

DoD Global Emerging Infections Surveillance & Response System (DoD-GEIS)



Early Warning Systems for Zoonotic Diseases in Humans

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**Committee on Achieving Sustainable Global
Capacity for Surveillance and Response to Emerging
Diseases of Zoonotic Origin**

Disclaimer


∅ The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the U.S. Department of Defense or the U.S. Government.



Outline

- n Brief background on DoD-GEIS
- n Highlights of DoD early warning systems to detect diseases of zoonotic origin in humans
- n Summary





DoD-Global Emerging Infections Surveillance & Response System (DoD-GEIS) Overview



DoD Role in Emerging Infections



THE WHITE HOUSE
WASHINGTON
PRESIDENTIAL DECISION DIRECTIVE NSTC-7
JUNE 20, 1996

MEMORANDUM FOR
THE VICE PRESIDENT
THE SECRETARY OF STATE
THE SECRETARY OF DEFENSE
THE SECRETARY OF THE INTERIOR
THE SECRETARY OF AGRICULTURE
THE SECRETARY OF COMMERCE
THE SECRETARY OF HEALTH AND HUMAN SERVICES
...

SUBJECT: Emerging Infectious Diseases

This Directive establishes national policy and implementing actions to address the threat of emerging infectious diseases by improving surveillance, prevention, and response measures.

“The mission of DoD will be expanded to include support of global surveillance, training, research, and response to emerging infectious disease threats.

DoD will ensure the availability of diagnostic capabilities at its 3 domestic and 6 overseas laboratories.

DoD will make its overseas laboratory facilities available, as appropriate, to serve as focal points for the training of foreign technicians and epidemiologists.”

GEIS Functions

- n Provides Emerging Infectious Disease (EID) **consultation**
- n Identifies and addresses EID **vulnerabilities** in surveillance, response, and infrastructure
- n Assists DoD partners in **developing and implementing programs** and projects to prevent and mitigate EID threats
- n Provides coordination for **assembling and sharing information** on EID threats



Overview of DoD - GEIS

n 4 goals

- Surveillance and detection
- Response and readiness
- Integration and innovation
- Cooperation and capacity building

n 5 disease priority areas

- Respiratory Illnesses (esp. influenza)
- Febrile Illnesses (esp. malaria and dengue)
- Enteric (Acute Diarrheal) Illnesses
- Antimicrobial Resistance
- Sexually-transmitted Infections



A Global Network



Armed Forces Institute of Pathology

WRAIR/NMRC



Germany

Korea

Egypt



Navy Hub

Air Force Hub



Thailand



Peru



Kenya



Indonesia

DoD's Unique Assets – Overseas presence due to laboratories

Global map of GEIS-funded surveillance efforts in Fiscal Year 2007



FY2007 Surveillance Sites

- | | | | |
|-----------|-----------|--------------|--------------|
| ● AFRIMS | ● LPMC | ● NHRC | ● USAMRU-K |
| ● CHPPM-W | ● NAMRU-2 | ● NMRCD-Lima | ● 18thMEDCOM |
| | ● NAMRU-3 | ● USAFSAM | |

23JUN2008 Reported EOY FY07



Highlights of GEIS-supported Surveillance Efforts

Laboratory-Based Surveillance; Influenza

n **Sentinel** Surveillance

- U.S. Air Force School for Aerospace Medicine (USAFSAM; San Antonio, Texas)

n **Population-based** Surveillance

- Naval Health Research Center (NHRC; San Diego, California)

n **International** Surveillance

- NAMRU-2 (Jakarta, Indonesia)
- NAMRU-3 (Cairo, Egypt)
- NMRCDC (Lima, Peru)
- AFRIMS (Bangkok, Thailand)
- USAMRU-K (Nairobi, Kenya)





Syndromic Surveillance

n Early Warning Outbreak Recognition System
(EWORS)

n Alerta

n **E**lectronic **S**urveillance **S**ystem for the **E**arly
Notification of **C**ommunity-based **E**pidemics
(ESSENCE)

Early Warning Outbreak Recognition System (EWORS)

n Established in 1999 in Indonesia

n Current sites:

n Indonesia: 11

n Lao PDR: 7

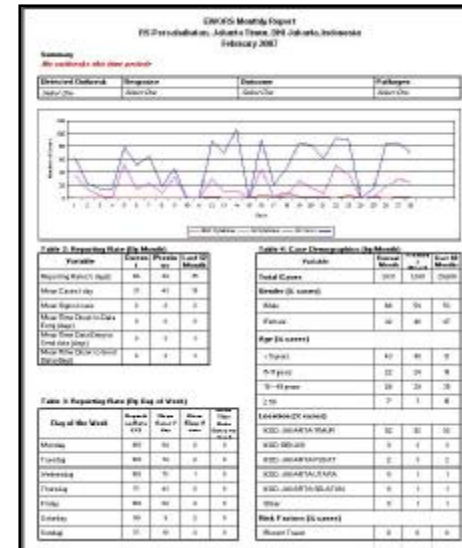
n Cambodia: 10

n Vietnam: 9

n Peru: 10

n Sentinel urban hospital sites

n Multi-language software



Alerta



n January 2003: Peruvian Navy implemented Alerta DISAMAR with support from NMRCDC - Lima using technology from VOXIVA

.. 2007:

n 97.5% of the Peruvian Navy population covered (125,000).

n 88 reporting units including hospitals, clinics, health centers, nurseries and units from jungle and borders

n 37 ships

n In June 2005, implemented in Peruvian Army

n Uses:

.. Any public phone in Peru (toll free number);

.. Computer (Internet dial-up or high speed);

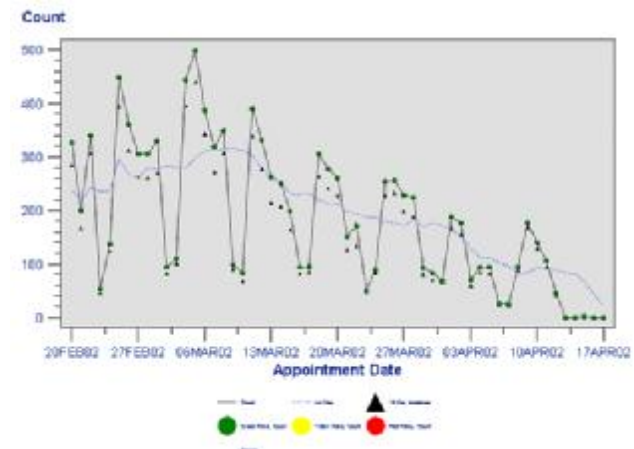
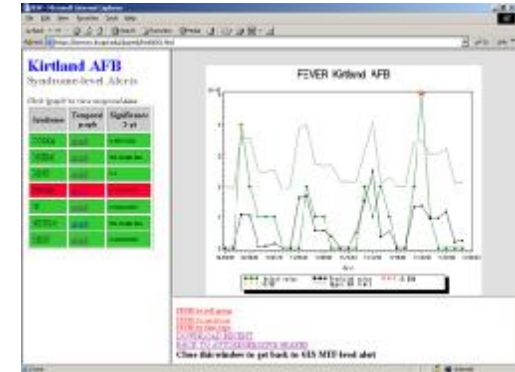
.. With no access to either phone or internet: radio



ESSENCE

n Web-based medical surveillance

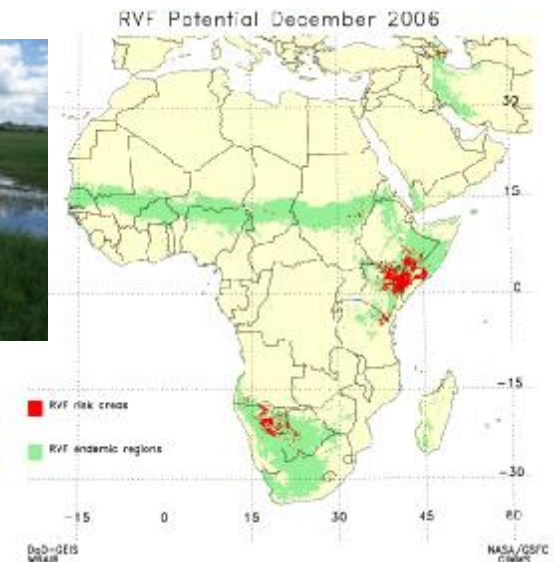
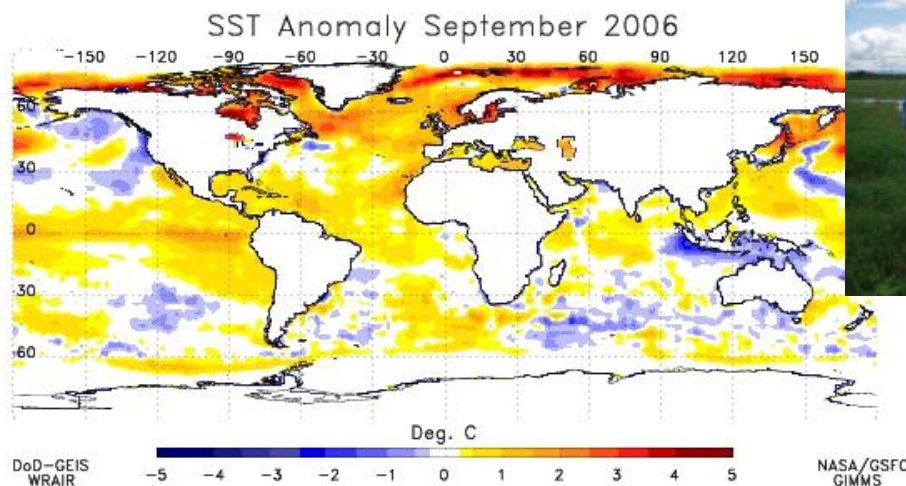
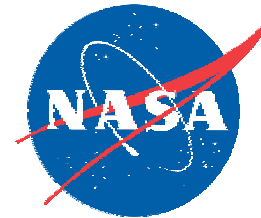
- Initiated in 1999 in National Capital Area
- September 2001 to present
 - n Military Treatment Facilities
 - 187 Army; 166 Navy; 80 Air Force; and 32 Coast Guard
 - Over 9 million beneficiaries



Prediction-based Surveillance

n Rift Valley Fever

- .. Prediction modeling based on satellite data
- .. Coordinated effort with NASA and USAMRU – K



<http://www.geis.fhp.osd.mil/GEIS/SurveillanceActivities/RVFWeb/indexRVF.asp>

Mortality Surveillance



- n Armed Forces Institute of Pathology
 - .. Armed Forces Medical Examiners Systems
 - .. Only agency in DoD with the mission to investigate the medical cause of death for all active duty personnel
 - n Created in 2001
 - n Monitor for any infectious or potentially infectious etiology



Conclusions

n What works well

- .. Global coverage
- .. Surveillance systems can be flexible
- .. Collaboration

n Gaps

- .. Efforts still not well integrated with animal / M of Ag side
 - n Efforts still 'human centric' due to mission
- .. Low specificity
- .. Some populations not covered
 - n Geographic; age

