



EXECUTIVE SUMMARY



Malaria Surveillance and Epidemiology: Reducing the Impact on US Civilians and Military Forces

Inter-Agency Malaria Symposium

7 July 2010

Each year, US civilian and military personnel travel to one of the more than 100 malarious countries of the world and, despite known preventive strategies, contract malaria. These “at-risk” populations receive care through various overseas and domestic healthcare systems. Within these systems, healthcare professionals responsible for malaria surveillance, prevention, diagnosis and treatment face many challenges. Gaps in malaria surveillance and reporting systems, imperfect chemoprophylaxis options, and limitations in diagnostic methods are issues of concern. Surveillance for emerging drug resistance and therapeutic outcomes are not uniformly nor routinely conducted. These issues have highlighted the need for improved inter- and intra-agency surveillance, communication, and data sharing to more adeptly manage the malarial threat.

In an effort to address some of the above issues, the Armed Forces Health Surveillance Center (AFHSC) and the Centers for Disease Control and Prevention (CDC) sponsored a one-day, inter-agency malaria symposium on July 7th, 2010 in Bethesda, Maryland titled, “Malaria Surveillance and Epidemiology: Reducing the Impact on US Civilians and Military Forces”. Bringing together nearly 40 key representatives from the Department of Defense (DOD) and other US Government (USG) agencies, this forum addressed current malaria surveillance methods, epidemiologic trends, and challenges facing the organizations’ efforts to manage malaria in their populations at risk. USG participants included representatives from the CDC, the Department of State (DOS), the Peace Corps and the Presidential Malaria Initiative. Participating DOD organizations included Joint Staff, DOD Health Affairs, US African Command (AFRICOM), US Central Command (CENTCOM), Armed Forces Pest Management Board, National Center for Medical Intelligence, Walter Reed Army Institute of Research, and representatives from headquarters, research & development, and public

health hubs for the US Army, Air Force, Navy, and Marine Corps.

The symposium’s objectives were to provide a forum for participants to identify common interests in malaria surveillance and develop strategies to meet surveillance challenges. Through didactic presentations, open discussion and dialogue, attendees identified opportunities to improve malaria surveillance, prevention, diagnosis, and treatment. Key agencies were able to establish collaborative relationships to initiate the process of data sharing to improve malaria reporting. Discussions also afforded participants opportunities to more accurately reflect on and understand the current realities and responsibilities facing those on the front lines of the malarial threat.

The keynote address was delivered by RADM (Ret) Timothy Ziemer, US Global Malaria Coordinator, who provided an overview of the Presidential Malaria Initiative (PMI) in the global fight against malaria. Launched in 2005 by President Bush, and augmented by the 2008 Lantos-Hyde Act, PMI represents the significant commitment by the USG to reduce malaria burden and mortality in 15 African countries.

Presentations were given by the DOD, CDC, Peace Corps and AFRICOM highlighting their current prevention practices, surveillance systems and epidemiologic trends. Case studies included the malaria outbreak among US Navy Reservists who served in Benin in 2009, and a recent malarial investigation in Liberia by Naval Medical Research Unit-3. These case studies emphasized the need for consistent leadership oversight and the persistent challenges in ensuring compliance with personal protective measures, to include chemoprophylaxis regimens, which are known to be effective in preventing malaria.

Factors identified which confound participants' ability to provide more accurate malaria surveillance include:

- Differences in agency's case definitions of malaria;
- Uncertainty in the role of serologic surveillance in identifying cases;
- Challenges in diagnosis to include the lack of rapid diagnostic capability in remote locations and the difficulty in species and mixed infection differentiation;
- Presumptive treatment of malaria in austere environments without definitive lab confirmation;
- Reliance upon the microscopy expertise of non-USG affiliated technical staff to provide diagnostic support;
- Dual reporting by military medical personnel to the DOD and their respective civilian public health departments;
- Discordance between DOD data & CDC-detected military cases;
- Malaria cases in Military Reservists who are diagnosed by civilian healthcare providers but not reported to DOD;
- Differences in the reporting systems used by each of the Services and the lack of a single reporting system in the joint command environment that inhibit regional oversight [DOD-specific];
- Confusion across DOD organizations as to whether deployed medical personnel report malaria cases through Service or COCOM chains of command [DOD-specific].

Data quality improvement and data sharing opportunities were identified for DOD and CDC to compare cases to determine possible discrepancies in malaria reporting for military personnel diagnosed in the US. Additionally, it was recognized that DOS and Peace Corps personnel often represent sentinel populations at key locations around the world potentially providing vital information for malaria surveillance and country risk assessments with relevance to the DOD. Thus, participants recognized the opportunity to improve host nation surveillance and risk assessments by

exploring information sharing of malaria cases between Peace Corps, DOS, DOD and participating PMI countries.

Other surveillance gaps identified included the specifics of species surveillance and distribution, mixed infections, drug resistance and clinical outcomes. Significant discussions addressed improving diagnostic testing, medical provider training and clinical algorithms and how these activities directly affect data quality and malaria surveillance. Additionally, attendees suggested developing a behavioral-based approach to convey risks and advantages of complying with malaria chemoprophylaxis— particularly since these preventive measures have been proven to be most effective.

Significant dialogue ensued regarding the less than ideal options available for chemoprophylaxis. These include the lack of patient tolerability of doxycycline, the significant psychological side effects associated with mefloquine, the expense and need for daily dosing with atovaquone/proguanil, and the ambiguity associated with the proper dosage of primaquine for anti-relapse therapy. This issue led to a larger discussion regarding the need for standardized policy, education and training of DOD medical personnel including guidance on diagnosis, prophylaxis and treatment. Development of such DOD guidance could have potential applicability and benefit for other USG personnel.

NEXT STEPS: All of the respondents completing a post-meeting evaluation considered the symposium a valuable forum that should reconvene periodically; 85% recommended meeting on a semi-annual or annual basis. In the interim, various sub-committees could meet separately and more frequently. Attendees were enthusiastic about continuing the process started at this meeting in a manner that leads to definitive actions. Participants suggested the following topics for future discussion: diagnostics (e.g., diagnostic algorithms, role of non-microscopy tests); chemoprophylaxis issues; surveillance systems and case definition standards.

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