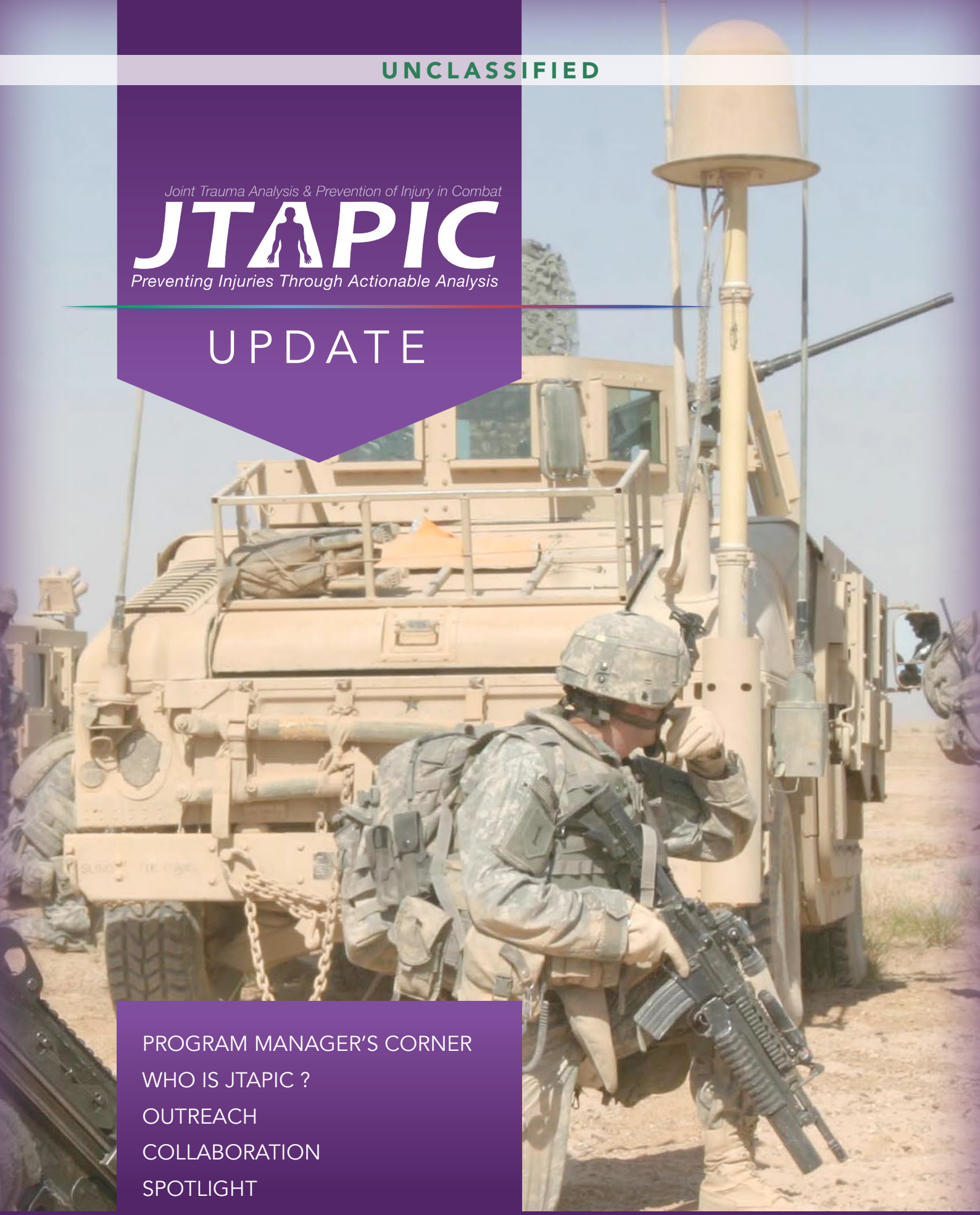
Joint Trauma Analysis & Prevention of Injury in Combat

JTAPIC

Preventing Injuries Through Actionable Analysis

UPDATE



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COLIN M. GREENE, MD, MPH
Colonel, Medical Corps, US Army
Program Manager

PROGRAM MANAGER'S CORNER

Welcome to the inaugural issue of the JTAPIC quarterly update, and to JTAPIC! Our goal is to help you to achieve success by providing useful, actionable analysis of events in the combat theater and the larger deployed environment. Our unique combination of subject matter expertise— operations, intelligence, materiel, and medical —combined with powerful database and collaborative IT systems, has allowed us to provide actionable analytic products to customers in the acquisition, materiel, and operational communities, leading to reduction in injury and death of Service Members. This has been achieved through improvements in vehicles; personal protective equipment; and tactics, techniques, and procedures. Further benefits have included identification of cost-effective courses of action in the acquisition process and key data supporting operational medical research.

JTAPIC has been in existence since 2006. Our primary focus has been the prevention and mitigation of blast-related injuries, but our partnership also performs analyses on other deployed injuries as well, including the tracking of mild traumatic brain injury, small arms attacks, and select aviation events. Our work has traditionally focused on land component forces, however we have recently begun to offer services to seaborne and Special Operations forces as well. The JTAPIC database presently contains some 20,000 injury-causing theater incidents with associated injury data, and through our legacy data entry initiative we expect to more than double this number over the next 4 years.

To our current JTAPIC customers, welcome again to this update. To those who are new to JTAPIC, welcome to the Program. I encourage you to browse our public website (http://jtapic.amedd.army.mil) and open an account on our JTAPIC Analysis and Collaboration System (JACS) by selecting the button at the top right of the main web page. Peruse our product library, and see if our services may be of use to you, either by downloading an existing product or requesting a new study analysis tailored to your needs.

Again, welcome! We look forward to serving you and working with you to prevent injury to our Service Members.

Colin M. Greene, MD, MPH
COL, MC, USA, Program Manager

WHO IS JTAPIC?

The JTAPIC Program Management Office (PMO) is a DoD program managed by the US Army Medical Research and Materiel Command at Fort Detrick, Maryland. with Executive Agent responsibility to collect, integrate, analyze and store operational, intelligence, materiel, and medical data. The JTAPIC program exists to inform solutions that prevent or mitigate injury during the full range of military operations. The JTAPIC Program links operational, intelligence, materiel, and medical communities for the purpose of collecting and analyzing data from combat incidents to help inform decisions by materiel developers, Commanders, TRADOC, and senior leaders.

Our Mission is to inform solutions that prevent or mitigate injury during the full range of military operations, by collaborative collection, integration, analysis and storage of data from operations, intelligence, materiel, and medical sources.

OUTREACH

16 JUL COL Colin M. Greene (Program Manager, JTAPIC) and Mr. David Wilson (Project Manager, JTAPIC) conducted a JTAPIC overview for the Warrior Transition Command (WTCs) Senior Leader and Clinician Course (SLCC) in Alexandria, VA. The course is conducted quarterly for commanders, staff, and clinicians assigned to the Warrior Transition Units (WTUs). JTAPIC regularly presents at this course, focused on the Wounded Warrior Debriefings, providing background information and examples of how the debriefings assist JTAPIC in preventing injuries in all aspects of military operations.

17 JUL COL Greene traveled to the headquarters of Program Executive Office-Soldier (PEO-S) headquarters, the parent organization of JTAPIC Partner Project Manager, Soldier Protection and Individual Equipment (PM-SPIE). The purpose of the meeting was twofold: first, in response to the invitation of BG Brian Cummings, PEO, who wished to discuss the Helmet Mounted Sensor System (HMSS), and second, to brief the new PM-SPIE on the JTAPIC Program. Mr. Timothy Goddette, Deputy PEO, and Dr. James Zheng, research scientist, were also present. COL Greene provided the JTAPIC Program Brief as well as a summary of the aggregate data from the HMSS as correlated with concussion diagnoses. The meeting concluded with assurances of future cooperation, including the use of the JTAPIC RFI system by the PEO staff.

22-23 JUL COL Greene chaired the JTAPIC Partners meeting at Natick, MA. On 23 July, COL Greene called on Ms. Suzanne Milchling, Acting Director, Natick Soldier Research, Development, and Engineering Center (NSRDEC), and COL Thomas Eccles, Commander, US Army Institute for Environmental Medicine (USARIEM). Discussion included a JTAPIC Program Brief and opportunities for present and future collaboration. On 24 July, COL Greene visited MIT Lincoln Laboratories in Lexington, MA, again offering a JTAPIC Program Brief and receiving briefings and tours of key activities of the Laboratories pertinent to TBI and neurological injury, including emerging technologies for the non-invasive detection of traumatic brain injury.

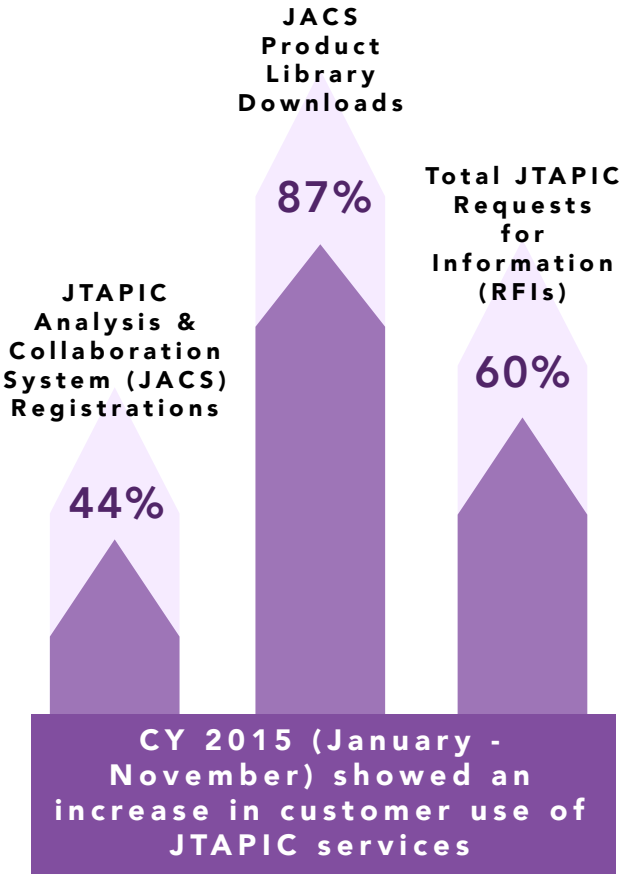
In December of 2015 the JTAPIC PMO chaired the JTAPIC Annual Program Review at the Naval Base Point Loma, San Diego, CA. Back row, left to right: MAJ Jason Jones - USAARL, Mr. Douglas Hoffman - COAST, Mr. Dave McFadden- NGIC, Mr. Danny Hassan- JTAPIC PMO, Ms. Mary Clouser- NHRC, Mr. Brad Scott-DIAT, Mr. Pat Gillich-ARL, Mr. Eleuterio Galvez-JTAPIC PMO, Mr. Gene Fober- DIAT, Ms. Karen Pizzolato-ARL, Ms. Susan West-JTS. Bottom row, left to right: Mr. Dan Wise-USAARL, Ms. Lindsay Liberto-JTAPIC PMO, Mr. Will Sattley-NHRC, Mr. Jeff Morgan-NGIC, Mr. Vernon Richmond JTAPIC Deputy PM, COL Colin Greene-JTAPIC PM, Mr. Dave Wilson-JTAPIC PMO, Ms. Cherelda Stephens-PdM ICE, Ms. Darlene Jordan-NGIC, and Ms. Felicia January-JTAPIC PMO.

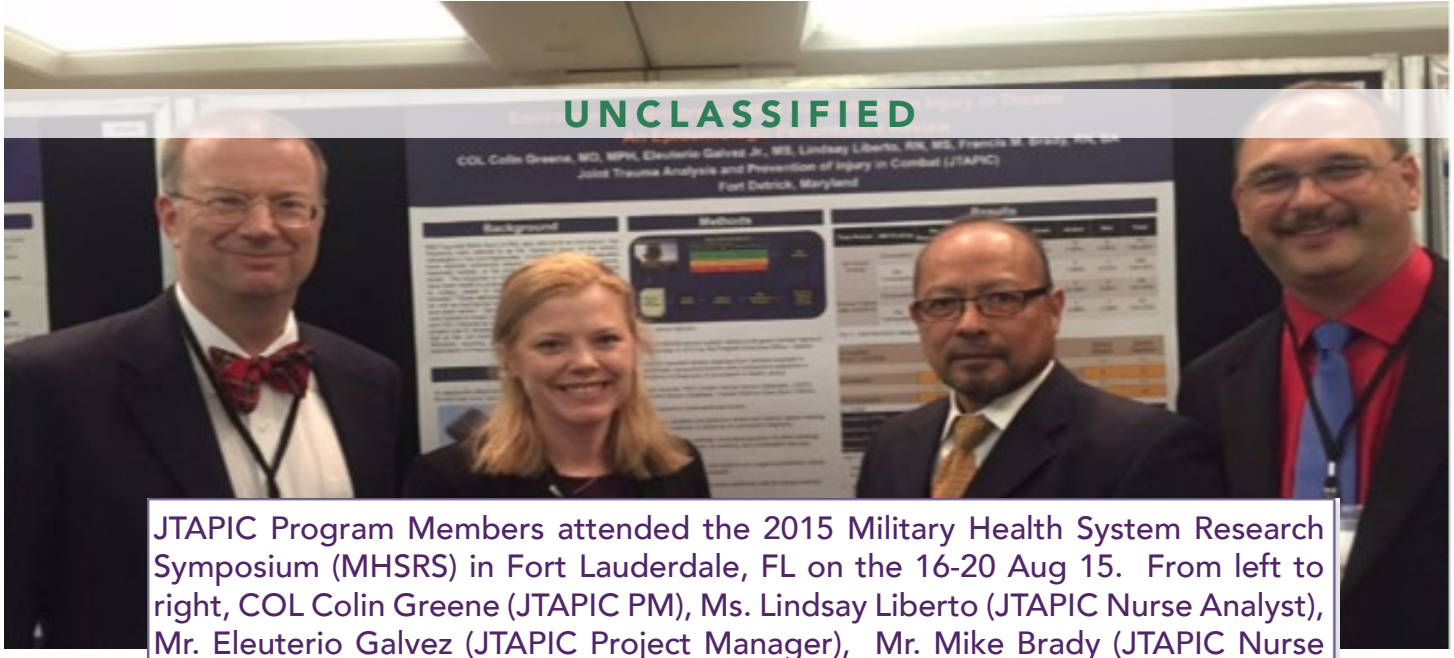
COLLABORATION

JTAPIC PROGRAM ANNUAL REVIEW

8-10 Dec 15 - COL Colin Greene, JTAPIC Program Manager, chaired the JTAPIC Annual Program Review, hosted by its partner Naval Health Research Center (NHRC), and Third Fleet Headquarters held at the Naval Base Point Loma, San Diego, CA. The meeting included a working Partner Meeting, along with tours of NHRC's Warfighter Performance Laboratory and of Strategic Operations, a contractor creating "hyper-realistic" training scenarios, combining the creative and artistic skills of the motion picture industries with theater and tactical experience. The final day comprised a review of JTAPIC's accomplishments for 2015 and goals for 2016 and beyond, with a keynote speech by MG Brian Lein, MRMC Commanding General, and a presentation by CAPT Rita Simmons, NHRC Commanding Officer.

By COL Colin M. Greene
(JTAPIC Program Manager)





JTAPIC Program Members attended the 2015 Military Health System Research Symposium (MHSRS) in Fort Lauderdale, FL on the 16-20 Aug 15. From left to right, COL Colin Greene (JTAPIC PM), Ms. Lindsay Liberto (JTAPIC Nurse Analyst), Mr. Eleuterio Galvez (JTAPIC Project Manager), Mr. Mike Brady (JTAPIC Nurse Analyst) and Mr. Danny Hassan (JTAPIC Product Manager, not pictured).

COLLABORATION

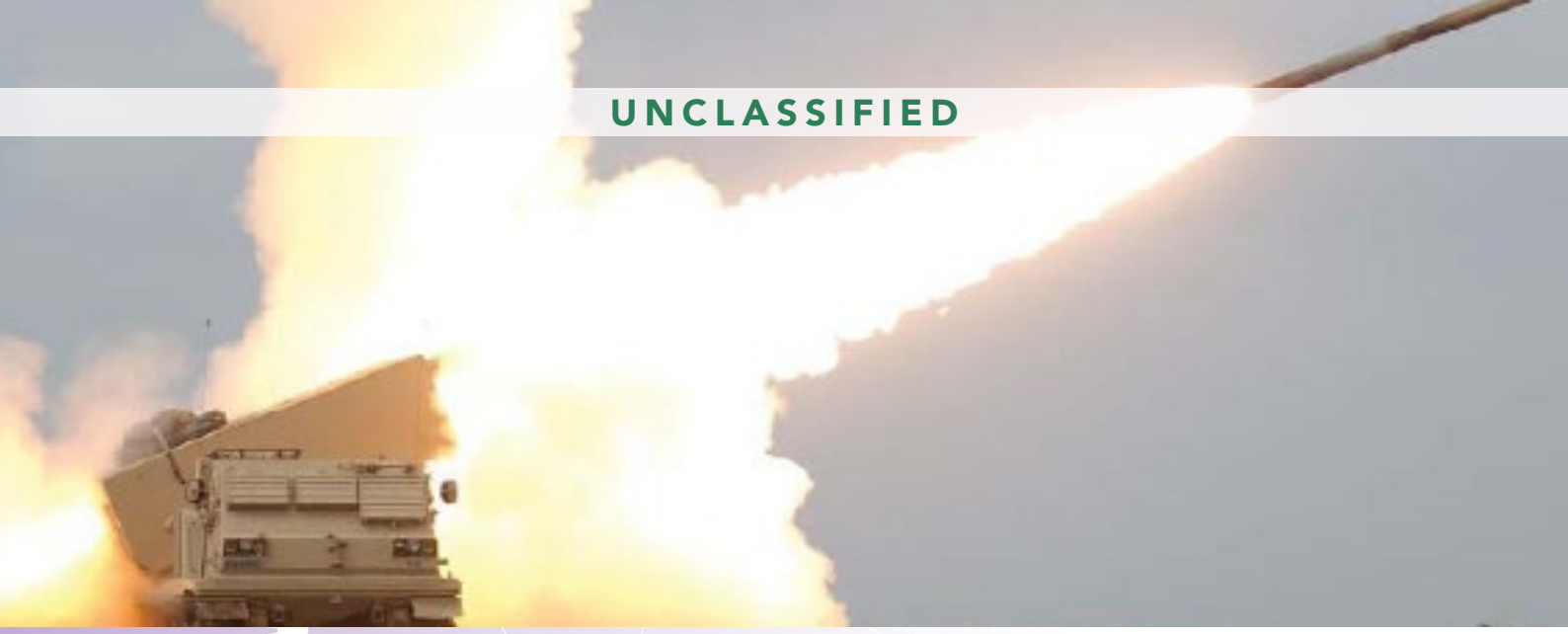
MILITARY HEALTH SYSTEM RESEARCH SYMPOSIUM

Members of the JTAPIC PMO and partners from the Naval Health Research Center (NHRC) and US Army Aeromedical Research Lab (USAARL) attended and participated in the annual Military Health System Research Symposium (MHSRS). The MHSRS is the Military Health Service's annual scientific forum for communication and discussion regarding research and scientific knowledge. The JTAPIC PMO and partners attended several sessions focusing on military-unique research and development related to the medical needs of the Warfighter.

> "The JTAPIC PMO and partners attended several sessions focusing on military-unique research and development related to the medical needs of the Warfighter."

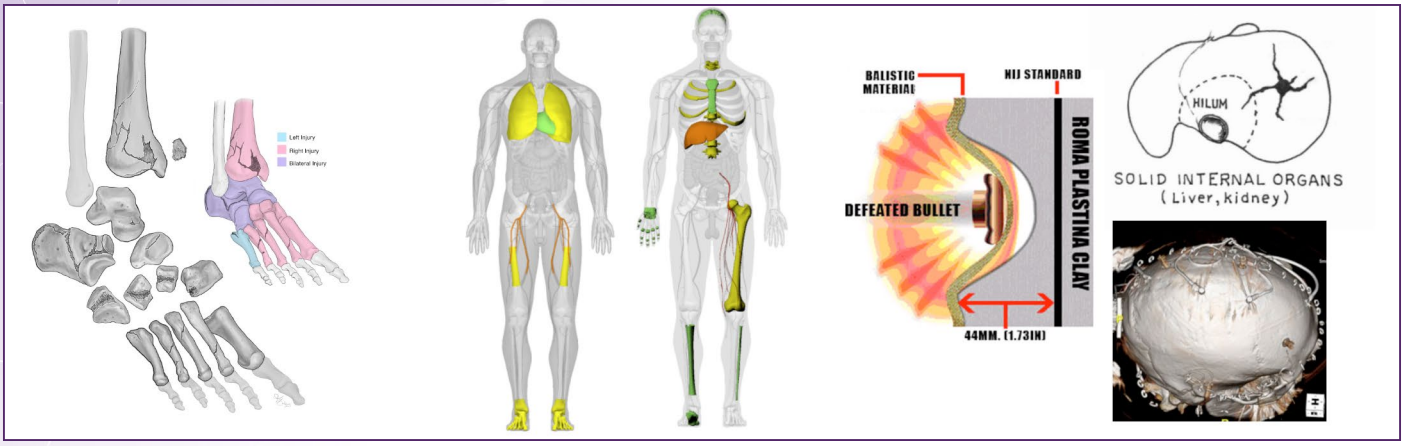
The JTAPIC PMO presented two well received posters. The first, "Collaborative Injury Prevention in the Deployed Setting: Joint Trauma Analysis and Prevention of Injury in Combat (JTAPIC)", highlighted the JTAPIC partnership as a unique collaboration between Department of Defense (DoD) operational, intelligence, materiel, and medical communities. The poster conveyed how JTAPIC efforts have identified vulnerabilities in operational tactics and vehicle and protective equipment. It also described how the partnership has enhanced the performance monitoring of modified protection systems, validated materiel upgrades, improved models and simulation, and provided decision support to the DoD Acquisition Community. The second, entitled "Environmental Sensors and Mild Traumatic Brain Injury (mTBI) in Theater: An Epidemiologic Performance Review", demonstrated how the presently fielded helmet sensor system appears ineffective for the purpose of screening Service Members exposed to Potentially Concussive Events, due to its extremely low sensitivity and high false negative rate.

By COL Colin M. Greene
(JTAPIC Program Manager)



SPOTLIGHT

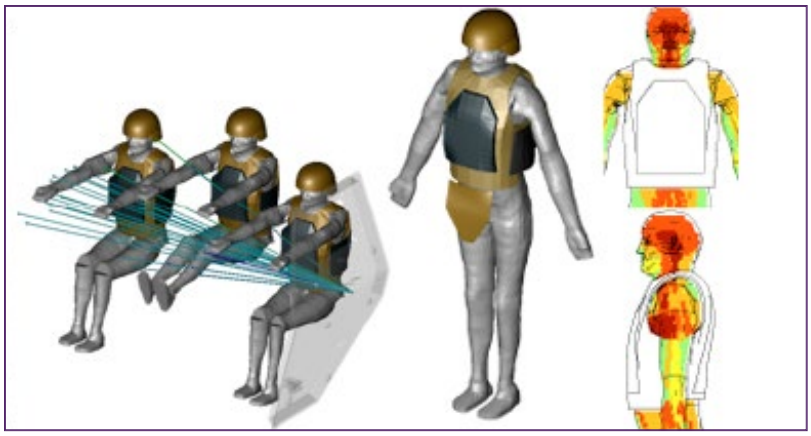
THE U.S. ARMY RESEARCH LABORATORY



Current projects within the U.S. Army Research Laboratory (ARL) Survivability / Lethality Analysis Directorate (SLAD) range from improving testing methodology to accurately describing anatomy visually. From left to right, ARL SLAD demonstrates medical illustration to describe results from biomechanical testing, standardized injury diagrams and images demonstrating methodology development for behind helmet blunt trauma.

The Army Research Laboratory (ARL) Survivability/Lethality Analysis Directorate (SLAD) at Aberdeen Proving Ground, Maryland has been a JTAPIC partner since the program's inception. As the Army's lead element for assessing the survivability/vulnerability and effectiveness of combat platforms and the Warfighter, ARL's mission requires expertise in ballistics, blast, damage mechanisms, human response to injury and incapacitation, armor mechanics, injury prevention, and more. To perform this work, ARL develops techniques and methodology to reduce vulnerability and enhance the survivability and effectiveness of vehicle platforms and individual Warfighters.

In its role, SLAD performs injury analysis through studies on terminal wound ballistics, personnel modeling and simulation, test event assessment, accident investigation, and the many analyses produced as partners of the JTAPIC program. As an expert in ballistics and human response, the organization provides expertise to determine the effects of small-caliber rounds and the performance of protective technologies using human tissue simulants. As a result of this biomedical



Current projects within ARL SLAD provide analysis about injury to personnel from LFT&E and modeled events. The left image depicts modeling of mounted soldiers to understand vulnerability caused by a behind armor event. The right image depicts vulnerability data that results from the modeling of body armor performance.

" To perform this work, ARL develops techniques and methodology to reduce vulnerability and enhance the survivability and effectiveness of vehicle platforms and individual Warfighters. "

and biomechanical expertise, SLAD analysts support other government agencies in providing AIS injury coding and analysis for mass casualty and civilian injury accidents. This work leads to an understanding of the underlying injury biomechanics and contributes to recommendations for the prevention of future injuries and the enhancement of medical triage and on-scene care. SLAD analysts combine operational intelligence, coded injury data, PPE data, and threat information to perform in-depth injury analyses, resulting in valuable contributions to materiel developers, the research community, and experimental communities.

SLAD demonstrates its analysis and modeling capabilities through the use and development of a fast-running model based on physics and empirical data called the Operational Requirement-based Casualty Assessment (ORCA) model. The ORCA model evaluates personnel causalities for all conventional insults, for any crew position, and for all anatomical locations in a way consistent with the needs of medical, materiel, and operational communities.

ARL plays a critical role in acquisition and LFT&E support, providing live-fire pre-shot predictions, model verification and validation, vehicle damage assessments, survivability recommendations, and more. SLAD's expertise places it in a unique position to connect test results and requirements to actual combat performance. Analysts conduct personnel assessments from acceleration, blast overpressure, thermal, toxic gas, small caliber weapons effects, behind-armor effects, and fragments. Furthermore, SLAD performs crew-casualty assessments for a wide range of lethality systems to help define current and future lethality requirements.

ARL SLAD plays an integral part in the Army's readiness to face the changing challenges of today's world. As a JTAPIC partner, ARL SLAD provides the same strengths and capabilities to the program as it does to the DoD community.

By Patrick Gillich
U.S. Army Research Laboratory

RECENT ANALYSIS PRODUCTS

The following are a few examples of analysis products recently published to our product library:

HOSTILE, NON-FATAL AVIATION INJURIES DURING FLIGHT OPERATIONS, 2002-2012

EOD BOMB SUIT INJURY DATA, 2004-2011

USMC AMPHIBIOUS ASSAULT VEHICLE (AAV)

UBB RELATED VISCERAL INJURIES

GROUND VEHICLE TOXIC GAS FATALITIES CY-2008-2009

POTENTIAL FUEL TANK MODIFICATIONS TO COMBAT VEHICLES

REQUEST AN ANALYSIS

JTAPIC Public Webpage:
http://jtapic.amedd.army.mil

ACCESS PRODUCTS

JTAPIC Analysis & Collaboration System (JACS) Information:
https://jtapic.arl.army.mil/jacs/

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