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Summary of the Military Health System Research Symposium (MHSRS)

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Summary of the Military Health System Research Symposium (MHSRS)
August 4-7, 2025 in Kissimmee, FL

OVERVIEW

The G2G team attended the 2025 Military Health System Research Symposium (MHSRS), participating in sessions and meetings with several leaders throughout the military health system (MHS). Below is a summary of the conference and insights gained from those conversations. The theme of the conference was **Supporting the Deployed Warfighter through Military Medical Research**. It featured over 500 oral and 1,400 poster presentations spanning 69 scientific topic areas, and 421 vendors in the Exhibit Hall, including G2G's that we shared with BBCetc. Attendance decreased from 4,300+ last year to 3,000+, including affiliates of the Department of Defense (DoD), Department of Veterans Affairs (VA), researchers, industry, and academia. If you have any questions or would like additional information, please contact Liz Powell (lpowell@G2Gconsulting.com), Aditya Girish (agirish@G2Gconsulting.com) or Katie Collins (kcollins@G2Gconsulting.com)

PLENARY SESSION

The presenters included leadership from the Defense Health Agency (DHA), MHS, Ukraine, and Israel including:

- **Stephen Ferrara, MD – Assistant Secretary of Defense for Health Affairs** – He gave the keynote address that outlined advancements in medical care and technology driven by DoD investment as well as emerging needs, challenges and opportunities in a turbulent global environment.
    - DoD's involvement in Operation Warp Speed was vital to the development of the COVID-19 vaccine in record time and trauma care techniques pioneered by the military have been successfully translated to civilian ER medical care and first response. DoD research has led to pioneering advancements in prosthetics technology, and diagnostics and therapies for TBI and PTSD, although significant unmet needs remain in these spaces.
    - Biosurveillance and biodefense remain top priorities, and DoD is executing partnerships with allies to meet critical needs.
    - New medical technologies including those that leverage AI will be vital to provide care in future conflicts. For example, the USNS Mercy hospital ship uses the GENESIS EHR system to ensure patient information is accurately documented, to facilitate continuity of care of injured Warfighters from sea to land.
    - Dr. Ferrara acknowledged ongoing challenges to military medical research funding. He indicated that recently passed legislation provides the DHA some breathing room to preserve military research programs. He also highlighted new funds designated for supporting the needs of military families, including pediatric and family care.

    - We talked with Dr. Ferrara about accessing military research and acquisition opportunities and shared information on some efforts we are working on. He was very receptive and connected us with more leaders within DoD.
- **Terry Rauch, PhD, Acting Director of Research and Development for Health Readiness Policy and Oversight, MHS** and **John Holcomb, MD, former Commander, Army Institute of Surgical Research and Trauma** – Led a panel discussion on combat casualty care and lessons learned to apply to current and future engagements. What was distinctive this year was the inclusion of Ukrainian and Israeli military medical leaders. Major takeaways include:
    - Digital documentation has become essential in combat casualty care (CCC) and its use correlates with a reduction in mortality rates even as the incidence of severe injuries on the battlefield has increased in recent conflicts.
    - Mental health providers need to be integrated into frontline care, since about 1/6 of soldiers report a stress reaction in combat, and 15-20% screened positive for PTSD or other mental health disorders.
    - The new conflict paradigm has shifted dramatically even compared to a few years ago, particularly due to resource constraints and no guarantees of medevac capabilities in far forward environments.
    - We talked with Dr. Rauch about military medical research priorities and opportunities and shared information on some efforts we are working on. He is focused on increasing the medical research funding that was decreased in FY 2025 and continues to prioritize trauma care and response.

BREAKOUT SESSIONS

Case Records of the Joint Trauma System (JTS):
Moderated by the JTS Chief and featuring a panel of experts who discussed specific military trauma cases to highlight lessons learned, and changes that need to be made in frontline trauma care for emerging conflict paradigms. Highlights include:

- Military medical teams need to train in scenarios that closely resemble resource constrained, austere combat situations if they are to be effective in preserving lives. The current model continues to train too many military medical providers in sterile settings. A program at Joint Base Camp Bullis in San Antonio was cited as a good model for realistic training of medical personnel.
- Continuous training and practice for physicians, medics and other providers is needed to mitigate the so-called 'Walker Dip' where medical capabilities and lived experience deteriorate in long gaps between conflicts.
- Invoking the selective service clause for medical personnel may be one option to augment the pool of military medical providers and enhance capabilities.

Female Warfighter Readiness:
There were several sessions addressing women in the military. Highlights include:

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- 394,834 women are serving in the military as of 2022. This is 17% of total enlistment and is growing with the expectation that it will reach 25% soon. This is due to more women enlisting, but also because many military age men cannot meet recruitment fitness standards
- The design of medical training and working environments impacts the health and performance of military women. Specifically, most trauma training occurs on male mannequins, and data indicates the need to include women patients in training for medics and physicians. Military armor design also needs to better accommodate female warfighters. Of 173 studies on body armor only 29 included the word "female". Additionally, adjusting the design of work environments outside the battlefield, such as the design or positioning of chairs can reduce occupational injuries according to a recently published Air Force study.
- Data indicates women in the UK Armed Forces have higher burnout rate due to exhaustion and emotional impairment, but alcohol use disorders are much less common for women than men while the rates of suicidal ideation, suicide attempt and self–harm are all fairly similar. Data showed women are more likely to seek help through medical routes or private mental health support than men, but men are much more likely to seek help through the military chain of command – perceived reaction impacts this behavior.
- Use of wearables within the military measured the effects of sex, sleep and stress on mental health symptoms throughout Navy deployment. A review of studies showed women have less sleep than men and more stress, so stress management is vital to readiness and performance.

Infectious Disease and Trauma Care: Lessons Learned from Ukraine & Israel

- Ukrainian military medical personnel outlined the problems they have observed linked to inadequate cleaning of wounds in the field before sending injured Warfighters to the next role of care. Antibiotic resistance and invasive fungal infections are systemic issues making irrigation of the wound more important than antibiotics in improving outcomes. U.S. military leadership agreed that these issues are also major pain points for American military medical corps.
- Vascular injuries on the battlefield are not just from bombs, but also tourniquets that are used too long or made too tight, according to an Israeli military medical leader. He addressed severe ischemia and longer surgeries and shared several pictures of the trauma care provided using existing vascular repair technologies. Secondary infection emanating from ischemia, overall blood loss and shock is a particularly serious problem. It requires cooperative applications of solutions to stop hemorrhage, maintain graft patency, mitigate wound infection and ensure final wound closure.
- The widespread use of drone warfare has led to increased incidence of severe head wounds including traumatic brain injury (TBI). These injuries are associated with higher risks of treatment failure that is driven by multi–drug resistance, and adverse drug reactions. Observed incidences of adverse drug reactions are as high as 13%.

Traumatic Brain Injury (TBI): Epidemiology & Down Range Management:

- There was increased exposure to explosive blasts during post-911 conflicts in Iraq and Afghanistan. Mild TBI is one of the most common injuries following blast exposure and can affect anyone physically subjected to the shockwave. Now almost all veterans have some history of having a TBI.

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- The latest approach to TBI management for Warfighters can be divided into three phases, with the goal of facilitating rapid return to duty. Phase I is acute medical management that is focused on addressing symptoms. If symptoms are not resolved within two weeks, patients are referred to Phase II outpatient care which consists of weekly assessments of injury, exertion testing, monitoring of disabling symptoms, specialist assessments and treatment planning. If symptoms cannot be sufficiently managed in Phase II patients are moved into a Phase III residential program until their condition resolves or can be managed.
- 40% of deployed soldiers who suffer a TBI go on to develop post-traumatic epilepsy (PTE). Despite this high incidence, there is no mechanistic understanding of epileptogenesis in PTE, which requires genetic predisposition and not just a casual TBI or other injury. Innovative work leveraging whole exome sequencing (WES) can be used to calculate the risk of developing PTE before and after a TBI.

Optimizing Medical Readiness, MHS Resilience and Biodefense

- Pathogen surveillance in wastewater continues to be an important method to monitor infections circulating in small communities. A study examining wastewater from the US Naval Academy over the course of the academic year was able to detect at least nine different viral and bacterial pathogens in wastewater analytes with a high level of accuracy prior to manifestation of outbreaks.
- A study of host-based biomarker diagnostics supported in part by the Defense Threat Reduction Agency (DTRA) and leveraging innovative DNA/RNA amplification technologies, is expected to move forward new pathways for detecting pre-symptomatic disease, asymptomatic shedding of viral matter, direct pathogen detection, and responses to treatment.

Survival in Future Large Scale Combat Operations (LSCO):

This session focused on the medical capability and technology gaps for emerging and future LSCOs which include:

- Unmanned critical care equipped drones that can deliver ICU level lifesaving interventions including blood, and medical supplies.
- New generation of smart tourniquets and education on best practices for both civilians and for military medics.
- Deployable point of care monitoring devices for injury severity and labs.
- Telemetric decision support for medics.

Additive Manufacturing in Support of Theater Care:

This session focused on emerging methods and strategies to manufacture medical products at scale, including in or closer to far forward military environments, as well as challenges associated with this transition. Salient points include:

- Recent advancements in 3-D printing technologies can facilitate a shift away from centralized facilities to decentralized manufacturing of medicines closer to end users in the field. Maintaining quality for 3D printed medicines in decentralized environments will require a

combination of applying some existing standards, modifying other existing standards and also developing entirely new standards

- The Uniformed University of the Health Sciences (USU) 4DBio^3 Center is leading efforts to develop and adapt promising new biotechnology to benefit Warfighter readiness and resilience. The Fabrication in Austere Military Environments (FAME) Program is one its initiatives to move bioprinting out of sterile lab facilities to forward-deployed positions. Significant products that have been made under this program include IV bags, laryngoscopes and ventilator vales among other items

Other Key Topics for Breakout Sessions Included:

- Blood and Blood Products: Novel Strategies for Treatment of Blood Failure
- Big Data, AI & ML in Military Research
- Military Injury Biomechanics
- Fatigue Mitigation for Medical & Operational Readiness
- Broad Spectrum Anti-Viral Countermeasures
- Warfighter Exertional Illness & Operations in Environmental Extremes
- VR/AR/MR Applications for Training & Patient Care in the MHS
- Polar Performance at Altitude & Arctic Activities

G2G'S MEETINGS WITH PROGRAM MANAGERS AND DIRECTORS

G2G met with several program managers who discussed their portfolios and high-level DHA leaders explaining policy priorities within DoD, future agency structural changes, and future research funding outlook. Some key meetings include:

Deputy Director of DHA Research and Engineering: He updated us on trajectories of the DHA's eight science and technology (S&T) strategic research plans (SRPs): TBI, Psychological Health, Sensory Systems, Military Infectious Disease (MID), DoD Working Dog, Combat Casualty Care (CCC), Environmental Exposures and Musculoskeletal Injury. CCC and MID are the largest parts of the portfolio with outlays of tens of millions of dollars, whereas TIB and Working Dog rank among the smallest with outlays of a few million dollars. DHA is still supporting research in cancer and in women's health areas, even though they do not have standalone SRPs. Rehabilitation and human performance do not comprise a major part of his portfolios, as they are supported by other DoD/DHA initiatives.

Leadership, Congressionally Directed Medical Research Programs (CDMRP): G2G met with the Director and Deputy Director of CDMRP to discuss program priorities. CDMRP funds impactful, innovative research via programs added by Congress to the Defense Appropriations Bill. These programs fill gaps and address high-priority needs focused on improving health, well-being, and care quality for Warfighters, Veterans, their dependents, and the broader community. However, for FY 2025 CDMRP suffered a 57% cut, from $1.5 billion to just $650 million and this led to over half of programs losing funding. CDMRP leadership has been working extensively to educate policymakers on the innovative work these programs fund, emphasizing non-redundancy with other federal R&D initiatives

and low overhead costs to ensure allocated dollars go almost exclusively to science. These efforts appear to be gaining traction, as the recently released Senate Defense Appropriations Bill restored funding to many CDMRP programs.

Leadership & Researchers of the Walter Reed Army Institute of Research (WRAIR): We spoke to leaders of WRAIR's Center for Enabling Capabilities (CEC) which is focused on innovation and includes the Veterinary Services Program to support preclinical research, the Clinical Trials Center that is capable of supporting Phase 1 and 2 studies and the Pilot Bioproduction Facility to manufacture vaccines and therapeutics to meet military needs. Another linked center at WRAIR is the Center for Infectious Disease Research (CIDR) which is focused on developing medical countermeasures for emerging infectious diseases that can compromise military readiness. Areas of focus include bacterial diseases, biologics research and development, diagnostics, entomology, experimental therapeutics, and HIV. A third major group at WRAIR is the Center for Military Psychiatry and Neuroscience (CMPN), which is focused translational efforts to treat blast induced neurotrauma and manipulating the relationship between sleep and performance among other areas.

Portfolio Manager, Military Infectious Diseases (MID): This directorate leads the DoD's solution focused work prevent and treat infectious disease threats relevant to the Warfighter. MID does not support exploratory work that delineates causal factors of infectious disease and works downstream of the DHA SRPs – which outline priorities at a very high level. MID's project scope is very specific to military use cases and requirements that are outlined in the DHA's multi-year broad agency announcement (BAA). While much of MID's projects are done in house, they collaborate with other DoD institutions like WRAIR or US Army Institute of Surgical Research (USAISR), and with extramural partners who can fulfil criteria set out in the BAA.

The above-described meetings were extremely insightful, as were several other meetings G2G had with the following individuals:

- Dean, USU School of Medicine
- Surgeon General, US Army
- Director of Medical Research and Development (R&D), DoD
- Director, Military Women's Health Research Program, USU
- Lt COL, Nurse Corps, Combat Casualty Care Portfolio
- Chief Science Officer, US Army Medical Research Institute of Infectious Diseases (USAMRIID)
- Assistant Director Support/Component Acquisition Executive, and Deputy Assistant Director Acquisition and Sustainment, DHA
- Head, Operational Medical Systems (OPMED) Program Management Office, DHA
- Research Project Analyst, Medical Technology Enterprise Consortium (MTEC)
- Product Manager, Warfighter Expeditionary Medicine and Treatment (WEMT) Program Office at USAAMDA, and Program Manager BioFabUSA
- Research Director & Capability Area Manager, Medical Robotics and Autonomous Systems (MedRAS) at USAISR
- Sr. Research Scientist, US Air Force School of Aerospace Medicine

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- General Health Science Officer/Sr. Scientist and Director, Joint Integrative Clinical Medicine Research at the 59th Medical Wing
- Deputy Director, Business Development, and Client Relationship Manager for Strategic Initiatives at Henry M Jackson Foundation for Military Medicine
- Chief, Phage Science Division, Department of Genomics and Bioinformatics at Naval Medical Research Center, Fort Detrick.

In closing, participating at MHSRS provides opportunities to gain intel on military needs, gaps, and requirements and to engage with DoD researchers, program and project managers, leadership, and decision makers. Presenting at the conference is a great way to raise visibility of your R&D efforts, innovation, and/or new products with key DoD leaders and decision-makers. The deadline to submit an abstract to be considered to present at next year's conference is expected to be in early 2026. If you have any questions or would like additional information please reach out to Liz Powell (lpowell@G2Gconsulting.com), Aditya Girish (agirish@G2Gconsulting.com) or Katie Collins (kcollins@G2Gconsulting.com).