



U.S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND (USAMRDC)



— RAPID RESPONSE FORCE FOR EMERGING INFECTIOUS DISEASES —

THE CHALLENGE:

- Emerging infectious disease (EID) can threaten political and economic stability, overwhelm partner capacity, and jeopardize a calibrated force posture, endangering compete phase activities as well as gains consolidation during the re-compete phase of multi-domain operations (MDO).
- Infectious disease can emerge in dense, urban, and remote environments, threatening operations during the penetrate, dis-integrate, and exploit phases of MDO.

THE SOLUTION:

- USAMRDC's extensive capabilities and international research infrastructure allow its scientists to anticipate and develop countermeasures against EID threats.
- USAMRDC provides full lifecycle management from research, development, testing, and evaluation to quickly respond to national health crises.
- USAMRDC HQ provides programmatic oversight, synchronization, and integration to ensure that materiel solutions develop at the velocity of relevance.

WALTER REED ARMY INSTITUTE OF RESEARCH (WRAIR)

Founded in 1893, WRAIR's research competencies around the world work in concert to address endemic and emerging infectious disease threats to the Warfighter

U.S. ARMY MEDICAL RESEARCH INSTITUTE OF INFECTIOUS DISEASES (USAMRIID)

Since 1969, USAMRIID serves as the DOD's lead laboratory for medical countermeasures for biological defense

U.S. ARMY MEDICAL MATERIEL DEVELOPMENT ACTIVITY (USAMMDA)

Established in 1985, USAMMDA is the premier advanced developer of military-relevant medical countermeasures, taking the products developed at WRAIR, USAMRIID, or by commercial partners and moving them to FDA licensure and acquisitions

CONGRESSIONALLY DIRECTED MEDICAL RESEARCH PROGRAMS (CDMRP)

Originating in 1992, CDMRP funds high impact research to support military-relevant medical product breakthroughs in academic, industry, and government laboratories

SURVEILLANCE



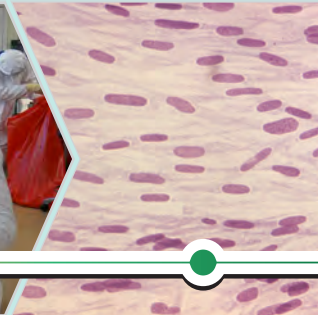
DISCOVERY



MANUFACTURING



PRE-CLINICAL



CLINICAL



DELIVERY



- Disease surveillance and epidemiology forecasts the efficacy of current products against evolving diseases and provides a head-start in outbreak response and medical countermeasure development
- WRAIR's OCONUS laboratories on three continents and USAMRIID's deployable Center for Genomic Surveillance are strategically located at the front lines of disease, working to identify and characterize emerging and evolving threats

- USAMRIID and WRAIR laboratories have vast capabilities and experience developing a range of countermeasures including vaccines, treatment and prevention drugs, monoclonal antibodies, and diagnostics
- Historic experience with major disease families provides the template to rapidly develop novel countermeasures
- CDMRP leverages congressional special interest funding to address needs and gaps in military research programs and taps into academic and industry based innovation

- WRAIR's newly renovated Pilot Bioproduction Facility can manufacture vaccines and biologics to support pre-clinical and early clinical testing
- Operating at fully capacity, the PBF can meet a DOD-wide need and serve as a critical part of a nationwide response to provide durable solutions to infectious disease

- USAMRIID and WRAIR begin testing novel products in animal models to forecast safety and efficacy prior to any human exposure
- USAMRIID performs animal efficacy studies in biosafety level 3 and 4, the highest levels of biosafety precaution which includes diseases with aerosolized routes of exposure, a unique competency

- WRAIR and USAMRIID operate clinical trial centers to perform early-stage clinical trials to test novel countermeasures
- WRAIR has cultivated an international network of collaborators with state-of-the-art labs and medical clinics to test countermeasures in endemic settings
- USAMMDA supports the conduct of late-stage clinical trials with industry partners, including regulatory support

- Product managers at USAMMDA work with the laboratories and user community to guide medical product development and acquisition while ensuring Warfighter relevance
- Regulatory affairs scientists and specialists provide regulatory guidance to the laboratories for product development and testing requirements needed for U.S. FDA approval
- USAMMDA's Force Health Protection Division is the DOD lead agent to provide rapid operationalization through strategic early equipping of investigational equipment of medical countermeasures where no FDA-approved solutions are available

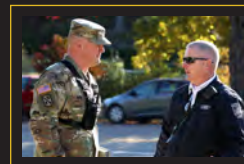
SYNCHRONIZED >>

WITHIN MRDC TO MAXIMIZE CAPABILITIES, MINIMIZE DUPLICATION, AND DEVELOP SOLUTIONS AT THE VELOCITY OF RELEVANCE



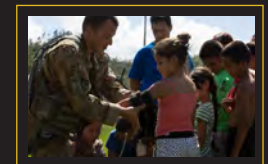
INTEGRATED >>

WITH GOVERNMENT AGENCIES, INDUSTRY, AND ACADEMIA TO SUPPORT RAPID, FLEXIBLE RESPONSE

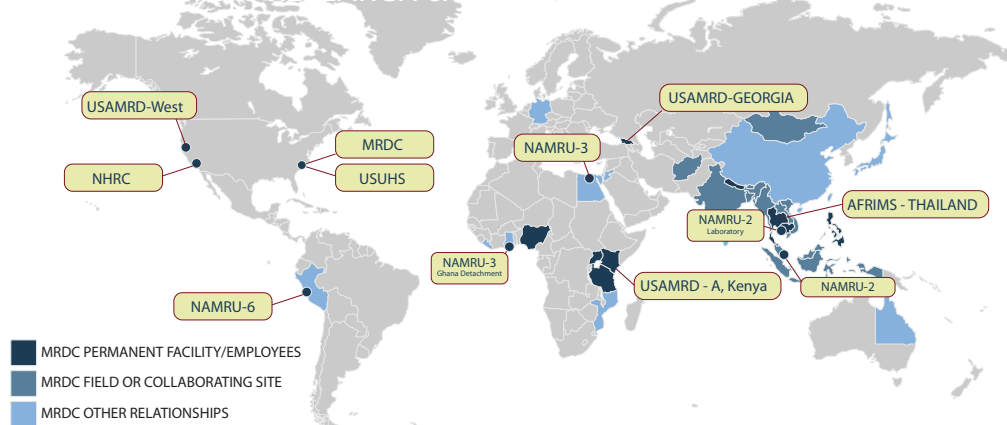


RESPONSIVE >>

TO THE NEEDS OF THE WARFIGHTER DURING TIMES OF CRISIS; EARLY RESEARCH AND DEVELOPMENT PROMOTES COUNTERMEASURE DEVELOPMENT



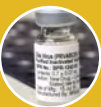
ARMY AND NAVY RESEARCH & SURVEILLANCE



MRDC HISTORICAL SUCCESSES



USAMRIID and WRAIR played a critical role in the development of an FDA-approved **Ebola virus vaccine** in December, 2019. USAMRIID tracked genomic changes of the Ebola virus to determine the effects of key mutations on diagnostic and therapeutic efficacy, achieved FDA emergency use authorization for an Ebola virus diagnostic assay with **USAMMDA**, and provided developmental therapeutics to patients during the recent outbreak. WRAIR, with USAMRIID's support, conducted more than half a dozen Ebola vaccine candidate clinical trials, including the first Ebola vaccine study in Africa, and a study to evaluate the recently FDA-approved vaccine within weeks of the 2014 outbreak. USAMMDA further supported Operation United Assistance, the U.S. military mission to combat the Ebola virus epidemic, by deploying personnel and establishing treatment sites for investigational new drugs, including intravenous artesunate for severe malaria and intravenous ribavirin for Lassa and Congo-Crimean hemorrhagic fevers.



WRAIR responded rapidly to the **Zika virus outbreak**, moving from an initial concept to clinical studies in under 9 months. Three Phase 1 human clinical trials showed that the vaccine induced a robust immune response in over 90% of recipients.



USAMRIID identified a novel, synthetic therapeutic compound with the potential to treat **coronaviruses**. **WRAIR** has experience studying both severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS), two high-profile coronaviruses that caused deadly outbreaks. WRAIR completed the first-in-human Phase 1 trial of a **MERS vaccine**, the only MERS countermeasure and third coronavirus vaccine ever tested in humans.

OUR PRODUCTS:

EPIDEMIOLOGY



Emerging infections can strike at any phase of multi-domain operations. Surveillance identifies and tracks diseases to inform combatant commanders and medical countermeasure development; cohort studies follow people near infection outbreaks of interest, gaining valuable information about disease progression, risk factors, and more.

DIAGNOSTICS



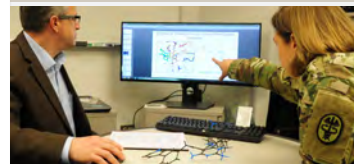
The development of diagnostic tools to detect military-relevant infectious threats enables force health protection and targeted medical countermeasure development.

VACCINES



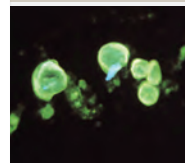
Due to WRAIR and USAMRIID's extensive experience developing vaccines against emerging and endemic diseases and also biological threats, USAMRDC can rapidly pivot to and develop vaccines for national priorities, if directed.

DRUG-DEVELOPMENT



WRAIR is home to over 800,000 unique compounds and high-throughput screening methods to quickly discover potential drug candidates.

MONOCLONAL ANTIBODIES



Monoclonal antibodies are targeted products that enhance the body's immune response. An emerging tool in the infectious disease field, monoclonal antibodies can be developed quickly, give near-instant protection, and are sufficiently durable for short deployments.

PARTNERSHIPS



A network of global partnerships tie MRDC laboratories to U.S. and partner government agencies, academic and industry collaborators, and non-governmental organizations. These collaborations are a force multiplier, allowing MRDC to project its research platform and product fieldability across a much greater area.

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