



AFHSC Surveillance Bulletin

Health Surveillance, Analysis, and Insight for Action

THIRD QUARTER 2015

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AFHSC Joins Defense Health Agency to Support Public and Global Health Surveillance in U.S. Armed Forces

On August 23, the Armed Forces Health Surveillance Center (AFHSC) officially joined the Defense Health Agency (DHA). This transition began a new chapter in AFHSC history. AFHSC brings its expertise in tracking injuries and illnesses among the service members and conducting global health surveillance among its allies to support U.S. national security interests.

AFHSC will operate under DHA's Public Health Division, which reports to the Healthcare Operations Directorate. DHA, which was established in October 2013, is responsible for delivering integrated health services to the beneficiaries of the Military Health System (MHS) and driving greater integration of clinical and business processes across the MHS.

"The ultimate goal for AFHSC is to make sure that its customers – Department of Defense policymakers, military commanders, public health officers, and healthcare providers – have the health surveillance information necessary for them to shape their preventive measures that protect our forces," said Colonel Michael Bell, AFHSC's chief. "AFHSC's mission is to make sure that our military leaders and interagency partners have timely and comprehensive health surveillance data in their hands to make those decisions."

AFHSC marked its transition into DHA with several celebrations. DHA Director Lieutenant General Douglas J. Robb welcomed AFHSC, along with the National Museum of Health and Medicine and the Armed Forces Medical Examiner System, during a video teleconference on Aug. 24.

"I want to personally welcome all of you here to the DHA," Robb told staff from all three agencies. "We're all here because we serve our service members and their families. We have the opportunity to create first solutions for those who serve and their families. Prior to this, we didn't have a joint entity that allowed this opportunity."

Colonel Bell responded, "We're delighted to join DHA. We're excited about the opportunity to move surveillance and public health to another level...We're looking forward to another great chapter as part of your organization."

Colonel Carol Fisher, chief of DHA's Public Health Division,

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AFHSC Chief Colonel Michael Bell (podium) addresses AFHSC staff and visiting DHA senior leaders Colonel Carol Fisher, chief of the Public Health Division (far right), Paul Hutter, acting deputy director (center) and Chris Priest (left), chief of staff to director of the Healthcare Operations Directorate, during a town hall in July.

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and Paul Hutter, acting deputy director of DHA, visited AFHSC headquarters and held a town hall for its staff in July. The officials provided an overview of DHA, and took questions from the AFHSC staff.

The final event was a transition ceremony held for staff at AFHSC headquarters in which the organization's flag was retired. Colonel Bell also recognized nearly two dozen staff members who have worked at the Army Medical Surveillance Activity, the DoD Global Emerging Infections Surveillance and Response System (GEIS), and the Office of the Deputy Assistance Secretary of Defense for Force Health Protection and Readiness – organizations that would be merged to form AFHSC in 2008.

As part of joining the DHA, personnel and health surveillance assets from the U.S. Army Public Health Command, U.S. Air Force School of Aerospace Medicine and the Navy and Marine Corps Public Health Center will join AFHSC as satellites. The satellites and AFHSC will share data and work to improve the health surveillance products they deliver to those overseeing force health protection and readiness among service members.

AFHSC is currently organized in to three sections: Epidemiology and Analysis (E&A), GEIS, and Integrated Biosurveillance.

The E&A division staff produces routine and periodic reports that look for trends over time of diseases and injuries such as communicable disease, training-related injuries, mental health injuries, traumatic brain injuries, and deployment health. The E&A staff, which has expertise in public health and epidemiology, extracts relevant data from Defense Medical Surveillance System (DMSS), a depository of more than 2 billion healthcare records from multiple sources and

integrated into a longitudinal surveillance database for all individuals who have served in the military since 1990. The section also publishes a peer-reviewed journal, *Medical Surveillance Monthly Report*, whose articles provide estimates of incidence, distribution and impact, and trends of illnesses.

The GEIS Section supports a surveillance network of six Department of Defense overseas research laboratories and four U.S.-based Department of Defense reference laboratories that conduct research on endemic and emerging infectious diseases. In fiscal year 2015, GEIS distributed \$47.4 million to support surveillance efforts in 65 countries. Some of the funding was used to support the infection control efforts in Liberia during the Ebola outbreak response. GEIS supported influenza surveillance in which Walter Reed Army Institute of Research sequenced 151 H3N2 samples collected from 37 different countries between 2009 and 2014. The results helped identify in advance the appearance of a drifted strain of H3N2 before it arrived in the U.S.

The Integrated Biosurveillance section monitors data sources to detect and communicate all-hazard events, ranging from emerging infectious diseases to environmental incidents, relevant to health of service members. In 2015, the section created and distributed 91 Surveillance Summaries on diseases such as influenza A (H7N9), chikungunya, the Ebola virus outbreak in West Africa, dengue in Japan, and Middle East Respiratory Syndrome (MERS-CoV). The staff also developed up-to-date guidance for detecting and reporting Department of Defense cases of chikungunya, Ebola virus, H7N9, and MERS-CoV.



AFHSC Chief Colonel Bell (right) and Dr. Mark Rubertone, functional manager of the Defense Medical Surveillance System (DMSS) (left), lower the AFHSC flag during a ceremony to mark its transition into the DHA.



Major Barbara Cloutier, lead for Gastrointestinal Infections for the Global Emerging Infections Surveillance and Response System (right) and Dr. Mark Rubertone, functional manager of the DMSS, cut a cake celebrating AFHSC's transition to the DHA.

Employee Spotlight: Dr. Lee Hurt and Mr. Gi-Taik Oh

Dr. Lee Hurt is a senior managing epidemiologist and Gi-Taik Oh is a principal research analyst for AFHSC's Epidemiology and Analysis (E&A) Section. Recently, Dr. Hurt and Mr. Oh spoke to the AFHSC Surveillance Bulletin about the challenges and complexities of their project to revise the [Installation Injury Report](#).

When it comes to a request for analysis on injuries and illnesses affecting service members, Dr. Lee Hurt and Mr. Gi-Taik Oh stand on the frontlines. The process of developing new surveillance products begins with defining the requirements for an epidemiologic study or surveillance report and progresses to writing computer code that extracts the surveillance data from a database of more than 2 billion health records known as the Defense Medical Surveillance System (DMSS).

That process is continually carried out by E&A staff – most recently when Dr. Hurt and Mr. Oh led a project to revise the [Installation Injury Report](#). This report summarizes injury-related data (e.g., counts and rates of injury among active duty U.S. service members by service, installation location, anatomical region, external causes, and duty limitation status).

[Installation Injury Report](#) is one of many tools that help Department of Defense policymakers, military commanders, healthcare providers, public health officers, and researchers to respond to an operational issue or improve their health protection programs for the U.S. Armed Forces.

What isn't obvious when viewing the finished product is the amount of time and complexity involved in producing it. Dr. Hurt and Mr. Oh were charged with revising the monthly report to enhance its features, update the programming code to reduce run time, and update military installations that are often subject to base reallocations.

"The old report had become outdated in look and feel," said Dr. Hurt, who worked closely with representatives from the services to get their input and suggestions for revisions to the report.

A significant visual change is that the graphs are now produced in color. In each graph about specific types of injuries, users can find the rate of incident injuries detailed directly underneath, making it easier to assess the information.

In addition, the graphs on type of injury are now consolidated based on anatomical regions. For instance, rates

of injuries for upper and lower extremities – which include shoulder and arm and hand wrist, leg, knee and ankle and foot – are all plotted on the same graph.

New surveillance data also were added to the report. Hearing and vision injuries are now reported separately because of the increased recognition of the impact of these injuries on service members. The external causes of injuries were added to data on outpatient medical encounters. "It's hard to prevent injuries if you don't know what caused them," Dr. Hurt said.

Mr. Oh wrote the code for the report so that it runs more efficiently each month. The old code had as many as 16 pieces linked together, which made it difficult to update the 195 different installation injury reports created monthly. Over four months, while juggling other projects, Mr. Oh completely rewrote the code so that it has only two sections. He noted that upgrades to the SAS code made it easier to carry out some of the changes. For example, SAS improved the ability to plot counts and rates of injuries on graphs.

"The report is more flexible and easier to update for a new analyst or an experienced one," Mr. Oh said. "It was very challenging at the beginning. But now we have a design that is simple and nice, and clearly shows in the result."



Dr. Lee Hurt, a senior managing epidemiologist for the AFHSC's Epidemiology and Analysis Section, recently led a project to revise its Installation Injury Report

Integrated Biosurveillance Section Department of Defense Disease Summaries and Guidelines for Detecting and Reporting Infectious Diseases

A key function of the AFHSC's Integrated Biosurveillance and the Global Emerging Infections System (GEIS) section is to monitor biosurveillance data sources to detect and communicate all-hazard events (e.g., emerging infectious diseases or environmental spills) relevant to the health of service members. The section recently began publishing unclassified versions of its [health surveillance summaries](#) on the AFHSC website, and updated several of its guidelines for detecting and reporting Department of Defense cases of emerging diseases. Recent surveillance summaries include the following:

- ▶ [Updated: Guidelines for Detecting and Reporting DoD Cases of Ebola Virus Disease Infection](#)
- ▶ [MERS-CoV Surveillance Summary](#)
- ▶ [Caribbean Chikungunya Surveillance Summary](#)
- ▶ [West Africa Ebola Surveillance Summary](#)
- ▶ [Updated: Detecting and Reporting DoD Cases of Middle East Respiratory Syndrome Coronavirus \(MERS-CoV\) Infection](#)
- ▶ [Detecting and Reporting DoD Cases of Chikungunya Infection](#)

For more information on disease surveillance summaries, please email requests to usarmy.ncr.medcom-afhsc.list.dib.alert-response@mail.mil



AFHSC Employment Opportunities

AFHSC is fortunate to employ a team of passionate, talented professionals who contribute to our mission of providing health surveillance analysis to the Department of Defense community charged with maintaining and enhancing the health of U.S. service members and their families. If you are interested in joining the AFHSC team, please see the current positions below and visit http://webconnect3.send-outs.com/cn_frame.aspx?id=etip&siteid=webconnect&group=etip&key=cn to apply.

- ▶ We are seeking an experienced Senior Public Health Epidemiologist to assist the AFHSC by applying expertise in a variety of critical capacities which include those listed below. Responsibilities for the position will include global surveillance portfolio management including proposal review and project evaluation; review project proposals and periodic reports from Global Emerging Infections Surveillance (GEIS) partners for scientific and technical quality; assure that project objectives meet AFHSC-GEIS strategic goals and

monitor project progress in accordance with stated milestones; provide guidance and feedback to GEIS partners concerning surveillance efforts with respect to strategy, design, analytic approach, and/or reporting; coordinate multi-site surveillance activities among the GEIS partner network; provide epidemiology and analysis support to GEIS partners both CONUS and OCONUS and perform ongoing evaluation of GEIS surveillance network, including occasional site visits to the DoD overseas research laboratories and national/international professional conferences. Other duties include providing epidemiologic expertise and input at internal working groups and with international GEIS partners; assist in the development of periodic reports, internal guidelines, and protocols related to the operation of AFHSC; assist in the planning and execution of health surveillance conferences, symposia, and workshops; collaborate with Interagency partners on infectious disease surveillance activities; and attend meetings and complete assignments for Health Affairs / AFHSC / GEIS, as needed.

Epidemiology and Analysis Division Reports

AFHSC's Epidemiology and Analysis section leverages the expertise of epidemiologists, preventive medicine physicians, and data analysts to provide timely reports of actionable health information. The division uses the Defense Medical Surveillance System (DMSS) and the DoD Serum Repository to provide analysis to the Department of Defense, policy makers, public health officers, and researchers. Recent reports include the following:

- ▶ Weekly Medical Evacuations Report for Defense Manpower Data Center
- ▶ Department of Defense Communicable Disease Report
- ▶ National Capital Region Medical Directorate Communicable Disease Report
- ▶ Influenza Surveillance Report; Weekly (Oct-May)
- ▶ Post-Deployment Health Assessment (DD2796) Summary Report
- ▶ Post-Deployment Health Reassessment (DD2900) Summary Report
- ▶ Pre-Deployment Health Assessment (DD2795) Summary Report
- ▶ Reportable Events Monthly Report (REMR)

For more information on these reports, or to request a new one, please email usarmy.ncr.medcom-afhsc.mbx.ea-reports@mail.mil



AFHSC To Launch New Web-based Programs to Improve Health Surveillance

By Bryan Cowles

As health surveillance increasingly shifts to a digital landscape, the AFHSC is updating three web-based programs to better serve the U.S. Armed Forces. ProMIS and DMED will be launching new versions based on customer suggestions. Also AFHSC will be gaining a new web-based program entitled Inventory Lab. All three platforms look to reinvent the digital wheel for health surveillance.

Web-based programming previously has been integrated into AFHSC's website providing a platform where individuals around the world with and without a CAC (Common Access Card) receive AFHSC data, analytics, proposals, and surveillance. According to Wilson Mendez, AFHSC program manager for the Data Management and Technical Support team, the overall goal is to ensure that all web-based programs have similar web-page layouts, similar functionality, and produce better results.

"Functionality is key because with each web-based program having a similar layout it will make it easier for the users to navigate and accomplish tasks faster," Mendez said.

To protect against security interference, all three web-based programs will now have CAC eligibility or password

encryption. The programs will also feature the same layout throughout AFHSC's website for user friendliness. Outside of the overall changes, each program will be transformed to tailor the needs of the Armed Forces.

The purpose of the ProMIS (Proposal Management Information Solution) program is to facilitate project management at AFHSC's GEIS (Global Emerging Infections Surveillance and Response System) Section. ProMIS is used by investigators in

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New Employees

Global Emerging Infections Surveillance and Response Section

- ▶ Barbara Cloutier, an Army Major, joined the Global Emerging Infections Surveillance and Response System section as the lead for Enterics Disease.
- ▶ Scott McCurdy, a contractor with Cherokee Nation Technology solutions (CNTS), joined the Data Management and Technology Support (DMTS) team as a Network Administrator.
- ▶ Netsanet Gizaw, a contractor with CNTS, joined DMTS as a Senior Informatica Developer.

Publications

- ▶ Elspeth C. Ritchie, Michael R. Bell, Shayne Gallaway, Michael Carino, Jeffrey L. Thomas, Paul Bliese, and Sharon McBride, (2015). "Female Soldiers and Post Traumatic Stress Disorder" in ["Women at War"](#) (2): 22-33.
- ▶ Robert F. Defraites, David W. Niebuhr, Brigilda C. Teneza, Leslie Clark, and Sharon Ludwig, (2015). "Comparative Morbidity and Mortality of Women Serving in the US Military During a Decade of Warfare" in ["Women at War"](#) (1): 3-21.
- ▶ Joseph H. Abraham, Leslie L. Clark and Aaron I. Schneiderman, (2015). "Epidemiology of Airborne Hazards in the Deployed Environment" in ["Airborne Hazards Related to Deployment"](#) (6): 61087
- ▶ Blacksell, S. D., P. Kantipong, et al. (2015). ["Underrecognized arthropod-borne and zoonotic pathogens in northern and northwestern Thailand: serological evidence and opportunities for awareness."](#) *Vector Borne Zoonotic Diseases* 15(5): 285-90.
- ▶ Jones, C. L., M. Clancy, et al. (2015). ["Fatal Outbreak of an Emerging Clone of Extensively Drug-Resistant Acinetobacter baumannii With Enhanced Virulence."](#) *Clinical Infectious Diseases* 61(2): 145-54.
- ▶ Nielsen, L. E., R. J. Clifford, et al. (2015). ["An 11,000-isolate same plate/same day comparison of the 3 most widely used platforms for analyzing multidrug-resistant clinical pathogens."](#) *Diagnostic Microbiology & Infectious Disease*.
- ▶ Ore, M., E. Saenz, et al. (2015). ["Outbreak of Cutaneous Leishmaniasis in Peruvian Military Personnel Undertaking Training Activities in the Amazon Basin, 2010."](#) *Journal of the American Society of Tropical Medicine and Hygiene*.
- ▶ Sanchez, J. L., M. J. Cooper, et al. ["Respiratory Infections in the U.S. Military: Recent Experience and Control."](#) *Clinical Microbiology Reviews* 28(3): 743-800.
- ▶ Foley, E. H. and W. K. Reeves (2014). ["Rickettsia massiliae \(Latreille\) from the Azores."](#) *Journal of Agricultural and Urban Entomology*. 30: 25-27.
- ▶ Khan, S. U., B. D. Anderson, et al. (2015). ["A Systematic Review and Meta-Analysis of the Seroprevalence of Influenza A\(H9N2\) Infection Among Humans."](#) *Journal of Infectious Diseases*.
- ▶ Larson, K. R., G. L. Heil, et al. (2015). ["Serological evidence of equine influenza infections among persons with horse exposure, Iowa."](#) *Journal of Clinical Virology*. 2015;67: 78-83.
- ▶ Pollett, S., M. I. Nelson, et al. (2015). ["Phylogeography of Influenza A\(H3N2\) Virus in Peru, 2010–2012."](#) *Emerging Infectious Diseases* 21(8).
- ▶ Reeves, W. K., L. A. Durden, et al. (2015). ["Rickettsial diseases and ectoparasites from military bases in Japan."](#) *The Journal of Parasitology* 101(2): 150-5.
- ▶ Shanks, G. D. (2015). ["Synergistic Mortality Caused by Plasmodium falciparum During the 1918 Influenza Pandemic."](#) *American Journal of Tropical Medicine and Hygiene* 92(5): 941-2.
- ▶ Tinoco, Y. O., J. M. Montgomery, et al. (2015). ["Transmission Dynamics of Pandemic Influenza A\(H1N1\)pdm09 Virus in Humans and Swine in Backyard Farms in Tumbes, Peru."](#) *Influenza and Other Respiratory Viruses*.

AFHSC To Launch New Web-based Programs to Improve Health Surveillance

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the [GEIS partner network](#) to submit proposals for funding to conduct surveillance of endemic and emerging infectious diseases, and used by GEIS staff to track progress made in those projects. According to Sarah Wijewardena, GEIS program manager, the application's goal is to track funding, approvals and detailed quarterly reports for ProMIS users. Although the web-based program served its purpose for the GEIS Section, the lack of functionality held the program back.

The previous version of ProMIS lacked communication tools that would enable users to discuss funding and ask questions. Lack of continuity among documents resulted in small glitches. Similarly, lack of continuity among documents was noted with ProMIS: Users had to export items into Microsoft programs, which made it difficult to maintain correct records because of alternating formats. However, these problems were addressed when Mendez, Wijewardena, and the GEIS Section began incorporating customer suggestions and input.

The new beta version of ProMIS has been launched on the website and just completed accepting fiscal year 2016 surveillance proposals. The web-based program will continue to release updates in phases to improve the program. To improve communication, ProMIS will provide a discussion board for users, department contact directory, and a calendar that notifies partners of important dates. In addition, users will soon be able to track and audit changes made to documents. Individual's names will be attached to documents and will allow AFHSC to track edits and text/content changes. Also, AFHSC is working on a system to streamline data instead of relying on exportation of Microsoft programs.

"If we didn't have ProMIS, we could not accomplish a large portion of tasks," Wijewardena said. "By streamlining the data, we can maintain the space where the money is being placed."

DMED (Defense Medical Epidemiology Database) is also receiving updates based on customer suggestions. The purpose of DMED is to provide a standard epidemiologic methodology used to collect, integrate, and analyze tri-service personnel and medical event data. DMED provides authorized users with remote access to the de-identified summarized data. The use of client-server technologies and database

optimization gives DMED users unprecedented access to tri-service epidemiologic data and tailored queries that respond in a timely and efficient manner.

According to Mendez, the previous version of DMED was neither user friendly nor security enabled. The new version is currently in development and will have a ".NET" base, making it easier for users to access. Security will be the central focus of the new DMED as the system has been hacked in the past. Mendez's plan is to ensure that passwords are not encrypted and that the system will be CAC enabled.

"Coming from telecom and software development, you are drilled with the importance of security," Mendez said.

The biggest change out of AFHSC's web-based health surveillance comes from a new service called Inventory Lab. The program will serve as a cross-relational database. Individuals will be able to enter the web-based program search for laboratories, methods for testing, and specific agents or diseases. Users will also be able to search for subject matter experts with background information certifying their validity within their field. For every laboratory listed, users will be able to search for the nearest laboratory location, testing capabilities of laboratory, shipping information, sample handling, and wait time for research. The information will be related specifically to the Department of Defense and serve as a resource outlet.

Jessica Reinhardt, AFHSC's laboratory systems officer and advisor, said Inventory Lab will not capture every test but a solid amount of information that is public health relevant and hard to find.

"What do you do for testing for MERS-CoV or any new disease? You end up doing the buddy system," Reinhardt said. "Inventory Lab will get us to the 'boom' where we will have the information needed to handle the disease properly because of this surveillance tool."

Inventory Lab launched a fully functional house for the beta system on August 1 for data entry. The web-based program will be fully released by the end of fiscal year 2015.

With ProMIS, DMED, and Inventory Lab in development and expected for launch, AFHSC looks to revamp health surveillance within the Armed Forces.

Medical Surveillance Monthly Report: August Highlights

- ▶ Update: Routine screening for antibodies to human immunodeficiency virus, civilian applicants for U.S. military service and U.S. Armed Forces, active and reserve components, January 2010–June 2015
- ▶ Durations of military service after diagnoses of HIV-1 infections among active component members of the U.S. Armed Forces, 1990–2013

John F. Brundage, MD, MPH; Devin J. Hunt, MS; Leslie L. Clark, PhD, MS

- ▶ Case report: Probable murine typhus at Joint Base San Antonio, TX

Ralph A. Stidham, MPH, DHSc; Robert L. von Tersch, PhD; Kenneth L. Batey, DVM, DACVP; Cierrea Roach, MD

- ▶ Morbidity burdens attributable to various illnesses and injuries in deployed (per Theater Medical Data Store [TMDS]) active and reserve component service members, U.S. Armed Forces, 2008–2014

Denise O. Daniele, MS; Leslie L. Clark, PhD, MS

- ▶ Deployment-related conditions of special surveillance interest

Click [here](#) to view the entire issue.



Join AFHSC on [Facebook](#) and [Twitter](#) in an extended conversation on health surveillance efforts to promote, maintain, and enhance the health of military and military-associated populations.

Did You Know...?

- ▶ Beginning October 1, 2015, the International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) will replace the ICD-9-CM for coding of morbidity data. To prepare for this transition, the Epidemiology and Analysis division, through the Surveillance Methods and Standards (SMS) working group, developed proposed ICD-10 code sets for many of the Center's surveillance case definitions. The validity of the code sets will be evaluated after ICD-10 implementation.
- ▶ If available, the proposed ICD-10 code sets are included in the code tables within the condition-specific case definitions. Currently, there are approximately 40 conditions with proposed ICD-10 code sets available on the [AFHSC website](#).
- ▶ The AFHSC uses case definitions for routine surveillance and reporting. These case definitions allow Department of Defense public health practitioners to measure disease trends and related biological phenomena in different environments and situations over time. The ongoing effort to document AFHSC case definitions and methodologies promotes internal consistency and credibility of AFHSC surveillance efforts as well as consistency and comparability of public health information and data across agencies.

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