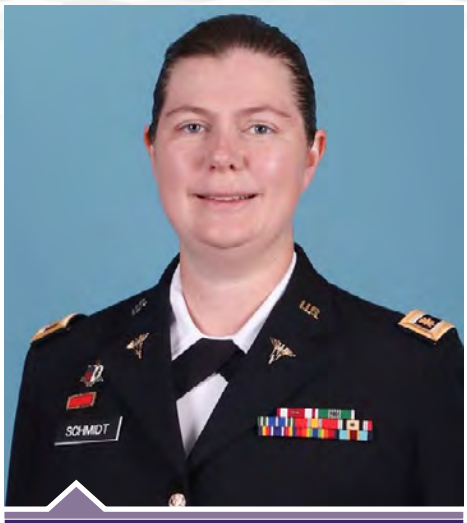
Evan Feuer using the newest iteration of the surgical cut suit.

Nurse Scientist Advances Med Tech & Informatics at TATRC's MMSIV Division

The concept that military work environments are complex adaptive systems is not a new phenomenon. Utilization of this framework is applied to various military operational work environments. This is also true of medical operating environments. Defining medical environments through the lens of complexity has been occurring for the past 30 years. The ability to quantify the increased complexity combined with the ability for computing large quantities of data also continues to expand, yet limited literature applies the concepts' complexity specifically to the military medicine work environment.

The Telemedicine and Advanced Technology Research Center (TATRC) is a subordinate organization of the Medical Research and Development Command at Ft. Detrick, MD. The organization began in the early 1990s to develop research and technology to support the medical warfighter. TATRC has four research divisions that incorporate a user (soldier) centered design model for pragmatic research with feedback from end-users (study participants) for the development and recommendations of technologies and acquisitions requirements for fielding technologies in the future (Kimmons, 2020). Army Futures Command adopted the soldier-centered design to elicit feedback during technology development stages so that fielded technologies meet the needs of end-users.

An ongoing program at TATRC, the Advanced Medical Technology Initiative (AMTI), supports translational research throughout



LTC Patricia Schmidt, Nurse Scientist.

military medicine by facilitating scientific inquiry at the level of the clinical provider to inform acquisition level decision-making for the whole enterprise. Through the research efforts of the four divisions and the AMTI program, TATRC conducts early research efforts with medical technologies incorporating the soldier-centered design.

TATRC recently identified a nursing science position as a valued asset for the organization moving forward. In May of 2021, LTC Patricia Schmidt became the first nurse scientist staff member at TATRC. Utilizing principles from complexity theory to shape the methodology of the research, LTC Schmidt and fellow researchers provide a data-driven lab space to improve care for Service members, make recommendations for future acquisitions, and integrate human-machine teaming into military medicine. As the nurse scientist, LTC Schmidt is a resource to the entire organization working with the division chiefs to develop methodologies for designing studies to answer research questions and identify cases in need of technology to improve patient care.

LTC Schmidt primarily works with the TATRC Medical Modeling, Simulation, Informatics, and Visualization division which runs the Nexus human performance lab, where simulation exercises are used to explore research questions related to the delivery of care. The Nexus brings transdisciplinary research teams together to understand the impact of humans and technology on delivering patient care and how the resulting data may be leveraged for decision making beyond immediate clinical care. Healthcare technologies should be developed with the intent of completing tasks or skills in a way that frees up the clinician to complete more complex work that machines are incapable of performing.

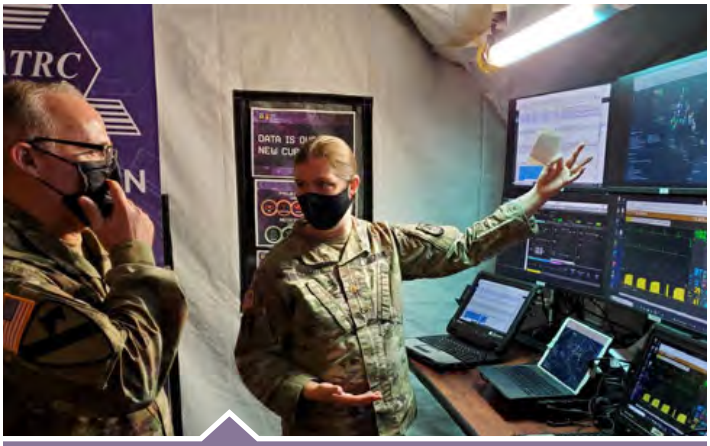
LTC Schmidt facilitated a comparative effectiveness study in preparation for the Project Convergence exercises in which telemedicine technologies were assessed in a simulated prolonged field care scenario. At the end of the study, each of the technologies was scored on functionality, usability, and technical ability to meet the criteria of the proposed use case. Qualified technologies have been recommended for inclusion in Army modernization exercises.

Future comparative effectiveness studies are designed to understand how

Med Tech & Informatic Advances
continued to page 19

Med Tech & Informatic Advances *continued from page 18*

BG Anthony McQueen gets hands on as he's walked through the steps to perform an escharotomy using telemedicine with synchronous video to the telementor.



TATRC has a Virtual Medicine Operations Center dashboard to display the various types of data that are available to facilitate decision makers. The motto "data is our new currency" emphasizes the untapped potential that data has to communicate across multiple echelons.

the use of technology informs care. Currently, LTC Schmidt and her team are recruiting for a study to investigate the ability of technology to facilitate hemorrhage detection in patients and determine if the technology changes the participant's prioritization of patients to receive blood or the amount of time it takes for participants to decide to treat patients for a hemorrhage.

TATRC envisions an interconnected health system that seamlessly communicates and follows Service members from the "healthy" space through illness or injury in garrison or deployed environments, through recovery. This interconnected data vision provides technology throughout the system to include the Service member, their direct leaders, clinicians, and decision makers at the echelon.

One of the projects LTC Schmidt supports is the National Emergency Telecritical Care Network (NETCCN), a COVID-19 funded project to provide telehealth resources for communities in need of support across the U.S. LTC Schmidt is the leader of the data analytics and research team. The project utilizes HIPPA-compliant telehealth platforms and electronic health records to provide clinical support and resources to participating facilities. The proof-of-concept program successfully assisted 59 hospitals across the nation. Importantly, this resource can be transitioned to expand medical capability and capacity for military medicine in future large-scale combat operations. The NETCCN concept is technology agnostic, meaning it is compatible with a range of smart devices and can potentially be a resource for monitoring the health of Service members such as conducting a sick call, monitoring changes in the status of units on a holistic level for public health purposes, providing expert support or consultation across the enterprise, and streamlining access to healthcare. Information from the NETCCN concept supports unified decision making for autonomous functions like facility resupply based on anticipated needs of the patients within the system, and the development of decision support tools for transportation or evacuation planning, integrated with echelon decision making tools. This holistic approach to data supports the development of dashboards and other decision-making tools that scale based on a person's role and responsibilities.

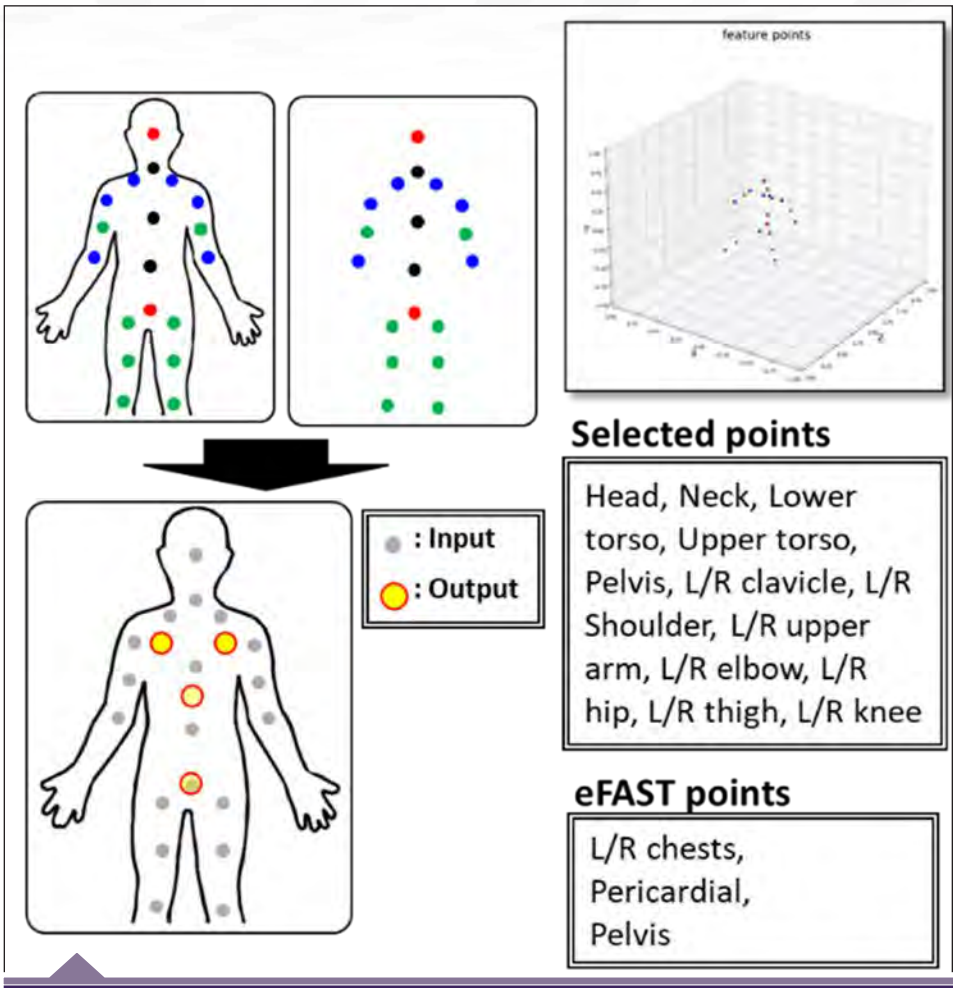
TATRC research teams continue to propose and conduct research to support the development of an integrated health system in which data used for the direct care of patients is informative not only for the healthcare professionals but is also utilized on an operational and strategic level for informed decision-making across operations. This integrated health system incorporates useful technology tools to facilitate care and decrease cognitive burden.

This article appeared in the Tri-Service Research Nursing Program Newsletter this Spring, and was written by our very own LTC Patricia Schmidt.

RPC3 Project Successfully Wraps and Provides Foundations for Human-Machine Teaming

TATRC's Medical Robotics and Autonomous Systems (MedRAS) division successfully met a major milestone, and completed their Robotic Perception for Combat Casualty Care (RPC3) project this past December. The RPC3 project provided valuable knowledge products and prototypes for various design approaches to employing robotic intelligence and perception technologies for accurately detecting, mapping, and modeling the human body to enable further applied research in semi-autonomous and autonomous casualty extraction and en route care systems. Successful implementation of future MedRAS will require high fidelity three-dimensional mapping of the human body and identification of major body parts and key anatomical features in near-real-time for safe physical interaction with wounded Soldiers and their care providers. Along with developing methods for real-time casualty pose and body mapping, the RPC3 project sought to research force control strategies for safe physical contact with humans, integration of a robotic system to carry out a Combat Casualty Care (CCC) task, and studying interoperability protocols for future multi-purpose RAS programs of record. In December, the MedRAS team turned in all final deliverables including reports and analysis on different robotic force control strategies, a summary of current Army interoperability profiles and best practices, as well as a detailed report on the project's final demonstration: a developed vision system integrated with force control into a robotic platform performing a CCC task.

For a culminating final demonstration, the MedRAS team chose the EFAST (Extended Focused Assessment with Sonography in Trauma) ultrasound diagnostics procedure as the demonstration case because it is trauma-relevant, simple and algorithmic but dexterously challenging. The trauma relevance is clear as the EFAST exam is used for lifesavers to non-invasively check for bleeding around the heart or abdomen, and check for pneumothorax, all of which are necessary diagnostics for combat trauma. The process of performing an EFAST exam consists of simple to follow steps of placing the ultrasound probe on six locations around the body. Placing the probe on the EFAST locations, however, still amounted to a compelling challenge for a robotic system as a constant normal force (perpendicular to the surface of the skin) is required while traversing curved

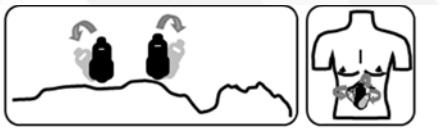


Converting skeletal pose estimation into EFAST locations.

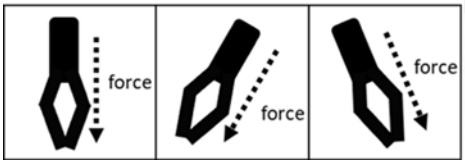
RPC3 Project
continued to page 21

RPC3 Project

continued from page 20



Force Control along the contours of the torso.

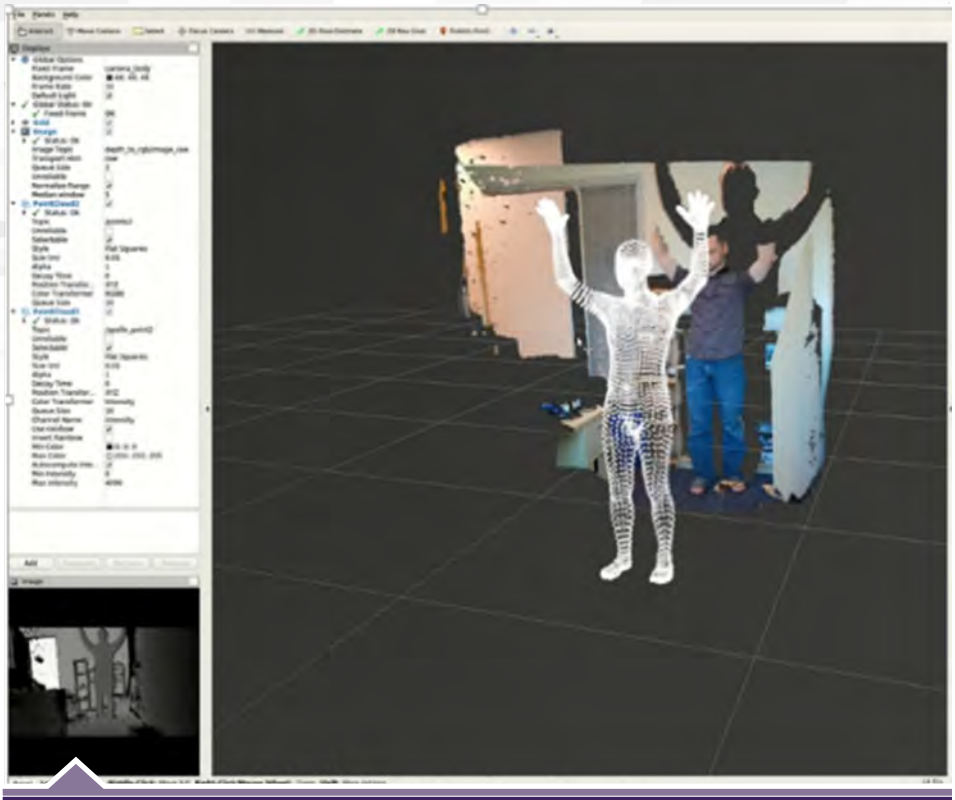


anatomy. The hardware consisted of a Universal Robotics UR5 robot, Microsoft Azure Kinect depth and vision sensor, Echonous Kosmos ultrasound probe, and a "willing" MedRAS participant.

The developed Robotic-EFAST software system consists of a main process code which interfaces with two external systems, the Anthropometry and Pose Observation using Low-dimensional Latent Optimization (APOLLO) vision software (a TATRC sponsored SBIR effort for body pose mapping) and the UR5 robot software. The Robotic-EFAST software takes in the skeletal pose tracking points of the APOLLO vision system and converts it into EFAST target locations along the perceived body using a geometric approach. The robot is then instructed to navigate to each determined EFAST point along the body.

The Universal Robots UR5 was utilized in this demonstration for the many advantages it provides. It is a mature and widely used platform across research and industry. One such advantage is integrated force control. The UR5 is able to control and maintain a desired force on either a plane or by a vector. Since the force affects the Z-axis direction of the end-effector frame, the force can be provided in any direction on the world coordinate frame by manipulating the end-effector orientation.

The APOLLO vision system developed by Charles River Analytics for the RPC3 project uses an Azure Kinect camera and



APOLLO 3-D body mapping vision system.

a quasi-newton optimization approach to generate 3D body pose and 3D point cloud volumetric body reconstructions. Once a subject is detected and a scene point cloud is generated from the depth sensor, the optimization algorithm minimizes the squared differences between their model prediction and depth sensed detection. This allows for a full body model despite occlusions. The Robotic EFAST pulls from APOLLO's generated body point locations, centers of mass, and normal vectors along the vertices of the 3D reconstructed body. These detected pose estimation points are the main driving force in the full perception system, as the remaining code to place the ultrasound probe is calculated directly from them.

On 9 December, the team conducted the final demonstration of a robotic perception system integrated with a robotic manipulator performing an EFAST examination. The procedure was conducted autonomously and driven by perception algorithms. All EFAST probe locations were autonomously detected

RPC3 Project

continued to page 22

Project BOOM Joins Forces and Supports the Marines

TATRC's Digital Health Innovation Center's (DHIC) Project BOOM (Blast Overpressure Operator Monitoring), an effort in partnership with the Joint Health Risk Management (JHRM) Enhanced Capability Demonstration project, was used by the Marines Breacher Training Course at Quantico for three weeks in late November – December, 2021.

This demonstration project allowed end users to enter their weapons fired details through the mCare mobile application, where it was synchronized with blast overpressure data readings transferred to the Mobile Health Care Environment (MHCE) through an application programming interface (API). The data transfer capability was still in development during the breaching exercise, so the team used a secure manual transfer of data to the MHCE web portal from the JHRM system. By the end of the course, participants of the exercise could log into the MHCE portal and view their Individual Longitudinal Non-Auditory Blast Overpressure Exposure Report; and their leadership were able to create data reports using the Training Feedback Report Generator, which returned graphical blast overpressure exposure data associated with weapons fired details for the group.

"The feedback provided to us from the end users who participated in this course has been invaluable. It has allowed us the opportunity to make meaningful and significant adjustments to the user interface; integrating key improvements in the Weapons Firing Log mobile app; and allowed the team to begin rebuilding our Training Feedback Report generator to create a more effective tool," said Ms. Tabitha Waldrop, the DHIC Project Manager.

Since the exercise, DHIC's developers have been busy working to move data across the new MHCE API. They recently completed the development and testing of this new capability. Moving data across MHCE's own API brings the DHIC capability to the next level of system maturity. Minimal viable product work is nearing an end around mid-year 2022, and we're looking forward to the next opportunity to demonstrate this capability.

For more information on Project BOOM and the DHIC Division, please contact Ms. Jeanette Little at jeanette.r.little.civ@health.mil.

RPC3 Project

continued from page 21

and calculated by the vision system and software. No prior configuration was set in the software regarding the subject's body parameters. The robot was able to reach and accurately image the pericardial space, and right and left anterior pleural tests. The procedure ran five times during the final demonstration and all five runs resulted in detecting and navigating to the EFAST locations with accuracy and precision. The robot was able to provide a constant 15N force along the subject's skin and the force control software safely applied pressure during the dynamic movements of the probe along the contours of the subject's skin. Ultrasound image quality was crisp and reliable.

Mr. Nate Fisher, MedRAS Division Chief stated, "The outcomes of this research are foundational to further applied research in enabling Soldiers to team with robotic systems for medical applications by building the computer vision technologies required for effective teaming."

Robotics Engineer and Deputy Chief of MedRAS, Mr. Ethan Quist added, "This testbed created at TATRC will allow for future body mapping vision systems testing, robot-human interface diagnostics planning, and become a springboard for further robotic intervention projects."

For more information on the MedRAS Division, and the RPC3 Project, please contact Mr. Nathan Fisher at: nathan.t.fisher3.civ@health.mil.

EMPLOYEE SPOTLIGHT

TATRC Congratulates FY22 Q1 Employee of the Quarter – Ms. Anna Applegate!

The TATRC Command team is pleased to announce Ms. Anna Applegate as the Employee of the Quarter for the 1st Quarter of FY22.

As a key member of the TATRC PAO team, Anna is often left with the numerous, tedious and repetitive daily tasks of making the PAO department run successfully. One key item from this past quarter was the planning and execution of the second, virtual Tele Robotic Surgery Symposium. It is no small task to organize these day-long events and our PAO team along with Anna, made it look easy! Not only did she support this 8 hour, entirely virtual symposium with the utmost professionalism, but she was also instrumental in the 8 weeks of planning that led up to the event.

Anna is an exceptional employee, whose "positive, can-do" spirit is on display and evident in every task she tackles. Her commitment to TATRC's many and evolving missions has been unwavering, and the execution of her tasks and responsibilities has been flawless. In her realm of responsibilities and because of the level of meticulous detail and precision she puts into them, the MRDC HQ Conference Review team has used her TATRC conference packets as models for the rest of the Command to follow. From her stellar support of planning and execution of the strategic off site event, to her key and critical role in the development of the TATRC Times, she supports all the TATRC divisions and staff that is often unnoticed. If there is an event, Anna is behind the scenes! She is a true, unsung hero, who is always in the background, "making good stuff happen" without a lot of fanfare.

Ms. Anna Applegate, Conference Planner / Meeting & Marketing Support

Her contributions day-in and day-out reflect great credit upon her and the value she brings to the TATRC Team!

Hats off and high-fives to Anna!

EMPLOYEE SPOTLIGHT

TATRC Welcomes New Chief of RM!

TATRC is thrilled to welcome Ms. Buffy Krall as Chief of RM to the organization. Ms. Krall is no stranger to the MRDC Command, having started her career as a student for USAMRDC back in May 1994, working in the Military Operational Medicine Research Program (MOMRP). After 5 years as a student, she transitioned to a contractor position under General Dynamics and continued providing support to MOMRP. In November 2010, she transitioned to a Civilian Employee and became a Research Program Coordinator. She was essentially the liaison between the Program Area Directorates, the Principal Assistant for Research & Technology, and the Resource Management (RM) shop at MRDC Headquarters (HQ).

It was in the job of the Research Program Coordinator that she found her niche in the budget field. In May 2013 as part of a management directed reassignment, Buffy became a Budget Analyst at MRDC HQ. She has successfully managed billions of dollars in various appropriations throughout her career as a Budget Analyst. Most recently, prior to coming to TATRC, Ms. Krall provided budget analyst support to MRDC HQ, the U.S. Army Center for Environmental Health Research, and the 21st Signal Brigade. Ms. Krall is FM Level 2 Certified and recently completed training to become a Contracting Officers Representative (COR).

Buffy is a native of Frederick and met her husband while working here at Fort Detrick where he was a police officer at the time, and now he is the Fort Detrick Installation Anti-Terrorism Officer.

Ms. Buffy Krall, Chief of Resource Management

Most of Buffy's free time these days is spent cheering her daughter on from the sidelines at lacrosse games, and spending time with her three wonderful step-kids.

Buffy stated, "I'm so excited to take on this new role of Chief of Resource Management here at TATRC. I will be managing all TATRC funding and providing resource management support to each of the TATRC divisions and the AMTI program and look forward to this new endeavor."

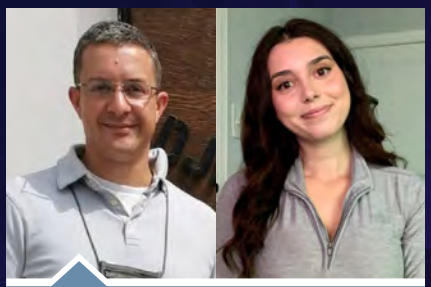
Welcome to the team, Buffy!

DHIC Welcomes 2 New Project Officers to their Fort Gordon Team

TATRC's Digital Health Innovation Center (DHIC) is very pleased to welcome 2 new Project Officers to their Fort Gordon office, Mr. Todd Hall and Ms. Triana Rivera-Megias.

First up, is Mr. Todd Hall. Todd recently retired from the U.S. Army after 24 years of distinguished service as a Combat Medic. His last assignment included duties serving as the Virtual Health NCOIC for the Virtual Medical Center Europe. Todd and his family recently relocated to the Augusta, Georgia area from Germany, and they are adjusting back to life in CONUS. According to Todd, "My amazing wife, three fantastic kids, and two marginal cats, and an old dog, moved to Augusta after living in Germany for the last eight years. I am looking forward to doing great and interesting things at TATRC, as part of the innovative DHIC team!" Todd will be focusing his work as a Project Officer in Operational Medicine.

Next up is Ms. Triana Rivera-Megias. Triana recently moved to the Fort Gordon area from Fort Meade in Baltimore, where she attended the University of Maryland and completed dual degrees while also participating in research studies at the University of Maryland Medical School in Infectious Diseases. According to Triana, "Being raised by a Navy sailor and living with an Army Soldier makes for very 'spirited' gatherings at the Navy vs. Army football games. I look forward to applying my academic research background to my new job duties as a Project Officer at TATRC and building new connections with all my team members at DHIC." Triana will specifically be supporting the Virtual Health Research portfolio.



Mr. Todd Hall (left) and Ms. Triana Rivera-Megias (right), Project Officers Digital Health Innovation Center (DHIC)

TATRC sends a big, warm welcome to these two outstanding new additions, Todd Hall and Triana Rivera-Megias!

A New Medical Sim Specialist Joins our MMSIV Team!

Mr. Evan Feuer is the newest member of TATRC's Medical Modeling, Simulation, Informatics, and Visualization Division (MMSIV). He is coming on board as a Medical Simulation Specialist, and most recently from the Walter Reed Military Medical Center.

At Walter Reed, Evan started in the Department of Simulation and moved to be the director for The Department of Resuscitative Medicine (ResMed). He oversaw BLS, ALS, and PALS training and hospital wide mock code training. During his time at ResMed, he started the high-fidelity ALS, PALS, and PHTLS programs in conjunction with the Department of Simulation. Evan was the recipient of the Civilian of the Quarter (Q2 2021) at Walter Reed.

Evan has been a paramedic since 1996. He was a paramedic for 20 years at Capital Health Systems in Trenton, NJ. He spent 15 months in Iraq with the DoD as a paramedic contractor in 2008-2009. Evan was a program manager at Thomas Jefferson University's Center for Bioterrorism and Disaster Preparedness, as well as the Director of the paramedic program at the University. Evan was the co-founder of Distance CME, an online EMS education platform, and the founder of Medic Training International (MTI). MTI was a paramedic school in Missouri for international students.

Here at TATRC, Evan is as a Senior Medical Modeling and Simulation Engineer. With extensive experience in medical simulation and disaster exercises, Evan is an excellent asset to have on board as we further develop our training and data collection initiatives in our NEXUS lab!

Mr. Evan Feuer, Medical Simulation Specialist Medical Modeling, Simulation, Informatics, and Visualization (MMSIV)

Evan currently lives in Silver Spring, MD with his wife Rahel, who is a kindergarten teacher. In their spare time they enjoy wilderness traveling, antiquing, and cooking!

TATRC is thrilled to welcome such an experienced & versatile member to the team!

EMPLOYEE SPOTLIGHT

MedRAS Welcomes New Systems Engineer to their Dynamic Team!

Ms. Nicole Sieling is the latest new hire to join the TATRC Medical Robotics and Autonomous Systems (MedRAS) Division! As a Systems Engineer, she is working in our MEDRAS lab helping to design, integrate, and manage their complex projects. Two of the current projects that she will be working on are the Combat Evacuation Mission Module (CEMM), which is focused on developing onboard medical systems for future CASEVAC operations, and the UAS Medical Research Platform (UMRP) to explore and validate possible technologies for use in CEMM and CASEVAC projects.

Ms. Nicole Sieling, Systems Engineer
Medical Robotics and Autonomous Systems (MedRAS)

Nicole received her bachelor's degree in Biomedical Engineering from the University of Florida in 2019. While there she worked as a research and development intern at Axogen Inc., and worked as an undergraduate researcher in an orthopedic research lab, focusing on developing gait models and therapies for osteoarthritis. Before joining us, Nicole worked at Medtronic, in Minneapolis, MN (as a Floridian, the Minnesota winter was a big change). At Medtronic, she worked as a Mechanical Design Engineer developing, verifying, and validating new mechanical designs for Spinal Cord Simulators and Neurostimulators that help ease chronic pain and Parkinson's in patients.

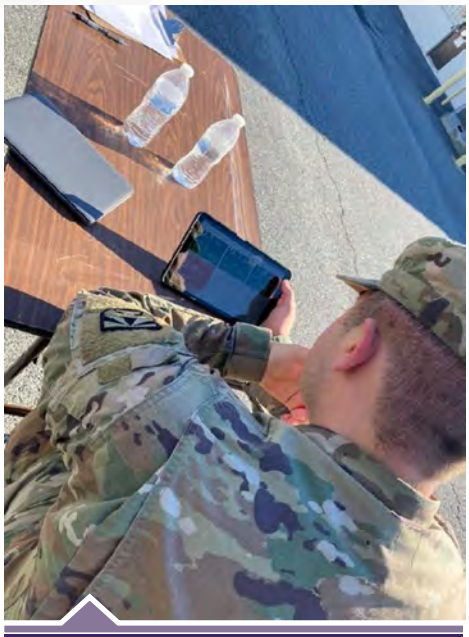
She grew up in St. Petersburg, Florida, and has always loved exploring new places and spending time in nature. She especially loves hiking and has gone backpacking with her Doberman, Kingsley, throughout the Midwest. Nicole is passionate about dog behavior and training and has actively been involved in agility and obedience with her dogs for the past 15 years. She also loves to scuba dive which has taken her to the Florida Keys, the Caribbean, and even to DiveQuest in Disney's Epcot!

Nicole is new to the DMV and is excited to explore all the museums, culture, and nature that the area has to offer.

TATRC is excited to welcome such a young and motivated asset to this outstanding team!

TATRC's NEXUS Environment Continues to Expand MMSIV Comparative Effectiveness Portfolio

A soldier caring for a patient in one of the scenarios for Project Convergence 22



Medic monitoring multiple soldiers for potential heat stress injuries.

TATRC's Medical Modeling Simulation, Informatics, and Visualization (MMSIV) team has been working hard in their new research environment, the NEXUS. This environment has been instrumental in the MMSIV comparative effectiveness portfolio. This realm of research focuses on providing a holistic view of how a new device, system, or technology fits into the current model of care. To gain this view, the MMSIV team looks at metrics such as overall usability, technical functionality, and bandwidth or network requirements. With these objective measures captured for these candidate systems, the MMSIV team can share this information to the stake holders who are making decisions about fielding these various products.

The first project that used the comparative effective design was initial testing for Project Convergence 22. The team developed a 2.5 hour scenario of a medic providing care in three different roles of care. The medics went through five iterations of this scenario. The medics first performed the scenario with no new technology or devices, after that four different devices were assessed, all within that same scenario. The results from this project were used in determining which devices were going to represent TATRC and USAMRDC at Project Convergence 22.

"I love this kind of translational research," the MMSIV Acting Division Chief, LTC Schmidt said, "and I am excited about continuing to do the kind of research that furthers TATRC's mission and develops an intelligent medical system."

The comparative effectiveness design model has also been utilized in evaluating devices platoon leaders would use to monitor their soldiers for heat stress. Upcoming projects in MMSIV will also include testing and analyzing the usability of hemorrhage detection devices.

For more information on the MMSIV Division, and the NEXUS, please contact LTC Patricia Schmidt at: patricia.m.schmidt10.mil@health.mil.

A special note of Thanks & Appreciation to all of our recent strategic stakeholders & VIPs who have a shared interest and have taken the time to come meet our team and tour our unique Lab.

Over the past few months, we've had quite a distinguished list of visitors come through our facility. Whether it was to learn more about our simulation capabilities in the NEXUS Lab, or our Medical Robotics & Autonomous Systems (MedRAS) Division, or the National Emergency Tele-Critical Care Network (NETCCN) initiative, the synergies, fruitful discussions, and shared interests have laid the groundwork for potential future collaborations. We always welcome the chance to build new relationships, strengthen existing partnerships, and brainstorm how to better innovate the future of military medicine for the Warfighter!

Thank you to all of our guests, and we look forward to continued dialogue.

A special Thanks to the following key leaders:

Members from PEO STRI, MED CDID, and the Simulation and Combat Medical Sustainment Division, including COL Paul Kwon, Mr. Thomas Wetherington, Dr. Beth Pettit, and MAJ Brian Downs from OTSG, who visited TATRC in October to learn more about our simulation efforts.

CDR Jean-Paul Chretien, Biological Technologies Program Manager, DARPA, and Mr. David Whittaker, Program Integration Office of the OUSD (R&E), who we hosted in November to meet with our MedRAS Division.

Senior key staff members from the MED CDID team including COL James Jones, COL James Oyekan, LTC Thomas Collette, Mr. William Geesey, and COL Mark Plooster, who toured TATRC in January to learn about how TATRC is focused on medical convergence.

Senior leaders from the VA including Carolyn Clancy, M.D., MACP: Assistant Under Secretary for Health, Discovery, Education & Affiliate Networks, Ryan Vega, M.D., MSHA: Chief Officer, Healthcare Innovation and Learning, and Mr. Michael D. Parrish: Principal Executive Director for the Office of Acquisition, Logistics, and Construction (OALC), who joined us in March to discuss the NETCCN initiative and its capabilities.

Thanks to all of our Distinguished Guests who visited us in Quarter 1 & 2.








Don't Miss an Issue!
Sign up and get the TATRC Times every Quarter!

To Subscribe and be added to our mailing list, please e-mail Lori DeBernardis at: lori.a.debernardis.ctr@health.mil

For more information on TATRC and its many initiatives, visit:

www.tatrc.org or call 301.619.7927