

Roundtable Discussion

Emerging Infectious Diseases In-Theater: Risks and Mitigation

The conflicts in the Iraq and Afghanistan theaters present complicated challenges in the surveillance, prevention and treatment of infectious diseases among U.S. personnel. While low disease and non-battle injury rates indicate success in dealing with injuries and illness, numerous issues remain, among them the unknown long-term effects of certain infections, the scope of impact of these infections, and the potential adverse effects of large, continuing troop rotations between the U.S. and Iraq and Afghanistan, where endemic agents are not identical. One broad issue is the impact of latent, chronic or unrecognized infections as troops return to civilian life.

To assess potential ways to enhance how infectious agents in-theater are identified and dealt with, the non-profit Institute of Federal Health Care convened a roundtable discussion that included representatives from the military and other federal agencies, congressional staff, professional organizations and academia.

It was noted during the discussion that the conflicts in Iraq and Afghanistan are the longest to be experienced by the all-volunteer force and that they differ from previous wars in that individuals often are sent on multiple rotations between the U.S. and the theater, potentially providing passage for infectious agents during these transitions.

In addition, some troops rotate between Iraq and Afghanistan, potentially transporting differing endemic infectious agents between the two countries.

“We have repeated, intermittent and prolonged exposures to deal with.”

Needed: More Collaboration

While there is collaboration between agencies working on infectious diseases — for example, CDC places staff in DoD overseas laboratories and DoD people work at CDC — a resounding theme of the roundtable discussion was the need for greater shar-

ing of information. “We need greater interoperability between VA and DoD” to follow individuals during and after transition to civilian life. Also urged were turf-neutral channels for sharing information, which currently “works well at the action-officer level,” but “not at the leadership level.” Further, the ability to collect epidemiologic data has outstripped the ability to analyze it. Some participants urged that a single

Highlights from the Discussion

- **Better communication, coordination, cooperation and standardization are needed across agencies and departments. White House-level leadership could help reduce interagency roadblocks that currently exist.**
- **Antibiotic resistance poses a significant concern.**
- **Gram-negative infections constitute a threat to health care facilities in the U.S. from returning troops, posing issues of how much followup is feasible, for how long and at what cost? The expense and logistics of storing staggering amounts of data necessitate difficult decisions about priorities and potential disease markers**
- **Disease identification can be hampered by limited diagnostics. While new rapid diagnostics have been developed, if they are not FDA-approved, their results cannot be used as a basis for treatment unless proper consent is obtained. Available diagnostics are needed for screening and diagnosis.**
- **Enhanced use of preventive measures and development of better measures — prophylaxis and vaccines — need consideration.**
- **Information on endemic diseases in local populations is difficult to obtain. The impact of sending troops without immunity to areas with new diseases is problematic. In addition, information on troop denominators and locations may be classified. It is essential to interface with the special operations and intelligence communities.**
- **Education and training in infectious disease threats are essential, for deploying troops, for commanders in the field, for medical professionals both at home and in-theater — and for policy makers. “There are strategic implications for troop flow and theater operations.”**
- **Cultural awareness is vital in working with allies in the field. Perhaps U.S. embassies should be staffed with medical epidemiologists, both to assess local needs and to build relationships abroad.**

U.S. agency be given responsibility for assembling and analyzing these medical surveillance data. A major roadblock to sharing data is the lack of standard definitions and terms — including the definition of surveillance and what it encompasses.

More effective education of high-level leaders on the use and limitations of medical surveillance and medical intelligence data and information was urged. Also recommended was creation of an interagency medical epidemiology training course. Some participants suggested reviving a previously proposed concept of a foreign area medical officer: Military and perhaps other personnel would be trained in the languages and disease threats found in particular geographic areas and would become regional experts.

An Unknown Denominator

Numerous unknowns underlie infectious threats in-theater and upon return to the U.S. Civilian physicians, including those in the VA, often aren't attuned to infections encountered in-theater, thereby limiting the scope of care provided. Additionally, who is responsible for the care of the large number of civilian contractors at risk in-theater? This question remains unanswered.

While a serum repository now encompassing nearly 45 million samples taken from troops is maintained by the Armed Forces Health Surveillance Center (AFHSC) and available to both VA and military clinicians and researchers, procedures and studies to make best use of the data that can be obtained from sera remain uncertain. Study of sera takes time and has many limitations. "It can't take the place of surveillance on the ground." Of immediate concern is that it takes about

two weeks to obtain surveillance data from the field.

DoD's Global Emerging Infections Surveillance and Response System (DoD-GEIS, now part of the AFHSC) and the Veterans Health Administration have numerous electronic databases devoted toward disease reporting and analysis. Standardization of definitions and data entry are needed.

Diseases of Particular Concern

"Smoldering things that linger for years are the big problem."

Q Fever. Physicians in the U.S. are seeing this highly infectious zoonotic disease in returning troops. Chronic cases (about 1 percent) are associated with cardiac valve abnormalities; identifying chronic infection is problematic.

Leishmaniasis. Differing strains are found in Iraq (*L. infantum*) and Afghanistan (*L. donovani*). Visceral leishmaniasis may be chronic and pose a transfusion risk. Species identification for cutaneous leishmaniasis is challenging and treatment is difficult.

Malaria. Both *P. vivax* and *P. falciparum* are found in Afghanistan. Prophylaxis is challenging, and *P. vivax* infections may not appear until long after leaving the theater.

Multidrug resistant gram negative bacteria — *Acinetobacter baumannii*, *Pseudomonas* and extended spectrum beta-lactamase enzyme (ESBL) producing organisms. Nosocomial transmission is a significant risk. Standardization of laboratory diagnosis is needed. Antibiotic resistance limits treatment options.

Hepatitis E. This enteric disease poses challenges of identification. Should vaccination be considered?

Tuberculosis. A DoD-CDC agreement is in the works to allow CDC to do rapid testing on specimens

from Iraq and Afghanistan — however, these tests are not FDA-approved as yet. Currently, turnaround time for testing is measured in weeks. Late reactivating disease could have impact as troops return to civilian life.

Undifferentiated febrile illnesses. Some, such as Brucellosis and typhoid fever, may have chronic sequelae. Others pose problems of detection in the field: sand fly fever, dengue, chikungunya, sand fly fever.

The emergence of H1N1 influenza has garnered attention at the top levels of the military command because of the potential for disruption of troop rotations and deployments.

Participants in this roundtable: Naomi Aronson of USUHS, Cynthia Bascetta of the Government Accountability Office, Tanis Batsel of the Navy Bureau of Medicine and Surgery, Michael Bayles of the Army Surgeon General's Office, Andrea Buck of the Senate VA Committee, S. Ward Casscells, Robert DeFraithe of the Armed Forces Health Surveillance Center, Tracy DuVernoy of the Armed Forces Health Surveillance Center, Rick Erdtmann of the Institute of Medicine, Brian Feighner of Johns Hopkins University Applied Physics Laboratory, Adolfo Firpo of the Armed Forces Institute of Pathology, W. Bryan Gamble of the U.S. Central Command, Joel Gaydos of the Armed Forces Health Surveillance Center, Philip Gould of the U.S. Air Force, Kevin Hanson of the Defense Department, Mark Holodniy of the Veterans Health Administration, Nikki Jordan of the Center for Health Promotion and Preventive Medicine, Rima F. Khabbaz of the Centers for Disease Control and Prevention, Sheila Kinty of the Defense Department, Luther Lindler of the Armed Forces Health Surveillance Center, John D. Malone of the Center for Disaster and Humanitarian Assistance Medicine, Gregory Martin of USUHS, Donald Noah of the Defense Department, Jean Otto of the Armed Forces Health Surveillance Center, Gary Roselle of the Veterans Health Administration, Kevin Russell of the Armed Forces Health Surveillance Center, Stephanie Scoville of the Center for Health Promotion and Preventive Medicine, Ronald Valdiserri of the Veterans Health Administration, Peter Weina of Walter Reed Army Institute of Research, Jon Woods of the Center for Disaster and Humanitarian Assistance Medicine.

The roundtable was moderated by Ernest Takafuji of the National Institute of Allergy and Infectious Diseases. IFHC Managing Director is Nancy Tomich (www.fedhealthinst.org).