TATRC TIMES

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A Holiday Message from the Director

IN THIS ISSUE:

COL Dan Kral

To say that the last 12-18 months have been a challenge for the men and women working in the Telemedicine & Advanced Technology Research Center would be an understatement. But how an organization responds in the face of adversity is what truly defines the character and culture going forward, and respond you have! Your ability to execute a 180 degree shift in the research paradigm, from funder to funded, from execution manager to intramural scientist, has been nothing less than inspirational. The energy, passion, and vigor you put into your efforts each and every day has set the bar for excellence and the military population we serve is better for it. So, as we collectively use this time of year to take a brief tactical pause, I want to personally both thank and congratulate each and every one of you for a phenomenal year. To the entire TATRC family, our intra and extramural research partners, vendors and supporters, I wish you all Happy Holidays and a Very Happy New Year. And if you thought 2015 was exciting, just wait until you see what 2016 is going to bring! Serving to heal, honored to serve.

Daniel R. Kral
COL, MS
Director, Telemedicine
& Advanced Technology
Research Center (TATRC)

New Virtual App Improves Engagement with Military Health Facilities

The Defense Health Program 2015 Small Business Innovation Research Program released a topic that was submitted by TATRC, with support from Walter Reed National Military Medical Center (WRNMMC), for a Virtual Medical Concierge Application. The objective of this topic is to demonstrate a prototype medical concierge application that will improve patient, employee, and visitor engagement with Military Health System (MHS) Military Treatment Facilities (MTFs). Three vendors were selected to complete Phase I projects that demonstrate the feasibility of a Virtual Medical Concierge. The three selected small business vendors were Vecna Technologies, Inc., Heron Systems, Inc., and Adaptive Methods, Inc.

The need for this type of application has been identified by various leaders at WRNMMC to support improved operations for patients and visitors. Upon arrival at MTFs, many patients and visitors are challenged with finding parking, remembering which clinic or provider they are going to see, navigating the medical complex, and determining the follow-on actions after completion of an appointment (lab tests, pharmacy, and other consult schedules). From the staff's perspective, patients are frequently late or absent, they do not have their forms filled out in advance, and they are unhappy with their overall experience at the MTF, even though they receive excellent care and patient educational content, they have difficulty differentiating it from the frustrations of navigating the large complex.

On October 13, 2015, a kick-off meeting was held with all three vendors and stakeholders from WRNMMC, where the completed system is expected to be piloted. Attendees at this meeting from WRNMMC included the Chief of the Optometry Service from WRNMMC, a member of the WRNMMC Patient Experience Team, and the Chiefs of informatics, Network Operations, and Information Management. The TATRC Contracting Officer's representative, Betty Levine, and Project Officer, Rebecca Lee, were also present and ran the meeting.

While this was just the initial kick-off, TATRC's Health Technology Innovation Center (HTIC) Team was able to learn that WRNMMC has a complimentary effort currently underway to acquire a kiosk-based wayfinding system to support guests visiting the complex. The system will include ten 55" kiosks but will not have a complementary app. There is much excitement that the Virtual Medical Concierge Application will compliment this wayfinding kiosk effort and that the two projects will be able to share information. A presentation of the problems encountered was given by the Chief of Optometry Services, LTC Kenney Wells. This laid out the problems from a visitor/patient standpoint to include parking, appointment reminders, navigating the campus, finding information when needed. He also presented the staff's perspective to include frequently late or absent patients, forms not completed, patients that are unhappy or frustrated at the WRNMMC experience, and trouble getting content to those that need it.

At the conclusion of the presentation, we followed up with a walking tour of the facility and along the way, ran into many lost patients and visitors – stressing the need for a Virtual Medical Concierge App. The vendors were able to ask questions and also able to make connections if they chose to work together on a solution.

Ms. Betty Levine, HTIC Lab Manager and COR of this project stated: "While on our tour of the facility, we encountered many patients and visitors who actually stopped us for directions. It was a perfect demonstration of the need for a Virtual Medical Concierge app that can direct people through the maze that is the WRNMMC campus, and give them relevant contact information like where they can eat or where they can pick-up their pharmacy refill. We need to take advantage of how ubiquitous mobile technology is and provide patients and visitors with an app that can make their experience at our MTFs a more rewarding and less frustrating experience."

As SBIR author and COR, Betty Levine is actively managing all three efforts. The Phase I SBIR awards have a six-month period of performance. The three vendors will devise prototypes and designs of a Virtual Medical Concierge application with the guidance of the COR, PO, and stakeholders at WRNMMC. They will then compete for a follow-on Phase II award, with a 1-2 year period of performance where a system to be piloted at WRNMMC will be developed.

The Apple introduced protocol that is Bluetooth low energy that can broadcast their identifier to nearby portable devices.

mHIC Team Participates in Kick-Off on Diabetes care Using mCare Mobile Health

Earlier this fall, two members of TATRC's Mobile Health Innovation Center (mHIC) team, Jeanette Little and Holly Pavliscsak, participated in a kick-off meeting for an exciting new project at Clemson University, in South Carolina. In attendance were an array of leading healthcare industry experts including Dr. Ronald Gimbel, PhD. Chair of the Department of Public Health Sciences at Clemson University; Dr. Terry Newton, Clinical IT Capability Manager, Office of the CMIO; OTSG, and Clemson University's respective team of subject matter experts. This Joint Program Committee-1 (JPC-1) funded project, titled: "Enhancing mHealth Technology in the Patient Centered Medical Home (PCMH) environment to Activate Chronic Care Patients: A Feasibility Study" brought together an impressive and highly experienced team of experts from Clemson Dr. Joel Williams; Dr. Sarah Griffin; Dr. Lingling Zhang; Dr. Liwei Chen; Dr. Lu Shi; Dr. Cheryl J Dye; Dr. Windsor Sherrill; Dr. Rachel Mayo; and Ms. Karen W Edwards.

This kick-off meeting initiated planning for a multi-site phased feasibility study; conducted within the Military Health System, including a user-centered design evaluation phase and a second clinically-based feasibility trial to measure successful aim achievement. The study will be conducted in the Patient Center Medical Home (PCMH) environment at the Mike O'Callaghan Federal Medical Center, Nellis AFB and Madigan Army Medical Center, Joint Base Lewis, McChord.

The project aims to drive two specific efforts. First, to improve the capabilities of current, Mobile Health Care Environment (MHCE) and its accompanying mCare mobile application for use in the PCMH environment; which would allow for the MHCE to expand for bi-directional data exchange with the Military Health System Secure Messaging System with embedded personal health record (PHR) functionality. Secondly, the project aim would be to activate the self-management behaviors of patients with type-2 diabetes in the PCMH environment with the enhancement of utilizing biosensors. These biosensors include a variety of home monitoring devices including activity monitors, weight scales, blood pressure cuffs and glucometers that will all transmit data automatically to a secure mobile health system, known as the MHCE. The goal is to reduce the need to have patients manually record the readings from these external biomedical devices, thereby reducing the opportunity for data errors.

This work is unique because it will advance knowledge in understanding the optimal use of mHealth in the care of chronic Type-2 diabetes enrolled in a PCMH environment. Expected benefits of this research and development effort to the scientific community and health care services include:

- Improved understanding of how to advance three joint PCMH principles (i.e. coordination of care, improved quality and safety, and enhanced access to care) through the use of mobile technology;
- Improved understanding of how to include mHealth technology into the clinical workflow of the PCMH health services model;
- Improved understanding of how to use mHealth technology to activate patients diagnosed with Type-2 diabetes in disease self-management behaviors;
- Improved understanding of how patient complexity and degree of "sickness" may influence how patient use (or not) of mHealth technologies in self-management of their disease; and
- Improved understanding on how to map patient-entered biomedical data into clinical documentation and a decision support platform useful in chronic care management.

This effort will allow diabetic patients to track and securely transmit biometric readings through MHCEs accompanying mobile phone application known as mCare, directly from their personal phone. In addition, the data from these devices will be transmitted back to the MHCE secure system, and made available to their assigned PCMH case manager and primary care physician through a secure web portal dashboard interface, that will aggregate each patient's information and show trends about the patient's health in a meaningful way to their care team.

Finally, as part of the research study, data collected within MHCE will be securely exchanged and recorded within the patient's PHR to ensure continuity of care. From a technology perspective, this research project allows the TATRC's mHIC researchers and mobile application development team to achieve an important milestone for the MHCE system and mCare application – providing interoperability with a variety of devices and health information systems in a secure, encrypted fashion.

AAMTI PROJECT SPOTLIGHT: The Fort Rucker Resiliency Resources Mobile App

Soldiers, at Lyster Army Health Clinic, utilize the new mobile health app for Fort Rucker, Ala. The app can be used to find useful links and contact information for various places of interest on Fort Rucker, as well as events happening on post.

Photo Credit: Ms. Jenny Stripling (Army Medicine)

One of the many challenges facing a Soldier and his or her family when moving to a new duty station is identifying the location and hours of operation for Post services such as the primary care clinic, the behavioral health clinic, the local gym, the Exceptional Family Member Program, and the Alcohol and Substance Abuse Program. Although this may seem to be a relatively trivial concern, anything that can reduce stress and confusion is an important quality of life enabler.

In Fiscal Year 2015, Telemedicine and Advanced Technology Research Center (TATRC)'s Advanced Medical Technology Initiative (AAMTI) program provided funding to the Lyster Army clinic at Fort Rucker, Alabama to demonstrate the value of a mobile app designed to provide access to information about the services available on post. The Fort Rucker Resiliency Resources Mobile App, spearheaded by CPT William Capp and COL Gary Wheeler, is a mobile app that incorporates data about Fort Rucker and the support and services available there. Capp said the resource app has the ability to find information fast so Soldiers and Families can make healthier lifestyle choices and be active in their daily lives.

The information collected is an aggregation of data from many sources including the various installation websites and the Fort Rucker Community Resource Guide. The app is focused on the five health domains which include: physical, emotional, family, spiritual, and social as identified in the Comprehensive Soldier and Family Fitness campaign.

COL Wheeler, CPT Capp and the development team identified two essential components for their AAMTI project to ensure that the app would be both functional and user friendly. First was the development of the app itself. Ease of use and efficiency were key design factors, and both iOS and android platforms were utilized. The second component to the AAMTI project was the development of health taxonomy. The taxonomy is based on the standardized services in five health domains: physical, emotional, social, family, and spiritual. All Army Garrison health resources are organized in accordance with this structure. The common taxonomy for application development supports the potential for rapid deployment of the app across the Army Enterprise, vastly improving access to health services at new duty stations through a simple app download.

According to CPT Capp, "The concept of our mobile app is this: In a year's time there are 525,600 minutes. Out of all of these minutes a person may spend approximately 20 minutes with their health provider, on average, five times a year. If you are only seeing your primary health care provider for 100 minutes out of the year, what else are you doing to positively affect you and your Family's health the rest of the year? How can we at Lyster and at Fort Rucker impact your life space to help you make healthy lifestyle choices?

"In steps, this mobile health app [will] help impact the life space of our Soldiers and Families."

CPT Capp and COL Wheeler have already envisioned future improvements and additions to the app, to include notifications of upcoming Post events, geo-targeting to allow on-site, automatic downloading of Post information and maps, and health-related information that supports the Comprehensive Soldier and Family Fitness campaign.

As the app rolls out to other Army installations, a form of geo-targeting will give the ability to download the local base information into the app. This is a great feature, especially for someone that goes TDY to other places. Future updates for the app include a push notification that one can opt-in or out of that notifies you of upcoming events including 5K's or healthy cooking demonstrations at Lyster. The app can be downloaded

Pictured (L to R) COL Gary Wheeler, Mr. John Winston & COL Dan Kral at the 2015 DHITS conference. Mr. Winston is holding the mobile device that the AAMTI program funded.

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from local mobile app stores for Android and iPhone by typing "Rucker" in the search field.

About the AAMTI:

The fundamental goals of the AMEDD AAMTI are: to demonstrate advanced medical technologies and their impact on cost, access, quality, and safety of care and medical readiness; to provide senior AMEDD leadership with medical tech-watch capabilities; and to encourage medical technology entrepreneurship by funding MEDCOM technology innovators through a bottom-up (provider/MTF level) approach. Managed by TATRC, the AAMTI provides modest funding to AMEDD personnel to conduct small-scale technology demonstrations and proofs of concept.

AAMTI UPDATE:

The FY16 AAMTI cycle has concluded. There were fifty-eight pre-proposals submitted, from which thirty-six full proposal were invited. Twenty-six projects have been identified for FY16 funding. The FY17 AAMTI will open for pre-proposal submission in early January 2016.

USAMRMC's Reifman Recognized with Second Presidential Rank Award

By: Crystal Maynard, USAMRMC Public Affairs

The U.S. Army Medical Research and Materiel Command's Dr. Jaques Reifman has been selected to receive the Presidential Rank Award's Meritorious Executive Award for the second time in his government career.

Dr. Jaques Reifman, Director, BHSAI

Reifman serves at the USAMRMC's Telemedicine and Advanced Technology Research Center, where he is the director of the Department of Defense's Biotechnology High Performance Computing Software Applications Institute (BHSAI) for Force Health Protection.

Reifman first earned the Presidential Rank Award's Meritorious Executive Award in 2009, which recognizes Senior Executive Service (SES) members who have demonstrated extraordinary career accomplishments. The selection process is rigorous and only 5 percent of SES members are eligible to receive the rank of Meritorious Executive. There will be a ceremony in the spring to honor Reifman and the other executives awarded a Presidential Rank Award.

"It is, of course, very exciting and an honor," Reifman said of the award. "However, I would not be where I am without my team. I may bring an idea to the table, but they dig in and find ways to bring that idea to fruition."

After Reifman started at the USAMRMC in 2001, he saw the need for an organization such as the BHSAI. Reifman built the institute to have a diverse staff comprised of about 40 employees, 75 percent of whom have doctoral degrees. The BHSAI's mission is to develop computational solutions to accelerate the research and development of militarily relevant medical products for the USAMRMC's Force Health Protection Directorate. The institute also collaborates with life scientists within and outside of the DoD to develop and integrate computational biology and medical informatics applications into research programs; focused on improving the medical protection and care of military personnel.

"In my 30-odd year career as a research scientist in academia and government, I have not met a more driven and capable leader," said Dr. S. Anders Wallqvist, deputy of the BHSAI for Force Health Protection. "Working with Dr. Reifman is exciting. He is a person that pushes the boundaries of the science and he is not afraid to work outside his comfort zone. Dr. Reifman is somebody who drives himself and us to excel in the work that we are doing."

To complete its mission, the BHSAI collaborates with many other parts of the USAMRMC, as well as Navy, Air Force and academia. The institute averages 20 to 25 projects each year.

"One of the hallmarks of working with Dr. Reifman is his ability to instill a sense of urgency and commitment to the work that we are doing," said Wallqvist. "His work ethics are legendary; he comes in first in the morning, and he is the last one to leave. He sets an example for excellence, and I think this comes across in how the institute works and ultimately in the work that we provide to support the Warfighter."

Answer to Last Issue's TATRC TRIVIA...

Q: Who was the very FIRST Director of TATRC? (HINT: TATRC's name at the time was MATMO)?

A: COL (Retired) Fred Goeringer

TATRC Team Prominently Featured at the mHealth Summit in Washington, D.C.

From left: Mr. Ed Kensinger, Ms. Mabel Cooper, Dr. Stephanie Fonda, Ms. Holly Pavliscsak, and Ms. Jeanette Little, at mHealth Opening Summit.

Last year, the Healthcare Information and Management Systems Society (HIMSS) published a study that reported that mHealth is being primarily used for pharmacy management, management of chronic care diseases, analysis of patient data and remote patient monitoring.[1] As part of this study, 59 percent of health system respondents said a mobile technology plan was already in place and an additional 29 percent are working to develop a plan. Utilizing mobile devices in the healthcare systems creates the potential to enhance productivity, increase response rates, improve appointment attendance, as well as increase and enhance overall communication. There are several specific ways that this technology has become popular over the last few years including: medication education and compliance, improved patient communication, patient treatment compliance, and from the health system view aggregated data/population health that can inform future decisions about clinical protocols.

The 7th Annual mHealth Summit was held this year on November 8-11, at the Gaylord National Harbor Conference Center, in Washington, D.C. The mHealth Summit, which is now part of the HIMSS Connected Health Conference, puts emphasis on mobile health innovation and the power it holds to engage and connect. The HIMSS Connected Health Conference now includes: the mHealth Summit, Global mHealth Forum, Population Health Summit and the CyberSecurity Summit, which is bringing together thought leaders, health IT professionals, policy makers and health executives around the three strategic areas of connected health – mobile health, population health and cybersecurity. The HIMSS Connected Health Conference as it is now known, continues to be the premier location for clinical mobile health research, which is in line with the mission of TATRC's Mobile Health Innovation Center (mHIC) located at Fort Gordon, GA. This conference continues to mature and showcase an integrated, connected approach to mHealth, which incorporates multiple IT systems for data exchange and increased communication and tracking. TATRC had several key staff members in attendance and one major presentation during the PopHealth Summit. Dr. Fran McVeigh, Ms. Jeanette Little, Mr. Ed Kensinger, Ms. Holly Pavliscsak, Ms. Mabel Cooper and consultant Dr. Stephanie Fonda were active participants at this 3-day mobile summit. Holly Pavliscsak, BS, MHSA, Research Project Manager for mHIC, presented at the new PopHealth Summit on Monday, November 9th, delivering a presentation titled: "Utilizing Mobile Messaging for Rehabilitation Support." The presentation focused on patient engagement utilizing mCare for Service Members being cared for in their home communities, determining whether mCare, a secure mobile messaging system is an appropriate communication tool for case management, with an emphasis on Traumatic Brain Injury (TBI), and/or Post Traumatic Stress (PTS). Data for this analysis came from a randomized controlled trial comparing mCare (n=95) with standard care (n=87). This analysis included mCare subjects only. Each day for 36 weeks, mCare sent a questionnaire to the subjects. Certain responses triggered action from the care team. Patient engagement was measured as a) percentage of questionnaires responded to each week, b) average response time each week, and c) exposure to the intervention. Analysis included subjects' response and exposure by presence/absence of behavioral health problems, PTS, and/or TBI. Irrespective of behavioral health status, PTS or TBI, subjects usually responded to >/= 60% of the questionnaires each week for the full 36 weeks and in 10 hours or less. Subjects with PTS and/or TBI responded quicker than subjects without these problems. The high percentage and rapidity of response indicates that subjects were engaged with mCare. This suggests, then, that mCare is an appropriate communication tool for care management, even for people with PTS and/or TBI.

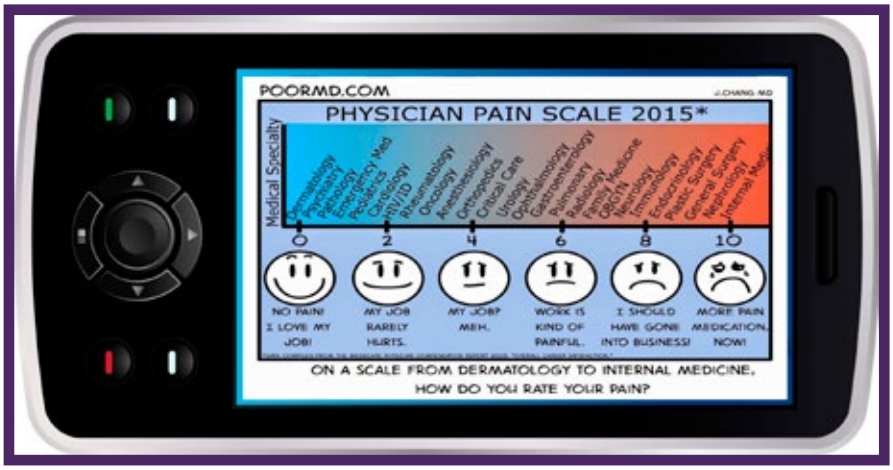
For more information about the HIMSS Connected Health Conference please visit www.himsspopulationhealth.org.

[1] Mcaskill, R. The Benefits of Mobile Health Strategies, February 03, 2015. http://mhealthintelligence.com/news/the-benefits-of-mobile-health-strategies

Ms. Holly Pavliscsak delivering her presentation about mobile messaging and rehabilitation at the 2015 mHealth summit.

mHIC Conducts Pain Study Evaluation

This Quarter, the Mobile Health Innovation Center (mHIC) conducted a research project, called the "Evaluation and Impact of mCare, a Cell Phone Based, Bi-Directional Messaging System, on the Case Management Care of Traumatic Brain Injury Patients Assigned to Community Based Warrior in Transition Units." The study resulted in a common denominator among patients and providers alike: the need for a more efficient way to record pain rather than a simple one to ten scale, commonly known as a visual analog scale (VAS). This scale is typically assessed at most patient encounters to evaluate patient's physical pain. After further assessment, it was determined that patients and providers desired a more graphically rich way to record and evaluate pain. Modeled after several pain scales, the mHIC development team created a mobile pain assessment tool that would allow providers to utilize a "back-end" web portal to request pain readings from patients which would compile and track patient responses to pain questionnaires on the Mobile Health Care Environment (MHCE), all while utilizing its accompanying mCare application.



Recently, TATRC's mHIC team received final approvals to initiate a patient recruitment campaign for a Joint Program Committee – 1 (JPC-1) funded research study on pain evaluation for Warriors in Transition, using mobile technologies via the Mobile Health Care Environment Research (MHCE-R) system. This continuing study will be conducted as a multi-center, randomized control study. An anticipated number of 90 study participants will consent to participate and another 60 participants will download the mCare application onto their personal cellular devives. This study aims to evaluate and demonstrate the usability, responsiveness and impact of using the MHCE for pain management, through collecting real-time pain data from subjects. Study participants will be randomized into three groups. Experimental groups will be provided with the mCare mobile application intervention. The first of the experimental groups will receive the graphically rich pain scale on mCare, while the second experimental group will receive the VAS on mCare. The third experimental group will get the VAS as part of their standard of care without the mCare mobile application intervention. Pain questionnaires will be sent out on a daily basis to the experimental groups for a running course of 12 weeks. Each of the two experimental groups will be assessed by the System Usability Scale at the end of the study and have their response rates to the two pain questionnaires compared. All study participants will then be assessed by the General Well Being Schedule at beginning and at the conclusion of the study.

The Community Care Unit, working together, will assemble and monitor responses to message sets. If a subject reports through the mCare app that their pain rating level has changed by 30% on the respective pain scales, then the patient's assigned Nurse Case Manager (NCM) will be notified. This alert will encourage the providers to log into the website to see the subject's responses. Playing a vital role, the mCare mobile app will be considered an effective tool to conduct pain assessments, provided that each subject answers at least one of the daily mCare mobile app pain questionnaires per week. If the association proves positive, in reference to the subject's general well-being, it will allow for subjects to better cope with their pain, when they are able to record/communicate the pain to their provider in real-life circumstances through the mobile app.

TATRC's mHIC Lab Manager, Ms. Jeanette Little, concluded, "The TATRC mHIC team is excited to begin patient recruitment for this project. This follow-on research effort is part of an overall strategy to expand the TATRC body of knowledge on best practices for connection with patients between clinical encounters."

The approach is user friendly, requires minimal support, and will empower the subject in individual healthcare management. Additional features of the MHCE Research System/ mCare mobile app will include Health and Wellness Tips, General Announcements and Administrative Information Messages, such as appointment reminders.

Employee Spotlights

Salute to mHIC's Major John C. Fraser

This past Summer, an award ceremony was held at the TATRC mHIC office in Fort Gordon, GA. Major John C. Fraser, Royal Signals, was awarded the Friend of the Army Medical Department Certificate for exemplary support to the Army Medical Department. The "Friend of the Regiment" certificate was created by the Army Surgeon General to recognize individuals, groups, and businesses which have made noteworthy contributions to, or performed a service for, the AMEDD Regiment.

Distinguishing himself as the Lead Engineer and Officer in Charge of several high profile demonstrations of medical technologies, Major John C. Fraser has supported the efforts of the AMEDD Regiment in an exemplary fashion. These demonstrations included Recall Capability within a Combat Support Hospital, Transport Telemedicine, and Cross Domain Solution. Each of those demonstrations required weeks of travel to field training sites where Major Fraser supervised and participated in the labor intensive setups. In addition to participating in the C4ISR E-14 demonstration and the TATRC Open House, Major Fraser has been assigned to manage numerous projects focused upon the insertion of technology in order to improve clinical outcomes.

The first of these projects was focused upon the creation of an integration of a technical solution to allow clinical data to flow across the Secret network, used by the combatants, to pass data to the Unclassified network where our clinical data is stored. This was referred to as the Cross Domain Solution. The second of these projects was focused upon the recall of clinical personnel within the large footprint of a Combat Support Hospital through the use of the recall capability as well as a secure wireless technology. The third project involved the ability to more effectively pass digital imaging data through the use of a unique data transmission capability. Major Fraser has also been assigned as an exchange officer to the United States Army's Cyber Center of Excellence, Experimentation Division under a NATO Officer Exchange Program during his assignment here.

The Friend of the Army Medical Department Plaque.

UK Liaison Officer, Major John C. Fraser accepting the Friend of the Army Medical Department (AMEDD) Certificate presented by Mr. Ed Kensinger

Major Fraser has worked tirelessly through the execution of all of these projects. The projects that he executed on behalf of the AMEDD often required extensive travel and extremely long hours in inhospitable terrain and adverse weather conditions. Major Fraser always volunteered for the more difficult tasks, even those that are typically executed by personnel much more junior to him in rank, and always conducted himself in a manner that demonstrated the "lead by example" model.

Major Fraser has gone above and beyond the call of duty to support the AMEDD mission and it brings great credit to him personally, but also to the United Kingdom, Scotland, and the British Army.

On behalf of your TATRC colleagues, we salute you!

3 New Employee Spotlights

Robert Connors Returns to TATRC's HTIC Team!

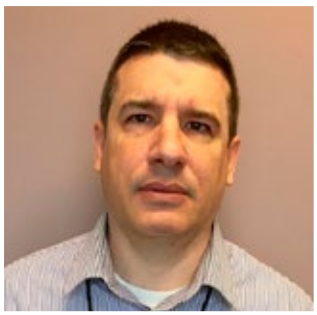
Believe it or not, he's back – again. Leaving TATRC back in June this year, Robert Connors aka… "Bob" left TATRC to assume a position as VP for the Health IT Practice at NiyamIT, Inc., a small company which was part of the IBM/Epic bid on the Defense Healthcare Management Systems Modernization Program. In his return, Bob currently supports Ms. Betty Levine and Ms. Ollie Gray in the Health Technology Innovation Center (HTIC). In his new role, Bob will be drafting proposals concerning new ways to acquire access and analyze health data, make it mobile, exchange it, and store and retrieve it, in an effort to support improved health access, availability, acceptability, continuity, cost-effectiveness, and quality; in addition to looking for new customers for TATRC's Early Stage Platform. Bob has already contributed to a new proposal to create a Linked Problem List in the DoD/VA Joint Legacy Viewer. He will also leverage his 35 years of experience in the Military Health System to provide subject matter expertise on the Virtual Medical Concierge prototype application, and the Clinical Language Encoder Software as a Service prototype project. Bob will also lend his expertise to an enhanced Fitness Tracker prototype, and a potential project with the DoD/VA IPO concerning an HL-7 FHIR test lab. Inside the office, Bob is most famously known for his delectable Paella dishes that he whips up every year for the office Picnic, and for donning that Red Santa suit at the Holiday Party each year!

Mr. Bob Connors returns to HTIC.

Bob – We're glad you're Back! \\\

TATRC Welcomes Mr. Todd Poling to Op-T-Med & Mr. Robert Chewning to mHIC

Mr. Todd Poling recently started with TATRC's Op-T-Med Lab as a Mobile Software Engineer. Soon, he'll be working with MC4 on making modifications to the eTC3 mobile application. For the past 10 years, he had been building mobile applications for the Veterans Administration and non-profit health organizations. Todd, welcome aboard! \\\



Mr. Todd Poling, Project Officer, Op-T-Med

Mr. Robert Chewning joins the TATRC family, and will work in direct support of the Mobile Health Innovation Center (mHIC) team, as a Senior Project Officer supporting TATRC's Mobile Health Care Environment system and will work primarily with mHIC's Lab Manager, Ms. Jeanette Little and the rest of the mHIC team. Even though the mHIC lab is located at Fort Gordon, GA, Robert will be 100% full time and on site, in TATRC's main Fort Detrick office. Robert lives in Frederick along with his wife and two children and his favorite hobbies include playing guitar and fishing. Before joining TATRC, Robert previously served as Senior Project Manager at the Department of Energy.

Robert, Welcome to TATRC! \\\

Mr. Robert Chewning, Senior Project Officer, mHIC

Op-T-Med Team Works to Improve Healthcare for Deployed Medical Units

Mr. Lary Markins, TATRC Senior Field Support Engineer

In coordination with the Communications-Electronics Research, Development and Engineering Center (CERDEC), TATRC's Operational Telemedicine Lab installed a Lociva 4G LTE base station in the OP-TMed Tele-Medicine HUMVEE to use while conducting research into technology enhancements for medical care. This experimentation led by TATRC technical expert, Mr. Larry Markins, has aided in the development of innovative solutions to medically related problems that is in alignment with the advance of technology in the private sector.

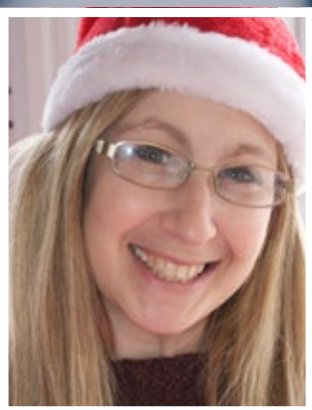
As new technologies become more available, TATRC works with military, academia, and industry stakeholders to adapt these technologies in an effort to enhance the practice of medicine in support of the MEDCOM's mission to "Deliver Leading Edge Health Services to Our Warriors and Military Family to Optimize Outcomes."

This capability provides an evaluation and integration location for medical equipment and systems used to improve healthcare for deployed medical units. The OP-TMed 4G LTE switch allows clinical and technical specialists to resolve integration problems prior to deployment in an environment similar to that in which they will actually be used.

The Lociva 4G LTE base station

Employee Spotlights

TATRC Receptionist Beats Cancer!



Ms. Marne Tragert, Administrative Assistant and breast cancer survivor.

Not all heroes are found adorned in red capes or bear gold medals on their chests; sometimes they co-exist inconspicuously, living modestly amongst the public as our friends, neighbors, or even as our coworkers. Nowhere is this more true than in the case of TATRC's own, Marne Tragert; an Administrative Assistant and receptionist right here at TATRC's front desk.

Marne, a one-year free, breast cancer survivor, was diagnosed with stage two HER2+ and Estrogen+ in early 2014. She has demonstrated true heroism through her courage, perseverance and warfighter-like attitude; having undergone a double mastectomy, endured countless surgeries, and withstood aggressive rounds of chemotherapy, she came out a winner!

About 1 in 8 U.S. women (12%) will develop breast cancer over the course of their lifetime; with studies having suggested that military women have a slightly higher breast cancer risk than that of their civilian women counterparts, according to a 2009 Walter Reed Army Medical Center study. Although often rare, men are also at risk for the disease, with an expected 2,350 men to be diagnosed with the disease this year.

In an effort to spread awareness, Ft. Detrick has consecutively hosted their Annual Walk for Breast Cancer, celebrating their fourth year this past October. The post-wide event aims to unify both the Fort Detrick community and the city of Frederick, MD as they congratulate those who have survived, celebrate the lives that have passed, and support those still fighting the good fight.

Marne is truly a hero, because she hasn't allowed this disease to hinder her life and remains active – finding solace in her scrapbooking and being a mother to her "high-spirited" five-year old son. As a breast cancer survivor, she urges EVERYONE, regardless of age, gender or race to check themselves monthly.

For information on how to self-examine, please visit 5 Steps of a Breast Self-Exam.

TATRC's BioGears® Brings Free Medical Simulation Technology to America

Staff Sergeant Benavides has just been hit by shrapnel during a mission in the Middle East. His buddies hastily come to his aid to squelch the bleeding from his shoulder and flank. Things seem to be improving as the medic takes charge until Benavides says he is feeling starved for air and collapses. What will the medic do to save this casualty?

Medics prepare for situations like this through training at military educational centers. The difference with this particular scenario is that big facilities, patient actors and instructors aren't required because Sergeant Benavides is a virtual casualty created in software. The technology that makes such training possible has been advanced by TATRC's Medical Modeling & Simulation Innovation Center (MMSIC) through the BioGears® physiology system, created under contract by the North Carolina based company, Applied Research Associates (ARA).

BioGears® is a physiology engine that simulates how the body works on a practical level in real-time through software. The engine simulates breathing, circulation of blood, kidneys and other organs along with medications. In this manner, a bleeding casualty, an athlete having an asthma attack or a teen undergoing anesthesia can be easily simulated in a manner that accurately keeps track of the virtual patient's alertness, heart, breathing and blood chemistry. This capability allows educational developers to create new virtual experiences with the goal of challenging the military's medical talent to perform at their best.

This project was originally conceived by Thomas Talbot, MD, a TATRC Scientist at the MMSIC Lab and Professor from the University of Southern California. Dr. Talbot explained TATRC's reasoning, "We were spending a lot of money on multiple projects that were supposed to simulate patients. We wondered if we could come up with a human physiology model that was fast enough to work in real-time and just accurate enough for medical training. The model would be universal and free for anyone to use. That way, we could focus on other innovations and create more capable training in less time."

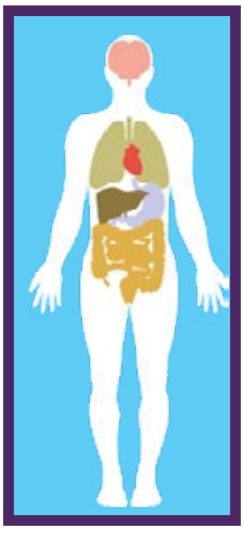
The TATRC team worked with the Joint Program Committee-1 (JPC-1) Medical Simulation & Health Information Sciences program at Fort Detrick to create and fund the concept, then called the Public Physiology Research Program. The Defense Medical Research Development Program provided $7 million for the program, which ARA won through a public competition.

As part of an initiative to reduce development costs, the effort led to a fully open source engine. Jeff Webb, ARA Principal Investigator, explained, "BioGears® is open source. That means anyone can use it for free, even for commercial applications. They can also customize the engine and share their innovations with our community. This should really lower the cost to build compelling training experiences for the military."

ARA has already used BioGears® to create an anesthesia trainer and a combat medic training system for the Army. When asked about others using the engine, Webb stated, "Even though our Beta Build was just released this October, we are already seeing very strong interest. Our user community includes various government entities, academic centers, and both large and small simulation and device companies. One such company, VCOM 3D, showed us their Air Force virtual casualty simulator running BioGears® at our conference this year."

This new physiology engine was publically released in October 13-14, 2015, in conjunction with the first-ever BioGears® Users Conference, held in Durham NC at the North Carolina Biotechnology Center. Over 100 registrants from government, academia, and industry, engaged with excitement. Mr. Harvey Magee, MMSIC Lab Manager and the Government's Grants Officer Representative provided oversight, noted "This BioGears® meeting, a 'first', was a buzz of exciting scientific and engineering engagement, give-and-take about the positive impact this may have on the entire field of Medical Modeling & Simulation (MM&S). It was exciting to see the expressions on peoples' faces when they 'got it'."

Currently, the engine requires computer programming skills in order to use it or integrate it into an application. Dr. Talbot stated that the next logical step will be to make BioGears® directly usable by non-programmers such as clinicians and students, where it could be used for medical training, research or STEM education. BioGears® is expected to serve as a public resource that will find use in many different and unexpected applications in the future. Detailed information and downloads are available at http://biogearsengine.com.



BioGears® is a multi-year program funded by the Defense Medical Research Development Program, JPC-1 and administered by the U.S. Army's TATRC, MMSIC, under USAMRMC award number W81XWH-13-2-0068.

biogears

Op-T-Med Senior Project Manager Presents at NATO Science and Technology Symposium in Paris, France

In October, in Paris, France, the North Atlantic Treaty Organization (NATO) Science and Technology Organization (STO), Human Factors and Medicine Panel (HFM) – 254 Symposium, were tasked to look at the most current state-of-the-art human factors/human systems integration. The task entailed taking a look at real-time surveillance of the health status of NATO forces and the population in the operational theater with emerging population health and healthcare delivery information systems. TATRC's Operational Telemedicine Lab was invited to play a role and share their knowledge.

The three day symposium discussed leading-industry topics such as: Deployed Health Surveillance; Medical informatics and information systems; Human systems integration in medical operations; Medical technology futures in surveillance and tactical systems; Human aspects of utilization of informatics for battlefield; and Barriers and enhancements to achieve interoperability of NATO systems.

The briefings on Deployed Health Surveillance for Infectious Disease highlighted that early detection is key for NATO forces in an operational environment on the deployed forces and indigenous population. The ability to identify, recognize new diseases, and infectious disease threats, i.e. Ebola, Malaria, etc. and dispensing the correct medications to combat troops to keep them operationally effective is critical. There are two mission critical decisions that need to be determined: Support command (personnel, fatigue, hydration, sleep, etc.) decisions vs. Support medical (sensors, injuries, etc.) decisions.

TATRC's very own, Mr. Carl Manemeit served as the representative from the Operational Telemedicine Lab to present the research and exercise evaluation on Remote Patient Monitoring, Encounter Documentation, and Telementoring over Secure Mobile Tactical Networks at the HFM-254 Symposium to NATO members. The presentation focused on the Operational Telemedicine portion for the Communications-Electronics Research, Development and Engineering Center's (CERDEC) Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Ground Activity (CGA) Event 2015 (E15) exercise on the effectiveness of physiological devices and wireless sensors and how they enhance a medics capability to electronically document patient care and conduct telemedicine from a point of care over CGA's tactical radio (Wideband Networking Waveform) and CERDEC's 4G Multi-Access Cellular Extension networks. The exercise leveraged emerging Brigade Combat Team tactical communications capabilities to capture and transmit medical information on a casualty; evaluating enabling wireless technologies; conduct remote physiological monitoring and telementoring; and exploring Cross Domain Solutions to exchange unclassified medical information over a classified network to remain unclassified at the receiving facility.

Mr. Carl Manemeit, Senior Project Manager, presents in Paris, France at NATO symposium.

The presentation was widely accepted by the NATO members present at the symposium. It was encouraging to learn that NATO is starting to look at Point of Care telemedicine capabilities and that the U.S. Army can lead the way in the research, development and evaluation of these emerging technologies.

Upcoming Events:

16 - 20 January: IMSH 16; San Diego, CA

29 February - 4 March: HIMSS 16; Las Vegas, NV

7 - 9 April: MMVR Conference; Los Angeles, CA

6 May: TATRC's Technology Open House; Ft. Detrick MD

23 - 26 May: 2016 SOMA Annual Meeting; Charlotte, NC

Joint Effort: New Project Brings T2 & TATRC Labs Together to Increase Readiness

A kick off meeting was held at the Telemedicine and Advanced Technology Research Center (TATRC) to initiate the Behavior Change Coach (BCC), a Joint Program Committee -1 (JPC-1) funded project. The BCC is a revolutionary behavior change program meant to increase readiness to change any behavior (such as smoking cessation or weight loss) based on the Trans Theoretical Method (TTM) of change. This project will involve a joint project between two of TATRC's laboratories, the Mobile Health Innovation Center (mHIC) located at Fort Gordon, GA, led by Jeanette Little, and the Health Technology Information Center (HTICC) located at Fort Detrick, MD, led by Ms. Betty Levine, in conjunction with The National Center for Telehealth & Technology (T2), located at Joint Base Lewis-McChord, WA, led by Amanda Stewart. This collaboration is unique, as it is the first of its kind and leverages the expertise of two TATRC labs and T2's expertise in psychological health and mobile app development.

Coupling mHIC's Mobile Health Care Environment (MHCE) secure mHealth communication system, is also mHIC's nationally awarded secure mobile application "mCare." mCare will be utilized to securely evaluate the ability to transfer data between HTIC's Early Stage Platform (ESP), allowing for an evaluation of data exchange between electronic health records (EHR) and the mobile application. T2 will develop the end point mobile app architecture and apply their expertise in psychological health to develop a graphically rich mobile app that can run on the MHCE architecture that will be able to exchange data with synthetic data and EHR data that is part of the ESP.

The HTIC & mHIC lab leaders, along with T2 staff, take part in the kick off meeting for the Behavior Change Coach (BCC). This meeting was hosted at TATRC's headquarters offices.

Unique projects such as BCC are a prime example of TATRC's mission — Working together for a common goal in an effort to exploit technical innovations for the overall benefit of improved readiness, access to care and military healthcare delivery.

New Technologies Create Partnerships Among Industry Leaders

KCF Technologies Inc, in partnership with Penn State University, has just begun executing their second year of the Phase II SBIR contract titled: "A New Generation of Actuators for Robotic Systems." TATRC's Operational Telemedicine Lab Manager, Dr. Gary Gilbert along with project manager and mechanical engineer, Mr. Nathan Fisher conducted an Interim Process Review in October to assess the first year's performance and review the project plan for the upcoming year's effort. The motivation behind this SBIR topic is to design and prototype an improved actuator for medical robotic applications that demonstrates improved performance, compared to currently available actuator types (e.g. both high force and high precision, and low space, weight and power (SWaP)).

KCF's approach to this topic is to create a unique actuator design utilizing Electroactive Polymers (EAP's). Utilizing EAPs for actuators is a new application of a fairly nascent technology - compared to conventional actuation methods. KCF is attempting a more innovative approach as opposed to an incremental improvement of current actuator technology. This effort has lead KCF to continue to develop a number of promising approaches in parallel during their Phase II effort.

KCF intends to continue developing a few lead candidates in parallel to support a design gate review in a couple of months. It is KCF's desire to develop at least two actuator mechanisms, one linear actuator and one rotary actuator. The rotary actuator design utilizing EAPs is being developed by Penn State's Mechatronics Research Laboratory under a subcontract. Actuators derived from EAPs have built-in compliance which should make them inherently safer to operate in close proximity to humans.

Potential future applications of KCF's novel EAP actuator technology

KCF has demonstrated an acceleration of development in the past four months, which will propel the project forward in achieving the Phase II results/deliverables.

As efforts continue, TATRC's Op-TMed team plans to continue to engage with KCF and brainstorm as designs develop to move toward a more fully integrated medical robotics application.

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