

STATEMENT

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REGARDING

INFECTION CONTROL IN MILITARY FACILITIES

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OVERSIGHT AND INVESTIGATIONS SUBCOMMITTEE

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Chairman Snyder, Ranking Member Wittman, Members of the Committee, thank you for the opportunity to discuss Department of Defense (DoD) efforts to address the growing challenge of healthcare-associated infections, particularly those from multi-drug resistant organisms (MDROs). We greatly appreciate the Committee's interest in this important issue, and its continued support of the dedicated men and women of America's Armed Forces.

Mr. Chairman, as the Committee so well understands, healthcare associated infections, including those from MDROs are not unique to the military but rather constitute a growing national problem in healthcare facilities across the nation. These pathogenic organisms, which are predominately bacteria, have not only increased the length of hospital stays, but are also responsible for increased mortality rates, so the problem is a serious one.

The source of the bacteria responsible for these infections is both environment and facility-related. In hospital settings, they can contaminate environmental surfaces, equipment such as ventilators and dialysis machines, air ventilation systems, water sources, the hands of health care workers, and the respiratory, urinary and gastrointestinal tracts and wounds of hospitalized patients. Other sources include soil, fresh water, vegetables and animals, as well as lice, fleas and ticks.

Accumulated data have shown that transmission infections from MDROs in combat-wounded Service members who have returned to the United States do not appear to have a single source or involve a single strain of bacteria suggestive of system issues, but rather are derived from multiple sources, which must be addressed as system issues.

### **Screening, Surveillance, Prevention and Control**

The DoD has been actively engaged in measures to screen, surveil, prevent and control infection in military treatment facilities (MTFs) at home and on the battlefield.

The Military Health System (MHS) maintains a Quality Assurance Program, implemented in all MTFs, which establishes policies and procedures to minimize the risk of infection to patients and staff. The program includes infection control activities; patient care assessment, including a review of treatment procedures, therapeutics, blood and medication use; and reviews of healthcare records, health resources management, and risk management.

The Global Emerging Infection Surveillance and Response System, a division of the Armed Forces Health Surveillance Center, is a central hub that leverages the surveillance and response assets of the Services and overseas medical research units. Recent accomplishments include standardized laboratory characterization of *Acinetobacter*, a major MDRO, using uniform laboratory test systems and software at all

major receiving MTFs treating Service members with infected wounds, which will pave the way for laboratory standardization of other microbes of military interest.

The Multidrug Resistant Organisms Repository and Surveillance Network System, established by the Navy and Marine Corps EpiData Center (EDC), provides the ability to rapidly characterize emerging drug resistance threats, track and monitor MDRO patients, and reduce the risk of healthcare-associated infections. The network was established by the military infectious disease and microbiology community to study the problem of infection in deployed settings and in the continental United States, to detect localized sources, and to focus on infection control responses.

This capability, which is currently being tested at a pilot MTF, will aid the development of a daily alert surveillance system for MDROs of significant importance. The EDC already has the ability to rapidly analyze microbiology data and respond to inquiries regarding emerging antimicrobial resistance and pathogen surveillance in a timely manner, and has established metrics that provide visibility on trends both at specific MTFs and enterprise-wide.

The MHS has begun participation in the National Surgical Quality Improvement Program (NSQIP). Originally developed by the Department of Veterans Affairs (VA) and now offered by the American College of Surgeons (ACS), it currently includes 275 fully enrolled sites. The NSQIP is the only nationally recognized, validated, outcomes-

based, risk-adjusted, surgical quality improvement program. As of September 2010, 16 DoD MTFs had initiated their participation in ACS NSQIP. Initial risk-adjusted outcomes data from these facilities, including the occurrence of surgical site infections which could involve MDROs are expected to become available throughout calendar year 2011.

The Theater Joint Trauma Registry is also adding an infectious disease module to study and better understand the risks, interventions, and outcomes associated with combat trauma. Standard infection prevention and control practices, and standard clinical practice guidelines, have been established and implemented throughout the MHS in both garrison military treatment facilities and deployed areas. DoD partnerships have been established with the VA and the Department of Health and Human Services' Centers for Disease Control and Prevention (CDC) to address the challenges presented by MDRO and other infections.

With regard to screening, MDRO-specific policies are implemented at MTFs based on local risk assessment and identified needs. Admission MDRO colonization screening is performed at the four major receiving military medical centers for Operation Iraqi Freedom/Operation Enduring Freedom wounded: Landstuhl Regional Medical Center, Walter Reed Army Medical Center, National Naval Medical Center, and Brooke Army Medical Center. Patients are not released from contact precautions or isolation until they screen negative, and screening results are collected, reviewed, and reported.

The result is near real time monitoring of rates and epidemiology of MDRO colonization and infection in personnel evacuated from operational theaters.

In addition, MDRO prevention and control is a patient safety priority throughout the MHS. Standard hand washing and infection control precautions are used as a minimum in ambulatory care settings and, in acute care hospitals, contact precautions are implemented routinely for all known patients infected with MDROs.

The MHS has established an Infection Prevention and Control Panel (IPCP), which has infection control experts from each of the Services serving as a subcommittee to advise the MHS Quality Forum. In December 2008, the CDC's National Healthcare Safety Network (NHSN) was implemented within the MHS. The NHSN is a secure internet-based surveillance system. Currently, 33 MTFs are participating, and the IPCP has begun evaluating NHSN data. MTFs that are enrolled in NHSN voluntarily report healthcare associated infections. The NHSN collects data from healthcare facilities across the United States to note adherence to practices known to be associated with the prevention of healthcare associated infections (HAI). The data collected in NHSN is used to improve patient safety at the local and national levels.

MTFs began submitting data to NHSN in December 2009. After collecting a year's worth of data, MTFs will be able to compare device-associated infection rates such as Ventilator Associated Pneumonia with other healthcare facilities across the United

States. All infection preventionists receive initial training, and then again annually and as needed. Individual MTFs provide infection control orientation, annual updates, and targeted training to all staff.

Seventy MTFs and clinics have memberships in the Association for Professionals in Infection Control and Epidemiology (APIC) which provides additional training and an annual educational conference. In addition, an MHS online education activity entitled *Reducing Antimicrobial Resistance Through Judicious Use of Antimicrobial Agents and Patient Education* is available to MTF personnel. Physicians and nurses can receive continuing education credit for completing the course.

### **Military Research and Development**

In addition to screening, surveillance, prevention and control, the DoD has a vigorous research program to further our understanding of MDRO and other infections, enhance the prevention and control of infections, and develop new treatments and therapeutics.

The Department assures a coordinated and sustained biomedical research and development program (to include MDROs) through the Armed Services Biomedical Research Evaluation and Management (ASBREM) Committee. The ASBREM Committee serves to facilitate coordination and prevent unnecessary duplication of effort

within DoD biomedical research and development and associated enabling research areas.

The ASBREM is chaired by the Director of Defense Research and Engineering, and co-chaired by the Assistant Secretary of Defense for Health Affairs. The committee includes Senior Executive representatives of relevant DoD Components' Acquisition Executives. The ASBREM reviews medical Research Development Test & Evaluation program plans and accomplishments for quality, relevance, and responsiveness to military operational needs, the needs of the MHS, and the goals of force health protection. They also review program plans and budgets in support of the various guidance documents relevant to national security and to the missions and functions of the DoD.

Several DoD research laboratories receive funding to conduct research on MDROs, including the Walter Reed Army Institute of Research (WRAIR), the U.S. Naval Research Laboratory, U.S. Navy Medical Research Center, the Institute of Surgical Research, Armed Forces Institute of Pathology, and the Walter Reed Army Medical Center. In general, the DoD strategy has been to look across industry and academia for solutions that appear most promising.

For example, in the area of wound infection, prevention, and management, recent studies have examined:

- A novel coating of human albumin plastic to inhibit bacteria colonization and biofilm formation on orthopaedic implants;
- The use of predatory bacteria to control drug-resistant bacteria and microbial biofilms associated with burn and wound infections; and
- Randomized multicenter trials to evaluate the safety and immunogenicity of *Staphylococcus Aureus* *toxiods* in healthy volunteers.

Each year, the DoD releases a solicitation of proposals focused on antimicrobial countermeasures and wound infection prevention and management. The Fiscal Year 2010 solicitation has been disseminated to DoD laboratories, academia, and industry. The proposals are evaluated through a scientific peer review process and a review for military program relevance. Lists of meritorious proposals are established, and the top proposals are slated for funding depending on the amount of funding available within each focus area.

In the area of wound infection prevention and management, proposals have been solicited to:

- Identify and characterize biomarkers that are associated with the immune response and/or predictive of infection/wound closure or early detection of antimicrobial resistance;
- Identify organisms that cause healthcare-related infections, and pursue mitigation of contamination in the military medical environment; and
- Develop an animal model of polytrauma/blast wound infection.

In the area of antimicrobial countermeasures, research efforts will be directed toward mitigation of factors that influence severity of infections and metabolic pathways associated with organisms that cause MDRO wound infection, including characterization and mitigation of biofilm formation. These wound infection organisms include: *Acinetobacter*, *Pseudomonas aeruginosa*, MRSA (methicillin-resistant *Staphylococcus aureus*), and ESBL (Extended spectrum beta lactamase)-producing enteric bacteria (*Eschericia coli*, *Klebsiella pneumonia*, and *Enterobacter* species).

The Department has a preference for discoveries with applicability to infections with multiple organisms, leading to products to treat wound infections that are approved by the Food and Drug Administration.

Additional treatment efforts are focused on topical approaches (application of medicine to the skin). DoD collaborative efforts have arisen with both industry partners and academia. For example, the Wound Infection Program at WRAIR has partnered with Meiji Seika Kaisha, Ltd. of Japan and Johns Hopkins University to support a new indication for the use of *arbakacin*, an antibiotic.

The DoD strategy is wide-ranging, and it will widen the clinical toolbox to prevent or mitigate MDRO wound infections that can be devastating to our wounded warriors.

### **Conclusion**

Mr. Chairman, I hope this provides the Committee with some useful insight into how the DoD has responded to outbreaks of MDRO and other infections in military personnel, as well as the surveillance, control and prevention, and research and development programs in place to help us manage infections now and in the future.

Again, we appreciate the Committee's interest in this important issue, and I am happy to respond to any questions you may have.

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