Golden Hour Study Gains Worldwide Attention, Prompts US Leaders to Reinforce One-Hour Evacuation Policy

By Cynthia R. Kurkowski, Senior Technical Writer

The study proving the Golden Hour policy saves lives drew international attention from the media, scholastic circles, and the medical and military communities and US leaders. The Golden Hour policy mandated prehospital evacuation transport of critically injured combat casualties in 60 minutes or less.

The Effect of a Golden Hour Policy on the Morbidity and Mortality of Combat Casualties published in Journal of the American Medical Association (JAMA) Surgery last fall was number eight among its top 10 papers. The retrospective study compared morbidity and mortality outcomes for casualties before versus after the mandate and for those who underwent prehospital helicopter transport within 60 minutes versus more than 60 minutes. The study involved researchers from JTS, USAISR, Uniformed Services University of the Health Sciences, Texas A&M Health Science Center College of Medicine, and the Center for Translational Injury Research at the UT Medical School at Houston.

News of the supporting data reached the ears of policy enforcers. On 29 Jan 2016, US Brigadier General Raymond S. Dingle, Deputy Chief of Staff of the Office of the Army Surgeon General, issued a memorandum emphasizing the urgent need for medical evacuation (MEDEVAC) within the first hour. The memo’s purpose is to provide interpretation and applicability of Army Regulation 40-3, Paragraph 16-2a which implemented the aeromedical evaluation standard of a one-hour completion time for urgent surgical missions. Since the policy’s implementation in 2009, there was a shift from 24.8% to 75.2% of missions achieving transport within an hour with the median transport time reduced by 54%.

The memorandum reaffirms the MEDEVAC standard with the “intent to prevent disparity in evacuation standards.” The memo does so by clarifying the one-hour evacuation is not confined to battlefield injuries. “The policy... applies to all operations without regard as to whether they occur during combat, in contingencies, or in support of installation operations. As such, this policy applies to installation air ambulance providers without regard to their status as military, government-owned, contract operated, as well as contract-owned-and-operated assets.”

The Golden Hour statistics validates the previously unsubstantiated policy. According to The New York Times, Robert Gates, the former US Defense Secretary, issued the mandate in 2009 without any statistical support whatsoever, an unprecedented move.

“I had no data to support my decision. I simply told them my decision was a matter of morale and moral obligation to the troops. If I were a soldier who had just been blown up, I’d want a helicopter there as fast as possible,” said Gates in The New York Times article. Gates said he was gratified to learn that his decision to reduce medical-evacuation times and improve trauma care in Afghanistan was credited with saving hundreds of lives. (The study estimated 359 lives were saved from 2009-2014. The 359 lives saved does not refer to specific individuals; the number is drawn from a comparison of higher fatality rates before the medical evacuation orders and lower rates afterward.)

He noted the importance of a secretary-level order to compel a reluctant Pentagon bureaucracy to focus on the needs of the troops. The memorandum reminding the system of its duty to deliver the injured to a surgical facility within one hour is a start.

The retrospective descriptive analysis of battlefield data examined 21,089 US military casualties that occurred during the Afghanistan conflict from 11 Sep 2001 to 31 Mar 2014. Detailed data for those who underwent prehospital helicopter transport were analyzed according to whether they occurred before or after the mandate and whether they occurred in 60 minutes or less vs more than 60 minutes. Casualties with minor wounds were excluded. Mortality and morbidity outcomes and treatment capability-related variables were compared.

The study “has enormous credibility due to the fact that these medical researchers are all combat veterans who have served at every level of combat casualty care,” Col. Evan Renz, a burn surgeon and former director of the Burn Center at San Antonio Military Medical Center, told The Express News.

The Golden Hour study will help guide decisions as evidenced by the memo distributed by US Brigadier General Raymond S. Dingle. Data reinforcing the policy’s relevance has influenced the Army’s training of medics. Army added eight months of instruction over previous requirements for helicopter medics. All Army flight para-

(Continued on page 3)
medics must attend a refresher course periodically to renew their certifications.

Lt. Col. Neil Davids, a physician who served in Iraq and Afghanistan and oversees pre-deployment training for Army medical personnel at JBSA-Fort Sam Houston, said the discovery was important. “Historically, the Golden Hour was created out of Vietnam, (but) saying that getting somebody to surgical care within an hour as the goal had never truly been validated in the community, and finally Dr. Kotwal has gotten the numbers to kind of prove what we all kind of intuitively knew: that sooner is better,” said Davids in The Express News story.

References


The Golden Hour study led by JTS’ Dr. Russ Kotwal ranked eight among the top 10 papers published in JAMA Surgery last year. The scoring was performed by Altmetrics which monitors and collates mentions of work online, ranging from scholastic journals to Twitter. The Altmetric scoring method ranks research outputs based on attention the paper receives from different media venues. The amount a news mention contributes to the score depends on the tier for that news source. Each venue is assigned a value based on what the Altmetric team believes reflects the relative reach of each type of source. For instance, a mention from a popular national news outlet such as The New York Times will contribute more to the score. The average newspaper story is more likely to bring attention to the research output than the average tweet.

“In addition to the media coverage, the Golden Hour paper has been the subject of a published editorial, letter to the editor, and commentary,” said Dr. Jean Orman, JTS’ Senior Epidemiologist. This heightened attention from the medical community underscores the interest in this topic and importance of this work.”

Golden Hour Altmetrics http://jamanetwork.altmetric.com/details/4571145

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<th>Table 1. US Military Combat Casualty Care Statistics in the Afghanistan Conflict and Historical Conflicts*</th>
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**Abbreviations:** CFR: case fatality rate; DOW: died of wounds (died after arrival at treatment facility); KIA: killed in action (died before arrival at treatment facility); RTD: returned to duty; WIA: wounded in action (RTD + non-RTD + non-DOW + DOW).

*Updated data for Iraq and Afghanistan (September 11, 2001, to March 31, 2010) were obtained from the Defense Casualty Analysis System. Definitions and historic World War II and Vietnam data were obtained from Holcomb and colleagues. A variance from Holcomb and colleagues is that we do not include Battalion Aid Station in the definition of medical treatment facility as it is a prehospital entity that lacks true major surgical capability.

*Provides a potential measure of a specific prehospital triage and care, optimization of evacuation procedures, and application of a coordinated trauma system as well as the effectiveness of medical facility care and calculated as follows: % DOW = (DOW/RTD + WIA + KIA) * 100.

*Provides a potential measure of overall battlefield lethality in a battle injury population and calculated as follows: CFR = (KIA + DOW)/KIA. The total Afghanistan value appears lower compared with previous comparisons. The difference between Afghanistan values before vs after the mandate was significant ($\chi^2 = 56.48\; P < .001$).

*Provides a potential measure of prehospital lethality, effectiveness of prehospital medical care, and availability ofprehospital transport and calculated as follows: % WIA = (WIA/RTD + WIA + KIA) * 100.
CAPT Zsolt Stockinger, MC, USN  
JTS Director

**DIRECTOR’S NOTES**

**SPREADING THE JTS MESSAGE...ONE MISSION AT A TIME**

Well, it’s time for another Director’s column. I had tried ducking it by cleverly arranging to be overseas when it was due, but Cynthia outsmarted me and changed the deadline while I wasn’t paying attention. That, and she was able to keep reminding me because the Blackberry just wouldn’t flush. So, as I spent a delightful 16 hours flying home, shoe-horned between the sumo wrestler and the sleep apneic, I had plenty of time to work on what to say. Plenty of time, but not plenty of ideas.

But being in places like former Soviet republics gives one perspective, so maybe I’ll just ramble on a bit about that instead. I was in a country we used to view as the enemy “Russians” during the Cold War, but we’re now providing medical training to them in their own not-so-cold war against those very Russians whom they clearly are not. From what I could see and what I heard, they could use a Joint Trauma System.

They lost their lessons learned between World War 2 and Afghanistan, the “Soviet Vietnam” of the 1980s, just as we lost our lessons learned between Vietnam and Afghanistan. They struggle now with their conflict, as we struggled at the start of this one. Like us, they have dedicated, well trained people and, like us a few years ago, their system lacks the integration required to provide coordinated care as patients move from place to place.

The problems and the frustrations they expressed were the same as ours: inadequate training for a combat trauma care mission; poor communication between echelons of care; equipment and supply shortfalls; and the perennial phenomenon that the closer you are to a big hospital, the smarter you become – just ask anyone standing in a big hospital.

They have no Golden Hour. For one thing, they have no aeromedical evacuation from the battlefield as they have neither air superiority nor the aircraft to spare for the task. I spoke about concepts like planned MEDEVAC rings and “intelligent tasking” that directs which casualties go to which facilities, and in return they related tales of 24-hour “MEDEVACs” in the back of uncovered cargo trucks.

So they were very interested to hear what we’ve [re]learned over the past decade about treatments such as massive transfusion and whole blood, damage control resuscitation and surgery, tourniquets, and haemostatic dressings. The surgeons I worked with over there were generally grateful to learn that meatball surgery remains meatball surgery, and that the differences are resuscitative post-op care. They marveled at how we view surgery as a process. They were impressed by how we’ve gotten ourselves organized.

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They were intrigued by the concept of standardizing treatment for specific injury patterns and the Clinical Practice Guidelines (CPGs) which I plopped down on the table in a giant ring binder for their perusal. Fascinated and at times shocked – how can you dictate care and surgical judgment from a book?

"Because we have the data to show that what’s in the practice guidelines works," I replied. Because we have the DoDTR. Because we standardize how we write things in the record. We review patient care wherever it occurs, and we figure out what works and what doesn’t. Because we are not a diaspora of deployed medical units working in isolation. Because we have a Joint Trauma System.

They must have bought what I was saying because the CPG binder disappeared during the first break, which meant no overweight baggage fee on the way home. Lucky me!

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**JTS TO ASSIST WITH XSTAT RESEARCH**

The CoTCCC named JTS as a key partner in its efforts to further investigate the uses of XStat. The recommendations were published in the Management of External Hemorrhage in Tactical Combat Casualty Care: The Adjunctive Use of XStat Compressed Hemostatic Sponges (14 Jan 2016). The documents states:

- A research project should be undertaken as a combined effort of the JTS and the Armed Forces Medical Examiner’s System to identify all casualties - to include KIA not entered in the DoDTR - who sustained life-threatening hemorrhage from narrow tract penetrating trauma. This effort should also note whether or not the wounds were amenable to treatment with limb tourniquets, hemostatic dressings, or junctional tourniquets and whether or not these devices were used.

- The JTS Performance Improvement process should be used to identify future casualties on whom XStat is used and how it was performed. The records of casualties who would have been good candidates for hemorrhage control with XStat (life-threatening hemorrhage from narrow tract penetrating trauma not amenable to treatment with limb tourniquets, hemostatic dressings, or junctional tourniquets or not responding to these treatment modalities), but for whom XStat was not used should be identified and reviewed for opportunities to improve.

See Page 18 for another update.
The Tale of the DoD Trauma System

JTS Visionary Shares His Story of How the JTS and the DoD Trauma Registry Were Built.

By Dallas Burelison, JTS Education Branch Chief and Cynthia R. Kurkowski, Senior Technical Writer

JTS visionary COL John B. Holcomb (retired), a US Army general surgeon, shared the story of how JTS was formed with participants of the Combat Casualty Care Conference (CCCC). Holcomb is accredited with seeing the tactical need, the operational need, and the strategic need to deploy a trauma system.

Holcomb and other JTS leaders, whose hard work contributed to JTS’ success, participated in the 500th conference held 18 Feb 2016.

According to Lieutenant General Douglas J. Robb, Holcomb was the “John the Baptist” of trauma care systems whose “brilliance and diligence and persistence” converted supporters one person at a time. Converts included Army Surgeon General James Peake who sent Holcomb and consultants to study the matter.

Holcomb explained how the idea of a tri-service trauma system came to him when he was deployed in the early years of the wars in Iraq and Afghanistan. In such austere locations, the absence of trauma experts and a trauma system was glaring.

“It was intimately clear as I went into Iraq in May 2003 and talked to young medics, forward operating bases, forward surgical teams, combat missions, and combat support hospitals and found there was absolutely no connection of anything to anybody – and I emphasize that,” said Holcomb. “There was no communication from prehospital providers to ground units or between the ground units and to Landstuhl where casualties were sent.”

He explained the communication disconnect was so profound it was rumored the Surgeon Generals got their information from The Washington Post since the publisher reportedly had a robust data collection and reporting system. The Surgeon Generals were essentially working in “the dark.” They didn’t know who was receiving what operations much less what were the common injuries.

The revealing Iraq trip prompted Holcomb to recommend the Army Surgeon General create a trauma care system. Holcomb, Robb and other trauma system proponents took the concept a step further by building the foundation under the US Central Command to ensure global tri-service coverage before, during and after theater.

The result was the CENTCOM Joint Theater Trauma System (JTTS), the JTS, the DoD Trauma Registry and Combat Casualty Care Conferences to support the educational and training needs of combat medics, surgeons and nurses here and abroad.

The first ever conference was held at Landstuhl Regional Medical Center (LRMC) with providers at Role 3 military treatment facilities in 2005. In 2009, Role 2 providers joined the conference. In 2012, the deployed JTTS team extended participation to all Roles of care from point of injury to US military and Veterans Administration hospitals.

The clinical discussion was also expanded to incorporate a tele-education model to give clinicians, nurses and medics the opportunity to earn Continuing Education credits while in a deployed environment.

The JTTS team established similar teleconferences in the Pacific Command (PACOM) in 2014. JTS Education Branch now manages the PACOM conferences.
JTS’ Smooth Move to Virtual IT Environment

The JTS transition to a virtual Information Technology (IT) environment this winter was seamless. End users experienced no down time. The IT Automation team also upgraded the DoDTR to Oracle 11g Release 2. All of DoDTR is now virtual with the exception of the DoDTR proxy server. The effort, which took about 10 months to plan, design and test, was implemented overnight.

The migration replaced outdated servers and strengthened the JTS’ compliance with DoD Information Assurance requirements. All IT operations, including DoDTR maintenance and sustainment, benefit from the virtual platform with increased memory and storage capacity.

"The virtual environment provides our programmers and analysts a secure and safe environment to work on process improvement applications for our JTS staff colleagues," said James Mason, IT Automation Branch Chief. "It also enables the DoDTR team to test software updates and upgrades in a security compliant environment. The increase in memory and storage capacity makes the DoDTR application more responsive and scalable. In addition, the total cost of ownership is lowered due to the reduced hardware inventory and maintenance."

A special thanks goes to Jesus "Jesse" Morales, Database Administrator, and Ernest "Matt" Vasquez, Database Engineer, for their hard work and sleepless launch night.

Coming Soon: SharePoint

ISR has given the IT Automation Branch the go-ahead to set up a SharePoint site for JTS. Each branch will have its own secure library and collaborative work space for document creation and management.

The IT team will work with leadership and branch chiefs in the coming weeks to discuss their documentation needs and determine the appropriate set up and security parameters.

“SharePoint will allow JTS to consolidate information into one central location in an organized, standardized format,” said Mary Jo Glunz-Bartz, Information Manager, JTS IT Automation Branch. “Collaboration on document creation will be easier to manage with SharePoint’s version control feature which lets authors track the editing process and maintain version control. We’ll know who edited what and when.”

New AKO Administrator

IT Automation Branch Chief James Mason is now your go-to for Army Knowledge Online (AKO) administrative issues, replacing James Ward, ISR System Administrator.

Mason is responsible for activating, renewing and removing AKO accounts for JTS personnel. He will sponsor incoming personnel for AKO accounts.

Did You Know?

JTS Serves the Needs of Prominent Researchers

JTS received 119 data requests for FY 2015. Below is a partial list. As you can see from the list, JTS impacts many organizations.

- North Atlantic Treaty Organization (NATO)
- US Senate
- US Army Medical Research & Material Command
- Walter Reed National Military Medical Center
- Joint Trauma Analysis & Prevention of Injuries in Combat (JTAPIC)
- Defense Health Agency
- Veterans Administration
- US Central Command (CENTCOM)
- Center for Army Medical Department Strategic Studies
- Tripler Army Medical Center
- San Antonio Military Medical Center
- Fort Benning
- Fort Rucker-US Army Aeromedical Research Lab
- Dwight D. Eisenhower Army Medical Center
- And, of course, JTS Performance Improvement
Role 2 Registry Conversion Improves Data Quality, Enhances Reporting

By Brian Miller, JTS Database Manager and Cynthia R. Kurkowski, Senior Technical Writer

The JTS IT Automation team has converted the original Role 2 Microsoft Access-based registry (module) to a Microsoft .NET derived application, complete with a user-friendly custom interface and secure Oracle repository. The “new” Role 2 module retains existing tools while adding advanced functionality for easier data entry and reporting.

The existing Access solution was approaching the maximum file size and its shortcomings were handicapping users. For example, users could not perform batch imports of records sent from the field; the data for each record had to be manually entered. Batch import of records is now possible, in addition to allowing abstractors down range to send updates, which is currently not possible.

The upgrade moves the data repository onto the DoDTR Oracle servers, ensuring regular back ups and that DoD data management standards are followed. The upgrade will align the Role 2 module with DoD security specifications for properly transmitting, handling and storing Personal Identifiable Information (PII) data. The PII data will be encrypted from the field to stateside to JTS for importation, protecting PII and other sensitive data from interception by unauthorized third parties. The CAC-enabled application will rely on user roles/permissions for security. New error checking features which verify data entry on a field-by-field basis will significantly improve data quality.

The conversion resolves a crippling problem personnel in theater faced: the inability to run the existing Access-based Role 2 because the workstations did not allow Access databases to work properly. The module will be compatible with existing desktop security policies, eliminating this problem.

This upgrade represents a foundation on which future conversions can be deployed. The base technologies are reusable and can be applied to other database products which rely on Microsoft Access to function.

The vision is to incorporate the various databases under one product where a range of database applications are accessed and managed from a common console resembling JTS Manager.

“The Role 2 upgrade will ensure a significant reduction in time managing of data with an option for bulk imports within the registry,” said Inez E. Eddington, JTS R2 Data and Training Manager. “This is huge, and certainly will correct past issues with data cleaning and bad data fields. I am also looking forward to the reporting capability; this will allow us to give our team a clear picture of how their work will affect our mission today and in the future.”

The Role 2 team will continue to resolve Phase I bugs and issues prior to the launch. In parallel to deploying Phase I, additional enhancements are being developed for future releases.

This enhanced functionality among other DoDTR features will ease data analysis for performance improvement efforts to ensure Clinical Practice Guidelines are followed and evidence-based practice is consistently applied across the continuum of care. Ultimately, this will allow teams to prepare for a unique combat environment and train accordingly to improve patient outcomes.

Ensuring Trauma Care Readiness

LTC Robert Mabry, former JTS Division Chief for Trauma Care Delivery, addressed the US House Armed Services Committee during its February panel Ensuring Medical Readiness in the Future. The group discussed how to maintain battlefield trauma care readiness.

Mabry called officials’ attention to the great progress the US Military has made in battlefield trauma care, having gone from no trauma system in 2001 to the establishment of the Joint Theater Trauma System four years later. He stated the JTS manages the DoD trauma care repository, and explained how data analysis, coaching by trauma surgeons, tele-education by trauma care experts and clinical practice guidelines allow the US to trace improvement to outcomes.

He emphasized the need to preserve the JTS after the conflict winds down to maintain readiness to ensure the right care to the right patient at the right time. To illustrate this point, Mabry told the story about the use of the ineffective strap and buckle tourniquet long after the 1945 recommendation to stop using it. The device was removed from inventory in 2008, but not before 7,000 lives were lost to the faulty tourniquet in the initial phases of Iran and Iraq wars — about the same amount of lives lost in the Korean war.

Officials were asked: How can we prevent such a mishap from reoccurring? He pointed out how sustainment of the JTS is key to readiness and to sustain JTS the military must foster research and trauma care training. Research which takes lessons learned and implements them will keep the learning cycle moving. This will increase trauma training in the military and civilian worlds and keep the learning curve down to a minimum. Maintaining this momentum will help overcome one of the biggest trauma care challenges facing the US: To enter the next conflict WITHOUT a learning curve.

Panel: https://m.youtube.com/watch?v=BD09TZK3wWY
**New Research Determination Process Promotes Better Project Planning**

*By Cynthia R. Kurkowski, Senior Technical Writer*

JTS now offers a new research determination process which provides PI investigators with project planning guidance.

The Project Planning and Research Determination Standard Operating Procedure (SOP) is in response to the change in ISR policy in which JTS investigators will no longer automatically be designated as Process Improvement (PI) under a blanket exemption.

The JTS SOP describes the procedures for developing a new project and determining whether a proposed project meets the criteria for PI versus research. The specific objectives of this SOP are to:

1. Establish the capability within JTS to perform official PI versus research determinations.
2. Create a streamlined and standardized process which will:
   - Eliminate repetitive and redundant data pulls and thus optimize the internal JTS data management workload.
   - Improve the scientific validity of JTS projects.
3. Enable tracking of project progress and completion. Quarterly reviews will ensure the PI project stays on track and not evolved into a research project.

The ISR Commander and the Army Human Research Protections Office appointed Dr. Jean Orman, JTS Senior Epidemiologist, as the Exemption Determination Official (EDO) Officer. Her research background and prior experience as a member of an Institutional Review Board made her the ideal candidate for implementing the determination process.

The Epidemiologist/Biostatistician and Data Analysis Branch Chief respectively will assist with completion of the methods sections of the Project Planning and Research Determination Form to ensure that the project plan is feasible, the methods are sound, and that the outcomes match the project purpose and expectations. The process allows the researchers to consider the various aspects of the research such as required types of data, data collection procedures, statistical considerations, and project quality benchmarks.

The process is the inspiration of CAPT Zsolt Stockinger, JTS Director. “I dislike paperwork as much as the next person — perhaps even more. I’m also as guilty of ‘idea hamstering’ as anyone else here. However, having a standardized process for something we do frequently will streamline it,” said CAPT Stockinger. “By asking investigators to put detailed forethought into their projects, with help in study design from those at JTS who will have to pull, clean and analyze the data, we will get better science in a shorter time. That benefits everyone."

*See next page for process flow chart.*

**New to Combat Medic Aid Bag**

Major General Stephen L. Jones, Commanding General of US Army Medical Department Center & School, has approved the addition of the following items into the Combat Medic Medical Equipment Set (MES), the aid bag:

- Oral transmucosal fentanyl citrate
- Ketamine
- Nasal atomizer
- Tranexamic acid

**NOTE:** Morphine will no longer be a part of the MES as a result of the addition of these more effective, and safer, pain medications. In addition, TXA can be a lifesaving intervention for severe hemorrhage. These changes are excellent and give our medics a large step up in their battlefield medical armamentarium.

**NOTE:** Like all controlled substances, ketamine and fentanyl will be issued by BN/BDE surgeons to medics who have been properly trained. It is ultimately up to the supervising physician/PA to determine when/if these drugs will be issued to a given medic, just as it was with morphine.

Thanks to COL Lance Cordoni, his team at the Army Capability Development and Integration Directorate, and all who had a hand in the MEDCOM approval of this upgrade to the Army Combat Medic Aid Bag.

*See another update on page 18.*
JTS NEWS & NOTABLES

JTS PROJECT PLANNING AND DETERMINATION PROCESS

“It’s really not as bad as it looks.” ~ CAPT Zsolt Stockinger

[Diagram of project planning and determination process]

- JTS Director
  - Project lead consults with JTS Director to formulate study concept.
  - Discusses study concept with JTS Director.
  - Receives approval email notice.
  - Approves study concept?
    - NO: Provides reasons/feedback to project lead.
    - YES: Project lead completes Project Planning/ Determination form with input from E/B, DAB, and the JTS Director.
- E/B and DAB
  - Chief to determine feasibility; may also meet with EDO for initial research.
- Exemption Determination Officer, Epidemiology/ Biostatistics (E/B)
- Data Analysis Branch (DAB)

- Project lead submits final proposal with JTS Director’s approval email to Exemption Determination Officer (EDO).
- Completes USAMRMC IRB Protocol Application.
- Submits protocol to IRB for IRB review.
- Receives documents; proceeds with project.
- Provides EDO with quarterly progress and final reports.

- Research or PI?
  - EDO reviews plan.
  - Adds project to tracking spreadsheet.
  - Prepares memo & official letter; sends form to JTS Director.
  - Sends letter & memo to Project Lead.

- PI
  - Begins data extraction and collection.

Stop

Stop
**RENEE GREER: DRIVING FORCE BEHIND MOTR’S SUCCESS**

Renee Greer started in Jan 2010 as the Program Manager, Data Acquisition Branch, for the DoDTR when the abstraction cell was still located at Stanley Rd. #2268. Today she runs the MOTR group as MOTR Branch Chief. Last June, she converted to an Army civilian.

Greer says she enjoys knowing that the detailed work we do at the JTS translates into lives saved and significant quality of life improvements for both our military and civilian casualties.

Greer stood up MOTR in July 2013 and entered their first patient record within 7 weeks—a notable achievement. This milestone was important Greer because her mentor COL (Dr) Jim Ficke was retiring and she wanted him to see the project for which he fought so hard up and running.

This quality makes her a leader coworkers admire. Ramon Juarbe Hernandez, JTS Quality Assurance Nurse for the MOTR, has worked with Greer for over seven years. He says he is very proud to be part of her team. “She is an intelligent woman who has put an extreme amount of hard work into JTS,” said Hernandez. “She has shown qualities we wish all possessed. Her dedication and perseverance has driven operations at MOTR.”

“Renee has been the keystone for organizing, advocating and coordinating all activities related to MOTR and its relationship to the DoDTR, including the first ever inclusion of Veteran Affairs data,” said Dr. Mary Ann Spott, JTS Deputy Director. “The MOTR data has already produced some very timely and important publications, abstracts and podium presentations.”

The lengths to which Greer has gone to build the most comprehensive collection of trauma-related orthopaedic data has made her the expert on orthopaedic trauma data collection. She has co-authored two MOTR articles for respected peer-reviewed medical journals. The articles broadcast the unique data and services MOTR offers.

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**INEZ EDDINGTON: ROLE 2 DATA ENFORCER**

Inez Eddington entered the doors of the JTS in 2006 as a Medical Coder/Data Entry Clerk. Today she is the R2 Data and Training Manager over a diversity of responsibilities, including:

- Conducting abstraction and application training and feedback reviews for personnel supporting Role 2 registry.
- Overseeing trauma patient record reconciliation with trauma log and Role 2 registry submissions.
- Coordinating Role 2 records shipments with deployed sites and PASBA to ensure access to records for abstraction.
- Supporting IT Automation Branch with user knowledge for registry improvements.
- Processing and abstracting records into the Aggregate Role 2 Registry.

Eddington also oversees the Role 2 project to guarantee all centers had the support needed to submit and transfer their data to the DoDTR. As Dr. Mary Ann Spott, JTS Deputy Director, points out, this effort has been instrumental as this is the earliest documentation that we are currently able to get on a consistent basis. We truly appreciate all the work Inez has done, and her collaboration with the DoDTR and downrange staff.

Phil Sartin, JTS Data Acquisition Branch Chief, said Eddington’s flexibility is an asset as JTS evolves to support ever changing requirements and capabilities.

“My job allows me to work alongside a great team of individuals with different levels of expertise that are focused on making a difference, not only now, but for years to come,” said Eddington. This gives me the motivation I need to maintain focus on what’s important: helping to save lives!”

Her team commitment is clear. “There’s no special milestone. Being able to help others means that each day is a milestone,” said Eddington.
Many of you may have overheard discussions (more like grumblings) from JTS staff involved in the Zero-Based Budget Review (ZBR). The ZBR in itself is a simple concept. The task, however, is a monster of an undertaking. The ZBR reaches far into the depths of an organization’s functional, technical, and financial business structures, processes, and production to eliminate redundancy and streamline cost management.

ZBR began with the National Defense Authorization Act FY2013 Section 731. The Act directed the Defense Health Agency (DHA) to assume responsibility for the Military Health System (MHS) shared services, functions, and activities. DHA implemented a process to ensure an organizations’ Information Technology (IT) aligns with mission needs, cost efficiency, and effectively supports the healthcare enterprise. Meanwhile, the MHS’ Medical Deputies Action Group focused on studies to identify consolidation opportunities. The two groups recognized the synergy of their efforts and the DHA ZBR Panel was born. The ZBR Panel initiated studies to identify redundancy and cost savings across the Healthcare enterprise. Officials of the DoD CIO Office, Air Force, Army, ASD HA, DHA and Navy sit on the ZBR Panel.

The following system areas were identified:

- **Queuing Systems** manage patient workflows within an organization. Example: PQNS - Patient Queuing & Notification System
- **Grants Management Systems** coordinate between the multiple parties involved in the creation, tracking, reporting, and awarding of grant submissions. Example: eBRAP - Electronic Biomedical Research Application Portal
- **Registries** collect, store, and retrieve individuals’ health data regarding certain diseases, diagnoses or conditions. Example: DoDTR
- **Enterprise Services Considerations.** The systems identified are being studied as potentially best suited as part of an enterprise-wide solution. Example: Defense Medical Information Exchange

As an organization responsible for a registry, the JTS must comply with the ZBR process. There are over 200 registries and databases within DoD that will undergo this process over the next year and beyond. DoDTR was chosen as one of the first nine to be reviewed.

The ZBR process evaluates three key areas: Functional, Technical and Financial. The functional evaluation focuses on how well each system meets its capabilities or functional requirements. A technical review evaluates the compliance with DoD information technology requirements, standards, and policies, such as cyber security and Health Insurance Portability and Accountability Act (HIPAA). Each system is evaluated for its financial status where actual and projected funding costs are gathered to determine overall expenses.

Each system is represented by subject matter experts (SMEs) who work with small and large working group leads. The information is provided to the ZBR large working group teams that prepare an objective joint recommendation for submission to the ZBR Panel Co-Chair and DoD Chief Information Officer (CIO), Mr. John Bergin. The recommendation presents anticipated cost savings, system consolidations, and standardization opportunities.

The DoDTR small team of SMEs consists of James Mason, Martin Phil, Renee Greer, Martin Dahlman and Mary Jo Glunz-Bartz and receives support from US Army Medical Command to address the functional, tech-

(Continued on page 12)
The ZBR large team, which is responsible for preparing the final recommendation package to present to the ZBR Panel, consists of SMEs from the organizations being reviewed, based their evaluation on the following:

- The Functional Team validated each system functional capability needs met the mission requirements. A prioritized matrix analyzed and evaluated the functionality of each identified system.
- The Technical Team evaluated systems for compliance as required by DoD networked IT systems and DHA directives, including cybersecurity, HIPAA, enterprise standardization and architecture.
- The Financial Team collected and evaluated the past, current, and future costs of each system using a variety of data sources including existing spend plans, Program Objective Memorandum submissions, and investment inventory data. JTS supplied financials for the past five years and project financials for the next five years.

The system SMEs help the ZBR large team finesse the process to make the path easier for the next systems to undergo review. The large team prepared the recommendation document for the ZBR Panel.

Dr. Spott was selected as the Registries Study Lead to represent the interests of the US Army Surgeon General. She is responsible for guiding the process of the Registry review and finalizing the recommendations to the ZBR Panel. Dr. Spott provides the DoD CIO with progress reports of the Registries working group. She is the mediator among the large and small team system representatives and spokesperson to the ZBR Panel.

The ZBR Panel presented the recommendations to the DoD CIO in June. Stay tuned for an update!

Laura Scott, JTS Epidemiologist, is developing a step-by-step method to adjust for common limitations in historical cohort mortality studies. A historic cohort study, also called a retrospective cohort study, follows a group of individuals with a specific risk factor over time and compares them to a similar group of individuals without the risk factor to determine how that factor may influence disease-specific mortality.

Collection of prospective data in a war theater is very challenging. Thus, most epidemiologic studies of combat casualties are limited to using previously collected injury and mortality data. The DoDTR has made it possible for researchers to evaluate combat casualty injuries, care and outcomes using the retrospective cohort study design. The study published by Stewart et al. in 2015 which assessed the association between combat injury severity and long term health outcomes, is a notable example. However, an important limitation of the study was the amount of missing data (approximately 31% of the total cohort).

Challenges to analyzing data from this type of study typically include:
- Missing data.
- Exposure misclassification.
- Loss of follow up.

Not many approaches are available for researchers to address these shortcomings in their studies and adjust for study imperfections. A common method of addressing the above issues is to withdraw lost individuals from the analysis at the time of loss. Using her method, researchers will be able to calculate how such issues impact the study’s conclusions.

Scott’s new methodology allows researchers to predict how the missing data’s influence on research using the Monte Carlo method which leverages repeated random sampling to generate simulated data to use with a mathematical model.

"One of the challenges of working with JTS data is the amount of missing data," said Dr. Jean A. Orman, JTS Senior Epidemiologist. “Scott’s work opens up new possibilities for JTS in dealing with this important data analysis problem."

Reference

http://circ.ahajournals.org/content/132/22/2126
“We cannot emphasize enough how critical the partnership with the JTS/ISR has been to our Trauma Infectious Disease Outcomes Study (TIDOS). Through use of the DoDTR, augmented by the Supplemental Infectious Disease Module, we have been able to respond to the invasive fungal wound infection outbreak, assess infection-related risk factors and outcomes, and comprehensively describe trauma-related infectious disease epidemiology. All in all, this partnership has been integral to achieving our program’s goal of informing the DoD’s efforts to develop real-time tools for outcome secondary to trauma-related infections during wartime.”

~ Dr. David Tribble, Science Director, ID Research Program Professor, Department of Preventive Medicine & Biometrics and Department of Medicine, The F. Edward Hébert School of Medicine, Uniformed Services University

Part of Dr. Mary Ann Spott’s job as JTS Deputy Director is to present DoDTR to the world, showcasing what makes DoDTR special and distinguishable from other leading registries. Since misconceptions about registries are common, Dr. Spott starts by defining a trauma registry. She explains the trauma registry is not a collection of medical records. The DoDTR is a compilation of identified information taken from the medical record in addition to expert clinical inference, scoring and coding schematics, probability determination, and performance improvement data requiring human intervention.

Dr. Spott stresses that DoDTR is an intellectualized registry, not simply a traditional database with discrete data points. Too often people refer to the trauma registry as a database. The DoDTR is not a research database, although it can and does support research. Rather, it is a performance improvement database with on-the-fly patient information.

The DoDTR takes data collection to the next level of excellence with special tools to grab special data.

♦ JTS is the first to create integrated multispecialty registries (modules) to address conditions like infectious diseases injuries to particular areas like the extremities, brain, eyes and ears.

♦ Surface wound mapping is used in the Prehospital module to aggregate wound patterns on patients.

♦ Abbreviated Injury Scale/Injury Severity Score: The specialty modules use this tool to accurately capture and depict the patient's degree of critical illness.

On top of the sophisticated, “smart” repository is a straightforward and simple user interface – a requirement in Dr. Spott’s opinion. “We had to ensure it was dummy driven – easy to get in and out without screwing it up, as a friend of mine used to say,” Dr. Spott explained.

Quality Assurance & Data Integrity

DoDTR has a 95 percent accuracy rate. To reach this accuracy expectation, the developers incorporated checks and data tracking to view and track data points to ensure no one is changing the records. Quality assurance measures can been found in the DoDTR’s key internal logic features. Some examples are as follows.

♦ Data checks and validation points with the use of parameters: This prevents users from entering wrong information.

♦ Automated coding (ICD-9/10, ISS and AIS scoring schematics): JTS works with its vendor to put in parameters and leading questions which guide the user to ensure they enter and/or use correct coding. No quotable diagnosis is given if DoDTR is unable to identify or determine the correct code.

♦ Data element tracking: The DoDTR has custom data points to check who is making what changes in the record, and who responded to what data points.
Health Insurance Portability and Accountability Act features to track changes. DoDTR uses three methods of tracking any changes made and by whom.

- A Medical Treatment Facility (MTF) cannot modify a record created by another MTF.
- The ability to lock a record from editing once complete provides an extra level of data integrity protection.
- Server access security meets strict DoD standards. Permissions are role-based.
- Data can be recovered using database techniques.

Performance Improvement (PI)
Built-in automatic audit filters to flag events increase analysts’ chances of catching areas of possible improvement. The flags do not indicate good or bad. The flags show JTS where something is off and needs to be fixed. The flags can help identify situations impacting tactical or operational issues which factor into important decision-making. For instance, a head injury patient arrives at a MTF, but no neurosurgeon is available. JTS can analyze circumstances leading to the delay in transferring the patient to a neurosurgeon. By analyzing DoDTR data, JTS can see what caused the delay and prevent it.

DoDTR gives providers the opportunity to look at how the team responded to a case. Reviewing the case reveals the complication to determine at what point it occurred and what were the circumstances. JTS can determine if the right team was used, or if the right care was given. This way, JTS is able to help to mitigate the problem for the next patient. DoDTR can help prevent problems in addition to improving care. This ability to review situations also promotes process improvement.

Loop Closure for Process Improvement
JTS employs loop closure methodology for process improvement. Loop closure success relies on two key components: Achievement of the best possible resolution of the initial problem and documentation of the process. One is not possible without the other.

A common trauma process improvement problem is the documentation of the loop closure when the original problem is still recurring and impacting performance improvement and quality assurance. JTS can identify something in the record which needs to be examined and figure out how to improve and track it and then put in processes to fix it and then monitor it until it’s fixed. The documentation must reflect the process “fixes” made during the monitoring phase.

How does JTS prove value?
- Better outcomes (i.e. mortality rates), PI outcomes, standardized clinical practices, and techniques.
- Type of Reports. Reports go to line commanders and MEDCOM.
- Trends data. The reveal of important trends is based on DoDTR data.

- Data linking to other data to reveal findings.
- Remote training via US Army Medical Information Technology Center’s Audio Bridge and Defense Collaboration Services.

The DoDTR specialty modules, report writers and applications for enabling remote connections and tracking quality assurance have allowed the Joint Trauma System to become a global force in trauma care. JTS can deploy trained trauma nurse coordinators (TNCs) with these applications rapidly into forward locations with limited connectivity without interruption to the TNCs’ data entry and acquisition.

“DoDTR resources are living, flexible tools that have adapted to the ever evolving trauma system/registry requirements and have provided a foundation for consistency in data acquisition with assets spread across the globe,” said Phil Sartin, Data Acquisition Branch Chief. “Our work with US Central Command over the last decade as the primary area of responsibility for JTS deployment operations has demonstrated the importance of Command and Facility leadership’s commitment to the successful integration of the trauma system into their environment.”

JTS extended its reach in 2015 when it stood up a data acquisition team in the Pacific Command. JTS will continue to cast its DoDTR net into distant regions. JTS leadership is working toward establishing teams in the Southern Command and Africa Command regions.
JTS PROVIDES CRITICAL DATA TO JTAPIC TO HELP PREVENT INJURIES THROUGH ACTIONABLE ANALYSIS

By Cynthia R. Kurkowski, Senior Technical Writer

JTS supports the Joint Trauma Analysis and Prevention of Injuries in Combat (JTAPIC) with DoDTR data to better understand vulnerabilities to threats and to improve tactics, techniques, and procedures and materiel solutions to prevent or mitigate traumatic injuries. JTS is one of three partners who contribute medical data for monitoring and analysis of deployed injury trends.

JTAPIC, a virtual partnership of 11 organizations, links medical, intelligence, operational, and materiel communities to collect and analyze data from combat incidents. Materiel developers, commanders, US Army Training and Doctrine Command and senior leaders use the analytic data to make informed decisions and determine the best course of action that will save lives, prevent or mitigate injuries, save money or direct the spending of resources in a wiser and more useful outcome.

JTAPIC engages JTS in a systematic fashion to determine the acute and long term outcomes of all casualties, the quality of their care, improvements in prevention and treatment and the logistical implications. JTS participates in all appropriate Requests for Information (RFIs), provides medical injury data as needed, reviews completed products and provides feedback. JTS also provides injury coding for identified individuals.

The US Military has used the actionable information provided by the JTAPIC program to change the way the military protects Warfighters from combat injuries. Combatant commanders have altered their tactics, techniques and procedures in the field as a result of the incident analyses and near real-time feedback on threats provided by the JTAPIC program. Modifications and upgrades have been made to vehicle equipment and protection systems, such as seat design, blast mitigating armor and fire suppression systems.

JTAPIC’s latest contribution to the warfighter is a new helmet that records head impacts and blast events. The Gen II Helmet Sensor records linear accelerations and rotational velocities during blasts. Three gauges record blast pressure and work together to capture acceleration and over pressure to help determine if warfighters have been exposed to concussions.

“JTAPIC, through their extensive partnerships, has been able to take multiple sources of medical, materiel, intelligence and operational data for analysis and contributed to the improvement of protection systems, survivability of the Warfighter and also the mitigation of injury. We are pleased to be a medical contributor to their efforts,” said Dr. Mary Ann Spott, JTS Deputy Director.

JTS supports the JTAPIC mission by:

- Providing Wounded in Action injury data and coding from the DoDTR to the JTAPIC program in response to RFIs.
- Performing and participating in the development of JTAPIC analysis products.
- Assisting in the development and maintenance of analytic tools and databases as required.
- Providing subject matter expertise as required.

What are the key JTAPIC accomplishments for 2015?

- Improved vehicle design and survivability.
- Provided information to improve tactics, techniques and procedures.
- Improved Personal Protective Equipment.

JTAPIC traditionally focused on land component forces; however, the group has recently begun to offer services to maritime and Special Operations forces. The JTAPIC database contains some 20,000 injury-causing theater incidents with associated injury data. JTAPIC is expected to more than double this number over the next four years through the legacy data entry initiative.

JTS will continue to provide support as above, working with the program manager office and other partners on marketing.
Effective eye protection for ground combatants must shield the eyes from multiple threats while maintaining the ability to see clearly. The Department of Defense (DoD) and the American optical industry have been working for the last 100 years to develop equipment that serves both purposes, and now Military Combat Eye Protection (MCEP) is saving eyes that in the past would have been lost. This does not imply, however, that the work is yet done; improvements to MCEP continue to address risks posed by fragments from explosive devices, blast forces, and the potential of laser, chemical and biological threats. As the nature of modern warfare continually evolves, it is imperative that protective devices, both for the eyes and body, keep pace. This article deals with the development and fielding of eye protection for the ground combatant.

**History of Eye Protection Development (1914–1995)**

Army ophthalmologists from several nations labored to develop acceptable eye protection for combatants during World War I, primarily in response to the threat of small fragments from artillery rounds. Several forms of protective eyewear were produced and tested in the field but none of these early prototypes were accepted by soldiers because they restricted the visual field and limited peripheral vision. Additionally, the glass prescription spectacles worn by combatants provided limited protection, and were an additional eye hazard when forcefully shattered. Little, if any, progress was made in the development of MCEP over the next 30 years. The sun-wind-dust goggle, worn primarily by tank crew members, provided little protection against fragments because its optical material was cellulose acetate (replaced many years later by polycarbonate). Between World Wars I and II, the incidence of eye injuries in the military was considered too low for significant investment in the development of eye protection. Consequently, the U.S. entered and ended World War II with no acceptable eye protection for the Infantry and Marines.

A major advancement in the development of combat protective eyewear arose during the Korean War. Dr. John Fair, a U.S. Army ophthalmologist, recognized the threat to the eye from the temporal area. In an attempt to address this issue, Dr. Fair fitted side shields to ordinary spectacles and named the product “eye armor”. The lenses placed in the frame could be either plano (i.e., containing no refractive power) or prescription-based. For some time, there were no efforts to improve upon this advancement, as the general consensus was that combatant-acceptable eye protection was impossible to develop. As a result, eye protection during the Vietnam War was little improved relative to what had been available during the Korean War.

In 1969, Dr. Frank La Piana, a U.S. Army ophthalmologist, became aware of the Postoperative Eye Guard (Younger Manufacturing Company, Los Angeles, CA) used after cataract surgery. This device was fabricated of 2-millimeter thick polycarbonate in a wraparound configuration and provided frontal and temporal protection of the eye. Drawing upon his own experiences in the field and at Walter Reed Army Medical Center, Dr. La Piana hypothesized that this device might serve as a template for the development of a definitive MCEP. In 1970, he tested the eyewear on Soldiers of the First Cavalry Division in Vietnam and returned with an enhanced understanding of the modifications that would be needed in a final product. Unfortunately, no government or commercial entity could be convinced to invest in this effort.

In the early 1980’s, Dr. La Piana became aware of a commercial product, Gargoyles™ (Pro-Tec Inc., Bellevue, WA), that met many of the desired characteris-
The Military Eye Protection System (MEPS) was developed for all ground combat and security personnel at the U.S. Army Soldier Systems Center under a Research and Development program in 2002. MEPS was a joint Army and Marine Corps initiative with an objective to produce goggles or spectacles with interchangeable lenses with enhanced fit, comfort and logistical efficiency. The MEPS evolved into the Military Combat Eye Protection Program (MCEP), which is currently under the direction of the Project Manager, Soldier Protection and Individual Equipment (PM SPIE) of the Program Executive Office (PEO) Soldier. Among its many duties, the PM SPIE is responsible for the development and dissemination of the Authorized Protective Eyewear List (APEL), a listing of commercial-off-the-shelf products that have been approved for military use. Soldiers are instructed to only use products on the APEL, indicated by a distinctive neon-green APEL logo that is required for all MCEP packaging and the APEL stamp on the left temple or strap.

The acceptability and overall effectiveness of MCEP among Soldiers in Operations Iraqi Freedom and Enduring Freedom appears to be higher than previous eye protection development efforts. An MCEP survey conducted in 2009 revealed that 94% of Soldiers reported using MCEP on convoys and missions outside the Forward Operating Base. Though not directly tested, recent studies provide initial support for the association between the use of MCEP and reduced ocular injuries. Despite these recent achievements, outreach is needed to encourage the use of eye protection during all potentially hazardous conditions on and off duty (e.g., in training, playing sports, working on construction projects).

References


A novel hemostatic product called XStat has recently been developed by RevMedx in Wilsonville, OR. The XStat system consists of approximately 92 flat, circular, compressed mini sponges that are coated with the hemostatic substance chitosan and packaged in a 60cc syringe applicator. The unexpanded mini sponges are 9 mm in diameter and 4.5 mm in height. When injected into a wound cavity, the sponges expand when they come into contact with blood, filling the wound cavity and exerting pressure on bleeding vessels from within the wound cavity.

XStat was evaluated in an animal model of severe bleeding at the Naval Medical Research Unit - San Antonio in 2013. XStat was compared to Combat Gauze in a porcine model of subclavian artery and vein transection similar to that used in a previous study by Mueller, et al. XStat was found to require significantly less time (31 seconds vs 65 seconds) to pack into the wound and to significantly reduce the amount of blood lost during application (1.3 g/kg vs 5.1 g/kg) without requiring manual compression by the provider after application into the wound. No significant differences were found with respect to either survival or post-treatment blood loss. In contrast to the Mueller study, all animals in both the XStat and the Combat Gauze arms of the Cestero study survived.

A proposed change to the TCCC Guidelines to add XStat as a hemostatic adjunct was recently reviewed by the TCCC Working Group and approved by the required 2/3 or more of the voting members of the CoTCCC. XStat may be particularly useful in junctional wounds in the groin or axilla in which the bleeding comes from a wound with a deep, narrow wound track.

The position paper for this change to the TCCC Guidelines has been finalized and approved for publication by the USAISR. The paper has been submitted to The Journal of Special Operations Medicine and will be published in that journal in the near future.

The training slides to support this change to the TCCC Guidelines have been developed by Dr. Stephen Giebner, the CoTCCC Developmental Editor. These XStat slides will being incorporated into the 2016 version of the TCCC for Medical Personnel curriculum, which will come out this summer. If there are any proposed changes to TCCC curriculum materials, please forward these to Dr. Giebner (sdgiebner@msn.com) as soon as possible.

Thanks to SGM Kyle Sims, SGM F Bowling, MSG (Ret) “Monty” Montgomery, SFCPaul Dituro, and Dr. Bijan Kheirabadi for their outstanding work in developing this update to the TCCC Guidelines.

See another update on page 8.
HAILS & FAREWELLS

JTS SENDS COL SHACKELFORD OFF TO HER MISSION WITH WARM WISHES, CAKE & A CARE PACKAGE

JTS gathered in May to wish Col Stacy Shackelford, Director, JTS Trauma Care Delivery, a safe send off to her new mission abroad. She is expected to return in October.

In June, staff came together again to collect goodies and necessities for a care package. It’s a safe bet COL Shackelford will not run out of K-cups during her deployment.

The Colonel reports her time is proving productive as she focuses on furthering the JTS mission to improve combat casualty care. You can read her report at the right.

NEWS FROM ABROAD

By Col Stacy Shackelford, Director, JTS Trauma Care Delivery

It is good to be back in theater, even though the activity is slower than it was in the past. Much has changed with the structure of forces, so it is easier to learn the key points of contact for the trauma system with boots on the ground here.

We have made progress with obtaining access to the Tactical Combat Casualty Care After Action Reports, improving relations with the Special Operations Force medical forces, and improving communication throughout the trauma system in theater. With the JTS Performance Improvement (PI) Division, we have continued to conduct bi-monthly PI teleconferences with in-theater providers to discuss opportunities for improvement in care.

Last but not least, I have received good feedback on our first four Role 1/ Prolonged Field Care guidelines — burn, crush injury, pain control and sedation, and traumatic brain injury. The updated Burn Care Clinical Practice Guideline is available at the JTS website. The others are nearing completion and will be posted on the website in the next few months.

Thank you for all the home base support. The data from the DoD Trauma Registry helps strengthen every "suggestion" and inform every decision on trauma care in theater. Keep up the great work!

Newcomers | Job Title/Position
---|---
Laura Scott | Biostatistician
Brittany Hand | Trauma Registry HIM Specialist (Coder MERCuRY Project)
Kelsey Williamson | Trauma Registry HIM Specialist (Coder MERCuRY Project)
Tasheka Dukes (Civ Srvc) | Nurse Analyst (Data Analyst/Special Projects)
Kelsey Williamson | Trauma Registry HIM Specialist (Coder MERCuRY Project)
Brittany Hand | Trauma Registry HIM Specialist (Coder MERCuRY Project)
Gordon Masaliheit | Clinical Nurse Abstractor (MOTR)
Trinity Peak | Nurse Analyst (Data Analysis/Special Projects-SIPR)

Newcomers | Job Title/Position
---|---
Caryn Turner | ORISE Fellow
Dr. Deborah Del Junco | ORISE Fellow
Steven Miller, Jr | IT Quality Assurance Engineer (MERCuRY Project)
Monica Thomas | Medical Coder (MERCuRY Project)
Mary Perez | Trauma Nurse Abstractor (MOTR)
Patricia Drouillard | Nurse Analyst
Gordon Masaliheit | Clinical Nurse Abstractor (MOTR)
Dustin Kinzinger | Clinical Nurse Abstractor (DAB)
JTS SAYS GOODBYE TO LONG-TIME LEADER, FRIEND & MENTOR “DOM” GREYDANUS

DOMisms: Quirky phrases coined by Dom Greydanus to colorfully illustrate an important HR rule in a playful, yet serious, manner.

◊ You could’ve gotten that done if you weren’t surfing the Internet.
◊ Hey, you can leave early. It’s your job!
◊ You can keep your Facebook up on your computer...Shop online all you want. You just can’t do it here!

The story goes that Dom was asked by a former colleague to help stand up the Joint Trauma System, and he certainly has done that...and more. Dom developed the original financial budget for the JTS. He established all the contracts for all the JTS positions. He then implemented processes to organize that staff. In doing so, Dom literally built the organization.

Dom helped wherever he was needed. He was instrumental in the acquisition of the Committee on Tactical Combat Casualty Care and its evolution as a global leader in clinical care education. Dom even participated in research studies, including the tourniquet studies which are directly responsible for saving lives on the battlefield.

“Dom has been the cornerstone of the JTS throughout the years and a major asset in the establishment of the JTS,” said JTS Deputy Director Dr. Mary Ann Spott.

It is true that Dom does go above and beyond the call of duty when it comes to JTS. When the HPMK team needed a volunteer to try out their hypothermia kits designed to keep patients warm, Dom donned the outer wear. Dr. Spott remembers that day: “He looked like a hot dog wrapped in aluminum foil; the researchers put him in the big freezer.” Now that’s commitment to the mission!

Clomp, clomp, clomp. Your heart pounds. The door swings open. You freeze in your chair mid swivel when you hear, “UH huh.” Dom is looking at you, EVERYONE is looking at you. Panic sets in. “Come see me in my office,” he says, abruptly walking out. Oh no! What did I do? Where did I park today? You pad along behind him down a suddenly too short hallway. Upon entering his office you wince as you see the white banker’s box sitting on his desk. He sits in his chair and gestures towards the box. You stand there, dumb founded, wondering why? WHY? He smiles and asks, “Hey, can you take that box of books and pass them out?” The feeling in your legs return, “Geez Dom, I thought you were going to fire me.” Dom chuckled, leans back in his chair shaking his head, “Some people’s kids.” ~Karissa Holm
Col Stacy Shackelford, Director of JTS Trauma Care Delivery showed in her AMSUS presentation, The Optimal Use of Limb Tourniquets, how the doctrinal change which names tourniquets as the primary means of first aid can save lives with proper use supported by proper training.

Shackelford said the CoTCCC now emphasizes tourniquets be converted to pressure dressings as soon as possible. The guideline change has had a major impact in Tactical Combat Casualty Care (TCCC) training, particularly in regard to training tourniquet conversion to the medics.

This is a big training commitment, Shackelford explained, because most medics were taught just to leave tourniquets on until they get to the hospital. The TCCC curriculum has been updated; new tourniquet training now teaches tri-service medics the technique of tourniquet conversion in the field. This is particularly important due to more prolonged prehospital times in remote locations. Shackelford incorporated some of the training into her presentation. Attendees learned proper instructions for applying tourniquets and tips for effective uses of the device. She addressed the pitfalls and complications of tourniquet use and what the responder can do to prevent them or ease the resulting conditions.

Shackelford included the Hartford Consensus recommendations in her presentation. The recommendations, based on lessons learned in both military and civilian trauma cases, are used to train the general public (civilian CPR), line side law enforcement, and medical responders in bleeding control techniques.

Recommendations to civilian systems have been addressed by the Hartford Consensus, reports generated from the Joint Committee to Create a National Policy to Enhance Survivability from Intentional Mass-Casualty and Active Shooter Events, founded by the American College of Surgeons. (The Hartford Consensus was formed in response to the Sandy Hook tragedy.)

The first meeting resulted in a concept document known as the Hartford Consensus I which described the necessary response steps to active shooter and intentional mass-casualty events with a focus on controlling bleeding to save lives. Hartford Consensus II called for action from the public, law enforcement, EMS/Fire/Rescue and definitive care facilities. Hartford Consensus III was the introduction of Stop the Bleed campaign with the implementation of curriculum such as the Prehospital Trauma Life Support course which has been taught to more than a million students in more than 60 countries. The TCCC courses embrace the principles.
**Objective:** Spread the word about DoDTR, its multiple uses and contributions to DoD combat casualty care, doctrine and research.

**Results:** The team is promulgating identified study findings, research and publications based on DoDTR data.

### Data Drives Change: How Joint Trauma System Analysis Optimizes Combat Casualty Care

**Beatrice T. Stephens, Gregory L. Dokken, Socorro H. Garcia, Bruce W. Tarpey, Rebecca J. Zeiset and Susan A. West**

**U.S. Army Institute of Surgical Research, JBSA, Fort Sam Houston, TX**

The opinions or assertions contained herein are the private views of the author and are not to be construed as official, or as reflecting the views of the Department of the Army, or the Department of Defense.

#### Introduction

- The Joint Trauma System (JTS) captures and reports battlefield injury demographics, treatment and outcomes.
- The Department of Defense Trauma Registry (DoDTR), containing more than 130,000 records, is the repository used to collect and store medically linked information.
- Since 2006, the Data Analysis Branch has collaborated with US Military/Government providers and medical planners to share data.

#### Objectives

- Increase awareness of the DoDTR Data Request Process
- Provide 3 different types of projects that can utilize DoDTR Data
- Inform reader of one project using data from the DoDTR and the impact

#### Methods

- Project Leads/Investigators contact the Data Analysis Branch requesting information related to research, performance improvement, force health protection.
- Working with the requestor, the population and applicable data elements are identified.
- Once the data is analyzed and following approval of all agreements and OPSEC review, the data set is released.

#### DoDTR data analyses generated significant contributions to DoD combat casualty care, doctrine, and research:

- In 2011, DoDTR analysis showing reduced mortality with advanced provider skills prompted the change for training U.S. Army flight medics from EMT-Basic to an EMT-Paramedic in order to improve the survivability of combat casualties

- Mortality in massively transfused patients decreased from 32% before implementation of the JTS Clinical Practice Guideline (CPG) to 21% post-CPG utilizing DoDTR data, published in the American Journal of Surgery.

- The “Golden Hour” MEDEVAC project supported and proved Secretary of Defense Gates’ “Golden Hour” directive of 15 June 2009, showing a statistically significant decrease in deaths after instituting the Directive.

- From 2009 to 2014 as tracked by the Institute of Surgical Research (ISR), a minimum of 107 Abstracts, 91 Manuscripts, 64 Posters and 50 Presentations were generated using DoDTR data.

#### Conclusions

- The DoDTR is a valuable resource to improve our understanding of the challenges, successes, and improvements essential to the military medical community.
- This trauma registry will support material developers to enact change to prevent and mitigate injury, deploy medical resources, and enter new scientific frontiers in military trauma medicine for the future warfighter.

#### Acknowledgements

- U.S. Army, Surgeon General Office
- All the Medical Providers who documented the care of our wounded warriors or supported the efforts to capture the data

#### References

1. Impact of critical care managed care personnel on casualty survival during helicopter evacuation in the current war in Afghanistan. Robert L. Middle, MD, Army Corps, Jocelyn P. Poirier, MD, Army Corps, Robert K. Gentian, MD, MHA, and Women © Belush, MD, Fort Sam Houston, Texas J Trauma Acute Care Surg Volume 70, Number 2, Supplement 1, 2011
3. Injury Data to Inform Operational Decisions in MEDEVAC Planning: The “Golden Hour” Project. US Army Wounded Care Army Institute of Surgical Research, JBSA Fort Sam Houston, TX, 2008-2017
**Objective:** Identify trends in severity and mortality trends in injuries in Afghanistan to understand causes and attributing factors

**Results:** The study confirmed the Golden Hour policy, new tools and techniques are reducing soldiers killed in action.

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**Table 1. Characteristics of Combat-Injured Patients Wounded in Afghanistan (N=7,770)**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>7,770</td>
<td></td>
</tr>
<tr>
<td>Survivors</td>
<td>4,624</td>
<td></td>
</tr>
<tr>
<td>KIA</td>
<td>2,935</td>
<td></td>
</tr>
<tr>
<td>Mortal</td>
<td>271</td>
<td></td>
</tr>
</tbody>
</table>

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**Table 2. Likelihood of Mortality among Patients Who Arrived at MTF Alive**

<table>
<thead>
<tr>
<th>Model</th>
<th>Parameter</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>z-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>Intercept</td>
<td>-2.54</td>
<td>0.22</td>
<td>-11.44</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Model 2</td>
<td>Time since last combat</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.29</td>
<td>0.77</td>
</tr>
</tbody>
</table>

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**References**

Objective: Determine the level of use of the Clinical Practice Guidelines (CPGs) and identify barriers to implementation and compliance.

Results: CPG implementation and compliance has led to a decrease in mortality and morbidity, particularly seen in civilian studies.

The Physician Compliance with JTS CPGs in Theater of Operations poster was presented at the annual meeting of AMSUS in December. The purpose was to illustrate the impact JTS’ evidence-based CPGs have on a Wounded Warrior’s rate of survival. The Performance Improvement (PI) metrics to improve outcomes after battlefield injury; Four CPGs were analyzed; all clinical recommendations were assessed with chart audit data identified by the DoDTR. In total, 856 patient records were assessed by chart audit data. The findings show a high degree of variation in compliance with the JTS CPGs, with an overall mean compliance rate of 71.5%.

A preliminary analysis of the characteristics of the message was analyzed as being high or low in complexity, observability and trialability. All four CPG recommendations showed a low degree of complexity, high degree of observability and trialability.

In conclusion, CPG implementation led to a decrease in variability in the care provided to combat trauma patients in CENTCOM. While in civilian studies this has been proven to decrease mortality and morbidity, further analysis is needed to clearly demonstrate this in the military trauma population. In addition, future studies looking at compliance rate should assess the characteristics of the message, setting, clinical practice area, and procedure.

The team has widened the aperture of the study to encompass all 44 CPGs. They are undertaking efforts to standardize the CPG development processes for developing, reviewing, updating, approving, adopting, and monitoring. A systematic and operationally responsive approach to development and implementation is taken to ensure rapid field dissemination and provide quality indicators to measure effectiveness.
Objective: Partner with civilian trauma care experts to identify and implement predeployment trauma training.

Results: Civilian life support courses can be adapted to meet military training needs. The ATLS-OE includes four novel lectures, supplemental slides for ATLS lectures, and a tourniquet skills session. The Defense Medical Readiness Training Institute has a pilot program.
Objective: To collect and document data about en route care and the interventions for the purpose of determining their effectiveness.

Results: The data showed nurses successfully transported critically injured patients without significant adverse effects over brief mission. The analysis also brought to light certain procedures and medications which should be emphasized in training ERC nurses.
Objective: To predict workloads for en route care providers through the continuum to Role 3 military medical locations.

Results: Role 2 and Role 3 display similar work-load trends and procedural ratios. Procedural frequency data can inform both predeployment and sustainment trauma training, and deployed manpower decisions.
Craniectomy Outcomes for Role 2 vs. Role 3. The review of craniectomy procedures to determine the outcomes when performed by general surgeons vs. neurosurgeons. The team is also performing a survey of military surgeons. The results will be used to update the neurosurgery CPG. No results yet. Col Stacy Shackelford, Dr Del Junco, MAJ Tyson Becker, LTC Jennifer Gurney.

Analysis of Prolonged Field Care Epidemiology. This is an evaluation of all cases in the DoDTR who arrived at the hospital more than four hours after injury. The goal is to determine the epidemiology and outcomes in order to advise medics who are deployed in remote areas where the evacuation time will be prolonged. IRB is pending approval. Col Stacy Shackelford, MAJ Jason Montgomery, Dr. Russ Kotwal, LTC Joseph DuBose.

Ongoing Analysis of Prehospital Blood Product Transfusion Outcomes. The team is comparing severely casualties who received prehospital blood transfusion to those who did not to see if survival is improved using prehospital transfusion. No results yet. Col Stacy Shackelford, Dr. Deborah Del Junco, LTC Nicole Powell-Dunford, COL Kirby Gross

Editorial Note: Team members listed are JTS or ISR staff. Others may not be listed.

Long Term Care for Genitourinary Patients
JTS' Senior Epidemiologist, Dr. Jean Orman, is part of a collaboration between UK and US groups to better understand the impact of genitourinary injuries and to facilitate improved long-term care for service members and Veterans who have sustained them. JST is working with SAMMC/Center for the Intrepid, the DOD and VA Extremity and Amputation Center of Excellence, the South Texas Veterans Health System, the Bob Woodruff Foundation, Walter Reed National Military Medical Center and the UK Military Genitourinary Trauma Working Group. A summary report from the meeting is in process.

Genitourinary (GU) Injury and Amputation. Unprecedented numbers of service members wounded in OEF/OIF have survived with injuries to the genitals and urinary structures (GU injuries). These injuries are often severe and accompanied by other severe injuries such as multiple extremity amputations. The authors from the ISR, BAMC and the UK ministry of Defense submitted to the journal Injury a manuscript on the co-occurrence of GU injuries and extremity amputation in male US service members. The results indicate more than 1,300 service men who survived with these injuries, nearly one-third had one or more extremity amputations. Dr. Jean Orman, Dr. Jessica Rivera.


Blyth, Dana M. MD; Yun, Heather C. MD; Tribble, David R. MD, DrPH; Murray, Clinton K. MD, Lessons of War: Combat-related Injury Infections during the Vietnam War and Operation Iraqi and Enduring Freedom, Journal of Trauma and Acute Care Surgery, Oct-15, http://ovids.google.com


Published Works Continued on Pages 29 and 30


Shanker T, Study Says Faster Medical Evacuation was Lifesaver for US Troops, The New York Times, 30 Sep 15, http://www.nytimes.com/2015/10/01/us/politics/study-says-faster-medical-evacuation-was-lifesaver-for-us-troops.html?_r=0


The JTS offers clinicians, nurses, and medics the opportunity to acquire Continuing Education credits on a weekly basis. The telemedicine conference was developed to increase the knowledge-base of clinicians, nurses, medics, and other non-healthcare providers while deployed. The dual technical platforms of landline telephones and Defense Collaboration Services are used to connect forward providers throughout the continuum of care.

If you would like to join the conference, please contact the JTS Education Branch Chief Dallas Burelison at dallas.r.burelison.ctr@mail.mil