TATRC TIMES
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TATRC's Director Spreads Some Cheer at the Holiday Town Hall

Normally the month of December finds the TATRC team celebrating the festivities of the season, munching on cookies, and "making spirits bright" in person. While the COVID pandemic didn't allow us to gather for our annual Holiday bash the "normal" way, we didn't allow it to steal our joy.

Instead, Team TATRC came together 'virtually' on a Teams call, with the entire organization participating in a special Holiday-Edition quarterly Town Hall! Led by our 'commander-in-cheer,' COL Jeremy Pamplin rallied the troops and kicked off the holiday season by reminding everyone how thankful he is for the fellowship and friendships that we're lucky to have within our TATRC organization.

COL Pamplin covered a wide range of topics, including our biggest current projects, upcoming developments, a warm welcome to the newest staff members joining the team, shout outs and accolades to key personnel, and a recap of all of our noteworthy accomplishments from the past year! These Town Halls are always a great opportunity to catch the team up on all things "TATRC," and for everyone to get together as a group, especially as we continue to work remotely. As always, the message was of positivity and reinforcement, with COL Pamplin summing up to the team, "Keep driving forward, keep delivering the technologies and the tools that enable good caregivers to do their jobs even better. That's our mission and if we continue with that in mind, we will be successful."

Of course, no TATRC holiday event would be complete without the famous "Year in Review" video, put together by the PAO team! While not as traditional as past years (thanks to COVID), it still provided a nice recap of the year, with some good laughs and great memories of what has turned out to be a pivotal year for TATRC.

Team TATRC is looking forward to a bright and innovative new year!

IN THIS ISSUE:

Meet TRON: A TeleRobotic Operator Network

The Telerobotic Surgery Operative Network (TRON) project has just completed an exciting major milestone – the delivery of the Taurus-M telesurgical robot prototype to TATRC's Medical Robotic and Autonomous Systems (MedRAS) Lab.

TRON is a collaborative research effort between TATRC, the Military Medical Centers, SRI international, and several universities. The TRON team includes Mr. Nathan Fisher from TATRC and MAJ Steven Hong, MD from Walter Reed National Military Medical Center as Co-Principal Investigators, Mr. Ethan Quist from TATRC who serves as a Robotics Engineer, and the SRI International team led by their senior engineers, Thomas Low and Bruce Knoth.

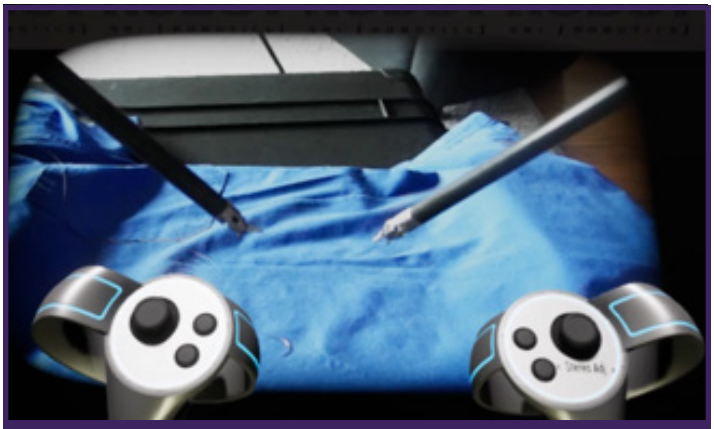
The TRON project began in FY19, funded by the Medical Simulation and Information Sciences Research Program (MSISRP), Medical Assist Support Technologies (MAST) portfolio, to research telesurgical robotics as a means to provide a force multiplier for forward surgical care by extending the reach of remote surgeons closer to the point of injury.

The goal of the Telerobotic Surgery Operative Network (TRON) project is to establish a semi-autonomous robotic framework that will enable safe and effective telesurgery in forward care environments by accommodating for the deleterious effects of signal latency and disruption. To achieve these goals, SRI adapted a novel robot called the Taurus, by integrating state of the art da Vinci Xi surgical instruments as end effectors, resulting in the "Taurus-M". The design of the surgical robot is compact enough to be deployable in forward care environments and allow intervention closer to the point of injury when evacuation to a Role 3 or 4 hospital is not feasible. Teleoperation is controlled through a Virtual Reality headset, which allows an expert surgeon to control the robot while remaining at their primary duty location.

In the past few weeks, SRI has completed the build of the Taurus-M robot and shipped the system directly to TATRC. Here at Fort Detrick, TATRC will be continuing the research and hosting resident surgeons from Walter Reed to perform surgical testing and evaluations of this system. The initial focus will be on evaluating the performance of this novel robotic system in comparison with large standard-of-care surgical robotic platforms in fixed facilities, such as Intuitive's da Vinci platform. However, the TRON team's research plans extend well beyond proving out the Taurus-M platform. Designing a compact robotic surgery system is an important first step but it is not enough to overcome the implementation barriers of forward-deployed telerobotic surgery. Current telerobotic surgical capabilities are hindered by time-delays (latency) and signal disruption during traditional teleoperation, which relies on immediate robot response and visual feedback. To overcome this hurdle, the TRON project seeks to develop a new paradigm for teleoperation that is less sensitive to signal latency. A major focus of the research is investigating methods of applying machine perception and intelligence techniques to automate the sub-tasks required during typical procedures such that the remote surgeon demonstrates the required subtask, which the robot then interprets and carries out without requiring high-frequency position commands from the operator. If successful, this approach will mitigate some of the challenges associated with signal latency, disruption, and bandwidth restrictions when operating in forward environments.

During the planned testing in the TATRC lab in FY21,

Taurus-M Robot, aptly named "GARY" in honor of recently retired Dr. Gary Gilbert. Dr. Gilbert was the former TATRC Robotics program manager.



View from inside the Virtual Reality Headset

Meet TRON *continued to page 3*

NETCCN Quarterly Update: Live TeleCritical Care Support

The National Tele-critical Care Network (NETCCN) project is one of TATRC's primary initiatives in response to COVID-19. As previously reported in the TATRC Times, this project was established as a novel means to provide remote, expert care to locations that were overwhelmed providing COVID care. The most precious, rate limiting resource during this pandemic is the clinical expertise to manage the most critically ill population when the local care facility is overwhelmed.

In June of 2020, TATRC launched a competitive project to rapidly develop prototype solution sets that allow critical care clinical expertise to reach points of need using an "anywhere to anywhere" model that is not constrained by traditional hospital network limitations. In the first initial phase, 9 teams rapidly developed prototype mobile application solution sets, and in the second phase, 6 of these teams advanced to enhance their basic solution set. The third phase of NETCCN, which commenced in the 4th quarter of 2020, featured 4 teams providing actual clinical support to locations in need.

By December 2020, the impact of the NETCCN tools and clinical teams had been felt in small hospitals in Guam, Minnesota, Puerto Rico, and South Dakota. Not only did this solution provide essential support to locations in critical need, but it provided valuable lessons learned about how to enhance and scale the next phase of the NETCCN product line; which is planned to include collaboration between these 4 discrete systems.

One of our current NETCCN partners at Avera, Ms. Lisa Lindgren, stated, "It has been our profound privilege to participate in the NETCCN program. The NETCCN platform not only rewards us as our patriotic duty to help patients via telemedicine across the United States, it also aligns precisely with the mission of Avera. Care to patients should never be determined by their geographical location and this platform truly allows expert remote care to happen anywhere. We have completed over a thousand interactions in just a few short months of being live, which not only supported local clinicians in the traditional hospital settings, but also assisted with the conservation of PPE, decreased exposure risks to our frontline workers and supported home patients. This decreased the need for inpatient beds, but also allowed for a safe way to monitor those who were discharged earlier than normal due to the need for hospital beds for higher acuity patients."

NETCCN continues to expand its reach and in 2021 / 2022, the NETCCN line will mature, and systematically advance to a point where it can be transitioned to our partners at the Department of Health and Human Services of the Assistant Secretary for Preparedness and Response for use in future disaster support situations.

For more information on the most up to date usage of the NETCCN solution sets, please visit the NETCCN page on TATRC's website: www.tatrc.org/netccn.

Meet TRON *from page 2*

data will be collected that will be used by TATRC's academic partners who are developing the control algorithms for semi-autonomous subroutines that allow the TRON platform to perform even with the introduction of noise, aberrant motions, and signal delay. For example, the University of California, Berkley has recently published some early results from their TRON-funded research indicating initial success in automating the Fundamentals of Laparoscopic Surgery (FLS) peg-transfer tasks. The data collected in the TATRC lab, from experienced clinicians operating the Taurus-M robot, will be used to improve the automation techniques being investigated at UC Berkley and other partner institutions.

"This is a huge step forward and ensures that we are keeping our promise to our Nation; to look forward, innovate, and leverage the latest technologies so that our wounded Warriors will always receive unparalleled medical care," stated MAJ Steven Hong MD, Co-PI and Chief of Head and Neck Surgical Oncology and Reconstructive Surgery at WRNMMC. "The delivery of the robot 'Gary,' aptly named after the beloved and recently retired TATRC Robotics Program Manager Dr. Gary Gilbert, whose life's work and vision made this project possible, is really a culmination of the incredible hard work by the TATRC Team and our partners at SRI, UC Berkeley, UC San Diego, University of Chicago and Stanford." The TRON collaborators will continue to lead the development of the telerobotic surgery platform with a targeted live demonstration of the system at Project Convergence in September 2022.

For more information on this exciting initiative, please contact Mr. Nathan Fisher, nathan.t.fisher3.civ@mail.mil.

Mr. Matt Quinn,
Science Director TATRC

Science Director's Corner

Maintaining Research While Delivering In the Real World

Many things changed when COVID-19 hit and the lockdowns began in March 2020. The majority of us began working from home, which meant living much of our lives on Teams, Zoom calls, and other virtual meeting platforms.

TATRC leveraged COVID use cases to accelerate the development of technology solutions for disasters including large scale combat operations. Indeed, since MRDC's Commander BG Michael Talley challenged TATRC to propose ideas to positively impact COVID-19, TATRC has been working at proverbial 'warp speed' on the National Emergency Tele-Critical Care Network (NETCCN) project, Technology in Disaster Environments (TiDE), and associated projects. Funding in the amount of $45M in additional CARES Act funding for these civilian COVID activities from the U.S. Department of Health and Human Services Assistant Secretary for Preparedness and Response (https://www.tatrc.org/www/resources/docs/HHS-and-MRDC-TATRC-Partner-to-Forge-the-Future-of-Telehealth.pdf) has further cemented this shift.

In reality, this new COVID work has accelerated rather than detracted from TATRC's traditional mission. During the time of COVID, TATRC teams supported the cyber exercises at Ft. Gordon and TATRC has continued to lead the Medical Assist Support Technologies (MAST) Research Portfolio, including the development and submission of several strong proposals for future research. In addition, TATRC has set the foundation for military transition of its NETCCN and TiDE activities through hosting multiple 100+ stakeholder meetings, and briefings for the Defense Health Agency and other activities.

Another big change has been the execution of research timelines. Traditionally, TATRC has focused on applied research and development with the goal of transition to military advanced development. This tedious process can take years. The COVID fight and use of CARES Act funding has challenged TATRC to deliver measurable impact on COVID-19 in the immediate term. This has required TATRC to accelerate its work to move from concept-to-reality in weeks and months. NETCCN began with a two week sprint, followed by evaluations and down-selection, followed by another sprint that included simulation testing, evaluation, and more down-selection. The severity of the pandemic pushed Team TATRC to bring NETCCN to the forefront of the COVID fight within just months of its conception. The speed with which this process took place was the first of its kind to be seen within a research project of this magnitude.

In addition, it has pushed us to work in ecosystems instead of pieces or parts. Successfully building and deploying NETCCN has required TATRC to manage both the technical aspects of the project – things like ensuring that NETCCN platforms "work" but also that there are licensed, credentialed, insured and trained clinicians as part of the teams to staff them and sites recruited to test them with actual COVID patients in the U.S. healthcare system. It has required TATRC teams to get smart on the Centers for Medicare & Medicaid Services codes and licensure rules, waivers, and all sorts of acronyms that describe the rapidly evolving governance framework for telehealth in our Nation.

This task has not been easy. Taking the time to be rigorous in evaluation and simulation testing approaches in the midst of rapid sprints (and a pandemic) has been a strain. So has developing and submitting the necessary Institutional Review Board applications to collect data and complete research and standing up a data commons. But the efforts that we have made not to lose the research during the crisis will pay off handsomely in the future with unique and new data, capabilities, and insight from this pandemic that we'll apply to future disasters and military medicine.

MEDRAS Presents at Health IT Summit on 3D Printing Innovations

On 10 November 2020, Mr. Nathan Fisher presented as a panelist at the Department of Defense & Government Health Information Technology Summit held in Alexandria, VA sponsored by the Defense Strategies Institute (DSI). The panel topic was titled, "'Leveraging 3D Printing Innovations to Facilitate Medical Breakthroughs for Veterans & Active Duty Service Members." Mr. Fisher, Chief of TATRC's Medical Robotics and Autonomous System (MedRAS) Division, presented the potential benefits of 3D printing to future medical missions and associated barriers to implementation, based on recent personal experience leveraging 3D printing to address PPE shortages during the early COVID-19 response.

In fact, each member of the panel had direct experience in applying 3D printing during the COVID-19 response. Panelists included Mr. Edward Brown, member of the U.S. Army Medical Research & Development Command's "Additive Manufacturing Working Group" led by the U.S. Army Medical Materiel Development Activity (USAMMDA). The panel was moderated by Dr. Beth Ripley, Director of the Veterans Health Administration (VHA) 3D Printing Network. There were also two panelists from the National Institutes of Health (NIH) that led the effort to establish the "NIH 3D Print Exchange" (3dprint.nih.gov) as a response to supply chain issues caused by COVID-19.

TATRC's 3D printing of PPE started in late March 2020, when the Walter Reed National Military Medical Center reached out to TATRC about a face shield shortage for its healthcare workers. After identifying a suitable 3D printing design, it was clear that a single 3D printer was inadequate to meet the urgent demand. During off-duty hours, Mr. Fisher mobilized a large group of local community volunteers to concurrently print and assemble face shields, resulting in over 100 units in less than 48 hours. Over the course of the next few weeks, over 250 units were produced by the community and delivered to Walter Reed and other local care facilities to meet the immediate shortages while the traditional supply chain issues were resolved.

During the panel discussion, it was observed that 3D printing has many potential drawbacks compared to traditional manufacturing, such as cost and the range of products able to be produced using additive manufacturing techniques. However, because of the increased availability and growing use of 3D printing, these capabilities are now located closer to the point of need and can be used as stopgap measures when supply chains from traditional manufacturers are disrupted. An analogy was made between the observed benefits of 3D printing in helping to alleviate supply chain shortcomings during the COVID response and potential benefits to future forward-care scenarios when traditional supply lines are challenged. The future operating environment is likely to challenge traditional lines of supply and innovative ways of producing and distributing certain supplies closer to the point of need may be required.

With help from the local community, Mr. Nate Fisher 3D-printed and delivered over 250 face shields to WRNMMC and local healthcare facilities.

"Beyond the potential to address future supply chain issues, there are medical applications that take advantage of the unique capabilities of 3D printing," stated Mr. Fisher, "for example, medical devices or models that are designed to match the anatomy of specific patients." The panel also discussed additional innovative medical uses for 3D printing, including the rapid scanning and printing of patient-matched models, e.g. for surgical rehearsal, and the ability to rapidly create and iterate physical simulators / models in support research, development, testing and evaluation, and training purposes.

For more information on this presentation and topic, please contact Mr. Nathan Fisher, nathan.t.fisher3.civ@mail.mil.

DHIC Division Chief Honored with a 2020 Women in Leadership Impact Award

Congratulations are in order as our very own Digital Health Innovation Center (DHIC) Division Chief, Ms. Jeanette Little, was selected as a 2020 G2Xchange Leading for Impact, Women in Leadership Award Winner! A long-standing innovative thought-leader and invaluable member of Team TATRC, Ms. Little has spearheaded numerous important health IT initiatives during her time here. As a recipient of this award, Ms. Little joins a distinguished list of women who are recognized and celebrated for guiding, mentoring, and driving the industry through their impactful leadership; driving technology and business transformation and modernization; and driving efforts to initiate the next positive disruption that will truly change how Federal agencies support their mission.

All award winners were nominated by their leadership teams, and selected by a panel of current and former federal and industry leaders from across the Federal IT sector. All branches of the U.S. government and major government contractors were eligible to be nominated and considered for this award.

In response to her selection as an awardee, Ms. Little said, "In my mind, every setback is a learning opportunity to excel in the future, and every small success is a stepping stone to great accomplishments. It's so important to take the time to provide the same kind of investments in the people that I encounter on a daily basis, because I'm indebted to everyone in the past who gave me the time and mentorship to shape my career."

During the virtual ceremony honoring the awardees on 21 October, Senator Elizabeth Dole was given a lifetime achievement award before each of the 66 individual award winners were announced.

Ms. Little stated, "Listening to Senator Elizabeth Dole speak about her lifetime of experience as a woman in the federal sector was incredibly inspiring, and I was incredibly honored to be included in this group of outstanding women working in the federal information technology field. I'm very grateful to my senior leadership for considering me for this honor."

Ms. Jeanette Little, Division Chief, Digital Health Innovation Center.

Congratulations again on this very well-deserved award! Your TATRC family couldn't be prouder!

Project BOOM Update

Demonstrations for Project BOOM, the Blast Over-pressure Exposure Monitoring effort, encompassing the Weapons Firing Log mobile app and web portal features, are near complete. These demonstrations involve end user groups such as the Marines at Quantico, users at Ft. AP Hill, and others whose valuable input is used to influence enhancements and improvements to the product, which are collected by Mr. Adam Becker, the Demonstration Manager, and provided back to TATRC's Digital Health Innovation Center (DHIC) development team. Feedback and change integration continues to be implemented with new and upcoming modifications to the mobile app and web portal features, to develop a strong capability in support of the Joint Health Risk Management Enhanced Capability Demonstration (JHRM ECD) program. This is a research collaboration effort between Defense Health Agency (DHA), the Joint Program Executive Office for Chemical Biological Radiological and Nuclear Defense (JPEO CBRND) and U.S. Special Operations Command (USSOCOM).

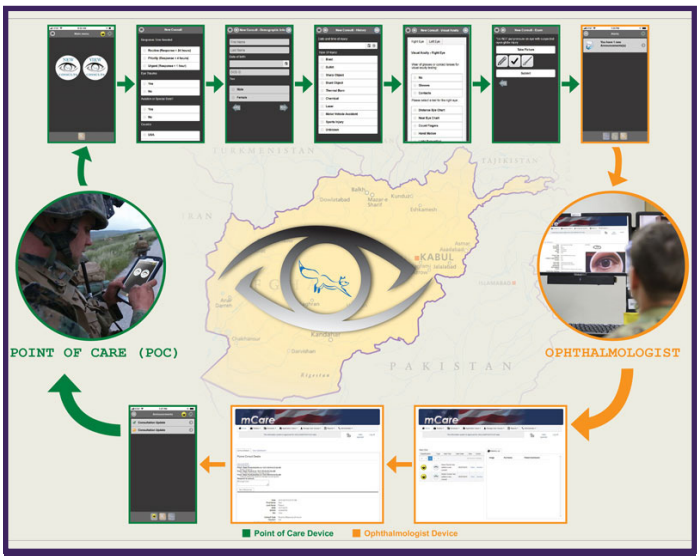
"Near future programming iterations will include the data and reporting features, which match monitored Service Members' blast over pressure readings with their weapons firing log details, to provide cohesive reports, which can be beneficial to command, research and force health protection decision-makers," said Ms. Tabitha Waldrop, DHIC's Project Manager for BOOM. These features are expected to be implemented into the MHCE BEMO Web Portal by Spring 2021. This lightweight mobile capability that can be accessed and used anywhere, and at any time aligns with recent FY18, FY19 and FY20 NDAA (sections 734, 253, 717 & 742, respectively) mandating study of the effects of blast overpressure on armed services members and longitudinal recording of exposures.

For more information on this project, please contact Ms. Jeanette Little, jeanette.r.little.civ@mail.mil.

FOXTROT Use in CONUS for Teleophthalmology During the COVID-19 Pandemic

TATRC's Digital Health Innovation Center's FOXTROT project continues its trail blazing campaign in the realm of teleophthalmology. As reported in prior editions of TATRC TIMES, TATRC's DHIC team continues its partnership with the U.S. Air Force 59th Medical Wing in further developing the secure mobile application FOXTROT, which focuses on the treatment of ocular trauma in remote deployed locations. The primary purpose of the FOXTROT project is to develop and test an operationally secure, HIPAA compliant mobile application to treat combat-related ocular trauma injuries. The FOXTROT application leveraged TATRC's Mobile Health Care Environment - Research (MHCE-R) and its accompanying mobile app, mCare. As previously reported, FOXTROT was deployed to Afghanistan in 2019. Participants were comprised of 16 military treatment facilities at diverse roles of care including forward operating bases in Afghanistan and 1 location outside of Afghanistan. Thirty point-of-care medics and medical professionals were included from September to November 2019. In August 2020, the findings of that project were published in JAMA Ophthalmology (see: https://jamanetwork.com/journals/jamaophthalmology/article-abstract/2769756).

Currently, FOXTROT has expanded its efforts to include a CONUS use case at three sites: Brooke Army Medical Center, Portsmouth Naval Hospital, and Joint Base Andrews Emergent Care Center (ECC). Emergency room providers are trained in the use of the FOXTROT app and will use it on an on-call basis to place ophthalmology consults in lieu of their current consult methods at all three sites. The consults are received by the on-call ophthalmologist and responded to with a diagnosis and treatment plan. As of October 2020, the Andrews ECC site is live and successful ophthalmology consults have been conducted using a secure, personal mobile device averaging two consults per week. The ophthalmologists have mobile access to the patient information, vision, and images in the teleophthalmology consults. Providers at the point of care have access to features like triage surveys, image capture, and secure messaging directly from the secure mobile app. On-call specialists have access to reports, remote health monitoring, secure messaging and user management from a secure web-based portal. These features allow members of the care team the ability to communicate in real time via a secure application and web-portal allowing providers the ability to make treatment determinations on consults without delaying their scheduled workload.



Operational view of Project 'FOXTROT' (Forward Operating Base EXpert Telemedicine Resource Utilizing MObile Application for Trauma).

Major William Gensheimer, MD, an Air Force Ophthalmologist who deployed FOXTROT in Afghanistan and is currently leading the FOXTROT CONUS effort at Joint Base Andrews gave us some insights into the real world application of this solution. He stated, "FOXTROT has been working well at the Warfighter Eye Center at Joint Base Andrews for consults from providers in the Emergent Care Center. Providers place consults on their phone and I can reply using a secure portal or my phone. The other day I was in the operating room between cases when I received a consult and FOXTROT was super helpful! The consult contained all the patient information, detailed history and exam, as well as pictures. I was able to quickly make a diagnosis and arrange for follow-up care. I was then able to refocus my attention on the next surgical case."

The future of FOXTROT includes the development of a secure video web-conferencing feature using Web RTC and a broadened "ocular suite" of a la carte assessment options for the medics including the incorporation of more sophisticated ocular monitoring peripherals such as intra ocular pressure monitoring as well as enhanced remote retinal image capturing. The flexibility and utility of FOXTROT continues to expand especially with the insight and participation of our Air Force, Army, and Navy partners.

For more information on this compelling initiative, please contact Ms. Jeanette Little, jeanette.r.little.civ@mail.mil.

Employee Spotlight

Congratulations to TATRC's Q1 Employee of the Quarter!

Mr. Ethan Quist, Robotics Engineer, Medical Robotics & Autonomous Systems.

Team TATRC would like to extend a heartfelt congratulations to Mr. Ethan Quist, Robotics Engineer for TATRC's Medical Robotics & Autonomous Systems (MedRAS) Division. While Ethan has only been with the TATRC team for just under a year, he has defined himself as a critical asset and essential part of the growing MEDRAS division. He was especially instrumental in Quarter 1 with his contributions in getting our intramural work back on schedule and in the FY22 new proposal submissions.

Ethan has been key in the execution of several MedRAS intramural research projects in the past year. As a new TATRC employee joining in January of 2020, he was given a tremendous amount of responsibility for managing projects and executing research and engineering tasks with minimal guidance and oversight. Ethan served as the lead engineer for two research projects that were behind schedule at the time he started and in the months since his arrival, he has achieved significant results and major progress towards getting these projects back on schedule. This is an especially impressive accomplishment for a new employee operating under the challenges imposed by COVID-19.

In addition to excelling in his role as lead engineer on intramural research projects, he has provided valuable SME guidance and oversight to extramural research partners. Ethan was essential in the process of conceiving, authoring, and managing two new intramural research proposal submissions which involved significant coordination with external partners. Ethan has demonstrated his commitment as a team player and can be counted on for timely and high quality execution of assigned tasks.

Congratulations again on this well-deserved honor, Ethan. We're so glad you're a part of Team TATRC!

TATRC Welcomes New Technical Project Manager to the Ft. Gordon Team

Mr. Scott Kotz, Technical Project Manager, Digital Health Innovation Center

Mr. Scott Kotz joins the TATRC's Digital Health Innovation Center's team as a new technical Project Manager. He will primarily be focused on maintaining the extensive workflow for the TATRC development team at the Fort Gordon office in Augusta, GA.

Scott is a graduate from Full Sail University and has been working in web development for more than 10 years and has spent the last seven building web apps and computer based support material for training for the WIN-T contract.

Scott was born and raised in North Augusta, SC and lives with his wife, daughter and 2 dogs. He likes to power lift after work and enjoys playing airsoft, video games, tinkering with micro controllers and spending quality time with his family.

TATRC welcomes Scott to the team!

TATRC Welcomes Much Needed Senior IT Advisor

TATRC is pleased to announce the arrival of Mr. Sunday Bitrus, who has joined the TATRC team as a new Senior Technical Advisor. In this role, he will support lab leaders in planning, conducting and overseeing research, provision of technical assistance, and perform program project reviews. He will use his technical experience and IT expertise to provide advisory guidance on products and services towards meeting the organizational goals amongst several other tasks at TATRC headquarters at Ft. Detrick, MD.

Sunday graduated with a MSc Project Management in Information Security from Northeastern University in Boston, MA, and holds a BSc in International Studies from Ahmadu Bello University in Zaria, Nigeria. He currently holds the CISSP, CISM, CAP and CISA Certifications and is an ISC2 Subject Matter Expert. He brings a wealth of experience having previously worked with Management Sciences for Health, ICF International, Deloitte, Freddie Mac and most recently, Mathematica.

Just last month, Sunday earned the coveted Certified Information System Security Professional (CISSP) Certificate. Sunday stated, "this next level of certification means a lot to me because it means I have been able to prove both my experience and understanding and it validates my expertise in what it takes to design, implement and manage an excellent cybersecurity program. I am delighted to have joined the rank of the holders of this industry respected and tasking certification. In my day-to-day job, especially now that I'm here at TATRC, it equips and allows me to access a broad set of professional resources to provide the organization with the best-in-class service in my area of expertise."

Mr. Sunday Bitrus, Senior Technical Advisor, TATRC

Sunday lives in Glen Burnie, MD with his wife, Titilola and daughter Hadassah. In his spare time, Sunday teaches cyber security to beginners interested in the field of cyber security, as well as other cyber security certification prep courses. He is an avid soccer lover and has Manchester United and DC United as his favorite club teams.

Team TATRC extends a warm welcome to Sunday as he fills this long overdue position!

TATRC is Thrilled to Bring On Our New Simulation Technologist

Mr. Robert "Rob" Shotto joins TATRC's Medical Modeling, Simulation, Informatics, and Visualization lab as a new Simulation Technologist. His expertise is in Human Patient Simulators and tactical medicine, and while he will be primarily supporting and assisting the MMSIV group, he will also work with other labs at TATRC headquarters in Ft. Detrick, MD. Rob is a U.S. Army (retired) Veteran and 68W, and an Alumni of DeVry University, where he graduated with his BS in Computer Information Systems and a minor in Information Security.

In the early adaptations of Med Sim in U.S. Army Medicine (1997), Rob developed integrations and adaptations into combat medics training through the "AMEDD school houses." In these years, he developed technical skills in repairing and adapting the simulators which led him to his job at the Penn State College of Medicine after his military retirement. Rob served as the Lead Technologist there where he was responsible for all the technology and operations of the simulation center. It was here where he developed a passion for computers.

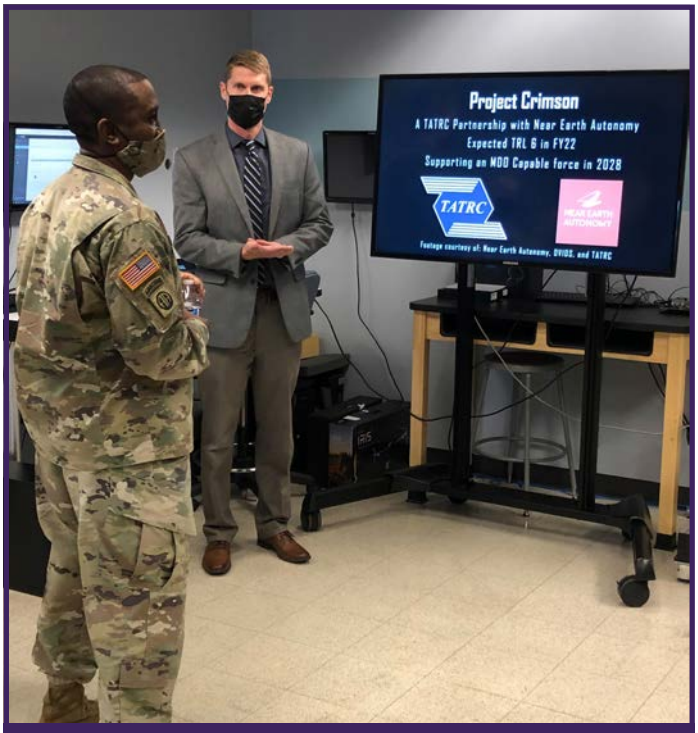
Rob has held many contract jobs in agencies such as U.S. State Department, Customs and Border Patrol and the Joint Chiefs of Staff. He trained in roles from tactical medicine to Instructional Systems Design.

He grew up in Shippensburg, PA, where he met his wife, Susan. They have been married for 33 years, and currently live in Charles Town, WV. They have 5 daughters, no grandchildren … yet, and a small dog.

Mr. Robert "Rob" Shotto, Simulation Technologist, Medical Modeling, Simulation, Informatics, and Visualization lab.

TATRC is excited to have this unique asset join our SIM team!

MEDCOM CSM Hough Hones his Simulation Skills at TATRC



Mr. Nate Fisher, MedRAS Division Chief, was on-hand to brief CSM Hough on current TATRC initiatives.

During the visit, CSM Hough impressed all with his surgical skills during a simulated escharotomy.

On 24 November, TATRC was privileged to host Command Sergeant Major Diamond Hough, of the U.S. Army Medical Command (MEDCOM), as well as our own CSM, Victor Laragione, for a briefing on current initiatives and a tour of our Simulation facility.

As the senior NCO for Army Medicine working for MEDCOM Commanding General, LTG R. Scott Dingle, it was an honor to host CSM Hough and demonstrate firsthand all the important work that TATRC is doing. An introductory briefing with our Leadership team was followed up by a tour of our Medical Robotics and Autonomous Systems (MedRAS) lab area and brand new, state of the art simulation based research environment, known as the 'NEXUS.' It was in the 'NEXUS' that CSM Hough was able to roll up his sleeves and experience how our Medical Modeling, Simulation, Informatics and Visualization (MMSIV) team is using first class simulation technologies that include high-fidelity mannequins, motion capture cameras, and moulage, to better understand the performance relationship of medical providers, medical technology, and medical data to improve combat casualty care and military medicine. We were impressed with CSM Hough's "surgical skills" as he simulated an escharotomy during the hands on scenario and demo.

A big shout out to our MMSIV & MedRAS teams, as well as our two medics who were on hand to assist for the demonstration, 1SG Walizer and SPC Sa-Id.

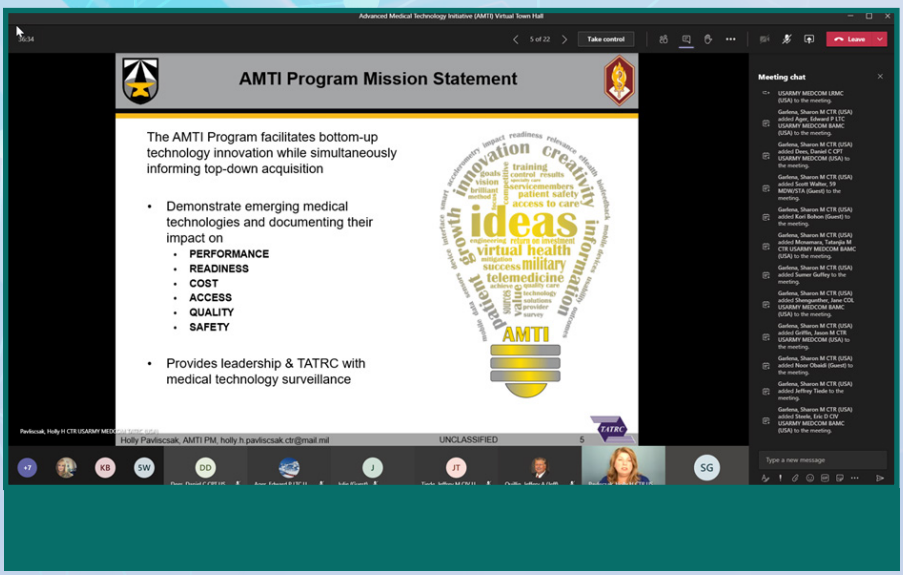
Our thanks to CSM Hough from the Office of the Surgeon General for his time and interest in TATRC's expanding simulation capabilities.

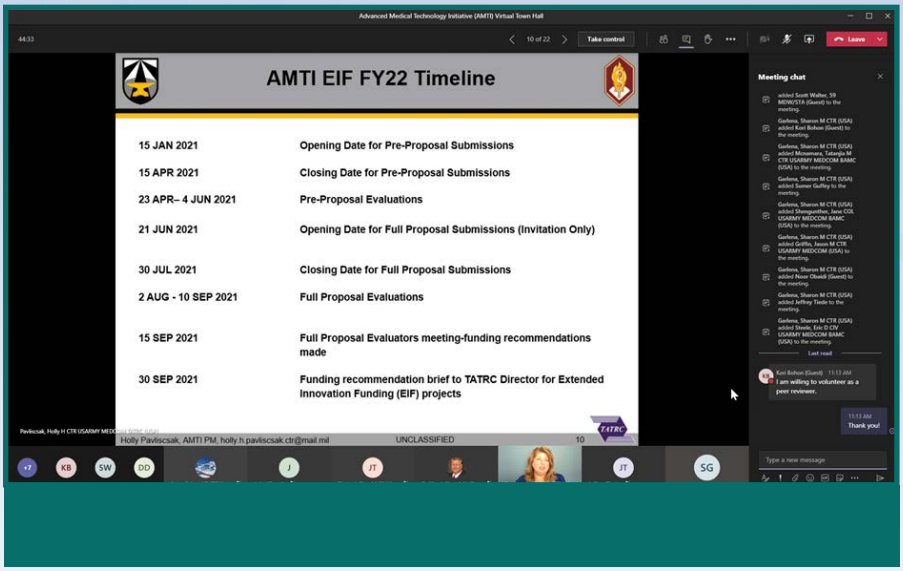
TATRC's AMTI Hosts First Virtual Town Hall Amid COVID-19 Pandemic

On 13 November, TATRC's Advanced Medical Technology Initiative (AMTI) hosted a virtual town hall for the staff at Brooke Army Medical Center (BAMC). This virtual event was led by AMTI Program Manager, Ms. Holly Pavliscsak, who has managed the AMTI since 2016 and has 24 years' experience in military medical research with an emphasis on medical technology projects and telemedicine. Traditionally, Ms. Pavliscsak travels directly to the sites where AMTI has funded projects and provides a hands-on, in-person briefing. While on site, she meets with Innovators for an update on their work and sits down face-to-face with interested AMTI applicants to answer any questions they might have about the AMTI Program. In the era of limited travel due to COVID-19, she needed to adjust her training method to reach out to individual sites and approached BAMC as the first site to host a Virtual Town Hall.

The purpose of the town hall was to provide an update on AMTI and allow participants to have open dialogue with Ms. Pavliscsak. She provided background on AMTI and its future, as well as the different funding types that AMTI supports. She also walked participants through the process of submission, review and award and answered detailed questions from the audience on recommendations and tips for success.

Ms. Pavliscsak would like to thank the outstanding staff at BAMC for their tremendous support and coordination to setup the event. Specifically, COL Jane Shengunther, LTC Edward Ager, Mr. Jeffery Quillin, Mrs. Sharon Conable and Mrs. Tatanjia McNamara.





If you would like to schedule or participate in an AMTI Virtual Town Hall at your facility, or to learn more about this program, please email: usarmy.detrick.medcom-usamrmc.list.aamti-pm@mail.mil.

AMTI
ADVANCED MEDICAL TECHNOLOGY INITIATIVE

Advanced Medical Technology Initiative (AMTI) Update

As with most things in the DoD, change is a common occurrence. In the last year the AMEDD Advanced Medical Technology Initiative (AAMTI) has undergone some big changes of its own. Primarily, a name change. In FY99, the Army Surgeon General, through TATRC at the U.S. Army Medical Research and Materiel Command (USAMRMC) stood up a program called the AMEDD Tele-health Initiative (ATI) with $5M to enable technology demonstrations across the AMEDD. The program became known as the AMEDD Advanced Medical Technology Initiative (AAMTI), in the early 2000s to reflect the technology and clinically agnostic nature of program investments submitted for funding. Fast forward to FY2020 and you'll note another name change to the program, which is known today as the Advanced Medical Technology Initiative (AMTI), because it now serves multiple branches of military services. That's right; AMTI now accepts proposals from Army, Navy and Air Force. Ultimately, AMTI provides an opportunity to demonstrate technologies in a Military Treatment Facility (MTF) or operational unit (OU) to assess the cultural, business, and clinical implications that impeded the adoption of new technologies

As AMTI has supported local identification of problems and potential solutions through demonstration of emerging technologies at the MTF level for over twenty years, it provides a valuable opportunity 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 knowledge and materiel by-products of AMTI are a reflection of AMTI's commitment to support projects that ultimately have an operational application and positively impact performance, readiness, cost, access, quality and/or safety. These knowledge and materiel products 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.

A few years ago AMTI reached out to our awardees, 'Innovators' as we call them, and asked for their testimonials on the value of the AMTI Program, and how its funding has made a difference for them directly. These personal accounts speak for themselves with regard to the impact AMTI can make on individual Service Members and government service civilians, the specialties they service, and the MHS as a whole.

Dr. Joseph O. Lopreiato, Associate Dean for Simulation Education and Director of the Val G. Hemming Simulation Center, was part of the AMTI funded Moulage Tattoo Project.

Many medical combat training scenarios incorporate theatrical makeup (moulage) to simulate wounds. The Val G. Hemming Simulation Center has developed a variety of temporary wound tattoos specifically for medical combat simulations. Custom medical illustrations were created from real-world injury references and printed on commercially available tattoo paper. Our detailed renderings ensures precise and detailed wounds that can stand alone or act as a base for further application of traditional moulage.

He stated, "The Uniformed Services University Simulation Center was able to create, develop, implement, and now market the first ever temporary wearable tattoos for combat casualty scenarios and advanced trauma life support. These tattoos have been distributed to many military treatment facilities and TCCC programs and has saved countless hours of manpower, supplies, and personnel time in creating combat wounds that are realistic and useful for training. The project involved creating medical art, finding the appropriate tattoo paper for printing, getting feedback from the field on its use and practicability, and finally, transitioning to a commercial product that is now available worldwide. None of this could have been possible without the tremendous support of AMTI and its seed funding to allow us to take this project from concept to commercial reality."

MAJ Dan Yourk, Deputy Director of Operations at the Virtual Medical Center is part of the The ADvanced Virtual Support to OpeRational Forces (ADVISOR) Program. MAJ Yourk said, "The ADVISOR Program was initially created using AMTI funds to establish the Virtual Critical Care Consultation (VC3) capability. The lessons learned and support structure developed with the VC3 program allowed the Virtual Medical Center to grow that initial capability for critical care support into what is now the ADVISOR program. The ADVISOR program provides 24/7/365 on-demand consultation support to operational forces around the world for critical care, general / trauma surgery, orthopedic surgery, pediatrics, toxicology, infectious disease, hematology / oncology, the burn center, military working dog vet support, chemical casualty support and emergency medicine department support. Over the past two years, the ADVISOR program has supported 102 real-world calls for urgent and emergent medical support to both U.S. and NATO forces across the world and over 300 training calls to support prolonged field care training and special forces training. The AMTI funding allows us to validate the capability, stress the importance to senior leaders for additional funding, and then grow the program to support all services. None of this would have been possible without the AMTI Program."

CPT Robert Whitehurst, a Board-Certified Clinical Specialist in Orthopaedic Physical Therapy OIC, Hope Mills Medical Home Physical Therapy, Fort Bragg, NC worked on the Rapidly Tracking Outcomes in Rehabilitation (RAPTOR) project. He stated, "The AMTI Program has been pivotal in allowing us to take a local idea and solution and further develop the functionality and implement it to reach a vast audience. From just one clinic at Fort Bragg, we have expanded to multiple clinics and multiple MTFs, and requests come in weekly of people wanting to implement the RAPTOR system at their location. Without AMTI, this would have never been possible. Not just their funding, but their mentorship, collaboration, support, and subject matter expertise have been invaluable in helping us to improve and expand our idea and product. With their help, we really do hope to influence the way patient outcomes are tracked across the enterprise as a whole."

AMTI looks forward to supporting many more great ideas in the years to come. Consider submitting your great idea today! AMTI is open for preproposals for FY22, and you can find more information at https://tatrc.amedd.army.mil/AAMTI/ or contact AMTI at usarmy.detrick.usamrdc.list.aamti-team@mail.mil.

For more information on this and other exciting AMTI Program initiatives, please contact AMTI's Program Manager Ms. Holly Pavliscsak at holly.h.pavliscsak.ctr@mail.mil.

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AMTI
ADVANCED MEDICAL TECHNOLOGY INITIATIVE

PROJECT SPOTLIGHT

Application of a Cognitive Mastery Learning Curriculum to Improve Fasciotomy Performance

PI: Col (Ret) Mark W. Bowyer, MD, FACS, DMCC, FRCS (Glasg); Ben Eiseman Professor of Surgery, Department of Surgery, Uniformed Services University, and the Walter Reed National Military Medical Center

Injuries to the lower leg are very common in combat casualties and one of the frequent consequences of such injuries is increased pressure within the envelope surrounding those muscle groups called Compartment Syndrome (CS). If unrecognized or untreated, CS will lead to death of the muscle and nerve with serious risk to limb and even life. The treatment of CS is a surgical procedure called fasciotomy that opens the envelope or fascia surrounding the muscles of the leg to relieve the pressure and improve blood flow. Fasciotomy is rarely performed in peacetime practice, and therefore most military surgeons have little experience and/or recent practice in this procedure. In Iraq and Afghanistan in 2007, over 20% of fasciotomies being done on wounded soldiers were being done incorrectly leading to unacceptable loss of limb and in some cases, life. Based on this finding, our team has been working for over a decade to improve the training of military surgeons to recognize compartment syndrome and to perform a proper and correct fasciotomy. In 2009, with the support and funding from TATRC's Advanced Medical Technology Initiative (AMTI), we were able to facilitate the development of and validate a simulated lower leg physical model (Figure 1) based curriculum to teach fasciotomy to surgeons preparing to deploy. This effort, in conjunction with other efforts to improve training, has resulted in significant reduction of delayed or poorly performed fasciotomies to around 5% with limbs and lives saved as a result.

In spite of the success of our initial work, the simulated legs used are costly and using them for the training of not only surgeons, but also of medics and physician assistants who may be increasingly called upon to provide more complex procedures downrange, is cost prohibitive. To improve access to this training, reduce the costs, improve preparedness and quality to perform a fasciotomy, we have developed a Cognitive Mastery learning curriculum to improve fasciotomy performance. With the support of AMTI, we were able to launch a Fasciotomy Improvement through Recognition of Errors (FIRE) simulation-based mastery learning curriculum incorporating Error Management Training exercises. As part of this project,

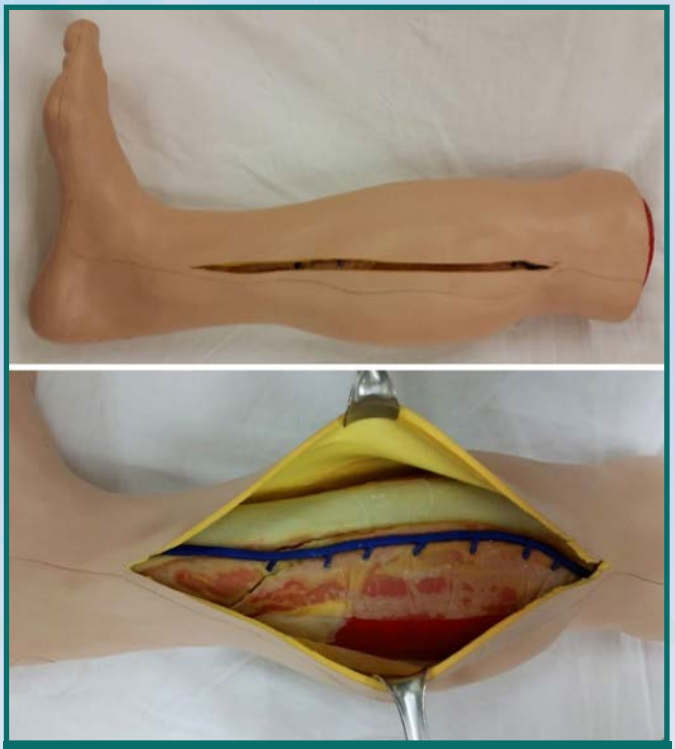

Figure 1: The simulated lower leg used a part of the physical model-based curriculum to teach fasciotomy demonstrating a correct skin incision (upper image), but an incomplete fasciotomy (lower image)

a comprehensive subject matter consensus driven, step by step narrated PowerPoint curriculum was developed (Figure 2). Instead of learning to perform the fasciotomy procedure by repeated practice on a costly simulated leg, learners were shown a number of simulated legs comprised of both correctly and incorrectly done fasciotomies (Figure 1). The learners were then required, using error management principles, to accurately recognize right versus wrong, and propose corrective

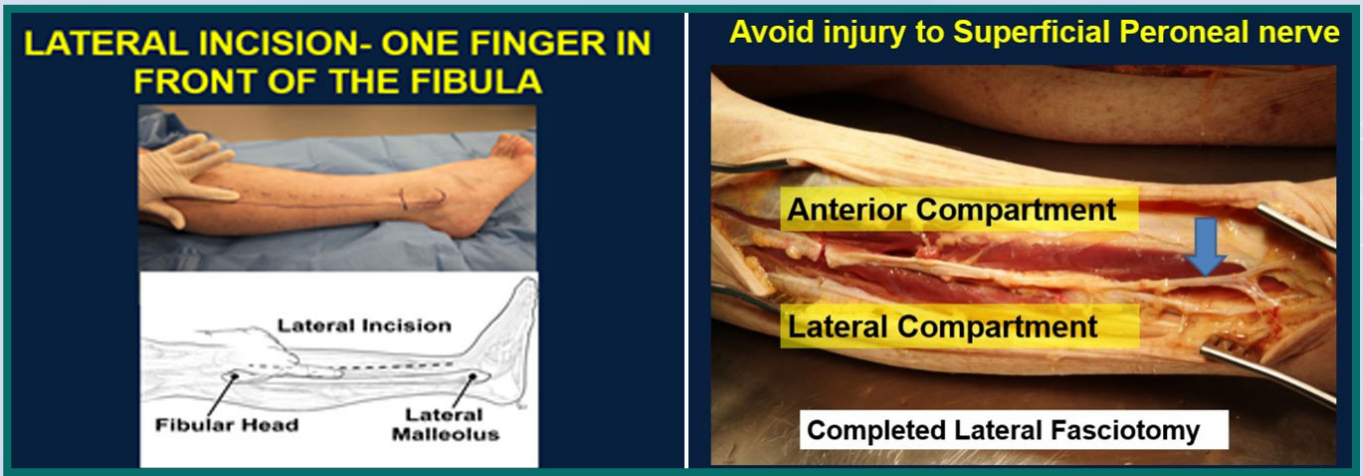

Figure 2: Selected screen shots from Power Point curriculum for teaching fasciotomy of the lower extremity.

action for procedural errors. Fourteen "novice" surgical residents completed the curriculum. All residents demonstrated significant improvement following the FIRE curriculum on the multiple-choice question test, fasciotomy score, and achieving a complete fasciotomy; only a single cumulative compartment was missed after completing the curriculum. The total time required for the FIRE curriculum was short, needing no more than three hours for completion. During this time, participants had exposure to, and evaluated an average of 14 fasciotomies. This is an exponential increase in the typical fasciotomy experience of a trainee during residency. The minimal time commitment also likely overshadows what would be required to perform that same number of fasciotomies in a clinical setting, and represents a fantastic return on investment of training time. The FIRE curriculum also utilizes artificial leg models in a cost-efficient manner and omits the need for cadavers which are expensive to obtain and store, if they are able to be procured at all.

The potential impact of this project on the Military Health System is significant in that surgeons continue to deploy without proper training or demonstrated competency in the performance of fasciotomy. Additionally, there is an increasing need for and dependence upon non-surgeon providers such as medics and physician assistants to perform life and limb saving skills far forward. Our study shows that minimal time and resources are required to successfully train novice surgeons in correct fasciotomy technique. The research team is in the process of expanding this curriculum to both medics and physician assistants and believe that it can meet the need for this vital training for these first responders. The FIRE curriculum is a great option for pre-deployment training that has demonstrated superior outcomes compared with all previous training courses and does not involve cadaver procurement. Minimal time is involved and the curriculum can be done anywhere with a small number of fasciotomy leg models resulting in significant cost-savings.

This project served as the thesis of one of the Walter Reed National Military Medical Center / Uniformed Services University of the Health Sciences general surgery faculty and has resulted in a peer reviewed publication in the Journal of Surgical Research. Successful defense of the thesis resulted in this faculty attaining a Master of Health Professions Education (MHPE). This project was only made possible because of appropriate funding to procure the fasciotomy leg models. Although the FIRE curriculum reused legs to offset total cost, there were still multiple recurring and one-time expenditures that required funding.

Moving forward, learners will undergo retention testing. The FIRE curriculum showed immediate success after implementation, but we are unsure if learning will be durable over time. Retention testing will also incorporate a lower extremity fasciotomy on a cadaver to determine if there is crossover to human anatomy. The study group believes the FIRE curriculum could be an important adjunct to current pre-deployment surgical training efforts. The omission of cadaveric specimens and low cost make the FIRE curriculum attractive for deploying surgeons.

The Project Lead, Dr. (Col Ret.) Mark Bowyer summed up this effort by noting, "This AMTI supported FIRE curriculum gives us the confidence that we can prepare in an efficient and cost-effective fashion anyone tasked with performing a fasciotomy on a combat casualty to "perform as advertised", and maximize outcomes."

For more information on this and other exciting AMTI Program initiatives, please contact AMTI's Program Manager Ms. Holly Pavliscsak at holly.h.pavliscsak.ctr@mail.mil.

AMTI
ADVANCED MEDICAL TECHNOLOGY INITIATIVE

PROJECT SPOTLIGHT

Novel Technology to Provide Real-Time Physiological Monitoring of Patients with TBI

Around 20% of combat casualties from Iraq and Afghanistan have sustained a traumatic brain injury (TBI). Furthermore, Service Members with blast-related injuries often sustain multiple co-occurring disorders, including Post-Traumatic Stress Disorder (PTSD) and other mood disorders, chronic pain, and cognitive dysfunctions. Treating these patients requires a comprehensive approach that addresses these comorbidities in a holistic manner. As these Service Members transition to post-deployment activities, continued access to care is challenging, especially for those stationed at geographically remote posts.

Recently, telemedicine has become increasingly prevalent in the Departments of Defense and Veterans Affairs. Numerous studies integrating telemedicine in military populations have demonstrated several advantages, including decreased patient and provider costs, improved access to care, high levels of patient satisfaction and low attrition.

In 2017, researchers at the Madigan Army Medical Center (MAMC) and the Walter Reed National Military Medical Center embarked on a project to assess the efficacy of wearable physiological devices. This project entitled, "Demonstration of Novel Technology to Provide Real-Time Physiological Monitoring of Patients with Traumatic Brain Injury" examined the acceptability, feasibility, and reliability of the Zeriscope™ System among Service Members who were admitted to a military TBI outpatient clinic.

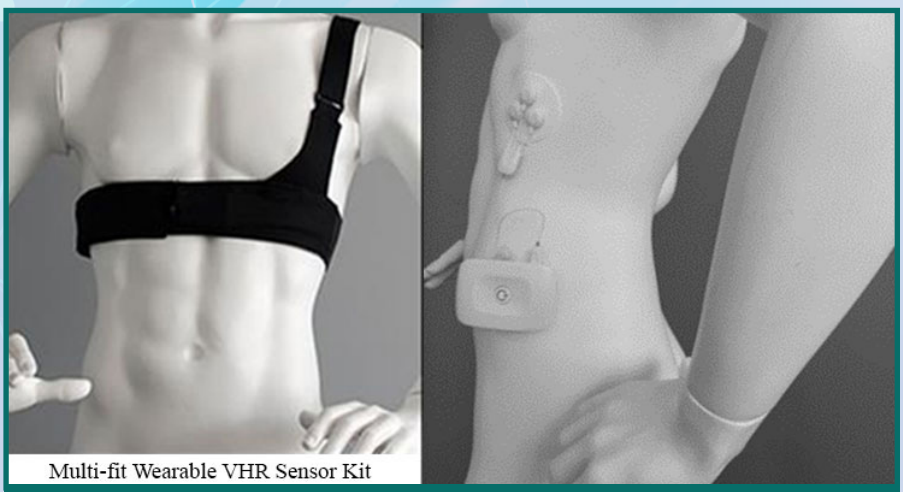

Figure 1: To begin a session, the subject will wear the multi-fit chest strap and apply the ECG electrodes. After powering on the mobile device, the subject will open the Zeriscope application, enter their subject ID, click enter and be prompted to power on the Hub device. Once a signal is received from the Hub device the application will prompt the subject to select 'Start Session'. Recording will begin and continue to take place until the 'Stop Session' icon has been selected.

The Zeriscope™ system allows for a telemedicine platform that provides remote, real-time monitoring of patients. Zeriscope™ packages include wearable sensors with live video and audio feedback, which can be viewed by clinicians as a means of monitoring objective physiological clinical data. Since Service Members with war-related trauma, especially those with TBI and PTSD, often display complex interactions between physiological, cognitive, and emotional functioning, the Zeriscope™ system holds promise to improve treatment interventions by providing continuous physiological monitoring across multiple treatment sessions in a telemedicine capacity. Moreover, this capability may also provide greater insight as to the complex relationship between physiological processes, symptom expression and response to treatment.

A major goal of this project is to

Zeriscope

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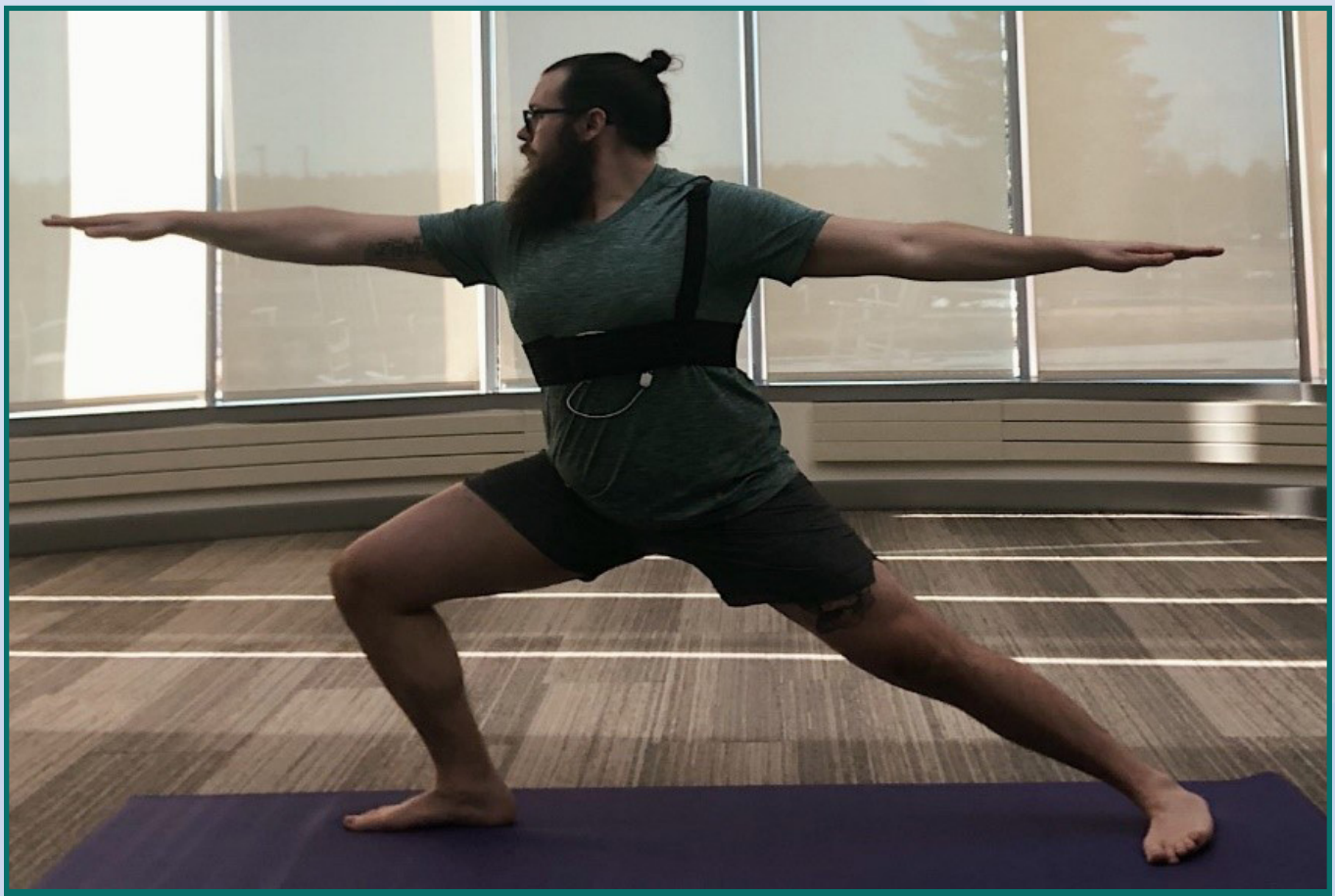

Figure 2: Research Coordinator demonstrating device in use.

demonstrate the utility of the Zeriscope™ in monitoring autonomic functions in patients with complex post-deployment disorders as they receive intensive outpatient treatment at the Intrepid Spirit Center at MAMC.

Zeriscope™ offers a unique platform that utilizes current health and mobile technologies to provide a portable, customizable health diagnostics tool that can be utilized for a variety of clinical purposes in order to provide clinicians with objective data and provide the most realistic insight to what a patient is experiencing in their daily lives. Furthermore, the Zeriscope™ platform is cost-effective and circumvents the need to build novel, purpose-built devices with a high initial development price tag. It also utilizes commonly available communication modalities and computing technology by incorporating Android operating system software. Utilizing a well-established platform allows for easy access, and is user friendly, and inexpensive. It can be delivered to portable smartphones or tablets and is almost always within the patient's reach in today's modern world. In addition to the integration of bio-monitoring sensors, the Zeriscope™ platform has video and audio capabilities. This allows for real-time sessions between clinicians and their patients, and for treatment to be enacted in real-time, instead of practicing in clinic and relying on the patients' ability to apply those lessons at home. Even in settings where the logistics of a provider constantly monitoring patients in their daily lives is not feasible, the Zeriscope™ can provide continuous objective data during desired treatment sessions, either in clinic or in the community. This data can provide live feedback for the patient, and help the provider identify useful techniques and eliminate ones that are less so during the actual encounter, which cannot be mimicked in the clinic. With further clinical demonstration and use, Zeriscope™ can prove to be a useful tool for advancing the goals of the modern medical era to provide personalized medicine. Continued work with this platform could aid research efforts by developing physiological parameters outlining dysfunction versus function, and be used as a measure for verifying efficacy of currently-utilized treatments as well as help the development of future pharmacological and non-pharmacological therapies.

Zeriscope *continued to page 18*

Zeriscope from page 17

The capability demonstrated through this project will support the move to operationalizing real-time health monitoring and assessment during patient/provider encounters. Beyond assessing the clinical validity of HRV, the results of this project will help to frame the parameters supporting the use of tele-presence and real-time remote monitoring. This capability demonstration is an important first step in laying the foundation in obtaining real-time patient physiological data to monitor compliance and effectiveness of treatment more objectively for Service Members with complex neurological and behavioral health problems. It will also serve as a beginning step in establishing DoD-wide collaboration led by the Uniformed Services University to advance military medicine's care of TBI, as mandated by the MHS and will inform future academic and research efforts in this important field. In addition, successful demonstration of this technology stands to further inform the current state of telemedicine and the U.S. Army's healthcare programs as to factors that support or impede the opportunity to incorporate an important new tool in their missions to achieve a uniform coverage of care for active duty, veteran and family member beneficiaries while maintaining the high standards of DoD healthcare and minimizing increased future costs.

Moving forward, this platform may be an important tool that supports the effort of the Intrepid Spirit Center and other Military Treatment Facilities (MTFs) efforts in addressing critical questions in treating patients, especially those exposed to high-energy blasts, presenting with TBI, chronic pain, PTSD, other behavioral health injury, and their associated comorbidities.

The complexity of TBI and the growing population presenting with these injuries were the motivation behind the establishment of the U.S. Army Intrepid Spirit program. While the Intrepid Spirit program has been able to help a great number of our wounded Warriors and Veterans, improvements can still be made. The Zeriscope™ platform may likely help identify possible physiological markers of the complications of head trauma and nervous system injury, and allow clinicians to measure those markers as patients undergo various pharmacological, traditional, and non-traditional therapies. This effort will also help to advance the field of personalized medicine for individual patients, as well as contribute to research studies attempting to validate potential therapy candidates in the future.

This clinical demonstration project will address several key military medicine requirements. As a telemedicine platform, Zeriscope™ can extend the reach of medical care to the communities and rural areas. Patients who previously would have been unable to access military healthcare because of geography or time restraints may be able to utilize this technology. In-person visits may be reduced, as real-time, in-community data can be accessed by the provider and personalized care can be given by current communications technology. This could aid in reducing the interruptions in patients' daily lives while increasing the scope and reach of military medical care and add increased efficiency in the modern age of military work force reductions. Zeriscope™ platforms could also be integrated into the daily care of active duty troops, thereby extending their ability to participate in their duties, minimize away time for clinic visits, and increase the success of their treatment with personalized therapies based on objective, measurable results.

Therefore, a successful demonstration of the Zeriscope™ system would aid in addressing a major medical concern for a growing population of patients within the DoD while also supporting the growth of the field of telemedicine. This has the potential to lead to improved access of care and availability across the Nation while also improving the providers' abilities to extend high-quality, personalized medical care to our Nation's military members and their families. The capability demonstrated through this AMTI funded project will support the move to operationalizing real-time health monitoring and assessment during patient / provider encounters. Beyond assessing the clinical validity of HRV, the results of this project will help to frame the parameters supporting the use of tele-presence and real-time remote monitoring. This capability demonstration is an important first-step that lays the foundation for ultimately adopting a cost-effective, robust, secure method of providing behavioral health care, ensuring greater patient compliance and satisfaction, while improving outcomes and quality of life.

According to Dr. Paul F. Pasquina, the Chief of Rehabilitation at Walter Reed, and Chair of Physical Medicine & Rehab at the Uniformed Services University, "the AMTI program offers an incredible opportunity for military providers to field test novel technologies within their clinics to ensure we continue to explore the newest methods to improve access and quality care delivered to our beneficiaries, particularly our Warfighters. We realize that the best informed clinical decisions are based on high quality and reliable data. As wearable technology continues to improve, using real-time physiological data to help guide best rehabilitation practices offers incredible potential."

For more information on this and other exciting AMTI Program initiatives, please contact AMTI's Program Manager Ms. Holly Pavliscsak at holly.h.pavliscsak.ctr@mail.mil.