CDMRP
DEPARTMENT OF DEFENSE
CONGRESSIONALLY DIRECTED MEDICAL RESEARCH PROGRAMS

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COMBAT READINESS-MEDICAL RESEARCH PROGRAM

VISION

To increase survivability and readiness of the Warfighter

MISSION

Develop innovative high-impact solutions to increase medical readiness, diagnose and treat life threatening injuries, reduce morbidity and mortality, and promote positive long-term outcomes for the Warfighter

RESEARCH INVESTMENT

The CRRP research investment focuses on products (knowledge and materiel) which have the potential to translate into clinical practice. The program seeks opportunities to enhance cross-translational research that bridges military and civilian trauma care with potential implementation into the training environment to encourage broad-user adoption of technology products. Innovations developed by CRRP-supported research are focused efforts to establish medical readiness ahead of deployment, in-theater at the point of injury, during periods of prolonged care, or during transport/en route care.

The program maintains a strategic emphasis on mid- to late-maturity research efforts. Thirteen of twenty-three CRRP projects recommended for funding (FY19-22) are expected to achieve a significant filing interaction with the FDA by or shortly after the end of the funded period of performance.

PROGRAM HISTORY

Treating and returning military personnel to duty, which maintains force strength, has always been a primary mission of the Armed Forces. In the wars in Iraq and Afghanistan, the U.S. military achieved the highest rate of survival from battlefield injuries in history; wounded-to-kill ratios improved more than twofold from the world wars of the last century. Substantial credit for this achievement is due to a 2009 congressional mandate that stated wounded Warfighters should be provided with lifesaving care within 60 minutes of injury, a timespan that is referred to as the "golden hour." In fiscal year 2019, Congress provided funding for Combat Readiness Medical Research to focus on medical needs of the Warfighter relevant to readiness in battlefield environments. Prioritized areas of focus for the program included research addressing life threatening injuries, battlefield diagnostics, medical threats and treatments for deployed Warfighters. The CRRP focuses on forward-deployable solutions that can promptly address life-threatening injuries, medical threats, and treatments for Warfighters, particularly in current and future battles settings. The CRRP has received $50 million in appropriations since FY19.

RESEARCH PORTFOLIO

The CRRP's research portfolio addresses the research priorities and topics described in the congressional language. For FY23, there are 19 distinct topics identified in the congressional language that are listed in Figure 2. The CRRP organizes these topics into broad focus areas related to the medical needs of the Warfighter on the battlefield and offers an award mechanism designed to support promising research ideas with the goal of advancing research into translatable medical knowledge and materiel products. The CRRP research portfolio is synergistic with existing DOD medical research interests, including specific portfolio investments of the Defense Health Program Joint Program Committees (DHP JPCs) and Product Development programs. Using this approach, the CRRP research portfolio leverages the knowledge of established requirements and guidance documents to complement other DOD investments. CRRP's portfolio alignment to JPC and Product Development needs is illustrated in Figure 1.

Figure 1. CRRP FY19-FY22 Portfolio Focus Alignment to DOD Gaps and Funded Efforts

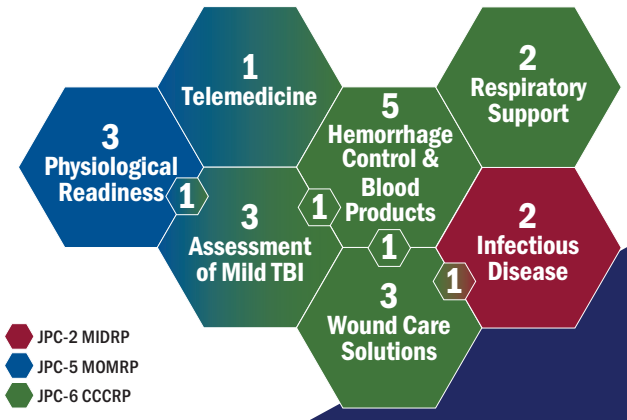

Figure 2. FY23 Congressional Topic Areas

FY23 CONGRESSIONAL TOPIC AREAS	FY23 FOCUS AREAS
• Rapidly deployable, all-in-one acute and chronic care therapy to address complex trauma and start tissue regeneration	**Wound care solutions for complex trauma and tissue regeneration that span the operational medical care continuum or roles of care (e.g., acute through chronic care), such as:** • Multi-modal wound care solutions that provide a combination of hemostasis, wound healing, infection prevention, and/or analgesia • Repair and restoration of genitourinary injury and tissue damage
• Telemedicine • Medical simulation technology • Freeze-dried plasma and platelets • Ruggedized oxygen generation systems • Portable neurological devices in support of mild TBI (mTBI) assessment • Handheld detection devices for traumatic brain injury (TBI) • Head trauma injury • Infectious diseases • Highly infectious disease treatment and transport	**Solutions to enhance combat care delivery through the far-forward environment, such as:** • Telemedicine solutions that enable medical capabilities at far-forward battlespace locations worldwide • Medical simulation technology that supports sustainment of critical skills and medical decision-making • Blood productions, including freeze-dried plasma and platelets • Ruggedized oxygen generation systems for medical use • Solutions for the assessment of mTBI, to include portable and handheld devices • Extracorporeal life support • Initial treatment and transport of patients with highly transmissible infectious disease
• Sleep disorders • Myalgic encephalomyelitis/ chronic fatigue syndrome (ME/CFS) • Preventing and relieving service-related arthritis • Eating disorders • Sarcoidosis • Valley fever • Regenerative medicine • Complementary health measures to accelerate return to duty (RTD) • Regenerative medicine	**Solutions to enhance Warfighter readiness, such as solutions to address:** • Sleep disorders • ME/CFS • Service-related post-traumatic arthritis • Eating disorders • Sarcoidosis • Valley fever • Complementary health measures to accelerate RTD • Regenerative medicine

RESEARCH ACCOMPLISHMENTS

Supported by CRRP funding, investigators from **Drexel University, Philadelphia; InfraScan, Inc., Philadelphia;** and **Hebrew University, Jerusalem,** developed an early prototype system for injury monitoring in prolonged care environments. The device combines near infrared spectroscopy and diffuse correlation spectroscopy to detect changes in blood flow, blood volume, water, and hemoglobin as injury markers. Initial animal testing demonstrates the ability to detect early measures of cerebral blood flow changes and hemorrhage.

CRRP investigators from **MaxQ Research, LLC,** and **U.S. Army Institute of Surgical Research** tested different heat reaction profiles of various chemical and mechanical elements working toward their goal of creating a smaller, lighter, and more robust blood/freeze-dried platelet warmer.

NeoMatrix Therapeutics, Inc., recently received FDA clearance to proceed with a Phase 1 safety study of cNP8, an intravenously administered peptide that may improve healing when given after burn injury.

ONGOING CRRP-SUPPORTED RESEARCH

- Development of a comprehensive training curriculum and training platform for treatment of traumatic ureteral injury at the University of Washington, led by Dr. Robert Sweet.
- The team at HDT Bio Corp led by Dr. Brian Berube is developing a novel temperature-stable intranasal antiviral therapy for treatment of respiratory viral pathogens.
- Clinical trial led by Dr. Stephen Simons at Teledyne Scientific & Imaging, LLC, of wearable neurotechnology to treat insomnia.
- Investigators led by Dr. Rosina Samadani at Oculogica, Inc., are developing a highly portable device for assessment of mild traumatic brain injury in deployed and far forward settings.
- Dr. Christian Kastrup from Versiti Wisconsin, Inc., and his team are developing a minimally invasive device and bioabsorbable hemostatic powder for managing noncompressible torso hemorrhage.

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